PASCO COUNTY, FLORIDA

APPLICATION FOR

WEST PASCO
CLASS III LANDFILL FACILITY

SUBMITTED BY

THE PASCO COUNTY
BOARD OF COUNTY COMMISSIONERS

JANUARY 1988

PREPARED BY

CAMP DRESSER & McKEE INC.

environmental engineers, scientists,
planners & management consultants CDM

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

D. E.
JAN 29 1988
SOUTH WEST DISTRICT
TAMPA

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION FOR PERMIT TO CONSTRUCT ☒
OPERATE ☐

A SOLID WASTE RESOURCE RECOVERY AND MANAGEMENT FACILITY

GENERAL REQUIREMENTS

Solid Waste Resource Recovery and Management Facilities shall be permitted pursuant to Section 403.707, Florida Statutes, and in accordance with Florida Administrative Code Rule 17-7. A minimum of six copies of the application shall be submitted to the Department District Office having jurisdiction over the facility. Complete appropriate sections for the type of facility for which application is made. Entries should be typed or printed in ink. All blanks should be filled in or marked not applicable. The application shall include all information, drawings, and reports necessary to evaluate the facility. Information required to support the application is listed on the attached pages of this form.

Facility Type: Existing ___ Proposed X

Sanitary Landfill:
- ___ Class I,
- ___ Class II,
- X Class III: Trash/yard Trash
- ___ Class III: Yard Trash Composting

Volume Reduction:
- ___ Composting
- ___ Shredder
- ___ Incinerator/Trench Burner
- ___ Resource Recovery:
  - ___ Energy ___ Materials

Sludge Landspreading:
- ___ Grade I
- ___ Grade II
- ___ Grade III
- ___ Septage/Food Service

FACILITY NAME: West Pasco County Class III Landfill / DER ID Number

FACILITY LOCATION (main entrance): Hays Road, New Port Richey, Florida

S 25&26 (section), T 24S (township), R 17E (range) / Latitude 28 ° 22 ' 05N " Longitude 82 ° 33 " 30W"

Applicant Name (operating authority): Pasco County Board of County Commissioners

Street Address & P. O. Box: 7530 Little Road, New Port Richey, Florida 34654 (City, County, Zip)

Contact Person: George Ellsworth (Name) 813-847-8145 (Phone Number)

Authorized Agent/Consultant: Camp Dresser & McKee (Name) 813-530-9984 (Phone Number)

Contact Person: Dorian Modjeski (Name) 1321 U.S. 19 South, Suite 100B (Street, P. O. Box) 813-530-9984 (Phone Number)

Clearwater, Florida (City) Pinellas (County) Florida (State) 34624 (Zip)

Landowner (if different than applicant): Same

Address of Landowner: ___ (Street, P. O. Box) ___ (City) ___ (State) ___ (Zip)

Cities, Towns and Areas to be Served: Incorporated and unincorporated areas of Pasco County, FL

Current and Projected Population to Served: 1990 - 279,100 2000 - 356,400

Acres within Waste Site Boundary: 20 Acres within Property Boundary: 59.23

Volume of Solid Waste to be received: 64-75 cu. yds/day tons/day gallons/day

Date Site Ready to Received Solid Waste: October 1988 Estimated Life of Facility 20 years

Estimated Cost of Construction, Total: $ 1,000,000 Estimated cost of Closing: $ 600,000

Anticipated Construction Starting and Completion Dates
From: July 1, 1988 To: September 30, 1988

REQUIRED ATTACHEMENTS FOR CONSTRUCTION/OPERATION PERMIT FOR A RESOURCE RECOVERY AND MANAGEMENT FACILITY

GENERAL

Permit application and supporting information shall include the following (17-7.030(2), F.A.C.):

	Completeness Check
1. A letter of transmittal to the Department; (17-7.030(3)(a) F.A.C.)	X
2. A table of contents listing the main sections of the application: (17-7.030(3)(b), F.A.C.)	X
3. The permit fee specified in Florida Administrative Code Rule 17-4.05 in check or money order payable to the Department: (17-7.030(3)(c), F.A.C.)	X
4. Six copies, at minimum, of the completed application form, all supporting data, and reports; (17-7.030(2), F.A.C.)	X
5. Engineer seal; (17-7.030(2)(d), F.A.C.)	X
6. Engineer's letter of appointment if applicable; (17-7.030(3)(e), F.A.C)	X
7. Copy of any lease agreement, transfer of property agreement with right of entry for long-term care, or any other agreement between operator and property owner by which the closing and long-term care of the facility may be effected; (17-7.030(3)(h)	X
8. Proof of publication of notice of application for the proposed activity in a newspaper of general circulation; (17-7.03(4), F.A.C)	N/A

SPECIFICATION ATTACHMENT ITEMS

The following information items must be included in the application or an explanation given if they are not applicable.

Construction Permits:

A. Landfills - Submit items 1, 2, 3, 4, 5, 6, 7, 8, 10.
B. Volume Reduction - Submit items 1, 2, 3, 4, 5, 6, 7, 9, 10.
C. Sludge Landspreading - Submit items 2, 3, 4, 5, 6, 8, 10.

Operation Permits:

A. Landfills - All the items above.
B. Volume Reduction - All the items above.
C. Sludge Landspreading - All the items above.

NOTE: For facilities that have been satisfactorily constructed in accordance with their construction permit the information required for A, B, and C type facilities does not have to be resubmitted for an operation permit if the information has not changed during the construction period.

1. A foundation analysis (17-7.050(2)(b), F.A.C.)	X
2. Evidence that the facility is in conformance with local zoning (17-7.050(2)(c)4, F.A.C)	X

3. Facility Design (17-7.050(3), F.A.C.:

NOTE: All maps, plan sheets, drawings, isometrics, cross-sections, or aerial photographs shall be legible; be signed and sealed by the registered professional engineer responsible for their preparation; be of appripriate scale to show clearly all required details; be numbered, referenced to narrative, titled, have a legend of symbols used, contain horizontal and vertical scales (where applicable), and specify drafting or origination dates; and use uniform scales as much as possible, contain a north arrow, and use NGVD for all elevations.

	Completeness Check
a. A map or aerial photograph of the area, no more than 1 year old, showing land use and zoning within 1 mile of the facility. (17-7.050(3)(a), F.A.C.)	X
b. Plat Plan (17-7.050(3)(b), F.A.C.)	X
NOTE: The plat plan on a scale not greater than 200 feet to the inch showing the following:	
(1) Dimensions and Legal Description of the site	X
(2) Location and depth (NGVD) of soil borings	X
(3). Plan for trenching or disposal areas	X
(4) Fencing or other measures to restrict access	X
(5) Cross sections showing both original and proposed fill elevations	X
(6) Location, depth, and construction details of monitoring wells	X
c. Topographic Maps (17-7.050(3)(c), F.A.C.)	
NOTE: The topographic maps, which may be combined with the plat plan (item 4b), on a scale not greater than 200 feet to the inch showing the following:	
(1) Five foot contour intervals	X
(2) Proposed fill areas	X
(3) Borrow areas	X
(4) Access roads	X
(5) Grades required for proper drainage	X
(6) Typical cross sections of disposal site including lifts, borrow areas and drainage controls	X
(7) Special drainage devices	X
(8) Fencing	X
(9) Equipment facilities	X
(10) Other pertinent information based on intended use of facility	X
d. Report (17-7.050(3)(d), F.A.C.)	
(1) Estimated population and area served by the proposed site with basis for the estimate	X
(2) Anticipated type, annual quantity, and source of solid waste	X
(3) Anticipated life of site	X
(4) Source and characteristics of cover material	X
e. Ground Water Monitoring Plan (17-7.050(3)(e), F.A.C.)	
(1) Plan and hydrogeological survey, including foundation analysis, in accordance with 17-4.245(6), 17-7.030, and 17-7.050 F.A.C.; or	X
(2) A copy of a Department letter of approval of a previously submitted plan, if applicable.	N/A

	Completeness Check
4. Landfill Performance and Design Standards (17-7.050(4), F.A.C.)	
a. Liner performance (17-7.050(4)(a)(b), F.A.C.)	X
(1) Material type (soil, synthetic, other)	X
(2) Adequate base support	X
(3) Planned installation adequate to cover all surrounding earth	X
(4) Equivalency to design standards	X
b. Liner quality control plan (17-7.050(4)(c), F.A.C.)	X
(1) Specifications	X
(2) Construction/installation methods	X
(3) Sampling and testing	X
(4) Manufacturer's specifications and recommendations	X
c. Leachate control and removal system performance (17-7.050(4)(e), F.A.C.)	X
(1) Construction materials	X
(2) Strength and thickness	X
(3) Measures to prevent clogging	X
(4) Central collection point for treatment and disposal	X
(5) Leachate depth not to exceed one foot	X
(6) Equivalency to design standards	X
d. Surface water management system performance (17-7.050(4)(g), F.A.C)	X
(1) Prevention of surface water flow onto waste-filled areas	X
(2) Stormwater run-off controls; retention, detention ponds	X
(3) Equivalency to design standards	X
(4) Water management district approval	X
e. Gas control system performance (17-7.050(4)(i), F.A.C.)	X
(1) Prevention of methane migration	X
(2) Prevention of damage to vegetation	X
(3) Prevention of objectionable odors off site	X
(4) Equivalency to design standards	X
5. Operations Plan (17-7.050(5)(b),(c)(d) & (e), F.A.C.)	X
a. Designation of responsible person(s)	X
b. Contingency operations	X
c. Controlling the type of waste received at the site:	X

	Completeness Check
d. Weighing or measuring incoming waste	X
e. Vehicle traffic control and unloading	X
f. Method and sequence of filling waste	X
g. Waste compaction and application of cover	X
h. Operations of gas, leachate, and storm water controls	X
i. Ground water monitoring	X
j. All weather access roads	X
k. Effective barrier	X
l. Signs indicating name of operating authority, traffic flow, hours of operation, and charges for disposal (if any)	X
m. Dust control methods	X
n. Litter control devices	X
o. Fire protection and fire fighting facilities	X
p. Attendant	X
q. Communication facilities	X
r. Adequate in-service and reserve equipment	X
s. Safety devices on equipment to shield and protect operators	X
6. Water Quality Standards (17-7.050(5)(g) & (h), F.A.C.)	X
Describe how surface runoff and leachate will be handled to meet water quality standards of Florida Administrative Code Rules 17-3 and 17-4.	X
7. Closure (17-7.070(2), F.A.C.)	
a. Closure plan (17-7.073, F.A.C.)	X
(1) Design	X
(2) Final use	X
(3) Closure operations	X
(4) Post-closure (17-7.075, F.A.C.)	X
(5) Financial responsibility(17-7.071, F.A.C.)	X
b. Closure plan schedule (17-7.071, F.A.C)	—
8. Solid Waste Disposal Facility Data Form	X
9. Solid Waste-Volume Reduction and Resource Recovery Facility Data Form	—
10. Certification by Applicant and Engineer or Public Officer	X

SOLID WASTE DISPOSAL FACILITY DATA FORM

Date Form Completed: _____

Permit No.: _____ Issue Date: _____ Expires: _____

DER ACTION: __ Add __ Delete __ Change __ Deactivate Site

1. DER IDENTIFICATION NUMBER	2. SITE NAME West Pasco County Class III Landfill
3. COUNTY Pasco	4. FACILITY ADDRESS (Road, cross road, street) Hays Road
4a. Facility Phone Number: To Be Provided	4b. Facility Site Supervisor George Ellsworth
5a. 28 ° 22 ' 05N" Latitude 82 ° 33 ' 30W" Longitude	5b. 24S Township 17E Range _____ Section
6. Operating Authority Name Pasco County Board of County Commissioners	8. Operating Authority Address 7530 Little Road New Port Richey, FL 34654
7. Phone Number 813-847-2411	
9. Owner of Site Property (if different from operator) Same	11. Address of Owner Same
10. Phone Number of Owner Same	

12. Facility Type
- __ Class I, Sanitary Landfill
- __ Class II, Sanitary Landfill
- X Class III, Trash/Yard Trash
- __ Class III Yard trash comp.

Sludge Landspreading:
- __ Grade I
- __ Grade II
- __ Grade III
- __ Septage

Type
- __ Other Facility

13. Month Year Begun Projected October 1988	14. Disposal Area 20 Acres	15. Population Served 279,100 (1990)
16. Expected Useful Lifetime 20 Years	17. Weighing Scales __ Yes X No	18. Security to Prevent Unauthorized Used X Yes __ No
19. Depth of Water Table Ft. (NGVD)	20. Quantity of Waste/Day 75 tons or Yd^3	21. Charge $ yd/ton

22. Surrounding Land Use Zoning
__ Residential __ None __ Agricultural __ Commercial __ Industrial __ Other

23. Types of Waste Received
- __ Residential
- __ Commercial
- __ Incinerator Residue
- __ Pathological/Infectious
- __ Agricultural
- __ Septic Tank
- __ Industrial
- __ Water/Air Treat Sludge
- X Yard Trash/Trash
- __ Sewage Sludge
- __ Industrial Sludge
- __ Hospital
- __ Other: _____

24. Number of Monitoring Wells

25. Number of Surface Monitoring Points

26. Gas Control / Recovery __ Yes __ No / __ Yes __ No	27. Salvaging Permitted __ Yes X No	28. Attendant X Yes __ No

29. Leachate Control Method - Liner Type: __ Natural __ Emplaced Clay __ Synthetic X None __ Other_____		
Collection Method: __ Well Point __ Perimeter Ditch __ None __ Under Site Drains X Other_____		
Treatment Method: __ Oxidation __ Recirculated __ Chemical __ Advanced __ None __ Other_____		
30. Leachate Discharge __ Yes X No		Class of Receiving Water
31. Site Located in __ Floodplain __ Wetlands __ Other:		
32. Surface Runoff Collected __ Yes __ No	Type of Runoff Treatment	Class of Receiving Waters
33. Property Recorded as a Solid Waste Disposal Site in County Land Records __ Yes __ No		
34. Days of Operation 6	Days of Cover Weekly	Hours of Operation 7am-4pm
35. Name, Title and Phone Number of Person Completing Form Dorian Modjeski, P.E. 813-530-9984		

NOTE: All blanks must be filled or marked as not applicable.

1887 PASCO COUNTY FLORIDA 1987

★ CENTENNIAL ★

December 28, 1987

Dr. Harold Kerns, P.E.
Solid Waste Permitting
Southwest Florida District
Florida Department of Environmental
Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

D.E.R.
JAN 29 1988
SOUTH WEST DISTRICT
TAMPA

RE: Construction/Operations Permit Application
for the West Pasco County Class III Landfill

Dear Mr. Kerns:

We are proud to present herein one of four copies of the permit application and supporting information for construction and operation of the West Pasco County Class III Landfill submitted to the Southwest District Office of the Florida Department of Environmental Regulation on January 28, 1988. Accompanying these four copies is a check in the amount of $100.00.

If you or your staff have any questions regarding the enclosed documents, please contact me at your convenience.

Sincerely,

PASCO COUNTY UTILITIES DEPARTMENT

George Ellsworth

George Ellsworth
Resource Recovery Manager

dmc
PAS7C.6/31

c: L. R. Tortora

CAMP, DRESSER & MCKEE, INC. 09-92
1321 US 19, S, SUITE 601
CLEARWATER, FL 33546

63-656
631

1/21 19 88

Pay to the Order of Fl Dept. of Environmental Regulation $ 100 00

One hundred and 00/100 Dollars

Sun Bank of Tampa Bay
Countryside Office
2520 Countryside Blvd.
Clearwater, FL 33575

For Pasco Co. (RJT) 1

S Burke

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TAMPA

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December 28, 1987

Dr. Richard D. Garrity
District Manager
Southwest Florida District
Florida Department of Environmental
Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

RE: Construction/Operations Permit Application
for the West Pasco County Class III Landfill

Dear Dr. Garrity:

We are proud to present herein one of four copies of the permit application and supporting information for construction and operation of the West Pasco County Class III Landfill submitted to the Southwest District Office of the Florida Department of Environmental Regulation on January 21, 1988. Accompanying these four copies is a cashier's check in the amount of $100.00.

If you or your staff have any questions regarding the enclosed documents, please contact me at your convenience.

Sincerely,

PASCO COUNTY UTILITIES DEPARTMENT

George Ellsworth
Resource Recovery Manager

dmc
PAS7C.6/31

c: L. R. Tortora

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
PERMIT APPLICATION TO CONSTRUCT AND OPERATE
THE WEST PASCO CLASS III LANDFILL

I. INTRODUCTION

The following checklist of information has been prepared to specifically follow the solid waste Construction and Operations Permit Application checklist as it appears in FDER form 17-7.130(1) effective December 10, 1985. It is intended that this format will assist the FDER staff in reviewing the county's construction and operations permit application. The attachments listed in the Table of Contents are a part of this permit application.

This report presents Pasco County's intended plan for construction and operation of the proposed Class III Landfill which will provide the county with a disposal site for debris, white goods, demolition materials, and other Class III materials as defined in Chapter 17-7.020 and 17.7.050(1)(c) FAC. The goal is to build landfill cell systems which effectively contain, collect, and convey leachate to centralized collection facilities, while minimizing the generation of future leachate quantities. The treatment of raw leachate will consist of onsite treatment or transport to a wastewater treatment facility. It should be noted that the design of this facility exceeds basic Class III design and performance standards to provide a high level of protection to the environment.

This submittal refers to elevations in terms of mean sea level (msl) which is considered identical to the National Geodetic Vertical Datum (NGVD).

II. GENERAL INFORMATION

1. Letter of transmittal to the Department.

Response:
The letter of transmittal is included as page v of the cover sheets preceding this section.

2. **Table of Contents.**

Response:
A table of contents listing the general information and requested submittal items is included starting on page i.

3. **Permit fee specified in Florida Administrative Code Rule 17-7.030 in check or money order, payable to the FDER.**

Response:
The permit fee specified in FAC 17-7.030 is included and attached as part of this application package.

4. **Copies of Permit.**

Response:
Four copies of this permit application and accompanying attachments are hereby provided.

5. **Engineer's Seal.**

Response:
The permit application is sealed by Dorian Modjeski, P.E., Camp Dresser & McKee Inc., the designated engineer-of-record (see Letter of Appointment).

6. **Engineer's Letter of Appointment.**

Response:
A letter of appointment for Dorian Modjeski, P.E., is provided in Appendix B.

7. **Copy of any lease agreement, transfer of property agreement, with right of entity for long-term care, or any other agreement between operator and property owner by which the closing and long-term care of the facility may be affected.**

Response:
Long-term maintenance and closure will be performed by the current owner (Pasco County, Florida). No agreement for lease or transfer of property is necessary since the county intends to retain possession beyond the closure period. Proof of county ownership is evidenced by the Warranty Deed and Order of Taking found in Appendix C.

8. **Proof of publication of notice of application for the proposed activity in a newspaper of general circulation.**

Response:
Proof of Publication will be provided to the department pursuant to Chapter 17.103.150 FAC after determination of completeness of this application package.

III. SPECIFICATION ATTACHMENT ITEMS

Items will be presented as they appear in FDER Form 17-7.130(1).

SECTION 1 - FOUNDATION ANALYSIS

Response:
An extensive analysis of the geological stratification of Sections 24, 25, and 26, Township 24 South, Range 17 East. was performed by Jammal & Associates. This analysis was conducted for the entire 810.26 acres (M.O.L.) of which 59.23 acres are proposed for development of a Class III Landfill. This foundation analysis can be found in Appendix A. As part of the overall hydrogeological investigation, 92 SPT borings, 4 deep and 4 shallow groundwater monitoring wells, and 57 piezometers were installed. Over 7.5

miles of ground surface was investigated using ground penetrating radar (GPR) and was also evaluated in the grid pattern indicated on sheet numbers 2 and 3 of the boring location plan in Appendix A. A site specific geotechnical/hydrogeological investigation for the proposed Class III Landfill was also conducted including a foundation analysis which is included in Appendix A of this submittal. Of the total GPR grid conducted for the overall 810.26-acre property, approximately 4,800 feet (.91 miles) of the Ground Penetration Radar Survey was performed over the Class III Study Area.

SECTION 2 - EVIDENCE THAT THE FACILITY IS IN CONFORMANCE WITH LOCAL ZONING

Response:

Appendix B contains a letter from the Pasco County Zoning Director indicating that the proposed facility is exempt from local zoning.

SECTION 3 - FACILITY DESIGN

3A. Map or aerial photograph of the area not more than one year old showing land use and zoning within one mile of the facility.

Response:

Aerials of the site are provided on Sheets 2 and 3 of the design plans. Sheet 3 includes topographic contours for the site and the area within one mile of the Class III Landfill site boundary. The aerial on Sheet 2 was flown in November 1986 and has a 1-inch equals 1,000-foot scale. The aerial on Sheet 3 was flown in September 1986 and has a 1-inch equals 200-foot scale. Land use and zoning designations within one mile of the West Pasco Class III Landfill are delineated on Sheet 3.

3B. Plot Plan.

3B(1) Dimensions and Legal Description of the Site.

Response:
The boundary survey and legal description of the site are shown on Sheet 4 of the Design Plans in Attachment 1. The legal description indicates the site acreage to be 59.23 acres, more or less. The approximately 59.23 acres have been designated for the proposed Class III landfill. Approximately 751.03 acres are included in the power plant siting act submittal for a Class I landfill/ashfill and resource recovery facility. The Class I landfill/ashfill and refuse to energy facility are to be permitted separately.

3B(2) Location and Depth of Soil Borings.

Response:
The location of the soil borings are included as part of Sheet 3 of the plans. The Geotechnical and Hydrogeologic Investigation can be found in Appendix A of this submittal. Boring logs, location and depth of all soil borings and monitoring wells are included as part of Appendix A.

3B(3) Plan for Disposal Areas.

Response:

3B(4) Fencing or Other Measures to Restrict Access.

Response:
Access will be controlled at all times. Vehicles entering the landfill will be required to stop at the office facility for inspection and approval before proceeding. Access or containment barriers will include a locking access gate at the western Hays Road entrance to the landfill, and an eight-foot high chain link fence with two strands of barbed wire along the top completely

enclosing the Class III landfill area as shown on Sheet 6 of the Design Plans (Attachment 1).

3B(5) Cross Sections Showing Original and Proposed Fill Elevations.

Response:
Original and proposed final fill elevations are identified on the landfill cross sections shown on Sheets 10 and 12 of the plans.

3B(6) Location, Depth, and Construction Details of Monitoring Wells

Response:
The location of one (1) deep and (1) shallow monitoring well are shown on Sheet 3 of the plans. In addition five (5) piezometer installations were completed and their locations are shown on Sheet 3 of the plans. An additional three (3) well pairs (nests) are proposed for installation at the approximate locations shown on Sheet 3. These additional wells will be installed and sampled prior to landfill construction or operation. Typical construction details are shown in Appendix A, Plates 3 and 4 of this submittal. The location, depth, and logs of all monitoring wells and piezometer locations completed to date are included as part of Appendix A of this submittal.

3C Topographical Maps.

3C(1) Five-Foot Contour Intervals.

Response:
One-foot contour intervals are shown at a scale of 1-inch equals 200 feet on Sheet 3 on the aerial topographical map flown in September 1986.

3C(2) Proposed Fill Areas.

Response:
Sheet 7 of the Design Plans (Attachment 1) is a topographic map with one-foot contour intervals showing the proposed location of fill areas.

3C(3) Borrow Areas.

Response:
Borrow will be provided from excavation of the stormwater retention pond and weekly cover and borrow area shown on Sheet 7 of the plans

3C(4) Access Roads.

Response:
The main access road and the ingress and egress road for the Class III facility will account for approximately 0.5 miles of stabilized limerock surface. The permanent landfill perimeter road design consists of about 0.9 miles of stabilized base with limestone surface. The main access road will be 24 feet wide providing for two-way traffic and the perimeter road will be 14 feet wide and provide for one-way traffic flow. The access road plan is shown on Sheet 4 of the plans.

3C(5) Grades Required for Proper Drainage.

Response:
The efficiency of surface drainage will directly affect the amount of leachate production. Drainage grades will be developed to divert surface runoff away from active cell areas to reduce the amount of potential leachate. A cell interior drainage plan is shown on Sheet 8 of the plans. The closeout surface water drainage plan is illustrated on Sheet 10 of the plans. The surface water management pond shown on Sheet 7 of the plans will be constructed to adequately handle surface water drainage in

accordance with Chapters 17-3 and 17-4 FAC. The hydrologic calculation for the stormwater basin design will be provided to the Department as a separate submittal referencing the documents to be made part of Appendix D.

3C(6) Typical Cross Sections of Disposal Site, including Lifts, Borrow Areas and Drainage Controls.

Response:
Sheets 11 and 12 of the plans show cross sections through the proposed landfill. The perimeter swale at the toe of slope and the perimeter road directs the surface water to the surface water management pond.

3C(7) Special Drainage Devices.

Response:
No special drainage devices will be necessary for stormwater management. The drainage operation for leachate and stormwater runoff is shown on Sheet 8 of the plans.

3C(8) Fencing.

Response:
See response 3B(4) and Sheet 6 of the plans.

3C(9) Equipment Facilities.

Response:
An approximate 500 square-foot office trailer or similar structure will be provided in the area shown on Sheet 7 of the plans will be available for office and locker areas. Facility layout will be a part of final design.

3C(10) Other Pertinent Information Based on Intended Use of Facility.

Response:
A resource recovery facility initially capable of processing all of Pasco County's processible waste is expected to be operational on an adjacent site east of the Class III landfill by 1992. Therefore, the landfill will be accepting only Class III approved materials. Some deliveries arriving at the resource recovery facility may be redirected to the Class III Facility after inspection and weigh-in.

3D Report.

3D(1) Estimated Population and Area Served by the Proposed Site with Basis for the Estimate.

Response:
The projected population for Pasco County, Florida is presented below:

Year	Population
1990	279,100
2000	356,400

These population figures are based on projections of Florida population by county, as reported by the University of Florida, College of Business Administration, Bureau of Economic and Business Research, April 1986.

The area to be served by the Pasco County Class III Landfill facility includes the incorporated and unincorporated areas of Pasco County, Florida.

3D(2) Anticipated Type, Annual Quantity, and Source of Solid Waste.

Response:
The West Pasco Class III will accept only solid waste which may be disposed at a Class III sanitary landfill as defined in

Chapter 17-7, FAC (12-10-85). Class I and II, hazardous or infectious waste as defined by U.S. EPA and FDER will not be accepted. The landfill will only be accepting specified materials only during its capacity life cycle. These materials will be limited to the following:

1. Yard wastes
2. Spent soil materials
3. Trees and branches
4. Roofing materials
5. Demolition debris
6. Tires
7. Concrete rubble
8. Masonry board
9. Cement block
10. Wood wastes
11. White goods

The 20-year capacity and sizing of the Class III disposal area is based on a value of ten (10) percent of the total Pasco County solid waste stream. The daily anticipated quantities to be landfilled in the Class III Facility will be in the range of 64 to 75 tons per day providing an annual facility loading of 20,032 to 23,475 tons per year.

Waste is primarily from domestic and commercial sources.

3D(3) Anticipated Life of Site.

Response:
The life of the landfill is estimated to be approximately 20 years.

3D(4) Source and Characterization of Cover Materials.

Response:
The nature and source of temporary and intermediate cover material is native sandy type soil excavated from the surface water management ponds and the borrow and weekly cover area as shown on Sheet 7 of the plans.

3E Groundwater Monitoring Plan.

The proposed groundwater monitoring plan is included as Section 6.1 of Appendix A of this submittal.

3E(1) Plan and Hydrogeological Survey Including Foundation Analysis in Accordance with 17-4.245(6) and 17-7.050 FAC

Response:
Appendix A evaluates the soils that will form the base of the proposed landfill in terms of structural compressibility, consolidation, and differential settlement. This report contains information about soil borings, monitoring well installations, aquifer property testing, groundwater and surface water measurements, analysis of surface water and groundwater quality, and background soil chemistry. Slug test data was analyzed to compute hydraulic conductivities of the aquifer under the Class III Landfill.

See Appendix A for the required groundwater monitoring plan.

SECTION 4 - LANDFILL PERFORMANCE AND DESIGN STANDARDS

4A Liner Performance.

4A(1) Material Type (soil synthetic, other).

Response:
The design concept proposed employs a single liner/leachate collection system.

The liner will be specified as a 60 mil thick high density polyethylene material or equivalent that meets the minimum requirements of the National Sanitation Foundation Standard Number 54, Flexible Membrane Liners (November 1983). High density polyethylene (HDPE) was selected as the liner material for several

reasons. HDPE contains no additives or fillers which can leach out and cause deterioration over time. Most importantly, HDPE is resistant to a wide range of chemicals including acids, bases, salts, alcohols, amines, oils, heavy metals and hydrocarbons.

4A(2) Adequate Base Support.

Response:

A clay layer 5 to 10 feet below the ground surface and 5 to 15 feet thick was identified by Jammal & Associates. The proposed landfill was configured to be placed in an area possessing a relatively thick and dense subsurface clay layer. The clay layer adds support and mitigates the degree of differential settlement. Information contained within Appendix A discusses this and other advantages to the proposed Class III landfill in this area.

Landfill settlement considerations are discussed in Appendix A, Section 5.4 of the Jammal & Associates report. Consolidation test results are recorded in Appendix A, Section 3.4 and Sheet 2, and settlement estimates are shown on Sheet 1 in Appendix A of the report. Total settlement of the landfill under the maximum landfill height of 30 feet is anticipated to be 3 to 5 inches. Under the height of 30 feet, distortion plus consolidation is estimated to be 4 to 6 inches. Total settlement at the toe of the slope is estimated at 1 to 2 inches. Given a tolerance of 10 percent material elongation, the liner can withstand a 12-inch deflection if the radius is equal to or greater than 2.2 feet. The 330-foot radius between the toe and the high point of the slope is much greater than 2.2 feet, thus the liner settlement design is very conservative.

As part of the Jammal & Associates report (Attachment 2), the future sinkhole potential over the Class III study area was investigated. Study of the existing site conditions and the various factors associated with sinkhole formation showed the potential for sinkhole formation over the landfill area to be slight. See Section 5.8 of Appendix A for further details.

4A(3) Planned Installation Adequate to Cover All Surrounding Earth.

Response:
Sheet 8 of the Design Plans (Attachment 1) illustrates the extent of the synthetic liner placement. Cells 1 and 2 are proposed to be constructed and operated under the initial construction program. Liner installation for Cells 3 and 4 will involve retrieval and tying into previous liner installation as shown on Sheet 13, liner key detail of the Design Plans. All seams will be hot welded with parent materials to prevent the introduction of foreign adhesives. Corners will be constructed with separate side pieces, rather than wrapped around. Disposed Class III materials will be contained in each cell by surrounding berms. The liner in each cell will completely cover the base of the cell and the inside slope of the berm. The liner will be anchored at the top of the berms. See Sheet 13 of the plans for a liner anchor detail. Any penetration of the liner by the leachate collection system will be wrapped, with protective liner boots constructed of the liner material. Boots will be seamed to the liner to assure a contiguous surface.

4A(4) Equivalency to Design Standards.

Response:
The synthetic liner material will meet the specifications for permability and strength as required in FDER 17-7.050(4)(a). The proposed liner material (HDPE) is highly chemically resistant to leachate degradation. [Performance in a leachate environment will be tested using the EPA 9090 materials test for chemical degradation.] Additional materials test data will be provided by the manufacturer including tensile strength, burst strength, impact puncture strength, friction pullout and permeability.

4B Liner Quality Control Plan.

4B(1) Specifications.

Response:

Liner specifications are provided in Appendix E including a Liner Quality Control Plan.

4B(2) Construction/Installation Methods.

Response:

Synthetic liner failure primarily results from seaming and subgrade failures. Additional causes of failure include machine damage (puncture) during construction and excessive stress imposed during cell filling. Therefore, the method of installation of the liner is as important as the materials from which it is made. Recommended construction practices are included within the Liner Quality Control Plan in Appendix E.

Liner installation will occur by phased construction of the first two disposal cells providing for a minimum initial capacity equal to approximately 10 years. Additional liner will be fused to the in-place liner as the remaining two cell areas are required for landfilling.

Joining of field seams will be by heat fusion using extrudate of the same type as the liner material. Corners will be fused to fit cell grading contours.

The liner will be protected by a minimum 24-inch layer of sand placed above the liner. This layer will attenuate the tractive and compressive forces of construction and operations equipment. Construction methods and techniques will be in accordance with EPA publication SW-870, March 1983, "Lining of Waste Impoundment and Disposal Facilities."

4B(3) Sampling and Testing.

Response:
As part of the Liner Quality Control Plan in Appendix E, field samples of completed seams, as well as material samples from the liner sections, will be subjected to non-destructive vacuum testing. Fatigue strength, impact puncture, friction pullout, as well as tensile strength and compressibility, will also be tested.

4B(4) Manufacturers Specifications and Recommendations.

Response:
Manufacturer specifications and recommendations in addition to those in Appendix E will be used. Manufacturer recommendations will be followed, upon FDER concurrence, if improved methods of installation/construction for specific materials have been developed since EPA publication SW-870 was issued.

4C Leachate Control and Removal System Performance.

4C(1) Construction Materials.

Response:
The leachate collection system will be constructed of perforated collection pipe and closed conduit header pipe of a strength sufficient to support the static and live loads which will be imposed upon it. A material such as polyethylene or PVC pipe which can withstand the anticipated compressive loads will be utilized. The materials used in the leachate collection/ conveyance system will be resistant to leachate degradation.

Leachate collection systems will be supported by a liner subbase. Leachate collection pipes will be surrounded by stone or gravel of a diameter between 1 and 2 inches to allow increased leachate migration to the drainage pipe. Stone will be wrapped with filter fabric to prevent clogging. A sand bedding layer at least two

feet thick will be placed over the leachate collection system for structural protection and to act as a drainage media to increase leachate migration to the collection pipes. Refer to Sheet 8 of the Design Plans for a plan view of the proposed leachate collection and transmission system. A detail of the collection system is shown on Sheet 13 of the plans.

4C(2) Strength and Thickness.

Response:
The pipe wall thickness will be greater than or equal to SDR 17 for polyethylene and schedule 80 for PVC. The synthetic liner thickness will be 60 mil HDPE. The geotextile material will be 6 ounces or greater and be as manufactured by Celonese Fibres Manufacturing Company, Mirafi Incorporated, or approved equal.

4C(3) Measure to Prevent Clogging.

Response:
The leachate collection system pipes will be surrounded by stone for improved leachate migration. Geotextile filter fabric will be wrapped around the stone to prevent the protective sand layer from clogging the stones.

4C(4) Central Collection Point for Treatment and Disposal.

Response:
The leachate collection system will be sloped to carry leachate to holding facilities. Collection pipes will be sloped toward common header pipes. The header pipe will drain toward the leachate holding tanks to allow collection by gravity flow. See Sheet 8 of the plans.

4C(5) Leachate Depth not to Exceed One Foot.

Response:
Leachate depth over the primary liner was computed for permitting purposes using the U.S. EPA Formula SW-869, Landfill and Surface Impoundment Performance Evaluation, April 1983. Leachate depth was

estimated based on system design, precipitation, and soil data. Results were used for hydraulic design of the leachate removal system. Using the assumptions stated below, a maximum pipe spacing of 110 feet was calculated. (Calculations provided in Appendix D.)

EPA Formula SW-869 was calculated using the following assumptions.

- o Porosity = 0.34
- o Permeability = 22 ft./day
- o Average Annual Rainfall = 53.95 in./yr. (1950-80)
- o Rate of Impingement = 1/2 x 53.95 in/yr. = 26.98 in./yr.
- o Maximum Head = 12 in.

Drainage slopes between perforated pipes were assumed to be 2 percent. Soil data were based on soil tests of onsite material.

4C(6) Equivalency to Design Standards.

Response:
The leachate collection and transmission system is designed to collect and convey leachate so that leachate depth will not exceed one foot under average case conditions.

4D Surface Water Management System Performance.

4D(1) Prevention of Surface Water Flow into Waste Filled Cells

Response:
Prevention of surface water flow into waste filled areas will be accomplished by the design and implementation of several different common engineering practices. Initially, the proposed access road encompassing the landfill area will be elevated above existing

ground elevations preventing any surface water from entering the waste filled area.

Secondly, a large swale will be located at the base of the landfill slope on the interior side of the access road. The swale has been designed to receive runoff from the predeveloped and closed-out portions of the landfill area and transport it to the retention pond. Additionally, the proposed berm to be constructed, interior to the swale, will be lined with a high-density polyethylene liner to an elevation well above the design high-water elevation of the swale. In the unlikely event of any standing water within the swale, the liner will prevent any lateral flow to the landfill area. Finally, an 18-inch thick clay cap will be installed over top of the waste area to inhibit vertical infiltration/percolation of rainfall.

4D(2) Stormwater Runoff Controls, Retention/Detention Ponds.

Response:
The stormwater management system for this project will consist of an exterior swale and retention pond. The system has been designed to comply with all of the requirements of both Chapters 17-25 FAC. and 40 D-4 FAC. The stormwater management system has been designed to allow no greater volume of discharge under postdevelopment conditions than currently exists naturally under predevelopment conditions.

4D(3) Equivalency to Design Standards.

Response:
The surface water collection system for the new cells will be designed to route surface water away from solid waste fill areas. The drainage ditches/swales and surface water management ponds are designed to satisfy both the Chapter 17-25, FAC criteria, and those of (SWFWMD).

4D(4) Water Management District Approval.

Response:
All pertinent information will be forwarded to SWFWMD for approval by FDER officials.

4E Gas Control System Performance.

4E(1) Prevention of Methane Migration.

Response:
Class III materials to be placed in the landfill will generate very low quantities of methane and other decomposition gases after the low permeability top cap material is in place. Therefore, a gas venting system will be installed in conjunction with installation of the top cap material. See methane gas vent detail on Sheet 13 of the plans. The impermeable bottom liner will limit downward and sideward migration of methane.

4E(2) Prevention of Damage to Vegetation.

Response:
The landfill is designed as a disposal area for Class III type materials. Methane gas formation from the Class III materials will be low and damage to local vegetation is not anticipated. Additionally, the lining of the disposal cells over the bottom and sides will prevent lateral migration of any decomposition gases thereby limiting gas movement to vertical movement which will be mitigated by the low permeability cap and proposed gas vent system. Vegetation will be visually monitored for adverse effects due to methane gas. Passive vents as shown on Sheet 13 of the plans will be installed post-closure to facilitate venting of any decomposition gases which may develop.

4E(3) Prevention of Objectionable Odors Offsite.

Response:
The closest distance from the proposed waste limits to the site boundary is approximately 300 feet at the north property line (see Sheet 7 of the plans). Prevailing winds are from the east. The closest residence is approximately 1,000 feet north of the proposed waste limits. The dispersion of any odors generated from the landfill is expected to be adequate to prevent complaints from offsite sources. If odor complaints do become a concern, they will be investigated and appropriate action will be taken.

4E(4) Equivalency to Design Standards.

Response:
The gas control vents will be designed to adequately reduce gas pressure to prevent explosion or fires. A gas vent detail is shown on Sheet 13 of the plans.

SECTION 5 - OPERATIONS PLAN

5A Designation of Responsible Persons.

Response:
The Pasco County Board of County Commissioners sets policy for the administration and management of the disposal of solid waste in the county. William Munz, Pasco County Utilities Director, coordinates solid waste management in the county. He is assisted by George Ellsworth, Resource Recovery Manager.

5B Contingency Operations.

Response:
Class III materials due to a natural disaster may be stockpiled for later removal, or debris may be isolated and burned in an area adjacent to the operational phase in a virgin area. Cooled ash

would then be landfilled. The access road is designed to allow normal operations under adverse conditions. Cooperative lending agreements with other Pasco County departments will be pursued for backup equipment.

5C Controlling the Type of Waste Received at the Site.

Response:

The proposed Class III Landfill will only accept wastes which are permitted for Class III sanitary landfills as defined in Chapter 17-7, FAC. Hazardous waste as defined by the U.S. EPA and FDER will not be accepted at the site for disposal. Most of the waste landfilled is anticipated to be in the form of construction and demolition debris, yard wastes, spent road construction materials, and other relatively inert materials. A detailed list of acceptable materials is provided in Section 3D(2) of this submittal.

Each individual delivery of wastes will be accepted only with prior approval and inspection by the site supervisor or his designate. Office personnel, spotters, and equipment operators will be trained to identify unacceptable wastes, and spotters will be instructed to remove or prevent off-loading of non-specified wastes. Wastes to be removed for alternate disposal include automotive batteries, liquid paints, pesticide formulations, and solvents.

All landfill personnel will be trained and instructed to watch for barrels and other suspicious containers to control materials that may be classified as unacceptable, prevent their unloading, and to report the incident to the foreman.

5D Weighing or Measuring Incoming Wastes.

Response:

All loaded vehicles entering the landfill site will be either weighed or estimates of volume will be documented prior to

unloading. Vehicles with a franchise or commercial license may be weighed or volume estimated at the Class I/Resource Recovery Facility, issued a receipt indicating the weight or volume and payment received and redirected to the Class III landfill. Small vehicles will be charged by the type of vehicle and size of the load.

5E Vehicle Traffic Control and Unloading.

Response:

Directional signs will be placed to safely direct vehicles to the current waste unloading area. These signs will have large legible letters and will be cleaned when necessary. Signs will be placed at points so that the route is clear to the drivers. Speed limit, safety, and prohibitive practice signs will be placed as necessary to encourage a safe, clean operating area.

Unloading will be permitted only at designated working faces of currently operating cell. Haulers will be responsible for unloading their own vehicles. A spotter will be present near the active disposal areas to direct vehicles to appropriate off-loading areas and to observe the off-loading process to assure that non-specified materials are not part of the delivery.

5F Method and Sequence of Filling Waste.

Response:

The landfill will be developed using 4 disposal areas (cells) as shown on Sheet 6 of the plans. Each area is approximately 5 acres. Sheet 9 of the Design Plans depicts the sequencing progression of lifts within a typical disposal area. As this sheet indicates, disposal cells and their integral liner and leachate collection systems will be constructed two cells at a time with temporary roads and swales for access and surface water management.

Cells 1 and 2 will be constructed immediately for disposal of Class III materials. Depending on future volumes, Cells 3 and 4 will be constructed 7 to 10 years in the future.

The method of filling wastes in an individual cell is described below:

All incoming Class III materials waste will be directed to the working face. Class III materials will be placed against the side slope of the previous day's refuse. The first row will act as a berm to provide a guide for the placement of refuse for the remaining rows. In each row, cells will be constructed having a minimum length of working face to control the operation and leachate quantities, yet of sufficient length to provide adequate dumping areas and room for the landfill equipment to operate. A slope of 2 to 1 on a 75-foot wide working face will provide for centralization of operations, while providing maneuvering area for private and commerical vehicles unloaded each day.

The sequence of filling future lined cell areas with installed leachate collection systems is developed to meet the following objectives.

- Complete subsequent lifts over lower lifts frequent enough to minimize infiltration and conserve the field capacity of the lower lift cell.

- Design landfill slopes during operation to maximize surface runoff away from the working face and minimize leachate generation.

- Provide a bench terrace along side slopes to minimize erosion.

Efficient use of these techniques will reduce the need for intermediate cover, and decrease leachate volumes.

Final cover will be applied over cell lifts within 180 days after the final lift over an area is completed. Final cover will consist of a 18 inches of clayey material covered with 6 inches of native soils. The top six inches will be uncompacted and vegetated with native grasses or other vegetation to promote evapotranspiration. See Sheets 10 and 12 of the plans.

5G Waste Compaction and Application of Cover.

Response

Sufficient cover material will be available at the adjacent borrow area near the working face to provide a continuous supply of cover through the period of operational site life. Additionally, the eastern cells numbers 3 and 4 can be used to obtain cover materials if required since construction of these areas for disposal is not immediately required.

The Class III materials will be placed at the top of the working face, spreading outward in approximate 2-foot layers. The Class III materials will be compacted as necessary by a front end loader or bulldozer. The material types comprising Class III refuse are not always conducive to compaction. Therefore, compaction equipment is not included as required equipment.

Application of initial, intermediate, and final cover is to be performed as required per Chapter 17-7, FAC. Six inches of initial cover will be applied to the working face at least once a week. Intermediate cover consisting of 1 foot of compacted native sandy soil from an onsite borrow pit will be applied within 7 days of cell completion if final cover or an additional lift is not to be applied within 180 days of cell completion. Any intermediate areas that will not be landfilled or covered with final cover within 6 months will be seeded or covered with wood chips, straw or other appropriate cover material to avoid slope erosion.

Final cover will be applied to the landfill once the final grades are reached. The initial final slope on top of landfill areas will be a minimum of 2 percent and will not exceed 4 percent. The perimeter sides of all completed cells will have a slope of 4:1 to minimize erosion. Areas with final cover will be seeded or planted with grass or suitable cover vegetation.

5H Operations of Gas, Leachate, and Stormwater Controls.

Response:

Since the site closure plan includes a low permeability top cap, the gas venting system in the solid waste cells will be installed as the cells are complete and closed. The detail of this gas vent is shown on Sheet 13 of the plans. The vents will provide an escape route for gases that are lighter than air, such as methane, to prevent lateral migration of these potentially explosive gases.

The leachate collection and transmission system will consist of gravity drains, sumps (manholes), and leachate storage facilities. The normal operation is by gravity drain to the leachate collection tank. See Sheet 8 of the plans.

When the leachate reaches a predetermined level in the storage tank(s), leachate will be withdrawn and analyzed for indicator parameters as follows.

Specific Conductance	Nitrate-Nitrogen	Total Organic Carbon
pH	Total Dissolved Solids	Iron
Chloride	Chromium	Lead
Turbidity	Cadmium	Manganese
	Fecal Coliforms	Temperature
	Sodium	Water Level

If the analysis indicates greater than 50 percent of the established maximum contaminant levels for secondary drinking water standards are present or if any contaminants identified in

17-25 FAC are detected, the accumulated leachate will be withdrawn and delivered to the proposed Pasco County Hudson Subregional Wastewater Treatment Plant. If testing of the leachate indicates the need for pretreatment prior to processing at the wastewater treatment plant, the necessary pretreatment will be performed.

The stormwater controls shown on Sheet 7 of the plans will be operated to collect and convey runoff to surface water management areas for sedimentation control in accordance with Chapters 17-3 and 17-4 FAC. Surface water management areas will be maintained by periodic removal of sediments. Surface water control devices such as weirs and culverts will be routinely checked, and cleaned to assure proper performance.

All water coming into contact with emplaced Class III materials will be handled as leachate.

5I Groundwater Monitoring Plan.

Response:
The groundwater monitoring plan is presented in Appendix A. This plan complies with Chapter 17-7.050(5a) FAC.

5J All Weather Access Roads.

Response:
This subject is addressed in Response 3C(4).

5K Effective Barrier.

Response:
Access controls or other barriers will include a locking access gate at the entrance to the landfill, and an eight-foot high chain link fence with two strands of barbed wire along the top. This will completely enclose the Class III landfill area, as shown on Sheet 6 of the plans. Locking access gates are to be located at

the western access from Hays Road and at the internal entrance to the landfill proper as shown on the plans.

5L Signs Indicating Name of Operating Authority, Traffic Flow, Hours of Operation, and Charges for Disposal.

Response:
There will be a permanent sign identifying the Pasco County Landfill and the resource recovery facility and indicating hours of operation and charges for different types of loads. A sign near the office facility will also indicate materials that are not accepted for disposal in the Class III landfill.

Signs indicating approach and exit routes and one-way roads will be strategically placed so traffic at the landfill will move smoothly and efficiently to and from the working face area.

5M Dust Control Methods.

Response:
Dust control will be performed using a spray truck which will wet down unpaved access roads and areas immediately adjacent to the working face. Dust masks will also be available to personnel working in excessively dusty areas.

5N Litter Control Devices.

Response:
Litter will be controlled by requiring covered loads, efficient unloading and cover operations, and by routine cleanup as required.

5O Fire Protection and Fire Fighting Facilities.

Response:
In the event that an uncontrollable fire does occur at the landfill site, the Fire Department will be contacted immediately. Small fires on the working face will be snuffed by a bulldozer. Onsite stockpiles of soil will be available for suppressing fires.

A hot load area will be provided by the spotter in a location away from the working face to allow any vehicles arriving at the landfill with a fire in their load to dump quickly in an area where the "hot load" can be controlled and quickly covered with soil. The location of the hot load area will change from time to time with changing working face locations. Hot loads will not be dumped on the working face until sufficiently cool to avoid combustion.

5P Attendant.

Response:
There will be an attendent at the office facility and a landfill spotter responsible for guiding vehicles and promoting an efficient operation during normal operating hours. The Class III facility will operate 8-10 hours per day. During nonoperational periods all gates will be locked to prevent unauthorized entry to the facility. This combined with regular maintenance of site perimeter fencing will control site use to normal operating hours.

5Q Communication Facilities.

Response:
A telephone will be installed at the office facility.

5R Adequate In-Service and Reserve Equipment.

Response:
Table 1 lists equipment proposed for the West Pasco County Class III Landfill. Cooperative lending agreements can also be used as

TABLE 1

PROPOSED EQUIPMENT AT THE PASCO COUNTY HAYS ROAD CLASS I LANDFILL

Number	Equipment
1[a]	Bulldozer
1[a]	Pan-Scraper
1[b]	Water Truck w/Spray Boom
1[b]	Leachate Transport Vehicle

[a] To be permanent on-site equipment.

[b] To be provided on an as-needed basis from available equipment from the adjacent Class I facility or Pasco County Road and Bridge Division.

a means of procuring additional back-up equipment either from the nearby Class I facility or the Pasco County Public Works Division.

5S Safety Devices on Equipment to Shield and Protect Operators.

Response:
All safety devices will be maintained in accordance with recommended safe operating procedures.

SECTION 6 - WATER QUALITY STANDARDS

Describe how surface runoff and leachate will be handled to meet water quality standards of the Florida Administrative Code Rules 17-3 and 17-4.

Response:

Surface Water and Leachate Management

Surface water from new cell areas will be segregated from waste cell areas using berms, piping, temporary and permanent swales, and ditches. Leachate from active cell areas will be routed to leachate storage tanks for sedimentation of suspended solids before transport to the proposed Pasco County Hudson Subregional Wastewater Treatment Plant or discharge if analysis indicates acceptability for discharge. The surface water collection system is sized to collect the runoff estimated for the 25-year, 24-hour design storm event.

SECTION 7 - CLOSURE

7A Closure Plan.

7A(1) Design.

Response:
A vegetated, graded cover will be used to minimize infiltration and future leachate quantities. The design for a cover includes 6

inches of native topsoil over 18 inches of clayey material. A schematic of the proposed cover design is illustrated on Sheets 12 and 13 of Attachment 1. Grading will be provided to assure proper drainage, with routine maintenance performed to maintain the final slopes. Top slopes and side slopes will not exceed 3 percent and 25 percent, respectively. A closure design plan will be prepared and submitted to FDER at least 90 days prior to the date when wastes will no longer be accepted, per 17-7.072, FAC.

7A(2) Final Use.

Response:
The final use of the landfill is expected to be for recreational purposes. Post development land use would commence after all onsite landfilling activities are completed, and sufficient time for stabilization has passed (5 to 7 years).

7A(3) Closure Operations.

Response:
A closure design plan and permit application will be prepared and submitted to FDER at least 90 days prior to the date when wastes will no longer be accepted in the future refuse cell areas, per 17-7.072, FAC. The closure report will include the items specified in FDER 17-7.073. At least one year prior to final closure, written notice of closure will be given to the appropriate agencies, and notice to users at least 120 days prior, per 17-7.071, FAC.

7A(4) Post Closure.

Response:
Pasco County, as the owner/operator of the Class III Landfill, will provide for long-term care of the facility in accordance with Sections 17-7.075 and 17-7.076, FAC.

7A(5) Financial Responsibility.

Response:
Pasco County will be financially responsible for the project.

7B. Closure Plan Schedule.

Response:
See Response 7A3.

SECTION 8 - SOLID WASTE DISPOSAL FACILITY DATA FORM

Response:
A Solid Waste Disposal Facility Data Form is provided as pages 7 of 10, and 8 of 10 in FDER Form 17-7.130(1), included in this permit application package.

SECTION 9 - SOLID WASTE DISPOSAL VOLUME REDUCTION AND RESOURCE RECOVERY DATA FORM

Response:
Not applicable to this submittal.

SECTION 10 - PROHIBITIONS

1. **No Solid Waste shall be disposed of except by sanitary landfill, incineration, recyling process or other approved method.**

Response:
Materials which will be accepted for placement and disposal in the West Pasco County Class III Landfill are detailed in Section 3D(2) of this submittal.

2. **No solid waste shall be disposed of by being placed:**

(a) **in an open sinkhole or in an area where geological formations or subterranean features would not provide support for a landfill/ashfill;**

Response:
An extensive geotechnical/hydrogeologic study of the area was performed showing the geologic structure of the subsurface materials will provide support for the landfill as designed. The landfill will be equipped with a synthetic liner and leachate collection system.

(b) **in a limestone, or gravel pit**

Response:
The West Pasco County Class III Landfill will not use a limestone or gravel pit. No mining pits are located on the facility site.

(c) **in an area immediately adjacent to or within 500 feet of an existing or approved shallow water supply well;**

Response:
There are no water supply wells within 700 feet of the Class III landfill boundaries. See Sheet 3 of Appendix A for further information. There are no known shallow aquifer wells within 500 feet of the proposed facility.

(d) **in a dewatered pit;**

Response:
The landfill will be constructed above the seasonal high groundwater level. Dewatering will not be required.

(e) **in an area subject to frequent and periodic flooding;**

Response:
The proposed Class III landfill location is located outside the 100 Year Flood Prone Areas (see Sheet 2 of the Design Plans).

(f) in any natural or artificial body of water including groundwater;

Response:
The landfill is not located in a body of water. There are no water bodies within the proposed limits of the landfill.

(g) within 200 feet of any natural or artificial body of water;

Response:
The proposed Class III landfill is located more than 200 feet from all isolated ponds onsite (see Sheet 3, Appendix A).

(h) in any area open to public view from any major thoroughfare;

Response:
Existing onsite vegetation will be used and maintained as a buffer zone to obstruct view of the facility from adjacent roads and surrounding developments.

(i) on the right-of-way of any public highway, road, or alley.

Response:
The proposed Class III landfill is not located in any public right-of-way.

(j) within the boundaries of any airport property;

Response:
The proposed Class III landfill is not located within any airport property. The nearest airport is located approximately 4.5 miles southeast.

(k) within ten thousand feet of the closest point of any runway at any airport...

Response:
The proposed Class III landfill is located more than ten thousand feet from any airport [see (j) above].

3. Burning of solid waste shall not be permitted at any landfill...

Response:
Burning of Class III materials in the landfill area will not be allowed. The facility will receive listed materials only as directed in Section 3D(2) of this submittal.

4. Hazardous Waste...

Response:
Hazardous waste will not be accepted at the West Pasco County Class III Landfill.

5. Infectious Waste...

Response:
Infectious waste will not be accepted at the West Pasco County Class III Landfill.

6. Transportation and disposal of solid wastes...

Response:
Special Act HB1182, codified 87-441 was passed by the Florida Legislature on May 29, 1987. The act authorizes Pasco County to exercise control over solid waste hauling and disposal for the county. Any cross-county transfer of solid waste must be first approved by the Pasco County Board of County Commissioners. Proper hauling practices will be enforced by the county.

7. **The Department shall not issue a construction permit for a new sanitary landfill within 3,000 feet of Class I surface waters.**

Response:
There are no Class I surface waters within 3,000 feet of the proposed landfill. The nearest Class I surface water is Tampa Bay which is located 25 miles from the landfill.

APPENDIX A

SUMMARY REPORT FROM JAMMAL & ASSOCIATES

SUMMARY REPORT
GEOTECHNICAL/HYDROGEOLOGICAL INVESTIGATION
PROPOSED CLASS III SANITARY LANDFILL
HAYS ROAD SITE
PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

May 26, 1987
Project No. 87-30802

TO: Camp, Dresser, & McKee, Inc.
1321 U.S. 19 South, Suite 601
Clearwater, Florida 33546

Attention: Mr. Lou Tortora, P.E.

SUBJECT: SUMMARY REPORT
Geotechnical/Hydrogeologic Investigation
Proposed Class III Sanitary Landfill
Hays Road Site
Pasco County, Florida

Dear Mr. Tortora:

Please find enclosed herein our summary report which includes the results of our geotechnical/hydrogeologic investigation and study of the proposed Class III sanitary landfill site at the Hays Road site in northwest Pasco County. As discussed, we are presenting this report for your review and study. After you have completed your review, we should meet to discuss questions or comments.

Thank you for this opportunity to be of service to you and Pasco County on this significant and challenging project. If you have any questions during your review of the report, please do not hesitate to give either Mr. S.E. Jammal or myself a call.

Sincerely,

JAMMAL & ASSOCIATES, INC.

Richard A. Mortensen dlc
Richard A. Mortensen, P.E.
Vice President

S. E. Jammal dlc
S. E. Jammal, P.E.
President

RAM/nh:1552M

Attachment: Summary Report

cc: Mr. Dan Morrical, P.E., Camp, Dresser & McKee, Inc.-Orlando

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PASCO COUNTY, FLORIDA

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1.0 INTRODUCTION

1.1 Project Description and Our Scope of Study

The primary purpose of our geotechnical/hydrogeologic study over the selected or proposed Class III sanitary landfill site at the Hays Road site was to address some of the permitting requirements setforth in Chapters 17-4 and 17-7 of the Florida Administrative Code (F.A.C.) relating to the geotechnical and hydrogeological aspects of implementation of a Class III sanitary landfill. In addition, because of the site's topographic, geologic and hydrogeologic conditions, it was our intention to address in some detail the future potential for sinkhole activity over the Class III landfill study area and discuss soils and groundwater data relevant to this phenomenon.

As you know, we performed the geotechnical/hydrogeologic study over the Hays Road site (primarily the east side, east of the Florida Power easement) for the proposed Class I sanitary/ash landfill and resource recovery plant. A draft summary report for this study was submitted to Camp, Dresser & McKee, Inc. for final review and comment. Limited data was collected over the west side of the Hays Road site during the Class I landfill study; however, enough was collected to select a study area and suitable location for the proposed Class III sanitary landfill. The study area for the Class III landfill is shown outlined on Sheet 1. The study area is approximately 63.6 acres. The initial phase or Phase I of the Class III landfill is proposed to be approximately 20 acres, over the area shaded-in on Sheet 1.

Basically, our scope of services for this study included:

1. Acquiring and contracting with Atwood Associates, Inc. to provide the necessary minimal surveying services; primarily a legal description of the site, plot boundary survey and setting the concrete monuments in the field at the property corners.

2. Perform the appropriate geotechnical/hydrogeologic evaluations over the site compatible with Chapter 17-7 (F.A.C.) including:

   - identify and evaluate the soil and groundwater conditions over the site,
   - discuss the shallow and deep groundwater aquifer systems,
   - discuss the condition and presence of the semi-confining clay unit at the site, and discuss the need for a synthetic liner under the landfill area,
   - evaluate the settlement potential of the landfill under the anticipated heights and loading conditions,
   - discuss the potential for future sinkhole activity over the site.

3. Design and generate the necessary groundwater monitoring plan for the shallow and deep aquifer systems in the area of the site in accordance with Chapter 17-4 (F.A.C.). Perform a water supply well inventory within a one-mile radius of the site. Provide background groundwater quality data from the shallow and deep aquifer systems from the two (2) wells already installed at the study area.

4. Provide recommendations relating to the need for a synthetic liner; identification of the better portions of the 63.6 acre study area for implementation of a 20 acre (+/-) Class III landfill, considering the geotechnical/hydrogeologic data; and discuss and identify nearby daily sand cover borrow sources.

5. Provide one summary geotechnical/hydrogeologic report discussing the results of our field and laboratory testing, the subsurface soil and groundwater conditions encountered, and our geotechnical/hydrogeologic evaluations and recommendations.

6. Provide input and presentation at public meetings and/or with regulatory agencies on behalf of Camp, Dresser & McKee, Inc. and Pasco County.

1.2 Topography and Site Description

The project site is shown located on a recent 1"=200' aerial topographic map prepared for our use by Camp, Dresser & McKee, Inc. The aerial topographic map is included as Sheet 1. The topographic map presents approximately one foot ground elevation contour intervals over the study area. The site boundaries are also shown located on the map.

A Florida Power Corporation easement, approximately 295 feet wide, runs generally north-south along the east side of the study area as shown on Sheet 1. West of the Florida Power easement, in general, the site is near its natural state, which primarily consists of sparse to moderate tree growth and underbrush.

In the southwestern portion of the Hay Road site, south of the study area and west of the Florida Power easement, several closed circular depressional areas are present and contain standing water. These depressional areas and water elevations are identifiable on the topographic map.

2.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1 Physiographic Setting

The proposed Class III landfill site is located within the Gulf Coastal Lowlands physiographic province along the west coast of Florida. In this portion of Pasco County, the Gulf Coastal Lowlands province is bounded on the east by the Brooksville Ridge, a distinct north-south trending sand ridge reaching altitudes of about 290 feet above mean sea level (MSL). To the west of the ridge, land surface elevations decline to MSL along the gulf coast. Two major erosional terraces, the Pamlico Terrace and the Wicomico Terrace, occur between the Brooksville Ridge and the coast. The Wicomico Terrace is marked on its seaward face

by a break in land surface slope at an altitude of around +100 feet MSL. Farther west, a distinct break in slope again occurs, at an altitude of +25 feet MSL, delineating the seaward scarp of the Pamlico Terrace. The Hays Road site is situated within the Pamlico Terrace, westward from the Wicomico scarp.

The study area is situated in a relatively flat section of the Pamlico Terrace. More rugged topography with greater local relief occurs to the east and northeast. Relief within the study area varies about 10 feet in the north-central portion of the study area.

Numerous lakes and ponds exist to the south of the Hays Road site. This area is drained primarily by Buckhorn Creek and the Pithlachascotee River. The major surface water feature in the vicinity of the project site is Crews Lake, a linear, northeast-trending lake located about 1.5 miles to the east.

2.2 Regional Geology

The principal geologic formations in Pasco County are comprised primarily of a thick sequence of limestones and dolostones. The uppermost limestone formation identified in northwest Pasco County is the Tampa Limestone, or in areas where the Tampa is not present, the Suwannee Limestone.

The surface of the limestones is mantled throughout the county by interbedded deposits of sand and clay which may range in thickness up to as much as 250 feet within Pasco County. The lower portion of the sand and clay deposits in Pasco County are generally assigned to the Hawthorn Formation, a deposit comprised primarily of clays. According to available data, the Hawthorn Formation is absent in areas north of Pasco County, is relatively thin in the eastern portion of the county, and thickens appreciably to the south towards Tampa Bay. The Hawthorn Formation is overlain by deposits of quartz sand which form the present land surface.

A brief description of the various geologic and hydrogeologic units and their stratigraphic position within Pasco County is presented on Tables 1 and 2. The table does not differentiate the Hawthorn Formation from the contemporaneous deposits of the Tampa Limestone, owing to the similar lithology of each unit. That differentiation is made, as shown on the geologic cross section presented on Figures 1 and 2. An interpretation of geologic formations serving as the basis for the cross-section is presented on Tables 1 and 2.

2.3 Groundwater Systems

Two distinct water-bearing geologic units, or aquifers, able to supply economical quantities of water to wells occur within the western portion of Pasco County. The uppermost of the two is the water table aquifer, comprised of the permeable portions of the unconsolidated deposits overlying the limestones. The limestone formations are generally considered to form the skeleton of the deeper Floridan Aquifer, an artesian and sometimes unconfined aquifer system which underlies most of central Florida.

The water table aquifer is recharged primarily by precipitation and subsequent infiltration to the saturated zone. Water is discharged from the aquifer by evapotranspiration, seepage to lakes and streams and by vertical leakance to underlying aquifers.

The water table aquifer is apparently relatively thin in western Pasco County and according to some studies may be absent or discontinuous in some areas. The transmissivity, or ability to transmit water, of the water table aquifer is dependent upon the permeability of the aquifer deposits and the saturated thickness. In areas where the surficial sand deposits are thin, the transmissivity of the unit typically is comparatively less than in areas where the deposits are thicker.

The upper water table aquifer in western Pasco County is seldom used for a water supply source primarily because deeper aquifers supply greater quantities of better quality water to wells. Consequently, hydraulic characteristics of the water table aquifer are not well documented in Pasco County.

The regionally extensive Floridan Aquifer is the main water supply source throughout most of Florida. In Pasco County, the Floridan Aquifer is considered to consist of the Miocene, Oligocene and Eocene age rocks, primarily limestones and dolostones. As shown on the geologic cross-section (Figure 2), the top of the Floridan Aquifer in Pasco County is represented by either the Miocene Tampa Limestone or the Oligocene Suwannee Limestone. According to some studies, the top of the Floridan Aquifer occurs at an altitude of near mean sea level in northwest Pasco County. The aquifer becomes progressively more deeply buried beneath the surficial clastic deposits with distance southward. The increasing depth to the top of the Floridan Aquifer in the southerly direction reflects the regional dip of the upper Eocene and younger beds from the axis of the Ocala Uplift farther to the north.

Groundwater flow in the Floridan Aquifer in Pasco County moves generally westward towards the Gulf of Mexico from the well known "Pasco High" centered in the eastern part of the county. The "Pasco High" represents an area of highest altitude of the potentiometric surface of the Floridan Aquifer. The elevation of the potentiometric surface in this area is generally about +80 to +90 feet MSL. Groundwater moves from the "Pasco High" downgradient to discharge areas along the gulf coast. The elevation of the potentiometric surface is generally less than +10 feet MSL along the coast. The general westward flow is locally perturbed by discharge from numerous springs situated near the coast. Larger springs, such as Weeki Wachee, discharge copious quantities of groundwater from the Floridan Aquifer. Smaller springs and local seepage areas discharge water from the aquifer as base flow to the river drainage systems in southern Pasco County. A recent potentiometric surface of the upper Floridan Aquifer map, showing the site location, levels and regional flow directions, is included on Plate 1.

Based on available publications, the transmissivity of the Floridan Aquifer in this area of Pasco County is highly variable; varying from about 40,000 to 130,000 $ft.^2/day$. The natural leakance rate through the semi-confining clayey unit in this area of Pasco County, in general, varies from about 5×10^{-3} to $5 \times 10^{-4}/day^{-1}$. Based on the map on Plate 1, the potentiometric surface of the Floridan Aquifer in September 1986 in the general site vicinity of the proposed landfill was on the order of about +35 to +37 feet MSL.

3.0 FIELD AND LABORATORY INVESTIGATION

3.1 Test Drilling Program

During the evaluation of the Hays Road site for a Class I sanitary/ash landfill, eight (8) Standard Penetration Test (SPT) borings were advanced to the limestone level over the Class III landfill study area. In general, the designation of these borings correspond to the coordinates on the grid system that we established over the project site. These borings are shown located on Sheet 1.

For the final level study of the Class III sanitary landfill area an additional five (5) SPT test borings designated "A" were drilled to the limestone level. The approximate locations of these borings are shown on Sheet 1. These borings were not horizontally or vertically surveyed in the field. At each of the these five (5) test boring locations, a shallow 2-inch diameter PVC pipe, hacksaw cut screen, piezometer will be installed in an auger borehole advanced adjacent to the SPT boring location. This temporary piezometer will be installed within the next few weeks to measure shallow groundwater levels prior to construction. These shallow piezometers will be installed to a depth just above the first clayey material layer.

Upon completion of all the SPT borings that encountered clayey material and/or the limestone bedrock surface, the borehole was grouted up to the ground surface upon completion, in accordance with SWFWMD requirements. The SPT borings were performed in general accordance with ASTM D-1586. All the test borings performed on this project were performed using men and drill rigs from the Tampa Regional Office of Jammal & Associates, Inc. A degreed geologist was utilized in the field with the drill crews to coordinate field operations and to log the test borings.

At selected locations in several of the SPT borings, relatively undisturbed Shelby tube samples were collected of the semi-confining clayey unit material. Approximately 3-inch diameter Shelby tube samples were collected, at the approximate locations indicated on the soil profiles.

The results of all the test borings performed over the Class III sanitary landfill study area are shown illustrated as soil profiles on Sheet 2. Pertinent drilling notes are also included along the soil boring profiles. Other test boring data for the remainder of the Hays Road site is available upon request.

3.2 Ground Penetrating Radar (GPR) Survey

At the request of Pasco County and Camp, Dresser & McKee, Inc., the United States Department of Agriculture (USDA) was retained to perform a ground penetrating radar (GPR) survey over the proposed Hays Road site. Some of the GPR survey lines went through the proposed Class III landfill study area. The initial GPR survey was conducted by USDA at the project site on May 29, 1986, with observation from Jammal & Associates, Inc. The GPR survey grid lines are shown on the boring location plan and aerial topographic map included on Sheet 1. Heavy dashed lines indicate the path of the GPR survey. The GPR survey lines were established by Jammal & Associates, Inc. Approximately 39,800 lineal feet of GPR survey testing was performed over the Hays Road site; about 4,800 feet of the survey was performed over the Class III study area.

Tape results of the testing performed along the grid lines illustrated on Sheet 1, are available for review upon request from the USDA/SCS office in Gainesville, Florida. We reviewed the test results, as did USDA. The data was utilized in our site assessment as discussed later.

3.3 Installation of Groundwater Monitoring Wells

To assist in evaluating the groundwater levels and background water quality in the aquifer systems over the study area, one (1) deep groundwater monitoring well and one (1) shallow groundwater monitoring well was installed at the approximate locations indicated on Sheet 1. These two wells were installed as part of the Class I sanitary/ash landfill study. The deep groundwater monitoring well was sealed several feet within the limestone surface and was open-hole drilled into the limestone. The shallow groundwater monitoring well was installed just above the semi-confining clayey materials.

The monitoring wells that were installed for the Class I sanitary/ash landfill study were positioned in the field at the approximate locations approved by Camp, Dresser & McKee, Inc. and The Department of Environmental Regulation (DER), specifically, Mr. Gardner Strasser. The intent of these well locations was to utilize them as part of the permanent groundwater monitoring plan for the Hays Road site. The well construction details for the shallow and deep monitoring wells installed are included on Plate 3. The well construction details were approved by DER prior to well installation. Upon completion of each well, it was developed by pumping and/or air surging until the water produced was reasonably clear and clean. Ground elevations were determined at each well location by the project surveyor, Atwood and Associates, Inc.

3.4 Soil Physical Property Testing and Classification

To assist in visual classification of the soil samples and evaluating soil engineering properties relevant to our study, a series of minus No. 200 sieve washes, and liquid and plastic limit tests were conducted. The results of all these tests are included on the soil profiles on Sheet 2. The soil samples were classified utilizing procedures in general accordance with the Unified Soil Classification System. The soils were grouped into different strata according to the soil legend included on the soil profile sheets.

The strata break lines included on the soil profiles represent approximate boundaries between different soil or rock material types. The actual transition between soil or rock conditions not considered important to our evaluations were abbreviated or omitted for clarity.

3.5 Permeability Testing of Clay Samples

In order to evaluate the permeability of the semi-confining clayey unit material over the proposed Class III landfill site, some of the Shelby tube samples of the clayey material were selected for permeability testing. The permeability testing was conducted utilizing falling head testing techniques on a sample cut into a consolidometer. The sample was loaded to the

approximate insitu effective overburden pressure. The results of the permeability tests are included at the appropriate depth on the soil profiles. The results of the permeability testing of the semi-confining clayey unit materials will be discussed later in this report.

4.0 SITE SPECIFIC SUBSURFACE CONDITIONS

4.1 Soil Stratigraphy

As previously mentioned, the results of the soil borings over the study area are presented as soil profiles on Sheet 2. Also included on the soil profile sheets are the results of the laboratory testing of selected physical properties of selected soil types. In addition, pertinent drilling notes relevant to our study and evaluation are also included on the soil profiles. Standard Penetration Test "N" values and a legend which describes the soils encountered and the Unified Soil Classification designation are included on Sheet 2. The Hays Road site and study area are shown on the USDA/SCS Vicinity Map on Plate 2. USDA/SCS Soil Descriptions are provided on Table 3.

In general, the soil materials over the study area consist of a varying thickness of sandy material (Strata 3, 4 and 5) overlying clayey materials of varying thickness and consistency (Strata 7, 8 and 9), which in turn overlie either significantly weathered upper limestone material with clay (Stratum 10) or the more intact weathered limestone materials (Stratum 11).

The upper sandy materials of Strata 3, 4, and 5 generally contain less than 10% fines passing the No. 200 sieve. Strata 3 and 4 materials are the lighter colored sands at the project site and vary from fine sand to slightly silty fine sand. Strata 5 is comprised of the dark brown slightly silty fine sands to silty fine sands. Stratum 5 has the appearance of some organic staining. In general, the upper fine sands (Strata 3, 4, and 5) vary in thickness and in depth considerably depending on the location on-site. In general, the upper fine sands vary in relative density from loose to medium dense. The grain size analysis results (for the Class I study) indicate that the upper fine sands are poorly graded

with low fines content (clay and silt fraction). In general, over the study area, the topsoil materials are on the order of 1 foot thick and are basically either Stratum 1, which is black organic debris, or Stratum 3, which is gray slightly silty fine sand with traces of roots.

Beneath the fine sands of Strata 3, 4, and 5, clayey sand materials of 7 were generally encountered. These materials are generally the transition materials from the upper sands to the lower more plastic clayey materials. The thickness and presence of the Stratum 7 materials varies over the study area. In most borings, these materials are absent. The materials of Stratum 7 have generally less than 35% fines, passing the No. 200 sieve. The results of liquid and plastic limit tests performed on the more clayey materials of Stratum 7 (for the Class I study) indicate that the clayey sands are of low plasticity.

Either beneath the sandy materials of Strata 3, 4, and 5 or beneath the slightly clayey sand materials of Strata 6 and 7, the more plastic clayey materials of Strata 8 and 9 are present. Both of these materials are classified as sandy clay to clay and exhibit, in general, moderate to high plasticity. The difference between Strata 8 and 9 materials is essentially coloring, with Stratum 8 being more of a mottled colored material and Stratum 9 being more of a pure greenish-gray to green clayey material. The depth, thickness and presence of the clayey materials of Strata 8 and 9 are highlighted on the soil profiles on Sheet 2. These materials are shaded in for easy identification purposes. The clayey materials of Strata 8 and 9 are, in our opinion, the major components of the semi-confining unit clayey material which underlies the study area. In all the test borings over the Class III study area, the clayey materials of Strata 8 and 9 were discovered in excess of 6 feet in thickness.

Based on the results of liquid and plastic limit tests performed on selected Strata 8 and 9 materials, the plasticity of these materials varies significantly from moderately to extremely plastic. In general, liquid limit values of the Strata 8 and 9 materials varied from 65% to 120%. Minus No.

200 sieve washes indicate that the fines content of the Strata 8 and 9 material was in excess of 50%. In general, the natural moisture content of the Strata 8 and 9 materials is in excess of the plastic limit.

Based on SPT "N" values, the consistency of the cohesive materials of Strata 8 and 9 varies from stiff to very stiff. Several very loose and soft zones were identified and are indicated on the soil profiles. In general, these locations correspond to zones that displayed either "WH", "WR" or "WK" drilling notations. In these zones, either the weight of the drill rod (WR), weight of the rod plus the hammer (WH) or the weight of the rod plus kelly (WK) fell under its own weight because of the extremely soft or loose clayey conditions. At some locations identified on the soil profiles, drilling fluid circulation losses were experienced while drilling through these soft clayey materials.

Observing some of the clayey samples taken from the soil borings classified as Strata 8 or 9, it was evident that seams of sand and zones of secondary seepage were present. Thin hairline seams and lines of iron or rust color were evident in most of the clayey samples observed from Strata 8 and 9. These zones indicate that water is probably very slowly moving down through some discontinuities in the clayey materials.

Beneath the clayey materials of Strata 8 and 9, in general, highly weathered limestone with traces of clay (Stratum 10) or more competent weathered limestone (Stratum 11) was encountered. The presence and consistency of the extremely weathered portions of the limestone (Stratum 10) are indicated on the soil profiles. In general, Stratum 10 was classified as white to light brown calcareous silty clay with varying amounts of limestone fragments and traces of the green clay of Stratum 9. Stratum 10 was not encountered at all the borings locations. Stratum 11 is considered the upper unit of the Floridan Aquifer. This stratum was generally comprised of white to light gray weathered limestone and was found in nearly all the boring locations. In general, Stratum 10 materials overlaid more competent weathered limestone (Stratum 11). As noted on the soil profiles, significant drilling fluid circulation losses were reported when encountering Stratum 10

or 11 materials. At several boring locations, evidence of very loose or solutioning conditions was discovered in the limestone with the indication of "WK", "WH" or "WR" adjacent to the soil profile. Based on SPT "N" values, the consistency and integrity of the extremely weathered limestone material (Stratum 10) and the more competent weathered limestone of Stratum 11, varied considerably throughout the depth of rock penetrated at each boring location.

It is important to note the following items with regard to the site specific soil conditions discovered over the Class III landfill study area:

1. The soil and rock conditions over the study area are variable in thickness, material type, elevation of occurrence, and consistency or relative density.

2. It is important to note the thickness and occurrence of the semi-confining unit clayey materials of Strata 8 and 9 at individual boring locations; especially within the area proposed for Phase I of the landfill as discussed later.

3. It is important to note the presence of weight of hammer (WH), weight of rod (WR), and weight of kelly (WK), that occurred at several of the boring locations. The depth and thickness of these extremely loose zones that were discovered during drilling operations is indicated on the soil profiles. These areas are indicative of solutioning or ravelling activity.

4. It is important to note the depths and locations of minor and major losses of drilling fluid circulation. At nearly all the boring locations, there were some drilling fluid circulation losses reported. The approximate depth and degree of circulation loss is indicated on the soil profiles at the corresponding depth. Drilling fluid circulation losses noted above the limestone materials of Strata 10 and 11, indicate zones of secondary permeability within the upper unconsolidated deposits.

5. It is important to note that the consistency and physical properties of the clayey materials of Strata 8 and 9 within the proposed Class III landfill area are fairly consistent and uniform, based on the liquid and plastic limit tests, SPT "N" values and other laboratory data.

4.2 Groundwater Conditions

For the Class I sanitary/ash landfill study a network of shallow temporary PVC piezometers were installed at nearly all of the SPT boring locations to monitor the groundwater level over top the clayey materials of Strata 8 and 9. An attempt was made to measure the groundwater level in the already installed piezometers over the Class III landfill study area. However, most of the piezometers were damaged, broken and could not be utilized. A groundwater reading was obtained in a deep hand augered borehole near boring A-4, with the results indicated on Sheet 2. Also, the groundwater level was measured in the two monitoring wells.

Based on available recent data, which is consistent with the previous data collected over the Class III area during the Class I study, it appears that the groundwater flow gradient is toward the west across the study area. Groundwater levels during normal times of the year (not extreme wet or dry seasons) over the Class III study area generally vary from about elevation +30 to +35 feet MSL, or, in general, in excess of 8 feet or more below the ground surface. During wet seasons temporary perch shallow groundwater is anticipated several feet over the clayey materials of Strata 8 and 9. This issue is discussed later in the report.

4.3 Groundwater Recharge Potential

Most of Pasco County provides some recharge to the regional groundwater system. The exceptions are areas along the coast and along the western margin of the Green Swamp area in the eastern part of the County. These areas are discharge areas for the Floridan Aquifer. According to researchers, the most effective recharge area for the Floridan Aquifer is the northwest portion of Pasco County where annual recharge is

estimated at greater than 15 inches per year. Groundwater recharge rates throughout the central portion of the Pasco County are estimated to range between 5 and 15 inches per year on average. The area including the Hays Road site is apparently a good recharge area for the Floridan Aquifer. The lack of a well-defined surface drainage network in an area of abundant rainfall is evidence of groundwater recharge potential. Apparently, the primary surface drainage mechanism is internal to the groundwater system which serves to convey water to discharge areas along the gulf coast.

The majority of the test borings drilled within the boundaries of the Hays Road site penetrated several feet of high plasticity clays overlying the limestone surface. In an idealized hydrogeolgic model, the clay bed acts to retard the vertical interchange of water from the surficial sand deposits to the underlying limestones. Groundwater elevation data collected from on-site observation wells suggest that the clay beds are either discontinuous within the site, locally breached, or contain seams or zones of secondary seepage.

The surficial sand aquifer, which intercepts and stores excess precipitation, is relatively thin or non-existant over portions of the Hays Road site. With the top of the clay representing the base of the watertable aquifer, measurements at the observation wells indicate that the watertable aquifer is generally on the order of 5 feet thick or less when the measurements were taken in September 1986. As September typically represents the end of the rainy season when groundwater elevations are highest, the surficial aquifer in this portion of Pasco County may not be perennial.

Four deep monitoring wells were installed into the upper portion of the Floridan Aquifer within Hays Road site. As previously mentioned one well is located at the Class III study area. Water level measurements taken in November of 1986 indicate elevations of the potentiometric surface ranged from +29.2 to +34.5 feet MSL, and averaged about +31.5 feet MSL. These measured values are in good agreement with recent potentiometric surface maps for the area published by the U.S. Geological Survey and SWFWMD (Plate 1). This map suggests a typical end-of-wet-season elevation of about +30 to +35 feet MSL for the Hays Road site and near vicinity. The hydraulic gradient is toward lower elevations to the northwest and west.

The three major local highs identified over the Hays Road site during the Class I study suggest that the groundwater surface may be indicative of areas where the clay beds at the base of the water table aquifer are most effective in inhibiting recharge to the underlying limestones. The local groundwater highs over the Hay Road site do not necessarily correlate with topographic highs on the land surface where thicker sand deposits would normally be anticipated. The area of low groundwater elevations in the west-central portion of the site (the Class III study area) correlates with a topographic high on the land surface. Consequently, the watertable is deeper in this area, tending to approach the elevation of the potentiometric surface of the Floridan Aquifer.

5.0 EVALUATIONS AND CONCLUSIONS

5.1 Subsurface Conditions and Basis for Landfill Area Site Selection

The study area within the limits shown on Sheet 1 (approximately 63.6 acres), we have identified as being favorable or suitable for location of a lined Class III sanitary landfill. The limits of the favorable area for implementation of the landfill were based on our interpretation and evaluation of all the test boring data available and also on our interpretation of the GPR data collected by USDA. We understand that a synthetic liner system will be constructed under all areas to be land filled. We agree that the Class III landfill should be lined with a leachate collection system.

Generally speaking, the favorable for the Class III landfill as outlined on Sheet 1 includes areas where test borings:

a. showed at least five (5) feet or more of intact and nearly continuous clayey semi-confining unit material (Strata 8 or 9 as described on the soils legend);

b. were in general conformance with the trend of the neighboring soil stratigraphy;

c. lacked significant evidence or indicators of internal soil erosion in the overburden soils, and/or the propagation of this feature upward;

d. in general, showed the typical results, that is, sand over clay over limestone; or with some acceptable deviation from this soil profile.

General consistency in topography (lack of closed contours) and the lack or avoidance of depressional areas characterize the Class III landfill study area.

The USDA's interpretation of the GPR data included the identification of some potential subsurface anomalies within the Class III landfill study area. No significant anomalies were discovered in our test borings over the Class III landfill study area that would adversely impact the landfill with the design concept as planned.

5.2 Semi-Confining Unit Presence and Permeability

The clayey semi-confining unit separating the upper shallow aquifer system from the deeper Floridan Aquifer was present and fairly consistent in physical properties in nearly all the test borings performed over the Class III study area outlined on Sheet 1. The clayey semi-confining unit is primarily comprised of the highly plastic clays of Strata 8 and 9, and the more clayey portions of Stratum 7. The highly plastic and intact portions of Strata 8 and 9 are considered essentially impermeable to vertical groundwater movement. However, through minor inconsistencies and seams of secondary seepage within the semi-confining unit, some vertical movement of groundwater is occurring. As previously mentioned, the thickness of the semi-confining unit varies over the study area based on the test boring results from approximately 6 to 15 feet in thickness. In most instances, the thickness of the semi-confining unit is in the range of 6 to 10 feet. The semi-confining unit discovered over the study area should significantly inhibit direct vertical groundwater movement from the upper sand aquifer to the deeper Floridan Aquifer.

From our observation of the clayey samples, we are of the opinion that the semi-confining unit over the Class III landfill study area, although apparently consistently present, is somewhat leaky. Essentially, we believe that this is the case based on the shallow groundwater conditions discovered over the study area and based on the significant iron staining and small zones of secondary permeability discovered within intact highly plastic clayey samples. We believe that over the study area that some slow vertical movement down through the semi-confining unit is taking place through the small inconsistencies and vertical and somewhat circuitous paths made over the years through the clay layers. It is important to note that our test borings did not show significant signs of weathering or upward ravelling of the semi-confining unit, nor direct areas of recharge through breaches in the semi-confining unit. Therefore, over the proposed Class III landfill area vertical recharge should be lower than the surrounding areas.

The vertical permeability of intact semi-confining unit clayey samples varies from a high of approximately 2.3×10^{-4} centimeters per second to a low of 1.2×10^{-8} centimeters per second over the Hays Road site. The variability is attributable to the fine secondary seams of seepage. Based on the data collected, the average vertical permeability of the semi-confining unit clayey samples is on the order of 7.2×10^{-5} centimeters per second. Site specific (over the Class III landfill study area) vertical permeability results on samples varied from 5.1 to 7.3×10^{-8} centimeters per second. Essentially, these values show that the semi-confining unit clayey samples are nearly impermeable to vertical groundwater movement. The very low to low vertical permeability test results on the clayey materials suggest favorable conditions regarding implementation of a lined landfill.

5.3 Groundwater Design Considerations

Based on the results of available groundwater data, it appears that the normal groundwater table depth over the proposed Class III landfill area in excess of 8 feet deep. We anticipate that the groundwater level over the Class III landfill study area could be as much as 2 to 3 feet above the clayey materials of Strata 8 and 9 at certain locations under natural conditions on an interim basis (short-term during wet seasons). Considering the groundwater table depth information collected and the depth

of clayey materials, it is possible that some areas of the study area could be cut to accommodate landfilling. The Phase I landfill area shaded-in on Sheet 1 could be cut as much as 2 feet below present grades, if necessary. After liner installation and some landfill construction, the post-development groundwater levels beneath the landfill area should be more favorable for cutting because less recharge will be occurring. We recommend that no areas be considered for major cutting (in excess of 2 feet) that show clayey materials, Strata 7, 8, or 9, within 5 feet of present grades. This is recommended primarily because of the potential for temporary perched groundwater during sustained wet periods. Although some cutting is possible, it is our opinion that only minimal cutting should be considered primarily because of the variability in the elevation of the top of the clay. We recommend that the proposed landfill primarily achieve capacity by being filled above present grades.

5.4 Landfill Settlement Considerations

We have not had the opportunity to review the Phase I preliminary Class III landfill plan layout. However, we understand the Class III landfill height is anticipated on the order of 30 feet above general present grades. Little cutting is anticipated. From general present grade to about a height of 30 feet, the net slope of the sides of the landfill is anticipated on the order of 1V:4H.

Based on the consolidation test data available from the Class I sanitary/ash landfill study, in general, distortion (sand) plus consolidation (clay) total settlements of the Class III landfill under the maximum landfill height of 30 feet are anticipated to be on the order of 4 to 6 inches. Total settlements at the toe of the 1V:4H slopes are estimated on the order of 1 to 2 inches.

Differential settlements will be primarily dependent on the uniformity of the clayey semi-confining unit, the differences in landfill heights across a typical cross-section through the landfill and construction sequencing. It appears that the most

critical area for differential settlement is between the toe and the high point of the 1V:4H slope over an average distance of about 120 feet. Considering the total settlements above, the maximum differential settlements over the 1V:4H slope should be on the order of 3 to 5 inches.

We are assuming that the anticipated liner materials and leachate collection systems will be able to take the gradual differential settlements over the section mentioned above. We understand that Camp, Dresser & McKee, Inc. will forward the settlement results to the liner manufacturer for their review. If this is not the case, we should be contacted for additional evaluation.

5.5 Favorable Locations Within Study Area for Daily Sand Cover

The locations within the study area (outside the limits of the Phase I area) that should be considered the better areas to acquire and access daily sand cover material should be where test borings have indicated the presence of a significant thickness of fine sands. In general, the fine sands to slightly fine sands of Strata 3, 4 and 5 are most suitable as daily cover material. Most of the high knoll in the north central portion of the study area should be suitable for daily sand cover. However, Boring A-3 on the north side of the knoll indicates clay (Stratum 8) at about 3 feet deep. Therefore, care should be exercised when cutting down the knoll. The clays of Strata 7, 8 and 9 should not be excavated.

After areas have been selected to acquire sand cover, additional test borings, prior to excavation, are warrented at closer spacings to confirm the availability of sandy materials. As discussed in the Class I landfill summary report, the Hays Road site should have abundant sources for daily sand cover materials.

5.6 Final Cover Material Considerations

Regarding final cover clayey material, because of the following items below, we are of the opinion that the acquisition of offsite clayey material will be necessary for construction of the final clay cover (cap) over completed portions of the Class III landfill. We do not recommend excavating clayey semi-confining unit materials from areas around the Class III landfill.

a. The predominant clay materials of Strata 8 and 9 are, in general, highly plastic and upon excavation, drying, and compaction may crack or fissure due to dessication. This could cause a "leaky" final cover.

b. Stratum 7, clayey sand (which would be suitable final cover material) is not an abundant material type over the non-landfill areas of the site.

c. In general, the clayey material excavated would be below shallow perched groundwater levels; thus, some difficulty in excavation could be associated with dewatering and the drying of near-saturated clayey material.

d. In general, over the non-landfill areas of the site, when the clayey material is closer to the surface (easy access), in turn the top of the limestone is shallower, such as at boring A-3.

e. On-site clayey materials, Strata 8 and 9, and the more clayey portions of Stratum 7 make up the semi-confining unit separating the two aquifer systems.

5.7 Favorable Locations Within Study Area for Stormwater Disposal

At this time, no preliminary stormwater management plans are available; however, we are providing our general thoughts relative to this matter. Considering the natural low depressional areas located south of the Class III landfill site, it is reasonable to ultimately direct treated stormwater

towards these lower areas. Detention/retention facilities could be constructed adjacent to selected depressional areas that could provide ultimate discharge after pretreatment. Locations over the study area where stormwater ponds could be considered should have a significant thickness of upper sand aquifer (Strata 3, 4 and 5) present to promote positive horizontal exfiltration away from stormwater detention/retention basins. If possible, the primary on-site stormwater management features should be planned in these areas.

The groundwater data provided herein should be utilized in the design and selection of control levels in the retention/detention ponds. Although no permeability testing was performed on the sand strata, we anticipate that permeability values on the order of 10 to 20 feet/day would be appropriate for the materials of Strata 3 and 4, and 3 to 7 feet/day for Stratum 5 materials. After preliminary stormwater plans are available, some permeability testing of the sands and additional test borings should be performed.

5.8 Future Sinkhole Potential Over The Class III Landfill Study Area

The Hays Road site and adjacent areas exhibit Karst features typical of west central Florida. The land surface is a gently rolling terrain dotted by numerous topographically-closed depressions. Within the boundaries of the Hays Road site, land surface depressions are more common in the western portion and especially in the southwest corner where apparently perennial ponds occur.

Although numerous sinkholes and other Karst-related features exist within the project site and near vicinity, the standard penetration test borings drilled for this investigation did not encounter significant voids in the underlying limestones. This fact, and the general configuration of most of the on-site land surface depressions suggest that sinkholes in the area are primarily caused by areal solution of the limestone surface and subsequent progressive subsidence of the land surface over a relatively long period of time.

Researchers described this type of Karst process forming specific types of features known as limestone-solution sinkholes. Researchers attribute this process to areas where a relatively thin cover of overburden is overlying a limestone surface that is jointed and fractured. Researchers report that in general, the northern portion of west central Florida, including northwest Pasco County, is characterized by the occurrence of shallow, broad sinkholes that develop progressively over fairly long periods of time. The subsidence rate observable at the land surface occurs roughly at the same rate as the dissolving of the limestone by aggressive recharge waters.

Sinkholes and resultant Karst topographic features of the land surface have been intermittently active during the various geologic periods subsequent to deposition of the carbonate bedrocks. During the Pleistocene Age, the sea level has risen and fallen relative to current datum as water was stored and released in glacial and interglacial periods. It is commonly believed that the most recent maximum sea level regression occurred about 18,000 years ago when sea level was approximately 300 feet or more below today's level.

The Karst processes operating in west central Florida must have been more active in the past during low sea level stands. The drowned Karst features along the present coast line and offshore are solid evidence of past intense solution erosion of the region's limestone foundation. It is very likely that most of the sinkholes in the region were formed in the past and that these processes have slowed considerably with the onset of a transgressive, or rising sea which is continuing today.

An assessment of the potential for formation of new sinkholes within the Class III landfill study area is presented in this report, based on the geomorphologic history of the region, together with evaluations of site-specific geologic and hydrogeologic data collected during the investigation. Data collected and utilized in our assessment consisted of:

1. Geologic logs prepared from test borings drilled throughout the site.

2. Groundwater elevations measured in installed observation wells.

3. Ground penetrating radar (GPR) surveys.

4. Review of type, occurrence and distribution of existing sinkholes and related features within the Hays Road site boundaries.

5. Land surface fracture trace/lineament map of the area and vicinity that was developed for the Pasco County Public Works Department by FDOT, a portion of which was traced over the USGS map illustrated on Sheet 4.

Geologic logs of the test borings drilled within the study area indicate that:

1. The surface of the limestone bedrock, likely the Tampa Limestone, is fairly rugged in relief. This surface marks a lithologic change between the Miocene carbonates of the Tampa or Suwannee Limestone and the predominant clay lithology of the overlying Miocene Hawthorn Formation.

2. The Hawthorn Formation is apparently present throughout most of the study area overlying the limestone surface. The Hawthorn here is comprised of deposits of very plastic clays.

3. The Pleistocene to Recent Age quartz sand deposits are relatively thin and generally loose to medium-dense throughout the site.

Measured water levels in wells installed over the Hays Road site, indicate that the water table surface above the Hawthorn clay deposits ranged in altitude from about +30 to +40 feet above MSL. Based on the potentiometric surface map of the underlying Floridan Aquifer prepared by SWFWMD (Plate 1), the difference in head between the Floridan and overlying water table aquifer is relatively small, on the order of 5 feet as an average.

Geoelectric signatures generated from the GPR surveys identified interpreted potential geologic anomalies at certain locations along the survey lines. Some locations were drilled by Standard Penetration Test (SPT) methods to correlate the GPR signatures with actual geologic logs and samples. The SPT data indicate that the GPR responses may reflect density differences in the sedimentary beds overlying the limestone surface. The SPT data did not indicate noticable voids and cavities, either in the sand and clay deposits or in the underlying limestones.

The topographic map of the Hays Road site indicates numerous, small surface depressions. Two distinct types, or forms, of depressions are noted: small, rounded depressions with relatively steep slopes, mainly in the southwest corner of the site, and; very shallow, gently-sloping depressions occurring primarily in the interior portion of the site. Most of the land surface depressions within the site are of the latter category. These depressions are generally very shallow, perhaps two to three feet deep on average and relatively broad, ranging up to several acres in area.

Within the proposed Class III landfill area, a linear relationship between land surface depressions and other geomorphic features was not particularly noted during review of aerial photographs and U.S. Geological Survey 7-1/2 minute quadrangle maps. Other major lineament features were not observed in the immediate vicinity of the proposed Class III landfill, as evident on Sheet 4.

Given the above considerations, the predominant sinkhole-forming process operating at the Hays Road site appears to be very slow dissolution of calcium carbonate at the surface of the limestone bedrock. The result is the occurrence of very shallow depressions forming over very long periods of time. The primary hydrogeologic factors controlling the process are: 1.) the existence of a nearly continuous clay layer covering the limestone surface throughout the study area, and 2.) the small head difference between the water table and Floridan Aquifer.

Collected data suggests that active recharge to the Floridan Aquifer limestones, a prerequisite for formation of new sinkholes, occurs away from the study area boundaries. The clay deposits of the Hawthorn Formation apparently form an effective aquatard, or semi-confining bed, throughout most of the study area.

In view of the apparent site conditions and the various factors associated with sinkhole formation, we consider the potential sinkhole related risks to the integrity of the proposed Class III landfill to be slight over the study area identified on Sheet 1. The apparent hydraulic gradient driving water to the Floridan Aquifer limestones is relatively small throughout the site and the potential for erosion or ravelling of the unconsolidated deposits into limestone voids is low. The noticable lack of significant cavities in the limestones penetrated at test boring locations further reduces the potential for significant sinkhole risk to the landfill. In addition, with construction of the liner and landfill, Floridan Aquifer natural recharge will be significantly reduced in the landfill area, reducing the natural potential for sinkhole activity in the landfill area, and slowing solutioning processes identified at the greater depths in some of the deep SPT borings in the study area.

Sinkholes formed by catastrophic collapse of caverns in the limestone are considered to be uncommon in the project area. The relatively thin overburden covering the limestone formations, together with the apparent small head difference between the water table and potentiometric surface are two factors supporting the formation of surface depressions as a slow on-going process directly related to solution activity at the limestone surface. Sinkholes of this type tend to develop slowly, over long periods of time and may be typically on the order of 1 to 3 feet deep near the center and 10 to 20 feet in diameter. The potential to generate catastrophic, short-period failure sinkholes is considered to be very low.

6.0 GROUNDWATER QUALITY MONITORING PROGRAM

6.1 Well Inventory

To satisfy DER requirements, a water supply well inventory was conducted within a one mile radius of the Hays Road site boundaries. In addition, wells located within a two mile radius of the site were also located. Computer printouts of consumptive use permits (CUPS) and well construction lists for the area were obtained from the Southwest Florida Water Management District (SWFWMD). Also, a list of monitoring wells within the two mile radius that are still used by the United States Geological Survey (USGS) was also obtained. The USGS well locations, as well as the SWFWMD CUPS well locations, are shown approximately located on the USGS map (Sheet 3). The pertinent well inventory data collected from USGS and SWFWMD, as well as the well construction listing of wells within the one mile radius which could not be plotted because no locations were provided, are included in the Appendix.

Based on the CUPS data from SWFWMD, it appears that only one major water supply well is present within the one mile radius of the Hays Road site. This well is labelled Number 5 and is shown located on Sheet 3. This well is located approximately one mile from the northern border of the Hays Road site and is significantly upgradient (Floridan Aquifer) of the proposed landfill. Pertinent data relative to this well is provided in the Appendix. Based on data collected from SWFWMD and USGS, it does not appear that there are any other major permitted water supply wells within a one mile radius of the Hays Road site.

Based on the data on the SWFWMD well construction list, there appears to be a significant number of smaller water supply wells located within a one mile radius of the Hays Road site. In addition, it appears that there are significant small water wells located west and south of the site, or in other words, downgradient of the proposed landfill area. It is important to note, that there is no County water available within 1 mile around the site. Therefore, it should be assumed that all residences, businesses, etc. within a 1-mile radius of the landfill site (and more) have a small potable water supply well, based on the extensive well construction list.

6.2 Groundwater Monitoring Plan

To assess the shallow and deep aquifer background water quality at the Hays Road site, a series of four well pairs, as previously discussed, were installed at selected locations around the perimeter of the site. In particular, these well pairs consisted of a shallow and a deep well installed in accordance with DER regulations. The four well pair locations are shown illustrated on Sheet 3. More specifically, one shallow and one deep well (2 MW3 and 4 MW3) were located in the Class III landfill study area, as also shown on Sheet 1. Basically, the shallow groundwater monitoring wells are designated 2MW1 to 2MW4. The 2 as the prefix in the well designation corresponds to the diameter in inches of the well. The number following the lettering MW is the well number designation. Likewise, for the four deep groundwater monitoring wells, the 4 prefix represents a 4-inch diameter well and the number after the MW designation corresponds to the well number.

As outlined in our scope of work, we attempted to pull water samples from the wells (within the study area) for background water quality testing. At the time of sampling no groundwater was measured in the shallow well 2MW3 or in any of the nearby shallow piezometers; therefore, a sample could not be taken. This should be typical during normal and dry times, in this area of the Hays Road site. The deep well (4MW3) was sampled as anticipated. After sampling by Thornton Laboratories, Inc., the water sample was returned to Thornton Laboratories, Inc. for testing of all the State Primary and Secondary drinking water parameters as specified by DER. The water quality test results will be forthcoming in a separate letter upon completion of the testing. We understand that water quality sampling and testing from all the other monitoring wells at the Hays Road site to establish background parameters, will be conducted by Camp, Dresser & McKee, Inc. or Pasco County.

The construction details for the shallow and deep groundwater monitoring wells that were installed at the Class III study area to assess background water quality are included on Plate 3. As previously discussed, the well details were approved by DER prior to installation.

It is recommended that for the long-term monitoring program, for the proposed Class III sanitary landfill (Phase I, 20 acres), assuming that Phase I of the landfill is sited as shown on Sheets 1 and 3, that three (3) additional well pairs be installed for groundwater quality monitoring purposes. The three additional well pair locations designated 8, 9 and 10 are shown approximately located on Sheets 1 and 3. Well pairs designated 5, 6 and 7 were proposed for the Class I landfill. All the proposed monitoring wells at the Hays Road site are included in Sheet 3. The proposed groundwater monitoring wells are located approximately 100 feet away from the edge of the proposed landfill areas. The proposed well construction details for the shallow and deep groundwater monitoring wells, which are similar to the existing wells previously installed, are included on Plate 4.

Upon approval of the groundwater monitoring plan, by the Florida Department of Environmental Regulation, all the new monitoring wells should be initially sampled and analyzed for the following parameters:

1. State primary drinking water standards (including: inorganics, organics, tubidity, trihalomethanes, volatile organics, microbiological and radionuclide parameters).

2. State secondary drinking water standards.

Subsequent to the initial sampling and analysis, it is recommended that quarterly sampling and analysis be conducted for the following indicator parameters only:

1. Specific conductance
2. pH
3. Chloride
4. Turbidity
5. Nitrate-Nitrogen
6. Total Dissolved Solids (TDS)
7. Chromium
8. Cadmium
9. Fecal Coliforms
10. Sodium
11. Total Organic Carbon (TOC)
12. Iron
13. Lead
14. Manganese
15. Temperature
16. Water Level

As a minimum, we recommend that quarterly sampling be performed at each of the well locations during the initial five years of the landfill operation. If tested parameters show concerns, then the testing frequency and parameters will need to be adjusted.

7.0 TABLE AND FIGURES

Table 1 Geologic Formations

Table 2 Hydrogeologic Framework

Table 3 USDA/SCS Soil Descriptions

Figure 1 Location of Geologic Sections

Figure 2 North-South Geologic Cross-Section

TABLE 1 1/

GEOLOGIC FORMATIONS

Age		Formation	Lithology	Quality of water	Use
Recent and Pleistocene		Undifferentiated sand and clay	Interbedded sand and clay up to 250 feet thick.	Objectionable concentration of iron and high organic color are common.	Only a few small domestic wells.
Miocene		Tampa Limestone	White to gray, sandy, fossiliferous limestone.	Generally satisfactory for domestic supplies without treatment.	Most domestic and many irrigations wells produce water from the basal Suwannee Limestone. Some wells in southwestern Pasco County produce water from the Tampa Limestone if the Suwannee Limestone contains salty water.
Oligocene		Suwannee Limestone	Fossiliferous, yellow to white, fine-grained limestone. Hard at bottom.		
Eocene	Ocala Group	Crystal River Formation	Soft, chalky, white to tan coquinoid limestone.	Not well known but probably similar to water from Suwannee Limestone in most of area.	Only a few wells produce water from local cavities.
		Williston Formation			
		Inglis Formation	Hard, fossiliferous, brown to gray dolomitic limestone.	Contains more sulfate than water from overlying formations but probably does not exceed public health limits in most of area.	Most wells that produce more than 1,000 gpm penetrate the Inglis Formation and/or part of the hard brown dolomitic section of the Avon Park and Lake City Limestones.
		Avon Park Limestone	Soft to hard, fossiliferous, brown limestone with dark brown beds of dolomitic limestone. Some sapropel.		
		Lake City Limestone			

1The classification and nomenclature of rock units in this report conform to the usage of the Florida Geological Survey and also, except for the Ocala Group and its subdivisions, with those of the U. S. Geological Survey.

1/Taken from Wetterhall (1964)

TABLE 2 3/

HYDROGEOLOGIC FRAMEWORK

System	Series	Stratigraphic unit	General lithology	Major lithologic unit	Hydrogeologic unit	Geologic process	Age estimates of boundaries, in million years 1/
Quaternary	Holocene Pleistocene	Surficial sand, terrace sand, phosphorite	Predominantly fine sand; interbedded clay, marl, shell, limestone, phosphorite.	Sand	Surficial aquifer	Fluctuations of sea level with consequent high water tables and deposition in low-lying areas alternating with low water tables and accelerated weathering of soluble rocks.	
Tertiary	Pliocene	Undifferentiated deposits 2/	Clayey and pebbly sand; clay, marl, shell, phosphatic.	Clastic deposits	Confining bed		2
	Miocene	Hawthorn Formation	Dolomite, sand, clay, and limestone; silty, phosphatic.	Carbonate and clastic deposits	INTERMEDIATE AQUIFER AND CONFINING UNITS: Aquifer		5
		Tampa Limestone	Limestone, sandy, phosphatic, fossiliferous; sand and clay in lower part in some areas.				
	Oligocene	Suwannee Limestone	Limestone, sandy limestone, fossiliferous.	Carbonate deposits		Exposure and weathering Carbonate deposition	24
	Eocene	Ocala Limestone	Limestone, chalky, foraminiferal, dolomitic near bottom.		Confining bed	Exposure and weathering	38
		Avon Park Formation	Limestone and hard brown dolomite; intergranular evaporite in lower part in some areas.		FLORIDAN AQUIFER SYSTEM: Upper Floridan aquifer	Carbonate deposition	
		Oldsmar Formation	Dolomite and limestone, containing intergranular gypsum in most areas.	Carbonate and evaporite deposits	Middle confining unit Lower Floridan aquifer		
	Paleocene	Cedar Keys Formation	Dolomite and limestone with beds of anhydrite.		Sub-Floridan confining unit	Exposure and weathering Carbonate deposition	55 63

1/ Geologic Times Chart, 1984.

2/ Includes all or parts of Caloosahatchee Marl, Bone Valley Formation, Alachua Formation, and Tamiami Formation.

3/ Taken from Sinclair, et al (1985)

TABLE 3

USDA/SCS SOIL DESCRIPTIONS

Mapping Unit	Depth (Ft.)	Soil Description	Drainage	Water Table (Ft.)
Tavares SAND (6)	0 to 1/4	Very dark gray SAND	Moderately well drained	3-1/2 to 5 feet most of the year, more than 5 feet during dry season
	1/4 to 1	Yellowish-brown SAND		
	1 to 3	Light yellowish-brown SAND		
	3 to 4-1/2	Yellowish-brown SAND		
	4-1/2 to 6	Very pale brown SAND		
	6 to 7-1/2	White SAND		
Sparr fine SAND (7)	0 to 1/2	Dark gray fine SAND	Somewhat poorly drained, moderately permeable	2 to 3-1/2 feet for 1 to 4 months per year
	1/2 to 1	Grayish brown fine SAND		
	1 to 1-1/2	Pale brown fine SAND		
	1-1/2 to 3	Very pale brown fine SAND		
	3 to 3-1/2	Light yellowish-brown fine SAND		
	3-1/2 - 6-1/2	Light yellowish-brown sandy CLAY loam		
Adamsville fine SAND (11)	0 to 1/2	Dark gray to gray fine SAND	Somewhat poor; surface runoff; rapid internal drainage when not retarded by the high water table	1-1/2 to 2-1/2 feet for 1 to 2 months per year; floods over in 5-20 years for 1-4 weeks
	1/2 to 1	Light gray loose fine SAND		
	1 to 2	Light yellowish-brown fine SAND		
	2 to 4	Yellowish-brown fine SAND		
	4 to 6-1/2	White fine SAND		
Candler fine Sand, 0 - 5 Percent slopes (13)	0 to 1/4	Grayish brown fine SAND	Excessively drained rapidly permeable	2 to 3-1/2 feet for 2 to 6 months per year, more than 3-1/2 during dry season
	1/4 to 3/4	Brown fine SAND		
	3/4 to 2-1/2	Brownish yellow fine SAND		
	2-1/2 to 4	Yellow fine SAND		
	4 to 7	Mixed brownish-yellow and yellow fine SAND		
Electra Variant (18)	0 to 1/2	Dark gray to gray fine SAND	Somewhat poorly drained, slowly permeable	2 to 3-1/2 feet for 4 months per year, more than 3-1/2 during dry season
	1/2 to 3-1/4	White fine SAND		
	3-1/4 to 3-1/2	Dark brown fine SAND		
	3-1/2 to 5-1/4	Dark yellowish-brown fine SAND		
	5-1/4 to 6	Brown fine SAND		
	6 to 6-1/4	Grayish brown fine sandy loam		
	6-1/4 to 6-1/2	Grayish brown sandy CLAY loam		
	6-1/2 to 7	White soft LIMESTONE		

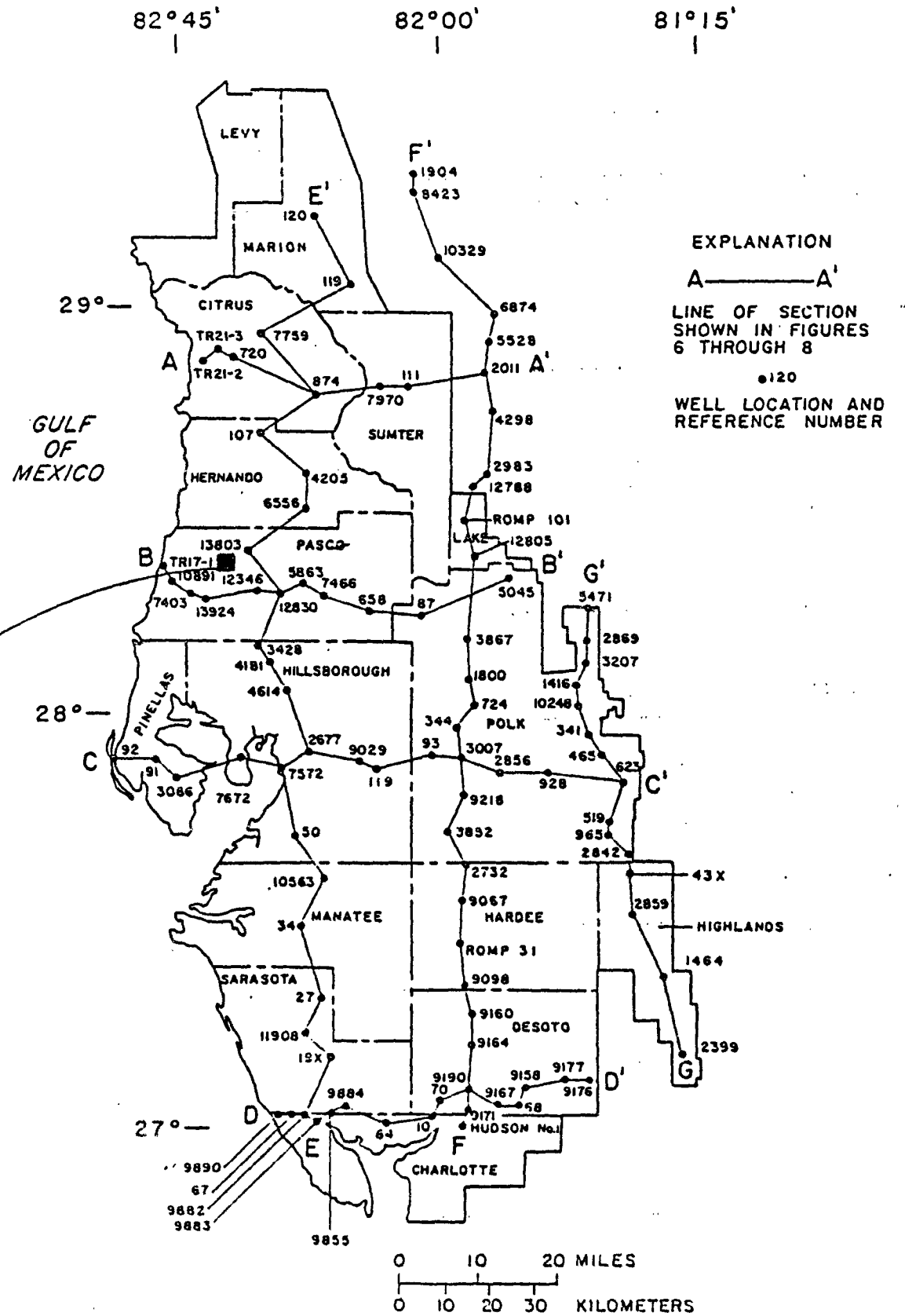


FIGURE 1 LOCATIONS OF GEOLOGIC SECTIONS

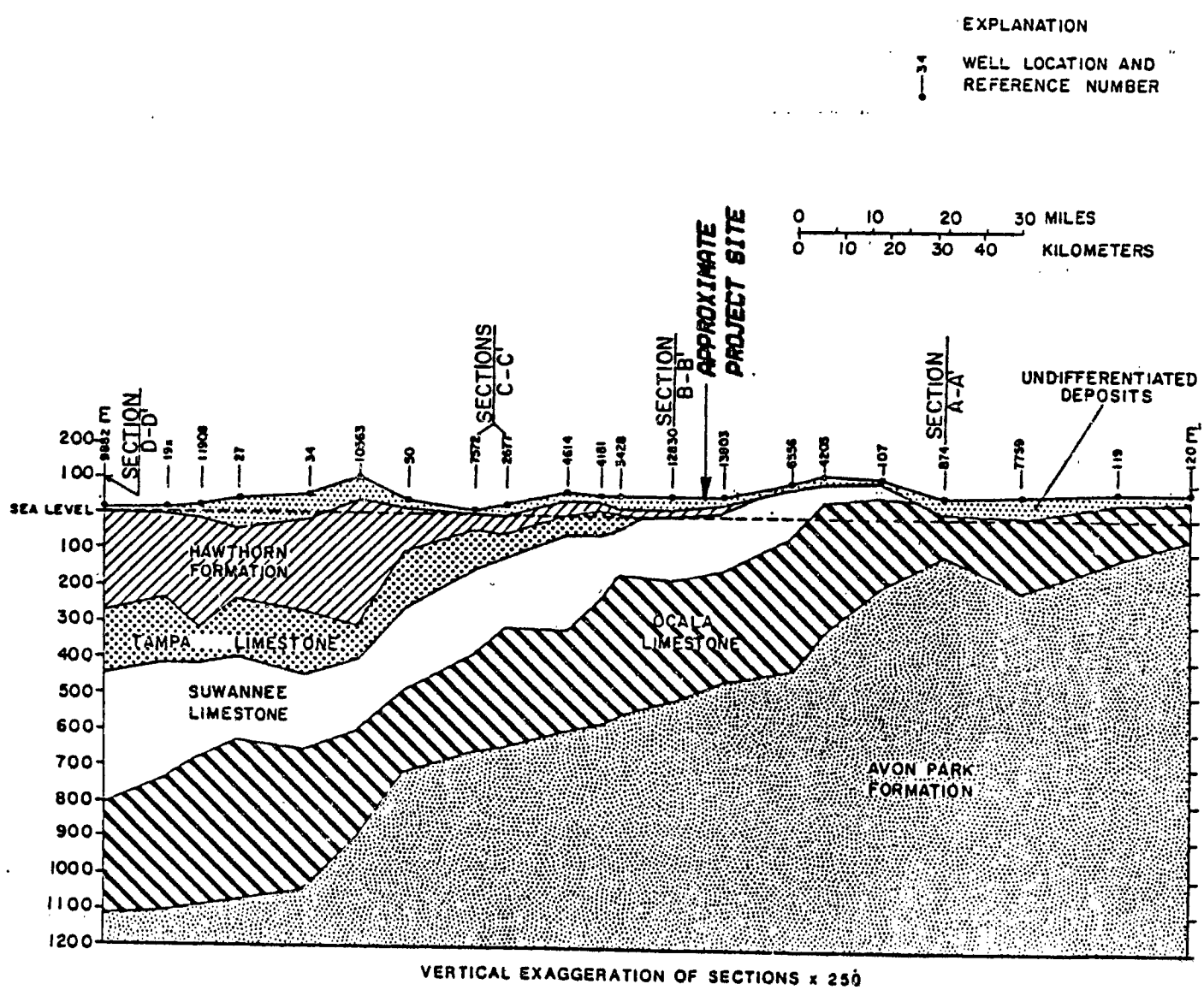


FIGURE 2 NORTH-SOUTH GEOLOGIC CROSS-SECTION

8.0 PLATES

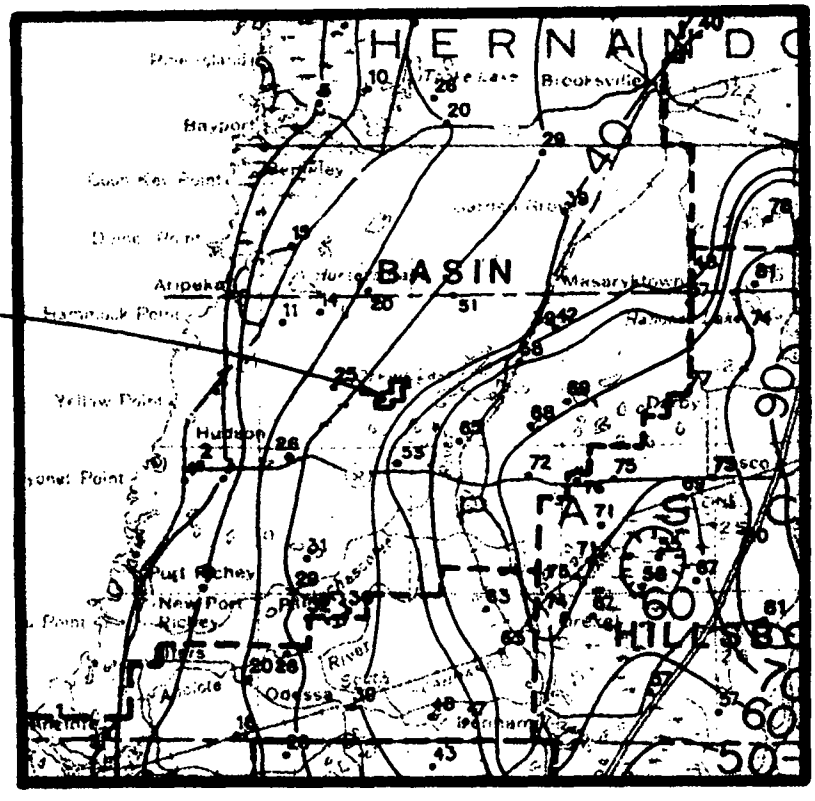
Plate 1: Potentiometric Surface of the Upper Floridan Aquifer

Plate 2: USDA Vicinity Map

Plate 3: Existing Groundwater Well Details

Plate 4: Proposed Groundwater Well Details

AF 38037B



POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER

NTS

Reference: Potentiometric Surface of the Upper Floridan Aquifer, Southwest Florida Water Management District, September 1986. U.S. Geological Survey Open-File Report 86-603

GEOTECHNICAL / HYDROGEOLOGIC STUDY

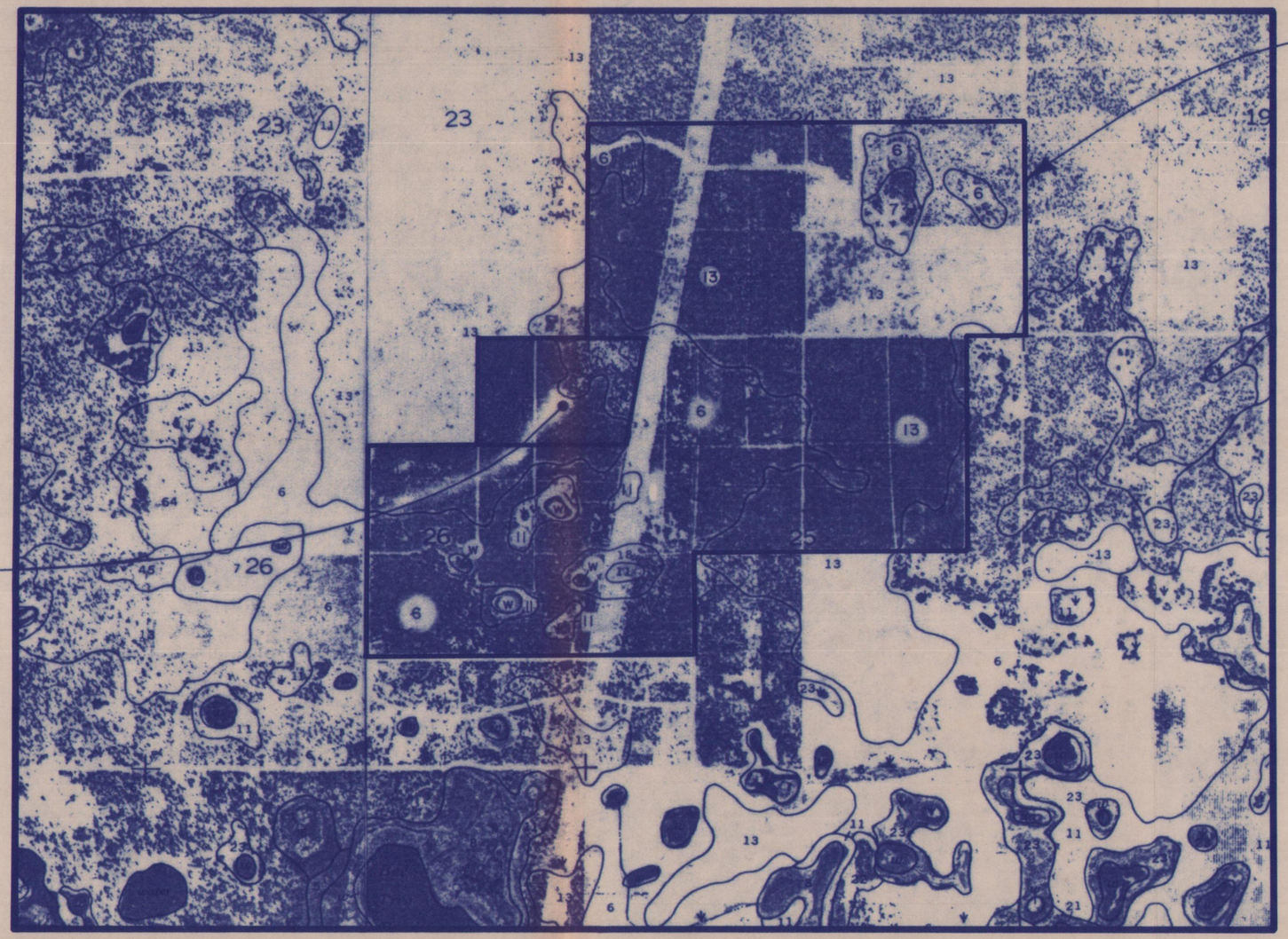
PROPOSED CLASS III LANDFILL-HAYS ROAD SITE

PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

DRAWN: STB	SCALE: ———	PROJ NO: 87-30802
CHKD. RAM	DATE. MAY 87	PLATE 1

AF 37008A



NOTE : For Soil Description see Appendix A.

REFERENCE : USDA Soil Survey
Pasco County, Florida
Aerial 1975
Issued 1982

USDA VICINTY MAP

SCALE: 1" = 1667'

DRAWN:	STB
CHKD:	KFB
APPVD:	RAM
SCALE:	NOTED

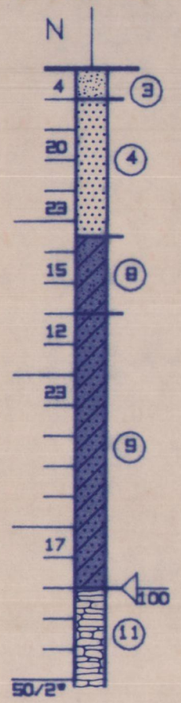
GEOTECHNICAL / HYDROGEOLOGIC STUDY
PROPOSED CLASS III LANDFILL-HAYS ROAD SITE
PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

DATE: MAY 87	PROJ. NO. 87-30802	PLATE 2

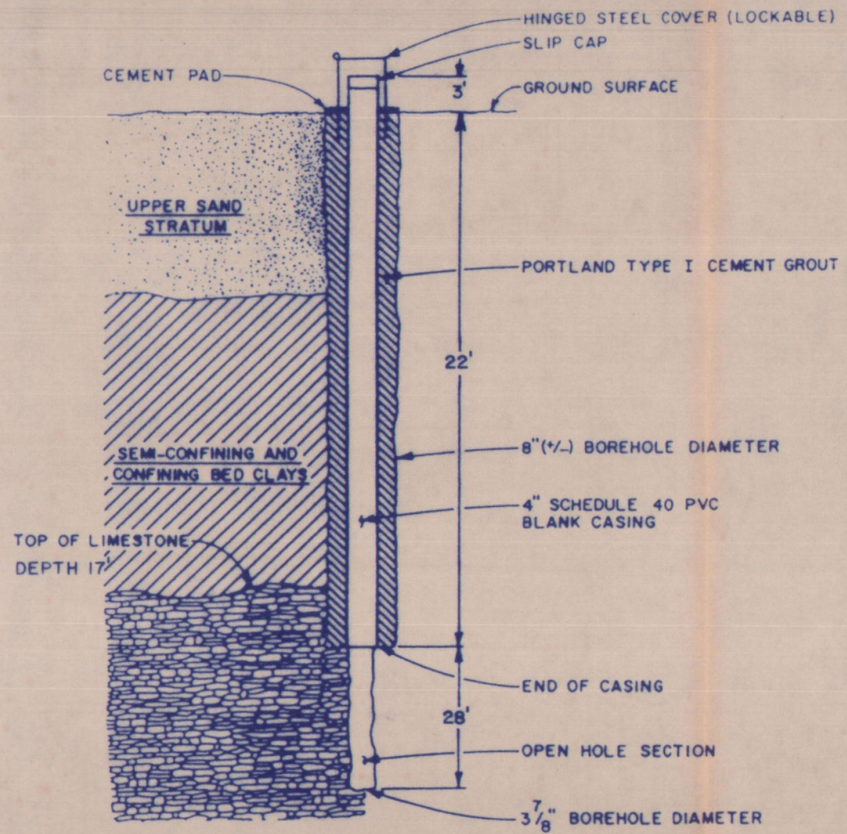
AF 37008A

F+600-26



VERTICAL SCALE: 1"=5'

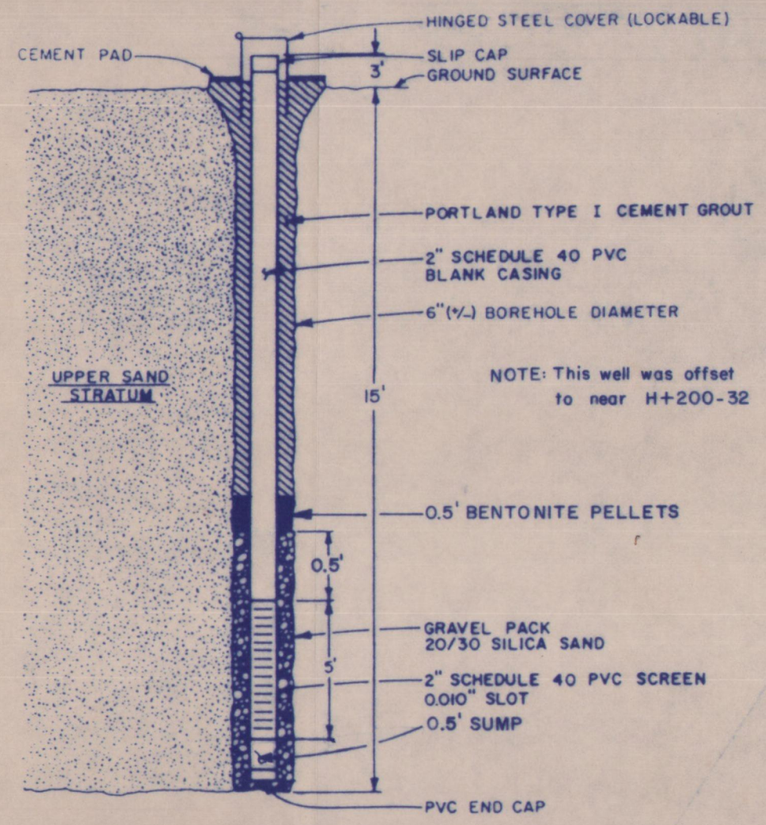
4MW3



FLORIDAN AQUIFER MONITORING WELL

NTS

2MW3



SHALLOW GROUNDWATER MONITORING WELL

NTS

EXISTING GROUNDWATER WELL DETAILS

NOTE: For Soil Legend See Report

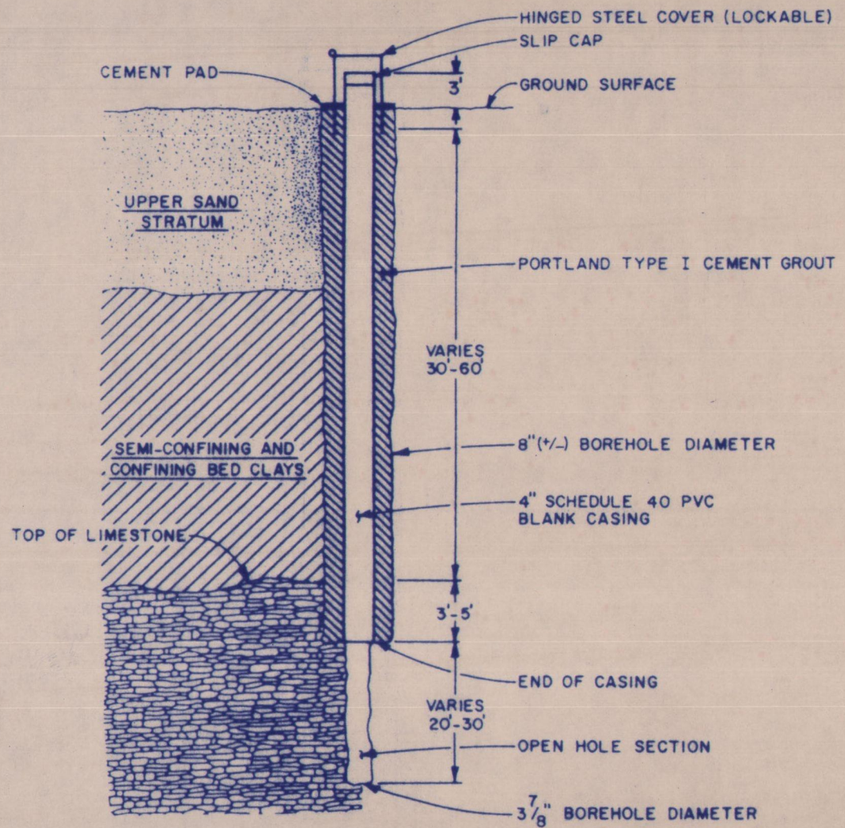
DRAWN:	KFB
CHKD:	KFB
APPVD:	RAM
SCALE:	NOTED

GEOTECHNICAL / HYDROGEOLOGIC STUDY
PROPOSED CLASS III LANDFILL-HAYS ROAD SITE
PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

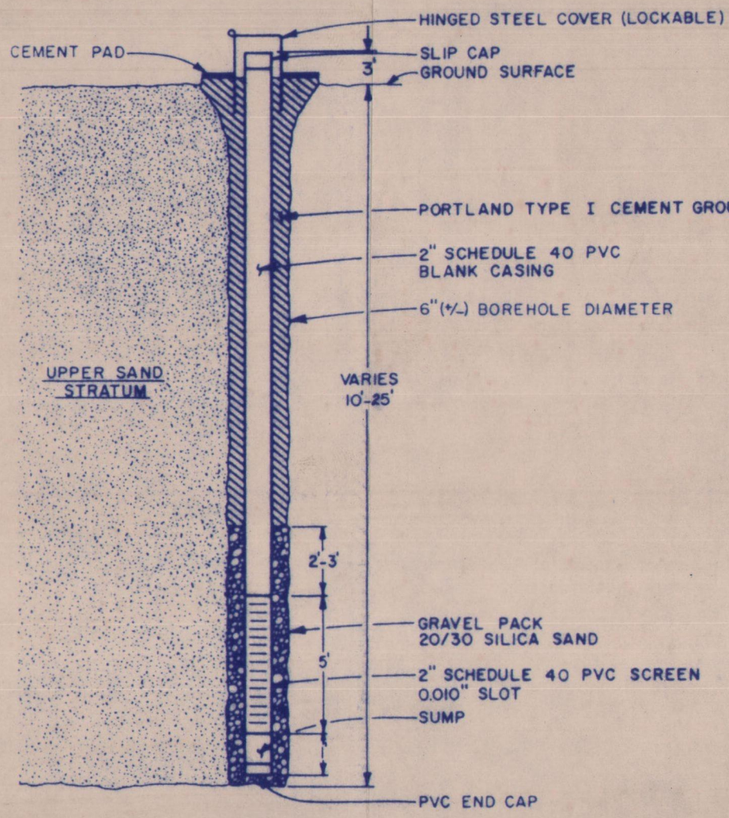
DATE: MAY 87 | PROJ. NO. 87-30802 | PLATE 3

AF 37008A



TYPICAL FLORIDAN AQUIFER MONITORING WELL

NTS



TYPICAL SHALLOW GROUNDWATER MONITORING WELL

NTS

PROPOSED GROUNDWATER WELL DETAILS

DRAWN:	KFB
CHKD:	KFB
APPVD:	RAM
SCALE:	—

GEOTECHNICAL / HYDROGEOLOGIC STUDY
PROPOSED CLASS III LANDFILL-HAYS ROAD SITE
PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

DATE: MAY 87	PROJ. NO 87-30802	PLATE 4

9.0 SHEETS

Sheet 1. Aerial/Topographic Site Plan

Sheet 2: Soil Profiles

Sheet 3: Well Inventory Map

Sheet 4: Fracture Trace/Lineament Map

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY
MULTIPLE STATION LISTING - STATION LOCATION

PROCESS DATE 30-MAY-84

STATION NUMBER	STATION NAME	LAT	LONG	ST	CO	CTY	LAST UPDATED
[illegible]	BAKER POND	[illegible]	[illegible]	12	12	101	[illegible]
[illegible]	[illegible] CATTLE CO. WELL #4 NR GOWERS CORNER	[illegible]	[illegible]	12	12	101	[illegible]
[illegible]	[illegible] #4 NR MASARYKTOWN	[illegible]	[illegible]	12	12	101	[illegible]
[illegible]	[illegible] 82120704 24S22E12 PS7-26 CORE HOLE	[illegible]	[illegible]	12	12	101	[illegible]
[illegible]	[illegible] RAINFALL AT CROSS BAR SOUTH NR LOYCE	[illegible]	[illegible]	12	12	101	[illegible]
282111082075101	82120704 24S22E32 CUMMER TRAILER WELL	282111	0820731	12	12	101	23-FEB-84
282113082241401	FT. KING RANCH GROVE WELL	282113	0822414	12	12	101	23-FEB-84
282114082103101	82121001 24S21E35 QUARTERS WELL	282114	0821031	12	12	101	23-FEB-84
282115082283701	CROSSBAR WF A-16 DEEP	282115	0822837	12	12	101	23-FEB-84
282117082062001	82120601 24S22E32 CUMMER CYPRESS	282117	0820620	12	12	101	23-FEB-84
282120082391109	DELMAR CORP WATER SUPPLY TREATED	282120	0823911	12	12	101	23-FEB-84
282121082071101	82120702 24S22E32 CUMMER OFFICE WELL	282121	0820711	12	12	101	23-FEB-84
282123082274401	CB-1 NR MASARYKTOWN	282123	0822744	12	12	101	23-FEB-84
282130082082401	82120602 24S22E31 AUTON WELL	282130	0820824	12	12	101	23-FEB-84
282130082082901	82120601 24S22E31 MAC BRIAN	282130	0820829	12	12	101	23-FEB-84
282132082115901	82121106 24S21E34 BOLTIN RESIDENCE	282132	0821159	12	12	101	23-FEB-84
282133082275301	CB-2 NR MASARYKTOWN	282133	0822753	12	12	101	23-FEB-84
282135082111201	82121107 24S21E34 DADE CITY SUPPLY WELL	282135	0821152	12	12	101	23-FEB-84
282135082414601	PASCO	282135	0824146	12	12	101	23-FEB-84
282141082101901	82121002 24S21E26 COLLURA WELL NO.2 W/LOG	282141	0821019	12	12	101	23-FEB-84
282141082334901	HAYS RD S. WELL 751 NR GOWERS CORNER	#1 282141	0823349	12	12	101	23-FEB-84
282141082335201	HAYS RD S. WELL 750 NR GOWERS CORNER	#2 282141	0823352	12	12	101	23-FEB-84
282142082283701	CROSSBAR WF A DEEP	282142	0822837	12	12	101	23-FEB-84
282142082283702	CROSSBAR WF A SHALLOW	282142	0822837	12	12	101	23-FEB-84
282145082093201	82120902 24S21E25 THOMAS WELL 6-IN.	282145	0820932	12	12	101	23-FEB-84
282145082093301	82120903 24S21E25 THOMAS WELL 3-IN	282145	0820933	12	12	101	23-FEB-84
282144082414701	HUDSON COMMUNITY WATER WORKS TREATED	282144	0824147	12	12	101	23-FEB-84
282147082113001	82121101 24S21E27 DADE CITY NO 1	282147	0821130	12	12	101	23-FEB-84
282147082113002	82121102 24S21E27 DADE CITY NO 2	282147	0821130	12	12	101	23-FEB-84
282147082113003	82121103 24S21E27 DADE CITY NO. 3	282147	0821130	12	12	101	23-FEB-84
282147082113004	821211213WATER PLANT WELL 4 AT DADE CITY, FL.	282147	0821130	12	12	101	23-FEB-84
282148082122901	DADE CITY PUBLIC SUPPLY COMPOSITE 2 WELLS	282148	0821229	12	12	101	23-FEB-84
282148082122902	DADE CITY PUBLIC SUPPLY UNTREATED COMP. 2 WELLS	282148	0821229	12	12	101	23-FEB-84
282148082122904	DADE CITY PUBLIC SUPPLY TREATED COMP. 2 WELLS	282148	0821229	12	12	101	23-FEB-84
282148082251901	CROSSBAR WF A-1 DEEP	282148	0822519	12	12	101	23-FEB-84
282148082251902	CROSSBAR WF A-1 SHALLOW	282148	0822518	12	12	101	23-FEB-84
282149082300701	FIVAY # 752 SHALLOW	282148	0823007	12	12	101	23-FEB-84
282152082114101	82121105 24S21E27 JOHN B. BURKS	282152	0821141	12	12	101	23-FEB-84
282152082413701	24S19E27 821241124	282152	0824137	12	12	101	23-FEB-84
282152082413801	24S19E27 821241123	282152	0824138	12	12	101	23-FEB-84
282153082085601	82120805 24S22E36 PARKER WELL	282153	0820856	12	12	101	23-FEB-84
282153082085602	82120804 24S22E36 PARKER WELL W/LOG	282153	0820856	12	12	101	23-FEB-84
282153082092601	82120901 24S21E26 GRIFFIN WELL	282153	0820926	12	12	101	23-FEB-84
282154082142401	82121401 24S21E36 HAYCRAFT WELL	282154	0821424	12	12	101	23-FEB-84
282154082260101	CB-4 NR MASARYKTOWN	282154	0822601	12	12	101	23-FEB-84

STATION NUMBER	STATION NAME		FLAT	LONG	ST	CO	CTY	LAST UPDATED
282154082280401	CROSSBAR MF A-2 DEEP		282154	0822804	12	12	101	23-FEB-84
282154082280402	CROSSBAR MF A-2 SHALLOW		282154	0822804	12	12	101	23-FEB-84
282155082132501	82121301 24S21E29 SHUTTLER WELL		282155	0821326	12	12	101	23-FEB-84
282158082170851	82121701 25S20E26 821217221		282158	0821708	12	12	101	23-FEB-84
282201082324301	SULTENFUSS NR FIVAY		282201	0823243	12	12	101	23-FEB-84
282202082414901	H E MOUNTAIN WATER CO 822 241 524		282202	0824149	12	12	101	23-FEB-84
282207082271101	CROSSBAR MF A-3 DEEP		282207	0822711	12	12	101	23-FEB-84
282207082271102	CROSSBAR MF A-3 SHALLOW		282207	0822711	12	12	101	23-FEB-84
282207082402401	HUDSON WELL 14 NEAR HUDSON, FL.		282207	0824024	12	12	101	13-SEP-84
282212082094501	82220901. 24S21E25 LUNCEFRD WELL		282212	0820948	12	12	101	23-FEB-84
282212082121801	82221201 24S21E28 WITHLA ELECT COOP		282212	0821218	12	12	101	23-FEB-84
282212082121802	82221202 24S21E28 WITHLAA ELECT COOP.		282212	0821218	12	12	101	23-FEB-84
282220082093301	82220902 24S21E25 PS7404 CORE HOLE		282220	0820933	12	12	101	23-FEB-84
282221082103001	82221001 24S21E26 COLLURA WELL NO. 1		282221	0821030	12	12	101	23-FEB-84
282222082280701	CB-5 NR MASARYKTOWN		282222	0822807	12	12	101	23-FEB-84
282225082293501	DETROIT RESORT MOTEL		282225	0822935	12	12	101	23-FEB-84
282226082222701	JOE GILMORE		282226	0822227	12	12	101	23-FEB-84
282228082402001	CITY OF HUDSON D. WELL AT HUDSON,FL		282228	0824020	12	12	101	23-FEB-84
282228082410301	822 241 422		282228	0824103	12	12	101	23-FEB-84
282229082405801	COASTAL PASCO D. WELL 02 AT HUDSON, FL		282229	0824058	12	12	101	23-FEB-84
282229082415701	USGS WELL PASCO 1 NR HUDSON		282229	0824157	12	12	101	23-FEB-84
282230082112201	82221102 24S21E27 LYKES-PASCO NO. 14		282230	0821122	12	12	101	23-FEB-84
282230082112202	82221118 24S21E27 LYKES-PASCO 4-IN OBS		282230	0821122	12	12	101	23-FEB-84
282230082223000	EHREN TEST QUAD NE CORNER	NOT DATA SITE	282230	0822230	12	12	101	23-FEB-84
282230082230000	MASARYKTOWN TEST QUAD SE CORNER	NOT DATA SITE	282230	0822300	12	12	101	23-FEB-84
282230082300000	FIVAY TEST QUAD NE CORNER	NOT DATA SITE	282230	0823000	12	12	101	23-FEB-84
282230082373000	PORT RICHEY TEST QUAD NE CORNER	NOT DATA SITE	282230	0823730	12	12	101	23-FEB-84
282230082450000	PORT RICHEY TEST QUAD NW CORNER	NOT DATA SITE	282230	0824500	12	12	101	23-FEB-84
282231082231700	POND NEAR BIG FISH LAKE		282231	0822317	12	12	101	23-FEB-84
282233082102401	82221102 24S21E22 PASCO PACKING #12		282233	0821024	12	12	101	23-FEB-84
282233082112201	82221104 24S21E22 LYKES PASCO NO. 8		282233	0821122	12	12	101	23-FEB-84
282233082112202	82221112 24S21E22 LYKES-PASCO NO.9		282233	0821122	12	12	101	23-FEB-84
282233082112203	82221101 24S21E22 LYKES-PASCO NO. 12 PTBL		282233	0821122	12	12	101	23-FEB-84
282233082112204	82221103 24S21E22 LYKES-PASCO NO. 15		282233	0821122	12	12	101	23-FEB-84
282233082112205	82221114 24S21E22 LYKES-PASCO NO.11		282233	0821122	12	12	101	23-FEB-84
282233082112204	82221113 24S21E22 LYKES-PASCO NO.10		282233	0821122	12	12	101	23-FEB-84
282233082233501	CB-6 NR MASARYKTOWN		282233	0822335	12	12	101	23-FEB-84
282234082164401	82221601 24S20E23 DONALD NATHE WELL W/LOG		282234	0821644	12	12	101	23-FEB-84
282234082405901	BUTTERWORTH 822 240 133		282234	0824059	12	12	101	23-FEB-84
282235082111901	82221115 24S21E22 LYKES-PASCO NO. 13		282235	0821119	12	12	101	23-FEB-84
282235082112501	82221105 24S21E22 LYKES-PASCO NO. 1		282235	0821123	12	12	101	23-FEB-84
282235082112502	82221106 24S21E22 LYKES-PASCO NO. 2		282235	0821123	12	12	101	23-FEB-84
282236082252101	JUSTICE DP NR HUDSON		282236	0822521	12	12	101	23-FEB-84
282239082112401	82221107 24S21E22 LYKES-PASCO NO. 5		282239	0821124	12	12	101	23-FEB-84
282240082112501	82221108 24S21E22 LYKES-PASCO NO. 4		282240	0821120	12	12	101	23-FEB-84

STATION NUMBER	STATION NAME	LAT	LONG	ST	OS	CTY	LAST UPDATED
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28224[illegible]2310301	JUMPING GULLY AT MOUTH NR GREENFIELD, FLA.	#11 282246	[illegible]23105	12	12	101	23-FEB-84
28224[illegible]2225[illegible]01	CROSSBAR WF B DEEP	282246	[illegible]22[illegible]16	12	12	101	23-FEB-84
28224[illegible]2225[illegible]02	CROSSBAR WF B SHALLOW	282246	[illegible]22[illegible]16	12	12	101	23-FEB-84
28225[illegible]2225[illegible]01	CROSSBAR WF N4S4 DEEP	282250	[illegible]22[illegible]31	12	12	101	23-FEB-84
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28225[illegible]2394101	W F SAYLOR 823 239 121	282256	[illegible]23941	12	12	101	23-FEB-84
28225[illegible]2113101	82221116 24S21E16 L-P NO. 16 FIRE WELL	282258	[illegible]21131	12	12	101	23-FEB-84
28225[illegible]2113102	82221117 24S21E22 L-P 4-IN FIRE TEST WELL	28225[illegible]	[illegible]21131	12	12	101	23-FEB-84
28225[illegible]2193601	822 219 5836	28225[illegible]	[illegible]21936	12	12	101	23-FEB-84
28225[illegible]2134101	82221001LYKES PASCO N. NR. DADE CITY, FL.	28225[illegible]	[illegible]21041	12	12	101	23-FEB-84
28225[illegible]2110901	82221119 24S21E23 WINDMILL WELL NO. 1	28225[illegible]	[illegible]21109	12	12	101	23-FEB-84
28225[illegible]2282801	CROSSBAR WF B-1 DEEP	28225[illegible]	[illegible]22828	12	12	101	23-FEB-84
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28250[illegible]2113401	82321101 24S21E22 RUG OUTLET WELL	28250[illegible]	[illegible]21134	12	12	101	23-FEB-84
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28250[illegible]2292101	RAINFALL AT JUMPING GULLY NR LOYCE, FLA	28250[illegible]	[illegible]22921	12	12	101	23-FEB-84
28250[illegible]2112601	82321107 24S21E22 MUSEUM WELL W/LOG	28250[illegible]	[illegible]21126	12	12	101	23-FEB-84
28250[illegible]2111101	82321108 24S21E23 LARKIN RES WELL	28250[illegible]	[illegible]21111	12	12	101	23-FEB-84
28251[illegible]2281901	CB-8 NR MASARYKTOWN	28251[illegible]	[illegible]22819	12	12	101	23-FEB-84
28251[illegible]2284301	CROSSBAR WF B-2 DEEP	28251[illegible]	[illegible]22843	12	12	101	23-FEB-84
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28251[illegible]2105201	82321002 24S21E23 LOVETT WELL	28251[illegible]	[illegible]21052	12	12	101	23-FEB-84
28251[illegible]2115001	82321104 24S21E22 STANBERRY WELL	28251[illegible]	[illegible]21150	12	12	101	23-FEB-84
28252[illegible]2151901	CB-9 NR DARBY	28252[illegible]	[illegible]21519	12	12	101	23-FEB-84
28252[illegible]2400601	BEAUDEAUX 823 240 422	28252[illegible]	[illegible]24006	12	12	101	23-FEB-84
28252[illegible]2112001	82321109 24S21E15 W. TERRIE WELL W/LOG	28252[illegible]	[illegible]21120	12	12	101	23-FEB-84
28252[illegible]2280901	CROSSBAR WF N4S2 DEEP	28252[illegible]	[illegible]22809	12	12	101	23-FEB-84
28252[illegible]2285201	CROSSBAR WF B-3 DEEP	28252[illegible]	[illegible]22852	12	12	101	23-FEB-84
28252[illegible]2285202	CROSSBAR WF B-3 SHALLOW	28252[illegible]	[illegible]22852	12	12	101	23-FEB-84
28252[illegible]2341601	#4 WOODLAWN DP NR HUDSN	#4 28252[illegible]	[illegible]23416	12	12	101	23-FEB-84
28253[illegible]2290501	ROUAN FARMS 4 INCH BARN WELL	28253[illegible]	[illegible]22905	12	12	101	23-FEB-84
28253[illegible]2110101	82321106 24S21E14 BOLTIN IRRIGATION WELL	28253[illegible]	[illegible]21101	12	12	101	23-FEB-84
28253[illegible]2091301	82320902 24S22E18 RANCH HOUSE WELL	28253[illegible]	[illegible]20919	12	12	101	23-FEB-84
28253[illegible]2395801	ZAZZY'S D. WELL NR HUDSON, FL	28253[illegible]	[illegible]23958	12	12	101	23-FEB-84
28254[illegible]2042101	82320401 24S22E14 CUMPRESSCO RANCH AT STURKEY	28254[illegible]	[illegible]20421	12	12	101	23-FEB-84
28254[illegible]2274601	CB-10 NR MASARYKTOWN	28254[illegible]	[illegible]22746	12	12	101	23-FEB-84
28254[illegible]2114901	82321105 24S21E15 SAPP WELL W/LOG	28254[illegible]	[illegible]21149	12	12	101	23-FEB-84
28254[illegible]2271201	CB-11 NR DARBY	28254[illegible]	[illegible]22712	12	12	101	23-FEB-84

UNITED STATES DEPARTMENT [illegible] GEOLOGICAL SURVEY — PROCESS DATE [illegible]-MAY-MO
MULTIPLE STATION LISTING - STA[illegible] LOCATION

STATION NUMBER	STATION NAME	LAT	LONG	ST	CO	CTY	LAST UPDATED
2[illegible]	[illegible] DEEP WELL NEAR GOWERS CORNER, FL	[illegible]	[illegible]0822522	12	1[illegible]	1[illegible]	23-FEB-84
2[illegible]	[illegible] SHALLOW WELL NEAR GOWERS CORNER, FL	[illegible]	[illegible]0822522	12	1[illegible]	1[illegible]	23-FEB-84
2[illegible]	[illegible] JCT OF SR 52 & 581 WELL NR DARBY, FLA	[illegible]	[illegible]2129	12	1[illegible]	1[illegible]	23-FEB-84
2[illegible]	[illegible] SR 52 & 581 S. WELL NR DARBY, FLA	[illegible]	[illegible]2129	12	1[illegible]	101	23-FEB-84
2[illegible]	[illegible] SR 52 & 581 S. WELL NR DARBY, FLA	[illegible]	[illegible]2129	12	12	101	23-FEB-84
2[illegible]	[illegible] C W HALL	[illegible]	[illegible]1112	12	12	101	23-FEB-84
2[illegible]	[illegible] LAKE PASADENA WELL	[illegible]	[illegible]1313	12	12	101	23-FEB-84
2[illegible]	[illegible] LYKES-PASCO FERTILIZER	[illegible]	[illegible]0937	12	1[illegible]	101	23-FEB-84
2[illegible]	[illegible] LYKES PASCO FERT 4-INCH	[illegible]	[illegible]0937	12	12	101	23-FEB-84
2[illegible]	[illegible] MINUTE MAID CORP	[illegible]	[illegible]1131	12	12	101	23-FEB-84
2[illegible]	SRW-DEEP NR DARBY	[illegible]	[illegible]2841	12	1[illegible]	101	23-FEB-84
2[illegible]	SRW-SH NR DARBY	[illegible]	[illegible]2841	12	12	101	23-FEB-84
2819340[illegible]	BEAR SINK HI NR BAYONET POINT, FL.	[illegible]	[illegible]6019	12	12	101	07-JAN-85
2819360[illegible]	TOM OAKLEY RESIDENCE US 301	[illegible]	[illegible]6122	12	12	101	23-FEB-84
2819380[illegible]	BEAR SINK #2 NR BAYONET POINT, FL.	[illegible]	[illegible]6021	12	12	101	07-JAN-85
2819380[illegible]	BALICKI DP WELL NR BAYONET POINT, FL.	[illegible]	[illegible]6021	12	12	101	07-JAN-85
2819420[illegible]	FLORAL MEMORY GARDENS	[illegible]	[illegible]1131	12	12	101	23-FEB-84
2819430[illegible]	FT. KING RANCH 10 INCH WELL	[illegible]	[illegible]2418	12	12	101	23-FEB-84
2819460[illegible]	WITHLACOOCHEE ELEC 01 AT BAYONET POINT, FL	[illegible]	[illegible]2153	12	12	101	23-FEB-84
2819490[illegible]	SR52 DP WELL WEST OF GOWERS CORNER, NR LOYCE, FL	[illegible]	[illegible]2320	12	12	101	23-FEB-84
2819490[illegible]	SR52 SH WELL WEST OF GOWERS CORNER, NR LOYCE, FL	[illegible]	[illegible]2320	12	12	101	23-FEB-84
2819500[illegible]	10J RAINFALL AT BAYONET POINT, FLA	[illegible]	[illegible]2157	12	12	101	23-FEB-84
2819540[illegible]	PONDEROSA DEV D. WELL AT BAYONET POINT, FL	[illegible]	[illegible]2134	12	12	101	23-FEB-84
2819550[illegible]	81921104 25S21E03 JOHNSON WELL	[illegible]	[illegible]2117	12	12	101	23-FEB-84
2819580[illegible]	81921105 25S21E02 COUNTRY AIRE ESTS WELL	[illegible]	[illegible]2102	12	12	101	23-FEB-84
2820000[illegible]	SAINT LEO NOAA STATION 7851	[illegible]	[illegible]2600	12	12	101	23-FEB-84
2820050[illegible]	82021104 25S21E03 STEARNS WELL	[illegible]	[illegible]2126	12	12	101	23-FEB-84
2820530[illegible]	82021501 25S20E01 GOLF COURSE WELL	[illegible]	[illegible]2235	12	12	101	23-FEB-84
2820960[illegible]	MARSH NEAR CYPRESS CREEK AND SR 52	[illegible]	[illegible]2160	12	12	101	23-FEB-84
2820970[illegible]	82021401 25S21E06 ST HWY 52 NR RAY POND	[illegible]	[illegible]2129	12	12	101	23-FEB-84
2820990[illegible]	SR 52 D. WELL NR HUDSON, FLA	[illegible]	[illegible]2138	12	12	101	23-FEB-84
2820990[illegible]	SR 52 S. WELL NR HUDSON, FLA	[illegible]	[illegible]2138	12	12	101	23-FEB-84
2821010[illegible]	82020301 25S22E01 CUMPRESSCO RANCH	[illegible]	[illegible]2158	12	12	101	23-FEB-84
2821110[illegible]	SAN ANTONIO WTR SUPPLY TREATED	[illegible]	[illegible]2123	12	12	101	23-FEB-84
2821110[illegible]	82021601 25S20E02 SAN ANTONIO PROD WELL	[illegible]	[illegible]2127	12	12	101	23-FEB-84
2821360[illegible]	82021102 25S21E03 EVANS PROP	[illegible]	[illegible]2121	12	12	101	23-FEB-84
2821360[illegible]	H. L. AND H. NURSERY	[illegible]	[illegible]2138	12	12	101	23-FEB-84
2821370[illegible]	82021103 25S21E03 EVANS WELL	[illegible]	[illegible]2116	12	12	101	23-FEB-84
2821370[illegible]	SHADOW RIDGE WELL NO. 1 NEAR HUDSON, FL.	[illegible]6	2821037	[illegible]03	12	12	101	04-SEP-84
2821380[illegible]	82021101 25S21E03 EVANS MAIN PLANT WELL	[illegible]	[illegible]2120	12	12	101	23-FEB-84
2821400[illegible]	CYPRESS CREEK DRAINAGE CANAL	[illegible]	[illegible]2105	12	12	101	23-FEB-84
2821440[illegible]	JOHN WOTTEN	[illegible]7	2821044	[illegible]32	12	12	101	23-FEB-84
2821440[illegible]	H. KENT GROVE WELL	[illegible]8	2821044	[illegible]24	12	12	101	23-FEB-84
2821460[illegible]	82021201 24S21E32 KRISSMAN WELL	[illegible]	2821046	[illegible]235	12	12	101	23-FEB-84
2821520[illegible]	[illegible] WOODS WELL 7 MI NEW PORT RICHEY, FL.	[illegible]	2821052	[illegible]043	12	12	101	14-SEP-84

PERMIT NUM	STAT	NAME	ADDRESS	CITY	ST	ZIP
04038 01	P	PASCO CO MUNI FIRE SERVICE UNIT	530 SUNSET RD	NEW PORT RICHEY	FL	33552

BASIN: COASTAL RIVERS

COUNTY: PASCO

PERMITTED AVG	PERMITTED MAX	NUM USES	NUM GWD PTS	NUM SWD PTS	TOT-ACRES	SEC/TWNSHP/RGE	EXPIRE DATE
5,000	15,000	1	1	0	5.0	13 24 17	94/09/09

	WD TYPE	W/LAT	W/LONG	SOURCE NAME	DIAMETER	WD PER AVG	WD PER MAX	W/D DESCRIPTION
WD#001	6	282347	823310	#5	6	5,000	15,000	ESSENTIAL SERVICES

	USE CODE	USE DESCRIPTION	USE PUMPAGE	USE ACRES
USE#01	001	ESSENTIAL SERVICES	5,000	0.0

WELL NUM	STIP CODE	FREQ CODE	DUE DATE	NEXT DUE	DESCRIPTION
000	073	06	84/05	00/00	DISTRICT RESERVES RIGHT TO COLLECT SAMPLES
000	082	72	94/05	00/00	MINIMUM AQUIFER LEVEL MAY BE SET
000	095	06	84/05	00/00	DISTRICT RESERVES RIGHT TO REQUIRE PUMPAGE RECORDS
000	097	06	84/05	00/00	WATER CONSERVATION METHODS

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

REPORT NUMBER 41-099

DATE 86/12/22

PERMIT NUM	STAT	NAME	ADDRESS	CITY	ST	ZIP
06821 01	P	QUAIL RIDGE GOLF & COUNTRY CLUB	1600 SHADY HILLS RD	SPRING HILL	FL	33526

BASIN	COUNTY
COASTAL RIVERS	PASCO

PERMITTED AVG	PERMITTED MAX	NUM USES	NUM GWD PTS	NUM SWD PTS	TOT-ACRES	SEC/TWNSHP/RGE	EXPIRE DATE
167,000	252,000	1	2	0	181.0	06 25 18	88/08/04

WD TYPE	W/LAT	W/LONG	SOURCE NAME	DIAMETER	WD PER AVG	WD PER MAX	W/D DESCRIPTION
WD#001 G	282040	823233	#12	4	24,000	36,000	IRRIGATION
WD#002 G	282039	823233	#13	8	143,000	216,000	IRRIGATION

USE CODE	USE DESCRIPTION	USE PUMPAGE	USE ACRES
USE#01 105	GOLF COURSE	167,000	50.0

WELL NUM	STIP CODE	FREQ CODE	DUE DATE	NEXT DUE	DESCRIPTION
000	073	06	85/11	00/00	DISTRICT RESERVES RIGHT TO COLLECT SAMPLES
000	082	72	88/11	00/00	MINIMUM AQUIFER LEVEL MAY BE SET
000	097	06	85/11	00/00	WATER CONSERVATION METHODS
001	005	01	85/09	87/01	METER PUMPAGE-READ AND SUBMIT MONTHLY
002	005	01	85/09	87/01	METER PUMPAGE-READ AND SUBMIT MONTHLY

PERMIT NUM	STAT	NAME	ADDRESS	CITY	ST	ZIP
07672 00	P	MEADOW OAKS GOLF-COUNTRY CLUB TR	13314 WYNN RANCH RD	HUDSON	FL	33562

BASIN: COASTAL RIVERS

COUNTY: PASCO

PERMITTED AVG	PERMITTED MAX	NUM USES	NUM GWD PTS	NUM SWD PTS	TOT-ACRES	SEC/TWNSHP/RGE	EXPIRE DATE
217,000	413,000	1	1	1	403.0	33 24 17	90/08/01

	WD TYPE	W/LAT	W/LONG	SOURCE NAME	DIAMETER	WD PER AVG	WD PER MAX	W/D DESCRIPTION
WD#001	G	282103	823607	#14	6	90,000	324,000	RECREATION
WD#002	S	282104	823602	PRETTY NORTH, LAKE #15	8	217,000	413,000	IRRIGATION

	USE CODE	USE DESCRIPTION	USE PUMPAGE	USE ACRES
USE#01	105	GOLF COUPSE	217,000	60.0

WELL NUM	STIP CODE	FREQ CODE	DUE DATE	NEXT DUE	DESCRIPTION
000	073	06	84/11	00/00	DISTRICT RESERVES RIGHT TO COLLECT SAMPLES
000	082	72	90/11	00/00	MINIMUM AQUIFER LEVEL MAY BE SET
000	097	06	84/11	00/00	WATER CONSERVATION METHODS
000	423	06	84/11	87/05	WATER QUALITY ANALYSES PERFORMED BY DISTRICT SPECS
001	005	01	84/12	87/01	METER PUMPAGE-READ AND SUBMIT MONTHLY
001	038	01	84/12	87/01	CHLORIDE ANALYSIS MONTHLY, SUBMIT MONTHLY

PERMIT NUM	STAT	NAME	ADDRESS	CITY	ST	ZIP
03761 01	P	PASCO COUNTY UTILITIES DEPT	7536 STATE ST	NEW PORT RICHEY	FL	33553

BASIN	COUNTY
COASTAL RIVERS	PASCO

PERMITTED AVG	PERMITTED MAX	NUM USES	NUM GWD PTS	NUM SWD PTS	TOT-ACRES	SEC/TWNSHP/RGE	EXPIRE DATE
550,000	1,100,000	1	2	0	2,560.0	04 25 17	92/05/02

	WD TYPE	W/LAT	W/LONG	SOURCE NAME	DIAMETER	WD PER AVG	WD PER MAX	W/D DESCRIPTION
WD#001	G	282042	823657	#16	8	435,000	870,000	PUBLIC SUPPLY
WD#002	G	282032	823656	#17	6	115,000	230,000	PUBLIC SUPPLY

	USE CODE	USE DESCRIPTION	USE PUMPAGE	USE ACRES
USE#01	026	ON-SITE PERCOLATION & PONDING	550,000	0.0

WELL NUM	STIP CODE	FREQ CODE	DUE DATE	NEXT DUE	DESCRIPTION
000	073	06	84/11	00/00	DISTRICT RESERVES RIGHT TO COLLECT SAMPLES
000	082	72	92/11	00/00	MINIMUM AQUIFER LEVEL MAY BE SET
000	097	06	84/11	00/00	WATER CONSERVATION METHODS
000	115	72	92/11	00/00	REPORT ALTERNATIVE SOURCE OF SUPPLY & DEVELOPMENT
000	175	03	84/11	87/02	REVIEW PERMIT STIPULATIONS AND PROJECTED SCHEDULE
000	423	06	84/11	87/05	WATER QUALITY ANALYSES PERFORMED BY DISTRICT SPECS
001	005	01	84/07	87/01	METER PUMPAGE-READ AND SUBMIT MONTHLY
001	038	01	84/07	87/01	CHLORIDE ANALYSIS MONTHLY, SUBMIT MONTHLY
002	005	01	84/07	87/01	METER PUMPAGE-READ AND SUBMIT MONTHLY

WELL CONSTRUCTION LIST DATE 1/31/86

DP USE	PERMIT	DIST	BASIN	CNTY	LOC SECTWNRGE	DIAM	DEPTH CASED	DEPTH DRILLED	GRAVEL	BORE HOLE	WELL USE	SCREEN LENGTH	SCREEN DIAM	SCREEN MATERIAL	SCREEN DEPTH TO PIPE	CASING DEPTH TO	CASING DIAM	CASING MATERIAL	CASING DEPTH TO	CASING DIAM	CASING MATERIAL	OWNER NAME
WPE336474	1696	D	15	51	132417	4	63	100		C					MS	30		10		40		63	SNOWDEN L
WPE336473	1696	D	15	51	132417	4	70	100		C					MS	25		20	45	45	5	70	HUGHES
WPE339355	1696	D	15	51	132417	4	52	95		C	30				MS	10		11	21	21	21	42	HUTCHINSON
WPE340205	1056	D	15	51	132417	4	41	112		C	35				MS	5		15		40	WH	40 WH	GARAREK,N
WPH344283	1696	D	15	51	132417	4	63	100		C	30												GRABIL,J
WPH345002	1696	D	15	51	132417	4	63	99		C	28				MS	31		11		42		52	DEHOFF,W A
WPN345008	1696	D	15	51	132417	4	***	CANCELLED	***														
WPC384539	1841	D	15	51	5932132417	4	115	145		C	2												HOOBLER, PA
WPC390501	2364	D	15	51	132417	4	63	85		C	18												KEPPEL, L E
WPC392084	1533	D	15	51	132417	4	33	36		C	12												KERR, KENNE
WPC410944	2364	D	15	51	132417	4	84	110		C	22												BARADLAY, T
WPE308913	0012	D	15	51	142417	3	89	120		C										60		60	M PAULERSON
WPE311289	0196	B	15	51	142417	3	94	108		C	13									95		95	A STATLER
WPE312239	0086	D	15	51	142417	3	50	95												23		23	A FABRIZI
WPC347171	1817	D	15	51	142417	4	90	130		C	31												ALLEY, CLIF
WPC350046	1904	A	15	51	142417	2		65		C	16												STOKES, LAR
WPC348688	1696	D	15	51	142417	4	50	73		C	17												TOOHEY, MIC
WPC350314	1696	D	15	51	142417	4	63	105		C	20												MICKLE
WPC357440	1533	D	15	51	L483142417	2	53	68		C	23												JORDAN, ROB
WPN363007	2159	D	15	51	142417	4	***	CANCELLED	***														
WPC368577	2159	D	15	51	142417	4	52	115		C	30												HANSON, MRS
WPN368018	2177	D	15	51	LT03142417	2	***	CANCELLED	***														
WPC370019	1533	D	15	51	L465142417	4	64	71		C	1 20												PONCZKIEWIZ
WPC375414	1056	D	15	51	NWSE142417	4	76	140		C	25												GELTCH, KEN
WPC377470	1056	D	15	51	NWNW142417	4	52	140		R	16												TOOLE, DAYL
WPC377364	2177	D	15	51	LS18142417	4	100	110		C													MENLEY, EDW
WPC377365	2177	D	15	51	128114241 7	4	55	65		C													REDDING, ME
WPC379685	2075	D	15	51	142417	4	45	100		R	10												MCCOY, EDNA
WPC379684	2075	D	15	51	142417	4	84	115		C	18												KRAUS, NORM
WPH309300	0123	D	15	51	142417	4	60	108		C	25 22	D								60			R E LANE SR
WPE313696	0196	D	15	51	142417	3	70	105		C	18											70	D E ESTOCAD
WPE314687	0086	D	15	51	142417	3	30	103		C	17									18		18	R JANDZINIS
WPE317355	0228	D	15	51	142417	3	62	90		C	18									55			H HUTCHINSO
WPE316169	0086	D	15	51	142417	4	40	100			20									39			R MOORE
WPE320513	0086	D	15	51	142417	3	51	120		C	22				MS	26		23		49	WH	49 WH	R WILLIAMS

DPE	PCT	DRL	BAS	ACY	LOC NRG	DIA	DEP	DGL	GWL	BAL	DIE	LOG	SWL	SPD	SSE	SPL	DCT	DPL	TCT	DHP	TCT	DLH	ICL	DLP	UCL	OWN	OWNER
WPE321387	1037	D	15	51	SESE142417	3	40	65		C			15									18		18			J WATTS
WPE322285	1436	D	15	51	142417	4	56	56		C			12		S			21				42		42		CE	J GANT
WPE321532	1037	D	15	51	NWSW142417	3	44	80		C			24									21		21			W M TRACER
WPE324070	1037	D	15	51	142417	3	42	97		C			31		NS	WH						22	WH	22	WH		JAMES JONES
WPE324174	1232	A	15	51	142417	4	37	75		C			31		NS	MB	18	MR	13	31	MA	7	36	WH	45		BIBLE BAPT
WPE325469	1037	D	15	51	142417	3	45	50		C														43			C NIX
WPE325144	1056	D	15	51	142417	4	61	170		C			25		S		6		15	44		16	60	60			O BURROUGH
WPE326933	1271	D	15	51	142417	3	76	115		C			32		S		10	MR	40	50		20	50	70	MA		C SIKES
WPE328938	1056	D	15	51	142417	4	46	120		C			46		S		20		30				30	30			J S RUSSELL
WPE337946	1696	D	15	51	142417	4	84	90		C			8		NS	WH	42		33				63	75			AYLOR,D
WPE341890	1696	D	15	51	142417	4	66	105		C			15		NS		42		21				63	66			RILEY,O
WPE343113	1986	D	15	51	NESW142417	2																					BRITTS,L
WPC381396	1525	D	15	51	142417	4	46	60		C			16														DEVINCENT,
WPC381696	2075	B	15	51	142417	4	45	140	36	R			16														MICKLE, JAM
WPC381395	1525	D	15	51	L48 142417	4	46	55		C			16														DEVINCENT,
WPC388208	2075	D	15	51	142417	4	45	100		C			11														TIBERII, JO
WPC400227	1841	D	15	51	142417	4	122	195		C			18														KYTE, RUTH
WPC406298	2092	D	15	51	142417	2	37	49		C			20														ANGELSON, J
WPC405421	1040	D	15	51	142417	4	98	135		C			21														TAYLOR, BET
WPC407275	1056	D	15	51	SWNE142417	4	63	138		C			20														ALLSTATE HO
WPE409345	2801	D	15	51	142417	4																					VIRGILIO, V
WPE311591	0244	M	15	51	152417	3	74	80		C												55		55			W DEES
WPE312150	0106	D	15	51	152417	3	41	98		C			22									24					D L RENAND
WPE312152	0106	L	15	51	SWNW152417	4	160	180		C			22									135					J W JOHNSON
WPC353335	1151	D	15	51	152417	2	46	56		C																	DIEHL, CLAR
WPC352029	1151	D	15	51	152417	2	46	57		C			26														WELLS, GENE
WPC352030	1151	D	15	51	152417	2	63	80		C			27														BARGH, BEN
WPC355327	1841	D	15	51	152417	3	84	105		C			20														VAN NESS, L
WPC357302	1525	D	15	51	152417	2	68	74		C			30														BOSSE, THOM
WPC360956	1525	A	15	51	152417	2	17	22		C			11														GILBERTI, F
WPE313716	0106	D	15	51	152417	3	40	50		C			8									39		40			J C BEAVU J
WPE312931	0106	D	15	51	NWSW152417	3	61	95		C			20									58		58			D J EXUM
WPE313393	0106	D	15	51	SWNW152417	4	61	110		C			50									36		36			J F SNYDER
WPE312932	0106	D	15	51	NESE152417	3	81	115		C			22									76		76			E E EXUM
WPE315556	0077	D	15	51	152417	4	59	110		C			16									54		54			K F FRINK

DWSE	PERMIT	DRILL	USE	ACNTY	SETNRG	DIAM	CASE	WELL	GRUT	BALL	DIEL	SWL	SSPLE	SSFOR	SDCTR	SDCTR	TDCTR	TDCTR	TICTR	LCAVB	DCPRK	DCPRK	UNKFA	OWNER
WPE315794	0086	D	15	51	152417	3	50	100			C	21								42		42		R SMITH
WPE316598	0228	D	15	51	152417	3	41	61			C	19								15		15		D BROCK
WPE317460	0086	D	15	51	152417	3	50	123			C	21								48		48		C MCINTIRE
WPE319256	0253	D	15	51	152417	3	58	85			C	26								40				ALL STATE H
WPE320233	1037	D	15	51NESE	152417	3	30	52			C	21								26		26		J DAVIS
WPE321255	1037	D	15	51SESE	152417	4	89	114			C	28								49		84		D CARSON
WPE321295	0228	D	15	51	152417	4	41	92			C									24		24		P DOMINION
WPE322146	1056	D	15	51	152417	4	42	120			C	22								35		35		I GONZALES
WPE323970	3121	D	15	51	152417	3	60	60			C	16								35		35		CARRY PARKE
WPE326682	1589	D	15	51	152417	4	47	192			C	18		S						38	WH	38	WH	D H CUMMILS
WPE333645	1841	D	15	51	152417	3	87	125			C	30		S		60	MR	5	67 WH	18	85 WH	87	WH	NEUBAUER D
WPE337739	1841	D	15	51	152417	4	176	198			C	34		S	LY	78	MR	17	85 MA	14	99 MY	99	MY	COCKIN,J
WPE337025	1841	A	15	51	152417	4	130	147			C	18		S		18	ME	15	33 WH	12	65 WH	130	LA	HOULTEN B
WPE339496	1841	D	15	29	152417	4	65	100			C	30		S		20		20	40	20	60 WH	65	WH	ALLISON,H
WPE339716	1841	D	15	51	152417	3	63	90			C	19		S	LY	28	PK	7	35 WH	4	39 WH	50	WH	KRISS,J H
WPE340545	1841	D	13	51	152417	3	110	115			C	31	B	S	LY	55	LA	10	66	9	65	107		BUKOWSKI,R
WPC382189	1040	D	15	51	152417	4	53	88			C													SUMMERS, ET
WPC386921	1040	D	15	51	152417	4	147	170			C	16												VERNING SR.
WPC386952	2092	D	15	51TRIS	152417	4	99	111			C	17												BEACH, MAUR
WPC391857	2092	A	15	51	152417	4	100	121			C	10												ROACH, STEV
WPC393115	2092	D	15	51	152417	2	26	38			C	4												SUMMERS, WI
WPC396355	1056	D	15	51	152417	4	52	120			C	12												DAVIS, LAUR
WPE399346	2364	D	15	51	152417	4																		MURROW, DAV
WPC400022	1056	D	15	51SWNE	152417	4	73	136	384		C	13												KERR, MAX
WPC404928	1841	D	15	51	152417	4	47	85			T	15												SAMUELS, F
WPC406358	1856	D	15	51NENE	152417	4	52	90			C	20												ALLSTATE MA
WPC406416	2364	D	15	51	152417	4	79	137			C	21												WILLIAMS, M
WPC405431	1715	A	15	51	152417	4	73	100	4	R														TRAPNELL, V
WPN408536	2092	D	15	51	152417	4	***	CANCELLED	***															
WPE409159	2364	D	15	51	152417	4																		BOYETTE, ED
WPC306108	1436	D	15	51	162417	3	55	84			C	21								45		45		FISHER, GAR
WPE310915	0254	D	15	51	162417	3	63	86			J	21								54		63		D NEUBAUER
WPE310197	0106	D	15	51	162417	4	51	100			C	18								31		51		R RHODES
WPE313353	0086	D	15	51	162417	3	130	135			C	31								97		127		L M LOTT
WPE317409	0086	D	15	51	162417	3	60	128			C	22								57		57		J RITCHIR

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DPUSE	PERMIT	DRILL	USE	BASIN	CNTY	LOCTN SETNRG	DIAM	DCASE	DWELL	GROUT	BRILL	DRILL	SWL	SPL	FE	SO	SPL	DPLCLA	CLCLA	THLCLA	DPLCLA	CLCLA	THLCLA	1CLAR	CLCLA	DPLCLA	CLCLA	UNCLA	OWNER
WPE335768	1841	D	15	51		[illegible]												[illegible]	DB	15	[illegible]	[illegible]	[illegible]	[illegible]	WH	[illegible]	WH	[illegible]	[illegible]
WPE336[illegible]	1841	D	15	51		[illegible]												[illegible]	WH	6	[illegible]	[illegible]	[illegible]	[illegible]	WH	[illegible]	WH	[illegible]	[illegible]
WPE337[illegible]	1696	D	15	51SWSW		[illegible]												[illegible]		16				[illegible]		[illegible]			[illegible]
WPE337482	1696	D	15	51SWSW	212417	4	130	155				C		12										120		120			HANSON,J
WPE340074	1696	D	15	51	212417	4	42	110				C		[illegible]				21		10				31		42			JUSTICE,G
WPE342174	1036	D	15	51	212417	2																							DATASFELD,B
[illegible]5001	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]45033	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]345591	1826	[illegible]	15	51	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WPH345484	1826	D	15	51	212417	2	42	50				C		[illegible]															SCALES,L
WPC381142	1841	B	15	51	212417	4	83	120			18	R		[illegible]															FOLEY, FRED
WPN381239	1841	V	15	51L800	212417	4	*** CANCELLED ***																						
WPC399299	2800	D	15	51	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]															[illegible]
WPC348451	1841	D	15	51	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]															[illegible]
WPC354734	1040	D	15	51	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]															[illegible]
WPC356273	1841	D	15	51	222417	4	146	190				C		[illegible]															HAYES, ELME
WPC355235	1533	D	15	51	222417	2	47	53				C		[illegible]															YUOND, JOHN
WPC362978	1525	A	15	51	222417	2	21	26				C		[illegible]															PEACOCK, JO
WPE310649	[illegible]	D	15	51	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]															[illegible]
WPE312976	[illegible]	D	15	51	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]										[illegible]		[illegible]			[illegible]
WPE313726	[illegible]	D	15	51	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]										[illegible]		[illegible]			[illegible]
WPE313282	0214	D	15	51	222417	4	40	80				C		[illegible]										30		40			G P NOLEN
WPE315057	0254	D	15	51	222417	4	66	68						[illegible]										60		60			DONALD DEAN
WPE317392	0344	D	15	51NESW	222417	3	42	87				C		[illegible]										29		35			J P DESLIN
WPE317393	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				C		[illegible]										[illegible]		[illegible]			[illegible]
WPE317486	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]										[illegible]		[illegible]			[illegible]
WPE317120	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]										[illegible]		[illegible]			[illegible]
WPE319044	0344	D	15	51	222417	3	52	74				C		[illegible]										27		27			C LITTLE
WPE318330	0334	D	15	51	222417	3	51	82				C		[illegible]										32		32			A MULLINS
WPE317921	0344	D	15	51	222417	3	51	87				C		[illegible]										32		32			R P COFFIN
WPE318331	0344	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]										[illegible]		[illegible]			[illegible]
WPE318267	0344	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]										[illegible]		[illegible]			[illegible]
WPE318552	0344	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]										[illegible]		[illegible]			[illegible]
WPE318049	0344	D	15	51	222417	3	51	87				C		[illegible]										32		32			L L SIZEMOR
WPE319321	0344	D	15	51	222417	4	52	52				C		[illegible]										31		31			J FISH

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DWSET	PERMIT	DBASIN	LOCATION SETNRGM	DIAM	DEPTH	GALLONS	DRILLER	SWL	SSP	SSEE	SSZER	DCPAA	TDHAA	DCPAA	TDHAA	ICLBB	DCPBB	UNKKK	OWNER
WPE319215	0228	D 15 51	222417 3	52	80		C	18								40	40		L ROBILLARD
WPE317923	0344	D 15 51	222417 3	61	100		C	27								47	47		J DULAR
WPE321002	0344	D 15 51	NESW222417 3	50	80		C	25								31	31		W CHRISTOPH
WPE319548	0344	D 15 51	222417 3	91	118		C	39								59	59		S GOSS JR
WPE319794	0344	D 15 51	222417 3	91	131		C	37								63	63		F HOLT
WPE320301	1050	D 15 51	222417 3	41	41		C	32								29	29		MARG AULD
WPE320975	1050	D 15 51	NESE222417 3	52	52		C	21								36	36		J STEVENSON
WPE320197	1050	D 15 51	222417 3	63	205		C	50								42	42		B E HOLMEY
WPE321101	1050	D 15 51	SWNW222417 3	62	62		C	30								41	41		MCCULLY
WPE319547	0344	D 15 51	222417 3	42	90		C	27								29	29		W C GREEN
WPE321578	1050	D 15 51	SW222417 3	63	80		C	28								42			W SECGAN
WPE321692	1050	D 15 51	SENE222417 3	31	55		C	18								23	23		DEESE
WPE321392	1050	T 15 51	SWNW222417 3	50	50		C	28								36			C BERMENDER
WPE323910	1050	D 15 51	222417 3	52	73		C	36	MS	MA	34	MY	11			45	WH	45 WH	R LOTOSKI
WPE322928	1050	D 15 51	222417 3	52	70		C	22								29			WAYNE WHITT
WPE324312	1050	D 15 51	222417 3	52	72		C	37	MS	MA						31	CR	31 CR	J L GREEN
WPE325432	1050	D 15 51	222417 4	52	68		C											32	J WALGRAY
WPE325542	1050	D 15 51	222417 3	42	68		C											29	A RODI
WPE325431	1050	D 15 51	222417 4	55	70		C											45	J WALGREY
WPE325119	1050	D 15 51	222417 3	42	72		C											31	L LOFFOON
WPE324741	1050	D 15 51	222417 3	42	65		C											34	A JOHNSON
WPE325391	1050	D 15 51	222417 3	42	62		C											33	W S COMBE
WPE324568	1050	D 15 51	222417 3	54	76		C	36	MS	MA	18	MY	26			42	WH	42 WH	A HERMAN
WPE327761	1050	D 15 51	222417 3	49	65		C	17	MS	MA	16	MY	17	33	MG 7	40	WH	40 WH	D CORBON
WPE326530	1050	D 15 51	222417 3	73	83		C	26	MS	MA	16	MY	25	41	WH 18	41	WH	59 WH	DAVID HALL
WPE327308	1050	D 15 51	222417 3	42	60		C	8	MS	MB	14	MY	18			36	WH	36 WH	C A DAVIS
WPE327132	1050	D 15 51	222417 3	98	110		C	41	MS	MB	18	WH	18	36	MY 48	54	WH	84 WH	W GEHRKE
WPE327498	1050	D 15 51	222417 6	63	75		C	28	MS	MA	18	PK	18	36	MY 18	54	WH	54 WH	R HOSKINS
WPE327760	1050	D 15 51	222417 3	65	76		C	33	MS	MA	15	MB	15	45	BK 13	30	WH	58 WH	G FOLSON
WPE326589	1050	D 15 51	222417 3	42	70		C	18	MS	MA	18	MY	18	36	CR 6	36	CR		M J SLOAN
WPE327269	1050	D 15 51	222417 4	12	77		C	12	MS	MA	20	MY	34			54		54	RAY MILLER
WPE326590	1050	D 15 51	222417 3	42	66		C	15	MS	MA	18	MY	18			36	CR		R H TANNER
WPE327395	1050	D 15 27	222417 3	63	70		C	35	MS	MA	16	MY	18			36	WH	59 WH	W L BAIN
WPE327640	1050	D 15 51	222417 3	42	60		C	20	MS	MA	18	WH	18			18	WH	36 WH	C BALES
WPE328287	1050	D 15 51	222417 3	63	63		C	42	MS	MA	16	MY	16	32	WH 22	54	WH	54 WH	W GOFF

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DPE WMS ET	PER IL E	DRA IS N	BAC US Y	LOC SETNRG	DIA M	DEP E	DWR L T	BAL S	GWL M V	DRL D	SSP PLE	SSE ER	SDD AA	CPL 1	IDH A	DPL 2	CTH A	CLR B	DPR B	CCK K	UNF A	OWNER
WPE328570	1050	D	15 51	222417	3	52	70		C	20		MS	MA	30		22			40	WH	52	WH	D M SMITH
WPE328406	1050	D	15 51	222417	3	50	61		C	15		MS	MA	20	WH	20	40	ME	10	50	WH	52	WH	J COOMBES
WPE329852	1050	D	15 51	222417	3	41	60		C	20		MS	MA	20	WH	5				25	WH	25	WH	J LUMPKIN
WPE331811	1533	D	15 51	222417	4	21	40		C	12		MS		18		2				20		20		GIANAKAS
WPE334138	1040	D	15 51	222417	4	100	155		C	18		MS		21	WH	29	50	MR	24	100		100		RICHERDSON
WPC344395	1533	D	15 51	222417	4	71	84		C	16														GIDCOMB, D.
WPC345196	1533	D	15 51	222417	4	21	31		C	15														SANDERSON,
WPC361365	1533	D	15 51	LL138	222417	4	68	86		C	11													GORDEN, RUS
WPC368552	2207	D	15 51		222417	2	42	65		C	20													BETTY, TERR
WPC408221	1036	D	15 51		222417	2	57	66		C	11													MITCHELL, B
WPE308989	0072	D	15 51		232417	4	61	112		C	12									61		85		
WPE312338	0086	D	15 51		232417	3	40	98		C										36				J C FARMER
WPE312468	0006	D	15 51	NE	232417	4	60	113		R	18									24				R A LONG
WPC349301	1904	D	15 51		232417	2		75		C	31													HOUSE, HARR
WPC351067	1094	D	15 51		232417	2	139	302		R	16													STANLEY, BI
WPC351371	1904	D	15 51	SWNE	232417	2		110		C	28													WRIGHT, WAY
WPC355099	1533	D	15 51		232417	2	46	49		C	23													CASSER, KEN
WPC361535	1904	D	15 51		232417	2	50	55		C	25													HENDERSON,
WPN361571	1587	D	15 51		232417	2	***	CANCELLED		***														
WPC362645	2100	D	15 51		232417	4	40	50		C	29													WOOLIMES, T
WPN363463	1587	D	15 51		232417	4	***	CANCELLED		***														
WPC368152	1841	D	15 51	LT10	232417	4	44	102		C	29													DRANKWALTER
WPC369677	2100	D	15 51		232417	2	40	45		C	22													KEMMIS, TIM
WPC369678	2100	D	15 51	LT06	232417	2		80		C	25													BAUER, GENE
WPC372217	2092	D	15 51	L813	232417	4		110		C	30													ACHTERHOF,
WPC378212	1056	D	16 51	SE	ME	232417	4	78	130		C	15												SPARKS, DAV
WPC380674	2035	D	15 51		232417	4	94	145		C	12													WOODS, BILL
WPE310354	0072	D	15 51		232417	4	31	51		C										31				E POTTER
WPE312598	0006	D	15 51		232417	4	94	133		R	26									56		56		R HARRIS
WPE313579	0254	D	15 51		232417	3	61	97		J	18									58				M J EDWARDS
WPE315245	0435	D	15 51		232417	4	205	210		C	22									999		999		WILEY KING
WPE315290	0086	D	15 51		232417	3	40	70		C	20									32		32		OHELAMZ
WPE315971	0043	D	15 51		232417	4	90	90		C	25									35		35		W HOPPER
WPE314619	0086	D	15 51		232417	3	60	112		C	46									57		57		D D CANALE
WPE317431	0002	D	15 51	NESE	232417	4	31	85		C	16									30		30		C FREEMAN

DP USE	PER MIT	DIST	BAS IN	ACT	LOC TNRG	DIA	CAS	DEPTH WELL	GRAL	DRILL METH	DRILL FLUID	SWL	SSP SACD	SSL ZONE	SSD DIST	CTL 1	THK 1	DCTL 2	THK 2	ICL CLAY	DCL BOR	DCL CAS	UNF ACQ	OWNER
WPE317052	0345	D	15	51	232417	3	42	89		C		18								25	38			W G BROCK
WPE318909	0086	D	15	51	232417	4	60	105		C										57	57			J T BICKEL
WPE318583	0332	D	15	51	232417	3	28	36		C		12								26	28			M J VESTUTO
WPE321076	1244	D	15	51	SESE232417	4	81	140		C		22								71	105			J GRANBERRY
WPE321075	1244	D	15	51	232417	4	81	150		C		23								71	130			F COLONGE
WPE322187	0015	D	15	51	232417	3	81	142		C										30	60			J HEWITT
WPE321483	1037	D	15	51	SENE232417	4	52	80		C		18								40	40			RAYMON,WITT
WPE322070	1056	D	15	51	232417	4	65	115		C										55	55			J SEIFERT
WPE323534	1024	D	15	51	232417	4	88	115		R		25								31				T DIMASCO
WPE324297	1056	D	15	51	232417	4	92	140		C		24		MS	17		28	70	10	45	45			R M KNEES
WPE323152	1056	D	15	51	232417	3	40	110		C		28		MS	17		13			30	30			D HILL
WPE324944	1037	D	15	51	232417	3	63	96		C											58			W TAYLOR
WPE324893	1121	D	15	51	232417	3	100	100		C		17								50	60			L C KENNEDY
WPE327906	1121	D	15	51	232417	3	63	70		C		12		MS	50		10			60	60			K R FRENCH
WPE329437	1696	D	15	51	232417	4	46	101		C		30		MS						42	42			C SINGLETON
WPE330611	1056	D	15	51	232417	3	88	105		C		17		MS						85	85			C VANCUYK
WPE330316	1056	D	15	51	232417	3	52	118		C		19			MS	30	MY	7		37	37			R STAFFORD
WPE338982	1056	D	15	51	232417	4	40	107		C		11		MS	MY	20		17		37	WH 37	WH		PHILLIPS,J
WPC343330	1841	D	15	51	232417	4	63	92		C		18												LOGAN, R. L
WPC390021	1056	D	15	51	232417	4	113	150		C		16												GLOVER, MIL
WPC390868	1841	A	15	51	232417	4	31	40		T		2												BUDDY GOODW
WPE394533	1179	D	15	51	232417	3																		MCDANIELS,
WPC395092	1649	D	15	51	232417	3																		LITTLE, JAM
WPC403666	2800	D	15	51	232417	4	73	88		C		23												DOLCE, ANTH
WPC402449	2364	D	15	51	232417	4	72	81		C		16												PAYNE, MICH
WPC407482	2800	D	15	51	232417	4	42	53		C														CILIENTO, M
WPC407483	2800	D	15	51	232417	4	84	100		C		10												CILIENTO, M
WPE304563	0000	A	15	51	24241710																			
WPC361995	2057	D	15	51	242417	2	90	90		C		40												PERKS, E.
WPC363365	2092	D	15	51	242417	2	56	61		C		18												MIX, CLYDE
WPC367733	1533	D	15	51	242417	4	42	51		C		30												MASTELLER,
WPC368921	1040	D	15	51	L307242417	2	84	94		C														FISHER, DEB
WPC370707	1841	D	15	51	L213242417	4	67	115		C		49												BUTLER, JIM
WPC371431	1094	D	15	51	242417	2	109	272		R		30												STOWE, DAVI
WPC373488	2177	D	15	51	L241242417	2	42	50		C														COTGREAVE,

DPS	PERMIT	DIST	BASIN	USE	SNTY	LOC SETNRG	CODE	CASE	WELL	GRAL	BALL	DRILL	SWL	SPL	SSL	SDD	SCL	TPL	TAA	DCL	TAA	TIL	CLR	UCL	UPR	UNK	OWNER
WPC375282	1843	D	15	51		242417	4	50	110			C															WHITEHEAD,
WPC374817	1056	D	15	51	SENW	242417	4		125			C	24														ALLSTATE HO
WPE319034	0314	D	15	51	NESE	242417	3	165	165			C										999		999			M WILLIAMSO
WPE319033	0314	D	15	51	NESE	242417	4	165	176			C										999		999			M A WILLIAM
WPE325322	1056	D	15	51		242417	4	60	122			C	20		MS	/J		/U	507		/I	5	500	/.	90	MA	K GILLETTE
WPE324615	1056	D	15	51		242417	4	246	270			C	29		MS		107		33	206	MR	34	240	WH	240	WH	C SELETOS
WPE327653	1686	D	15	51		242417	4	92	90			C	25		MS		21		10				31		31		L ANDERSON
WPE329333	1050	D	15	51		242417	3	85	103			C	18		MS	MA	21	WH	39	60	ME	25	85	WH	85	WH	F DUNCAN
WPE332395	1250	D	15	51		242417	3	92	60			C	18		MS	MB	15	MR	15				30	MB	30	MB	L S CLARK
WPC383950	1056	B	15	51	SWNE	242417	4	65	125		5	C	12														SAYLOR, RON
WPC388643	1841	D	15	51		242417	4	63	108			C	12														FLANAGAN HO
WPE392806	1040	D	15	51		242417	2																				SEHL, DANIE
WPE392976	1040	D	15	51		242417	2																				PANTALLERES
WPE400152	1533	D	15	51		242417	4			16384																	HAMILTON, T
WPE411339	2364	D	15	51		242417	4																				PETERS, RAY
WPC372065	2057	A	15	51		252417	4	42	80			C	15														CAUFIELD, B
WPN373186	1037	D	15	51	LT03	252417	4	***	CANCELLED			***															
WPC379431	1056	D	15	51	SWSW	252417	4	110	185			C	10														VAN WERT, B
WPC306110	1094	D	15	51		252417	4	78	110			R	12	Q								52					DORMANY, JI
WPE308440	0065	D	15	51	NWSW	262417	3	40	120			C	18									36		36			R DUNCAS
WPE308848	0065	D	15	51	SWSE	262417	3	34	43			C	9									21		21			D A TOOKEY
WPE308235	0065	D	15	51	SWSE	262417	3	30	45			C	30									27		36			H H BROXSON
WPE308551	0065	D	15	51	NESE	262417	3	76	102			C	19									50		50			J RENEW
WPE308757	0065	D	15	51	NESE	262417	3	50	63			C	40									42		46			W H HITCHUA
WPE312513	0086	D	15	51		262417	4	50	97			C	12									45					E CORLEY
WPE312437	0086	D	15	51		262417	4	40	104			C	12									4		34			D L VICKERS
WPC358281	1696	D	15	51		262417	4	63	105			C	27														AUBIN, GEOR
WPC373078	2092	D	15	51	LT01	262417	4	56	88			C	7														CARMAN JR.,
WPC377328	2092	D	15	51		262417	2	30	38			C	5														CREED, DAVI
WPE309458	0065	D	15	51	SWSE	262417	4	60	130			C	32									54		57			H ROGERS
WPE309636	0065	D	15	51	SESE	262417	3	56	56			C	18									40		40			L CHEEK
WPE313829	0214	D	15	51		262417	3	76	97			C	12											72			C LARISEY
WPE317580	0086	D	15	51		262417	3	80	95			R	7									77		77			T BROWN
WPE317681	0253	D	15	51		262417	3	50	85				9									40		50			R THOMAS JR
WPE318944	0086	D	15	51		262417	4	40	110			C										48		48			C D WARD

DP USE	PERMIT	DRILL	BASIN	CNTY	LOCATION	DIAM	CASE	DEPTH	FORMATION	BALL	SWP	SSELDD	SSPLCC	TDPLCC	TDCLCC	TDCLCC	JCAABB	CLPBCK	CUNFEA	OWNER
WPE318332	0344	D 15 51			262417	3	63	97	C								42		42	G JAMES,
WPE326383	1056	D 15 51			262417	3	52	120	C	13		MS	26	24			50	WH	50 WH	L WHIDDEN
WPE342508	1696	D 15 51			262417	4	126	180	C	10		MS	63	31			99		126	WHITE,T
WPE343601	1056	D 15 51	SWSW		262417	4														ALLSTATE HO
WPE383754	2177	D 15 51	LT16		262417	2														WESTFALL, E
WPC391248	2092	D 15 51			262417	4	107	131	C	12										LANDABLM GA
WPE311639	0245	D 15 51			272417	3	79	98	C	15							50		60	QUELLETTE
WPE311050	0254	D 15 51			272417	3	72	91	J	19							68		68	W SPENCER
WPE311051	0254	D 15 51	SWSW		272417	3	31	54	T	21							29		29	A CIRELLA
WPE312313	0281	D 15 51	NWSW		272417	3	225	328	J	14							120		224	S E KAVALIK
WPC368875	1151	D 15 51			272417	2	35	45	C											WHITTINGTON
WPE379609	2177	D 15 51	NENE		272417	2														MILLER, DAN
WPE309373	0245	D 15 51			272417	4	42	99	C	15							30		80	J HALL
WPE313544	0281	D 15 51			272417	3	121	145	J	30							80		90	S KAVALISKA
WPE320133	1040	D 15 51			272417	4	77	140	J	18							42		60	P C DELPINO
WPE338787	1696	D 15 51			272417	4	84	115	C	20		MS	63	10			73		73	MCMANIC,T
WPC388959	1151	D 15 51			272417	2	37	41	C											BAILLIE, SU
WPE394367	1151	D 15 51			272417	2														BAILLIE, J
WPE397177	1151	D 15 51			272417	2														STILES, JUD
WPE311672	0131	D 15 51			282417	3	95	126	C	20							90		90	CINDY ENTP
WPN352348	1904	A 15 27	SWNE		282417	2	***	CANCELLED	***											
WPC358274	1533	D 15 51	LT10		282417	2	59	65	C	18										ERRINGTON,
WPC361980	1533	D 15 51			282417	4	110	120	C											WAGNER, LYN
WPN364168	1986	D 15 51	NWNW		282417	2	***	CANCELLED	***											
WPC368727	2159	D 15 51			282417	4	62	76	C	16										MEADE, KEN
WPE370219	1151	D 15 51			282417	2														PORTER, RON
WPC369569	1436	A 15 27			282417	4	63	110	C											STEFANIAK,
WPC369568	1436	A 15 27			282417	4	60	100	C											TRACY, EMIL
WPC369567	1436	A 15 27			282417	4	80	102	R											SCHMIDT, GU
WPE370217	1151	D 15 51			282417	2														PORTER, RON
WPC371363	2092	D 15 51	LT39		282417	2	68	72	C	14										ROY RHODES
WPN372727	1533	D 15 51			282417	4	***	CANCELLED	***											
WPC372410	2092	D 15 51	LT11		282417	4	63	72	C	30										MORGAN, RHO
WPN372411	2092	D 15 51			282417	4	***	CANCELLED	***											
WPC373595	1533	D 15 51	TR06		282417	4	152	165	C	1	14									GROWNEY, MA

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WELL CONSTRUCTION LIST DATE 1/31/86

DPUSE	PERMIT	DIAL	BASIN	CNTY	LOCATION SETNRGM	DIAS	CASE	WELL DEPTH	GROUT	BALL	DRILLER LEVEL	DWR SWP	SSEZ	SSDD	DCPL1	THL1	DCPL2	THL2	CLAR	CLAB	DPLR	DPLK	UNFA	OWNER
WPC356241	2100	A	15	51	342417 2			26			C	12												CARINI, ALB
WPC360442	1525	A	15	51	342417 2		12	19			C	12												ALFIERI, TH
WPC362168	1040	A	15	27	LT09342417 3		63	85			C	30												COOPER, ROY
WPC372554	1525	A	15	51	342417 2		32	33			C	15												SWANSON
WPE317073	0190	D	15	51	342417 3		34	50			C	6							34					G CONSTANTI
WPE327970	1533	D	15	51	342417 4		40	60			C	12	MS	MY	31	MA	7			38	WH	38	WH	B ARTER
WPE335087	1121	B	15	51	342417 3		29	95			C	18	MS		16		4	20	S	20		29		FINIANI D
WPC394570	1040	D	15	51	342417 4		98	98			C													THOMAS DONA
WPE394715	1040	D	15	51	342417 2																			MOBLEY, HUE
WPC407407	2837	A	15	51	342417 2		22	30			C	21	6											LABELL, LEO
WPE409435	1040	D	15	51	342417 4																			THOMAS, DON
WPH314129	0086	D	15	51	352417 3		30	91			C	17							43		43			E SCARBOROU
WPE304355	0000	L	15	51	NE362417 4																			
WPE304352	0000	L	15	51	NE362417 4																			
WPE304351	0000	L	15	51	362417 4																			
WPE304353	0000	L	15	51	NE362417 4																			
WPE304358	0000	A	15	51	NE362417 6																			
WPE304357	0000	L	15	51	NE362417 4																			
WPE304356	0000	L	15	51	NE362417 4																			
WPE304354	0000	L	15	51	NE362417 4																			
WPE304359	0000	L	15	51	NE362417 6																			
WPC349017	1696	A	15	51	362417 4		73	100			C	6												NEWBORN GRO
WPC354758	1436	D	15	27	362417 4		53	125			C													SPANGLER, P
WPC358678	2071	D	15	51	362417 4		105	130			C	31												ZINK, JIM
WPC360518	1841	D	15	51	LT18362417 4		52	90			C	16												CAVONIS, D.
WPC366128	1056	D	15	51	SWNW362417 4		60	130			C	22												SINGLETON,
WPE303219	0000	L	15	51	NE362417 4																			
WPE303211	0000	L	15	51	NE362417 6																			
WPE303218	0000	L	15	51	NE362417 4																			
WPE303214	0000	L	15	51	NE362417 4																			
WPE303215	0000	L	15	51	NE362417 4																			
WPE303217	0000	L	15	51	NE362417 4																			
WPE303216	0000	L	15	51	NE362417 4																			
WPH303212	0000	V	15	51	NE362417 6																			
WPE303213	0000	L	15	51	362417 4																			

DP USE	PERMIT	DRILL	BASIN	SECTION	TWNRNG	LOCATION	DIAM	CASE	DEPTH	GROUT	BALLAST	DRILLER	SWL	SPL	SFED	SDIA	SCAS	SLEN	SACFS	SPLEO	TPER	TCLAY	TLIM	TSAN	TCLAY	TLIM	UCLAY	UPERB	UCRAK	UNFAC	OWNER
WPE320877	0086	D	15	51	362417	3	60	90		C															58		58				J POWELL
WPE332068	1817	L	15	51	362417	4	70	214		C	9					S	34		24	190		10			58		68				CAL MAINE
WPE336959	1696	A	15	51	362417	4	35	100		C						S	20		15						35		35				NEWBORN GUS
WPE337758	1696	L	15	51	362417	4	84	135		C	10					MS	21		42						42	WH	84				CALMAINE FM
WPE340489	1696	L	15	51	362417	4	63	115		C						MS	21		21						63		63				CAL MAI NE
WPE343170	1056	D	15	51	362417	4	52	110		C	11					MS	17		23						40		52				DUNCAN,M
WPC385629	1555	A	15	51	LT82362417	2	90	40		C	18																				HAAS, HERBE
WPE307595	0106	D	15	51	012418	3	81	84		C	23														30		40				N HA
WPC347647	1699	D	15	51	012418	2	60	100		C																					TURZAN MR.
WPC351284	1436	D	15	51	012418	3	42	100		C																					DUNBAR, VIN
WPC351095	1351	D	15	51	012418	4	42	75		C	29																				OSBORNE, FR
WPC355236	1436	D	15	51	012418	4	42	100		C																					MARTIN, DAL
WPC359797	1056	D	15	51	NENE012418	4	42	120		C	25																				PHILLIPS, J
WPC360508	1056	D	15	51	NWNW012418	4	42	145		C	42																				CURTIS, DAV
WPC363567	1226	D	15	51	012418	4	42	80		R	35																				HAYES, D. E
WPC366754	2159	D	15	51	012418	4	42	85		C	22																				HAGER
WPC368602	1436	D	15	51	012418	4	42	110		C																					MAREKEVITCH
WPC367870	1436	B	15	51	012418	4			5																						LACKEY, CAR
WPE372245	2159	D	15	51	012418	4																									ALT, CLAREN
WPE371003	2160	D	15	51	012418	4																									SILLERS, MR
WPC372699	1056	D	15	51	NWNE012418	4	46	95		C	35																				DE LA PENA,
WPC373075	2092	D	15	51	012418	4	68	90		C	35																				BECK, FRANC
WPC372526	1351	D	15	51	012418	4	40	70		R	28																				MARTIN, MAR
WPC374686	1841	D	15	51	LT15012418	4	52	93	3	C	33																				MEINECKI, K
WPC377329	1533	B	15	51	012418	4	68	77		C	1 22																				KOUTSOS, GU
WPC378906	1533	Y	15	51	012418	3		90	6	C																					KOUTSOTS, J
WPE377747	1436	D	15	51	012418	4																									WILKES, MER
WPC377748	1436	D	15	51	012418	4	63	110		C	20																				BILTON, AL
WPN379838	1037	D	15	51	185401241	8	***	CANCELLED	***																						
WPH303220	0003	V	15	51	012418	6	29	82			23																				
WPE306275	0106	D	15	51	012418	3	42	81		C	28														21		31				POLANSKY BL
WPE309276	0043	D	15	51	012418	4	42	85		C	32														36						
WPE314693	0280	D	15	51	012418	4	51	80		C	36														38		59				A HENDERSON
WPE317295	0043	D	15	51	012418	3	63	100		C	30														33		40				H TAYLOR SR
WPE316421	0106	D	15	51	NENE012418	3	71	90		C	20														45						BOROUSKY

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DUSE	PERMIT	DRILL	BASIN	CNTY	LOCATION	DIA	CASL	DEPTH	DRILLER	SWL	SPL	SCDZ	SEDR	DCPA	CLLA	THLA	DCPA	CLLA	THLA	ICAB	CLBB	DPKC	CLKK	UNFA	OWNER
WPE324842	1346	D	15	51	172418	3	63	90	C	34		MC	LB	40	LB	20				60		60			L W PETERS
WPE338684	1696	D	15	51	172418	4	50	90	C	25		MS		21		21				42		42			BROOKS,P
WPC381361	2092	D	15	51	TR38172418	4	63	81	C	32															THOMAS, ART
WPC384458	1525	A	15	51	L105172418	4	84	86	C	43															DETTERLINE,
WPC386494	1056	D	15	51	NENW172418	4	51	100	C	22															TALONE, GEN
WPC389141	1841	D	15	51	172418	4	63	130	C	45															HOCH, ALFRE
WPC391859	2092	D	15	51	172418	4	62	80	C	26															JOLLY, WILL
WPE392086	1533	D	15	51	172418	2																			BARNETT, EW
WPE403473	1533	D	15	51	172418	4																			CLARK, K
WPC405094	2451	A	15	51	172418	4	63	93	C	35															PRONTO, BIL
WPC407078	2364	D	15	51	172418	4	84	110	C	37															WILLIAMS, D
WPC305295	1056	D	15	51	182418	3	52	95	C	35										45		45			NOETHEN, RO
WPE308635	0983	D	15	51	182418	3	42	62	C	33										42		42			P JEFFERSON
WPE309081	0086	D	15	51	182418	3	50	111	C											46		46			C GILLEY
WPE311757	0086	D	15	51	182418	3	42	80	C	19										38		38			A J LAMPEL
WPE311305	0086	D	15	51	182418	3	40	80	C											35		35			M LINDSAY
WPE311128	0086	D	15	51	182418	3	125	130	C	18										125		125			C W GARTON
WPE312186	0086	D	15	51	182418	3	40	92	C											38					RAMSEY
WPE312237	0086	D	15	51	182418	3	50	98												47		47			B ONEAL
WPE311100	0086	D	15	51	182418	3	125	185	C	33										125		125			T CANNELLA
WPE311734	0086	D	15	51	182418	3	60	100	C											60		60			DAVID SAYLO
WPN348262	1056	D	15	51	182418	4	***	CANCELLED	***																
WPN349580	1040	D	15	51	182418	4	***	CANCELLED	***																
WPN353529	1696	D	15	51	182418	4	***	CANCELLED	***																
WPC369866	2160	D	15	51	L164182418	4	110	130	C	42															ROYCE, KEVI
WPC372311	2132	D	15	51	182418	4	63	110	C	38															AIRAL
WPC375524	1056	D	15	51	SWSW182418	4	55	120	C																PETTY, PAUL
WPE306547	0119	D	15	27	182418	3	100	145	C	27										100		115			R L AYRES
WPE306634	0072	D	15	51	182418	3	81	97	C	28										61		81			D BANKS
WPE306927	0072	D	15	51	182418	3	41	88	C	27										41		41			R BRADY
WPE306549	0072	D	15	51	182418	3	91	110	C	25										51		51			D W STEINRU
WPE307157	0072	D	15	51	182418	3	61	110	C	32										61		61			D CARTER
WPE306884	0086	D	15	51	NENW182418	3	50	102	C	30										48		48			J P MILLYER
WPC305656	1436	D	15	51	182418	3	53	83	C	25										42		52			WHITE, EARL
WPE310913	0086	D	15	51	182418	4	52	140	C	24										40					R WADDELL

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DPERMITSEQ	FILE NO	DRILLER	USE	BASIN	LOCATION SETNRGM	CASE DIA	WELL DEPTH	GRAVEL	BALLAST	DISCHARGE GPM	SWP	SSL	SSD	DCP1	DCC1	THC1	DCP2	DCC2	THC2	1CAB	CLPBB	CUNCK	FEA	OWNER
WPE310967	0086	D	15	51	182418 3	70	103		C	21										50	60			J DONOVON
WPE310808	0373	D	15	51	182418 3	60	90			15										90	60			R HALL
WPE314511	0086	D	15	51	182418 3	90	105		C	20										36	36			B CASTLEBER
WPE317315	0086	D	15	51	182418 3	110	164		C	29										101	101			T THOMAS
WPE317265	0086	D	15	51	182418 3	90	142		C	20										87	87			A BRANNEN
WPE319349	0305	D	15	51	182418 3	84	105		J	32										84	84			E KRAFT
WPE318460	0086	D	15	51	182418 3	60	128		C	30										58	58			J RAINES
WPE319936	0072	D	15	51	182418 3	71	125		C	32										71	81			R SIRINRICK
WPE320837	1037	D	15	51	NENE182418 3	40	65		C	31										33	33			SHADY H B C
WPE324570	1050	D	15	51	182418 3	42	55		C	35		MS	MA	17	MY	18				35	WH	35	WH	G LEATHERS
WPE324398	1436	D	15	51	182418 3	42	90		C	21		MS		28	WH	4				32	WH	32	WH	T MCDANIELS
WPE324313	1050	D	15	51	182418 3	73	86		C			MS	MA	42	MY	21				63	CR	63	CR	T THOMPSON
WPE323971	1121	D	15	51	182418 3	74	95		C	28										32		74		S F KENNEDY
WPE326072	1050	D	15	51	182418 3	63	82		C	38		MS	MA	21	MY	27				48	WH	48	WH	A N WELLS
WPE324972	1121	D	15	51	182418 3	47	65		C	14										90		97		HARRY RIEGE
WPE326213	1121	D	15	51	182418 3	87	87		C													62		M HOWARD
WPE326071	1050	D	15	51	182418 3	41	60		C	25		MS	MA	32	CR	10				42		42		S SORIA
WPE327113	1050	D	15	51	182418 3	63	80		C	43		MS	MB	18	MY	18	36	WH	18	36	WH	54	WH	WASILOWSKI
WPE329132	1050	D	15	51	182418 3	42	66		C	31		MS	MY	20	ME	10				30	WH	30	WH	L E AASENG
WPE342700	1699	D	15	51	182418 3																			GILLETTE,B
WPE343137	1841	D	15	51	182418 4	41	85		C	39		MS		27	MA	10				41		41		TRUNDLE,F
WPE390858	2074	D	15	51	182418 4																			BLAZEVIE, A
WPC390660	2169	D	15	51	182418 4	122	122		C	37														FERANDES, M
WPC390451	1056	D	15	51	SENW182418 4		130		C	31														HRUSKA, MAR
WPC392973	1056	D	15	51	182418 4	63	140		C	36														JOHNSON, RI
WPC391718	2263	D	15	51	182418 4	84	115		C															CHANDLER, D
WPC391717	2263	D	15	51	182418 4	84	120		C															CHANDLER, D
WPC396807	1841	D	15	51	182418 4	95	140		C	27														LARSEN, RON
WPC397353	2092	D	15	51	182418 4	58	70		C	28														NEASE, MARY
WPE407107	2802	D	15	51	182418 2																			TRAMMELL, C
WPC407082	2501	D	15	51	182418 2	104	120		C	37														HOUSE, DUAN
WPE405619	1533	D	15	51	182418 4																			HELTON, MAD
WPE411678	1056	D	15	51	SWSE182418 4																			GREER, JOSE
WPC411779	1533	D	15	51	182418 4	105	125		C	39														KLINE, D
WPC305611	1232	D	15	51	NENW192418 3	40	86		C	33										31		31		CARTER, ROY

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DUSE	PERMIT	DIST	BASIN	ACT	LOCATION	DIA	DEPTH	GWLEVEL	ORIGIN	SWL	SSFLAG	SSDEV	DCTHK1	DCTHK2	TDCTHK	ICLAY	DCLAY	UNCASE	OWNER
WPE308439	0086	D	15	51	192418	3	60	111	C							58	58		HELEN MADDO
WPE307971	0086	D	15	51	NWSW192418	3	43	102	C	44						32	32		E W PAYCER
WPE308550	0086	D	15	51	192418	3	50	110	C	18						46	46		L C HOUSELL
WPE308008	0119	D	15	51	192418	3	60	85	C	33						38	38		L E RYALS
WPE307902	0086	D	15	51	SESW192418	3	100	147	C	30						43	43		A L STEWART
WPE308438	0086	D	15	51	192418	4	64	121	C							42			
WPE309080	0086	D	15	51	192418	3	50	100	C							47	47		P C WITT
WPE311606	0119	D	15	51	192418	3	72	90	C	25						45	68		W CHILES
WPE311605	0119	D	15	51	192418	3	61	80	C	18						38	38		C STRICKLAN
WPE311607	0119	D	15	51	192418	3	24	65	C	18						15	15		H L VANCE
WPC350731	1696	D	15	51	192418	4	105	150	C	45									HAYES, WILL
WPC353630	1696	D	15	51	192418	4	71	110	C	40									ROACH, TIM
WPC354835	1533	D	15	51	192418	4	63	90	C	45									SPAULDING,
WPM355305	1587	A	15	51	192418	4	***	CANCELLED	***										
WPC359063	1699	D	15	51	192418	4	79	110	C	46									DRAIN, JOHN
WPC362955	1056	D	15	51	SWNW192418	4	50	125	C	55									HINKLE, CHA
WPC365840	2177	D	15	51	L611192418	2	88	91	C										ALLEN, ROBE
WPC367750	2159	D	15	51	192418	4	67	100	C	51									WAHLE, WARR
WPC369860	1817	D	15	51	SESW192418	4	80	126	C										COLSTON, BR
WPC376431	1525	A	15	51	192418	4	139	450	C	30									TESTA, ANTH
WPE379193	2177	D	15	51	LT-A192418	2													KELLEHAN, S
WPE307440	0106	D	15	51	192418	3	71	96	C							55	71		E K CHANDL
WPC305845	1436	D	15	51	NWSW192418	3	51	88	C	40						40	40		GIVEN, RUTH
WPE307439	0106	D	15	51	192418	3	48	86	C							28	41		W G CHANDL
WPE310342	0119	D	15	51	192418	4	49	96	C	17						35			D WOODRUFF
WPM313262	0106	D	15	51	192418	3	60	85	C	10						58	58		J C BEAVER
WPE313580	0259	D	15	51	NWNE192418	4	51	72	J	39							39		L DAVIS
WPE312729	0106	D	15	51	192418	3	81	105	C	25						39	73		J D ALDERMA
WPE314786	0605	D	15	51	192418	3	53	87	C	31						50	50		E REMON
WPE314688	0086	D	15	51	192418	4	120	167	C	39						114	114		J POST
WPE314920	0086	D	15	51	192418	6	40	91	C	16						33	33		T HENDERSON
WPE316685	0305	D	15	51	192418	3	42	85	J	33						42	42		W HOSEY
WPE316530	0086	D	15	51	192418	4	50	102	C	34						44	44		E USHERWOOD
WPE318117	0305	D	15	51	192418	3	60	90	J	39						60	60		D LONES
WPE318118	0305	D	15	51	192418	3	49	90	J	39						49	49		W RESNINDO

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DP USE	PERMIT	DRILL	BASIN	SEC	TWN	RNG	LOC SETNR	DIAM	DEPTH CASE	DEPTH WELL	GRAL	WBALL	DIELL	USE	SSLOC	SSPLAC	SSFLOW	SSDEPTH	CLASS	DIAM1	TIME1	DIAM2	TIME2	CASDIA	CASDEP	GROUT	WELLNO	OWNER
WPE318435	0228	D	15	51		192418	4	100	120		C	37									100		100				P E WHISLER
WPE320321	0086	D	15	51		192418	3	41	310		C	26									40		40				J L HUGHES
WPE322693	1050	D	15	51	NESE	192418	4	72	72		C	8									61		61				E MYERS
WPE326963	1050	D	15	9		192418	3	42	50		C	10		MS	MA						18		18				M HOULE
WPE328555	1050	D	15	51		192418	3	60	80		C	10		MS	MA	20		20	40	ME	20	60	WH	60	WH		W C CONNER
WPE330661	1388	D	15	51		192418	4	133	200		C	42		MS		90	MY	11	114	MY	6	101	WH	101	WH		R HINKLE
WPE334240	1696	D	15	51		192418	4	89	105		C	38		MS								49		49			WERLIN E
WPE334283	1056	D	15	51		192418	4	61	115		C	29		MS		5	MR	18	45	MR	10	23		55			KIEGEL D
WPE336498	1016	A	15	51		192418	4	100	180		C	26		MS		40	MA	80				120		150			SENANDER,J
WPE337484	1696	D	19	51	SENW	192418	4	63	105		C	33		MS		35		28				55		63			MCNUTT
WPE338354	1498	D	15	51		192418	4	66	95		R	48		MS	MA	35	MA	31				56		56			CERJES,R
WPE340346	1056	D	15	51		192418	4	107	170		C	35		MS		35		20	70		30	100	WH	107	WH		FADY,R V
WPC384752	1056	D	15	51	SWNE	192418	4	102	145		T	29															KELLY, ROBE
WPC387451	1056	D	15	51	SENE	192418	4	94	115		C	31															SCOTT, JIM
WPC390531	2263	D	15	51		192418	4	105	150		C																NICHOLS, WI
WPN395652	0012	D	15	9		192418	3	***	CANCELLED		***																
WPN395304	1056	D	15	9		192418	3	***	CANCELLED		***																
WPC399298	2800	D	15	51		192418	2	42	68		C	32															MULLIN, PAU
WPE404523	0000	D	15	51	NWNW	192418	2																				HOUSE, WILL
WPC406154	2092	D	15	51		192418	4	96	118		C	36															MORIN, CARO
WPE405621	1533	D	15	51		192418	4																				PEAL, HEBER
WPE304344	0000	I	15	51		202418	4																				
WPE311309	0123	D	15	51		202418	3	52	106		C	33									30		50				S WEDDLE
WPE311069	0086	D	15	51		202418	3	40	107		C	24									32		40				E B EXURN
WPE346756	1699	D	15	29		202418	4	2222	2222		222222					222		222	222		222	222		222			SEGREST, MI
WPC358702	2103	D	15	51	LTA	202418	4	42	130		C																TAYLOR, DEL
WPC364911	2177	D	15	51	LT-A	202418	2	53	58		C																BRYANT, WIL
WPC366961	2177	D	15	51	SWNW	202418	2	50	62		C																SPENCER, EL
WPC365496	2177	D	15	51		202418	2	66	74		C																DAWKINS, BE
WPC365497	2177	D	15	51		202418	2	45	45		C																STAMER, DEB
WPC368715	1151	D	15	51		202418	2	58	86		C																GREEN, SAUN
WPC368362	2071	D	15	51		202418	4	84	171		C	41															CRUMPLER, L
WPE370216	2177	D	15	51		202418	2																				POTTER, R.
WPC370031	2177	D	15	51		202418	4	52	61		C																ROACH, DORO
WPC369550	2177	D	15	51		202418	2	52	65		C																GOUGHF, GEO

DP USE	PERMIT	DRILL	BASIN	LOCATION SEC TWN RNG	CNTY	DIAM	DEAS	DWEL	GROUT	BALLS	DRILLED	SWL	SPEC CAP	SSER	SSDD	DCPL	TH2	UCPL	TH2	ICAR	CLBB	DPLCK	UNCK	OWNER
WPC348628	1841	D	15 27	272418	4		120			C														CARMEL HOME
WPC352436	1696	A	15 51	272418	4	70	100			C	15													BLACK, G.
WPC360727	1056	D	13 29	NENE 272418	4	147	170			C	15													ALLSTATE MO
WPC373110	1056	D	13 51	NENE 272418	4	50	115			C	13													PHODES, ALB
WPC374295	1436	D	15 51	272418	2	73	88			C	5													BEN MERCHER
WPC374296	1436	D	15 51	272418	4	82	115			C	5													MERCHER, BE
WPC376802	1974	D	15 51	272418	4	60	120			R	6													HUNTER, WYN
WPH303230	0000	W	15 51	272418	4																			
WPE313333	0276	D	13 51	SENW 272418	3	79	109			C	9									74		74		R H STEWART
WPE312731	0106	D	15 51	NENE 272418	3	101	125			C	15									30		101		WM L WAGNER
WPE320949	0086	D	15 51	272418	3	50	100			C										46		46		O ROESBERRY
WPE325536	1587	D	15 51	272418	4	84	142			C												50		J MONROE
WPH343511	1094	D	15 51	272418	2	131	182			R	2													HINOTE,J L
WPC385170	1056	D	15 51	NWNE 272418	4	62	135			C	9													REEDY, BARB
WPE384355	1436	D	15 51	272418	3																			WILLIAMS, G
WPC385609	1056	D	15 51	SWNE 272418	4	52	140			C	5													QUALITY CON
WPC392743	1905	D	15 51	272418	4	84	130			C	20													CADRECHA, B
WPE397512	2074	D	15 51	272418	4																			HOPPER, RAY
WPE336570	1056	D	15 51	282418	4	70	128			C	36			MS	27	MR	40			67	WH	67	WH	ALLSTATE MM
WPE383307	1436	D	15 51	282418	3																			MERCER, BEN
WPC404647	1024	D	15 51	282418	4	115	203			C	10													THOMAS, MIL
WPE409098	1024	D	15 51	282418	4																			THOMAS, MIL
WPE313031	0192	D	15 51	292418	3	91	115			C	28									70				BEN LEON
WPE335735	1056	D	15 51	292418	3	42	90			C	37			MS	12	MR	13			25		25		P KIDWELL
WPE308067	0065	D	15 51	302418	3	40	137			C	36									37		37		D E LAMOTTE
WPE308154	0065	D	15 51	SWNW 302418	3	90	95			C	30									80		80		C A HINES
WPE308094	0065	D	15 51	302418	3	90	113			C	34									37		52		C B CRONAN
WPE359346	0000	D	15 51	302418	2																			HEAVILIAN,
WPE358711	0000	D	15 51	302418	2																			FELICIANO,
WPC377911	1525	D	15 51	302418	2	140	143			C	35													FIRST WESLE
WPE307105	0065	D	15 51	NWSW 302418	4	102	160			C	52									91				
WPE307106	0065	D	15 51	SWNE 302418	4	63	160			C	22									99				
WPE314989	0086	D	15 51	302418	4	50	136			C	26									91		91		R L VELEZ
WPE331262	1328	D	15 51	302418	3	63	85			D	18			MS	MY	14	MY	22		27		36	WH	S STOKES
WPE310911	0065	D	15 51	NESE 312418	4	50	147			C	12									45		80		EDGAR COLLI

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DUSE	PLRMIT	DRILL	USE	BASIN	LOCT NRG	DIAM	CASE	GWELL	GRBALLS	GALLS	UIELSM	UIELV	SWLDS	SPLEC	SEEDER	SDCPLAA	TDCTHAA	TDCTHAA	TICLAA	DCLRBB	DCLRCK	UNFEAA	OWNER
WPE310719	0478	D	15	S1SWNW	312418	3	30	38			C	10								28	28		H D JONES
WPE313654	0086	D	15	S1NWSW	312418	3	126	180			C	29									123		W CADLE
WPE313698	0086	D	15	S1	312418	3	40	93			C	18									38		E BRAITEN
WPE312718	0086	D	15	S1	312418	3	60	150												56	56		J STALTER
WPE314529	0086	D	15	S1	312418	4	62	120			C	37								58	58		M C JACOBSE
WPE314454	0086	D	15	S1	312418	3	60	108			C	55								54	54		DR WHITEHUR
WPE322762	1050	D	15	S1	312418	3	68	68			C	28								52			T HOLMAN
WPE323532	1056	D	15	S1	312418	3	70	105			C	10	S		16		53			69	69		S HILL GARA
WPE325097	1056	D	15	S1	312418	3	70	105			C	10	S		16		53			69	69		S HILL GARA
WPE337935	1056	D	15	S1	312418	4	52	100			C		MS		30	ME	20			50	50		MARRERO,L
WPC383620	1817	D	15	S1	312418	4	63	120			C	24											JENNINGS, C
WPE319366	0276	D	15	S1SWSW	322418	3	86	114			C	4								31	31		M HAWSON
WPE320667	0334	D	15	S1	322418	3	84	130			C	35								35	75		W DUKE
WPE335143	1226	D	15	S1	322418	4	42	50			C	4	S		30		8			38	38		DALEY K
WPC391443	2410	D	15	S1	322418	4	63	100			C	28											CORKUM, RON
WPE304345	0000	L	15	S1	332418	4																	
WPC349999	1232	D	15	S1	332418	4	76	120			R	6											CARVEL HOME
WPC355940	1056	D	15	S1SESE	332418	4	52	120			C	9											MOORE, JAME
WPC357384	1436	D	15	S1	332418	3	42	70			C												MERCER, CHA
WPC361369	1843	D	15	S1LT14	332418	4	63	110			C	40											KROPP, ARTH
WPC370315	1056	D	15	S1SESE	332418	4	70	135			C	9											KWIECEIN, S
WPC371002	2160	D	15	S1	332418	4	88	125			C	9											ASHE, MR.
WPE371149	2159	Y	15	S1	332418	2																	ASHE, MR.
WPE373670	0000	D	15	S1NENW	332418	2																	WILLIAMS, J
WPC372879	1056	A	15	S1SWNE	332418	4	70	245			C	3											WILLIAMS, L
WPC373642	1056	A	15	S1NWSE	332418	6	61	320			C	2											WILLIAMS, L
WPN373691	1056	A	15	S1NWSE	332418	6	***	CANCELLED			***												
WPC380392	1056	H	15	S1NWSE	332418	6	120	312			C	3											WILLIAMS, L
WPC380389	1056	H	15	S1NWSE	332418	4		310			C	7											WILLIAMS, L
WPE303231	0000	L	15	S1	332418	4																	
WPE310295	0119	D	15	S1	332418	4	63	116			C	5								27			W SPINKS
WPE322040	0086	D	15	S1	332418	4	70	110			C	65	MS		45	WH	10			45	55		L F WILLIAM
WPE325354	1056	D	15	S1	332418	3	95	151			C	13	S		10		11	49	46	90	90		P MARTIN
WPE343868	0000	D	15	S1	332418	2																	WILLIAMS,J
WPH345939	1436	D	15	S1	332418	3		100			C												WATSON, WAY

JAMMAL & ASSOCIATES, INC.
CONSULTING GEOTECHNICAL ENGINEERS

TRANSMITTAL

TO Camp, Dresser & McKee, Inc.
1321 U.S. 19 South, Suite 601
Clearwater, Florida 33546

DATE June 8, 1987
PROJECT NO. 86-30802
ATTENTION Mr. Bob Tietz

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover, the following:

Report ☐ Proposal ☐ Preliminary Dwgs. ☐ Final Dwgs. ☐

☐

As requested, attached are the chemical results for the Pasco County Landfill.

If we may be of further service, please do not hesitate to contact us.

COPY TO

SIGNED

John R. Marquardt, P.E.

J131-A 8/86

THORNTON LABORATORIES, INC.

1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

TWX 810 876-9134
THORNT LAB TPA

TELEPHONE (813) 223-9702
P.O. BOX 2880

June 5, 1987

RECEIVED
JUN 8 1987
Lab.....

Laboratory Number 660052

For Jammal & Assoc. Inc.
6313 Benjamin Rd. Suite 101
Tampa, FL 33614

Attention R. Mortensen

Project	Pasco County Landfill
Sample Site	4MW3
Date & Time Collected	5/7/87, 11:50 am
Date & Time Received	5/7/87
Collector	Joan Hallgren of Thornton Laboratories, Inc.
pH	7.38
Conductivity (umhos/cm)	270
Temperature, °C	22

DRINKING WATER CHEMICAL ANALYSIS
Laboratory ID #84147
PRIMARY STANDARDS

PARAMETER	MCL(a)	RESULT(b)	PARAMETER	MCL(a)	RESULT(b)
INORGANICS			ORGANICS		
Arsenic (As)	0.05	<0.005	Endrin	0.0002	<0.0001
Barium (Ba)	1.0	<0.03	Lindane	0.004	<0.0002
Cadmium (Cd)	0.01	<0.002	Methoxychlor	0.1	<0.005
Chromium (Cr)	0.05	<0.005	Toxaphene	0.005	<0.001
Lead (Pb)	0.05	<0.01	2,4-D	0.1	<0.02
Mercury (Hg)	0.002	0.0016	2,4,5-TP	0.01	<0.002
Nitrate (N)	10	0.05	TRIHALOMETHANES		
Selenium (Se)	0.01	<0.005	Chloroform	--	<0.001
Silver (Ag)	0.05	0.007	Bromodichloromethane	--	<0.001
Sodium (Na)	160	2.9	Dibromochloromethane	--	<0.001
Fluoride (F)	1.6	<0.1	Bromoform	--	<0.001
Turbidity (NTU)	1	1.2	Total THM	0.10	<0.001
RADIONUCLIDES(c)			MICROBIOLOGICAL		
Gross Alpha, pCi/L		1.2+/-0.7	Total Coliform MPN/100cc	1	<3

Analysis according to approved methods listed in Chapter 17-22.
a. Quality Standards, Chapter 17-22.104 F.A.C.
b. All results are expressed as mg/L except as noted.
c. At 95% Confidence Limits.

THORNTON LABORATORIES, INC.

Fred R. Hautzel Jr.

THORNTON LABORATORIES, INC.

TWX 810 876-9134
THORNT LAB TPA

1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

TELEPHONE (813) 223-9702
P.O. BOX 2880

June 5, 1987

Laboratory Number 660052

For Jammal & Assoc. Inc.
6313 Benjamin Rd. Suite 101
Tampa, FL 33614

Attention R. Mortensen

Project	Pasco County Landfill
Sample Site	4MW3
Date & Time Collected	5/7/87, 11:50 am
Date & Time Received	5/7/87
Collector	Joan Hallgren of Thornton Laboratories, Inc.
pH	7.38
Conductivity (umhos/cm)	270
Temperature, °C	22

DRINKING WATER CHEMICAL ANALYSIS
Laboratory ID #84147
SECONDARY STANDARDS

PARAMETER	MCL(a)	RESULT(b)	PARAMETER	MCL(a)	RESULT(b)
Calcium (Ca)	--	58	CORROSIVITY		
Chloride (Cl)	250	8.3	Total Hardness(c)	--	150
Color(Pt-Co Units)	15	2	Total Alkalinity(c)	--	134
Copper (Cu)	1	<0.005	N.C.H. (c)	--	16
Foaming Agents	0.5	<0.02	Bicarbonate (HCO_3)	--	163
Hydrogen Sulfide	--	0.82	Carbon Dioxide (CO_2)	--	2.6
Iron (Fe)	0.3	0.095	Bicarbonate (c)	--	134
Magnesium (Mg)	--	1.4	Carbonate (c)	--	-0-
Manganese (Mn)	0.05	0.013	Hydroxide (c)	--	-0-
Odor(Threshold Units)	3	-0-	pH Value	--	7.6
pH Value	6.5 Min.	8.0	Saturation Index	<-0.2	
Sulfate (SO_4)	250	2.6		>+0.2	0.4
Total Dissolved Solids	500	176	Stability Index		7.2
Zinc (Zn)	5	<0.005	Interpretation		Scale Forming

Analysis according to approved methods listed in Chapter 17-22.
a. Quality Standards, Chapter 17-22.104 F.A.C.
b. All results are expressed as mg/L except as noted.
c. Results expressed as mg/L $CaCO_3$.

THORNTON LABORATORIES, INC.

Fred R. Hartlage Jr.

THORNTON LABORATORIES, INC.

1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

TWX 810 876-9134
THORNT LAB TPA

TELEPHONE (813) 223-9702
P.O. BOX 2880

June 5, 1987

Laboratory Number 660052

For Jammal & Assoc. Inc.
6313 Benjamin Rd. Suite 101
Tampa, FL 33614

Attention R. Mortensen

Project	Pasco County Landfill
Sample Site	4MW3
Date & Time Collected	5/7/87, 11:50 am
Date & Time Received	5/7/87
Collector	Joan Hallgren of Thornton Laboratories, Inc.
pH	7.38
Conductivity (umhos/cm)	270
Temporature, °C	22

DRINKING WATER CHMEICAL ANALYSIS
LABORATORY ID#84147

ANALYSIS	RESULT, ug/L	DETECTION LIMIT, ug/L
TRICHLOROETHYLENE	BDL*	1
TETRACHLOROETHYLENE	BDL	1
CARBON TETRACHLORIDE	BDL	1
VINYL CHLORIDE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
BENZENE	BDL	1
ETHYLENE DIBROMIDE	BDL	0.02

*Below Detection Limit

THORNTON LABORATORIES, INC.

Paul R. Hautaje P.

JAMMAL & ASSOCIATES, INC. Consulting Engineers

November 9, 1987
Project No. 87-30802

TO: Camp, Dresser & McKee, Inc.
1321 U.S. 19 South, Suite 100B
Clearwater, Florida 33546

Attention: Mr. Dorian Modjeski, P.E.

SUBJECT: Base Elevation
Proposed Class III Landfill
Hays Road Site
Pasco County, Florida

Dear Mr. Modjeski:

In accordance with your letter of October 30, 1987, and the memo from Mr. Bob Tietz dated November 6, 1987, we are providing some additional input relative to the base elevation of the proposed Class III Landfill at the Hays Road Site in Pasco County. We understand that you have suggested an elevation of approximately +45 Ft. MSL for the base level (lower liner elevation) of the Class III Landfill.

Based on the test boring data and the groundwater data we collected over the site, and our summary report to you for the Class III Landfill dated May 26, 1987, we have no major problem with an elevation of +45 ft. MSL as a base elevation for the landfill. Groundwater conditions in this area of the Hays Road Site are compatible for a landfill with base elevation at +45 Ft. MSL. We have not had the opportunity to review the preliminary stormwater plans for this landfill. Basically, they should be compatible with the recommended base elevation. We assume the perimeter swale system and adjacent retention ponds will be dry within 72 hours after a 25 year storm event; such that collected stormwater is not sustained above elevation +45 ft. MSL adjacent to the landfill.

We trust that the enclosed information is sufficient for your needs. If you have any additional questions, please do not hesitate to give me a call.

Sincerely,

JAMMAL & ASSOCIATES, INC.

Richard A. Mortensen/ds
Richard A. Mortensen, P.E.
Vice President

RAM/npl/ls:1852M

cc: Mr. Lou Tortora - Camp, Dresser & McKee, Inc.-Clearwater
Mr. Richard Gibney - Camp, Dresser & McKee, Inc.-Tampa
Mr. Bob Tietz - Camp, Dresser & McKee, Inc.-Clearwater

JAMMAL & ASSOCIATES, INC. Consulting Engineers

November 16, 1987
Project No. 87-30802

TO: Camp, Dresser & McKee, Inc.
1321 U.S. 19 South, Suite 100B
Clearwater, Florida 34624

Attention: Mr. Dorian Modjeski, P.E.

SUBJECT: Temporary Shallow Piezometer Installations
Proposed Class III Sanitary Landfill
Hays Road Site
Pasco County, Florida

Dear Mr. Modjeski:

In accordance with our proposal to you dated May 1, 1987, we have completed the installation of five (5) temporary shallow PVC piezometers at the site of the proposed Class III sanitary landfill at the Hays Road Site. As discussed in our summary report for this landfill dated May 26, 1987, the purpose of these piezometers was to establish and estimate the groundwater conditions over the proposed Class III landfill site.

A typical piezometer detail is included on Plate 1. Each piezometer was installed, using auger drilling techniques, into a 4-inch diameter borehole to the top of the clay surface. Prior to construction of the landfill, each piezometer should be pulled and grouted to the ground surface in accordance with SWFWMD regulations. Again, these piezometers are temporary, only to be utilized during the design phase of this project to estimate groundwater conditions over the landfill site. The approximate location of each of the piezometers is shown on the revised aerial topographic map of the site presented on Sheet 1. The soil profiles encountered at each of the piezometer locations are included on Sheet 2. At the time of installation

of these piezometers and several days after the installation, the shallow groundwater level was measured in each one of the piezometers. Based on the results of these readings, it appears that no shallow groundwater was present at any of these locations to a depth of at least 15 feet. Also, upon a subsequent site visit, it was discovered that two (2) of the piezometers (P-2 and P-4) had been destroyed. During the design phase, the piezometers should continue to be monitored to see if a shallow groundwater table can be encountered. It should be noted that fluctuations in groundwater conditions will occur with seasons and rainfall conditions. If necessary, Jammal & Associates, Inc. will be available to perform subsequent monitoring of these piezometers at your request.

If you have any questions regarding the information contained herein, please do not hesitate to call. Thank you for this opportunity to be of service to you.

Sincerely,

JAMMAL & ASSOCIATES, INC.

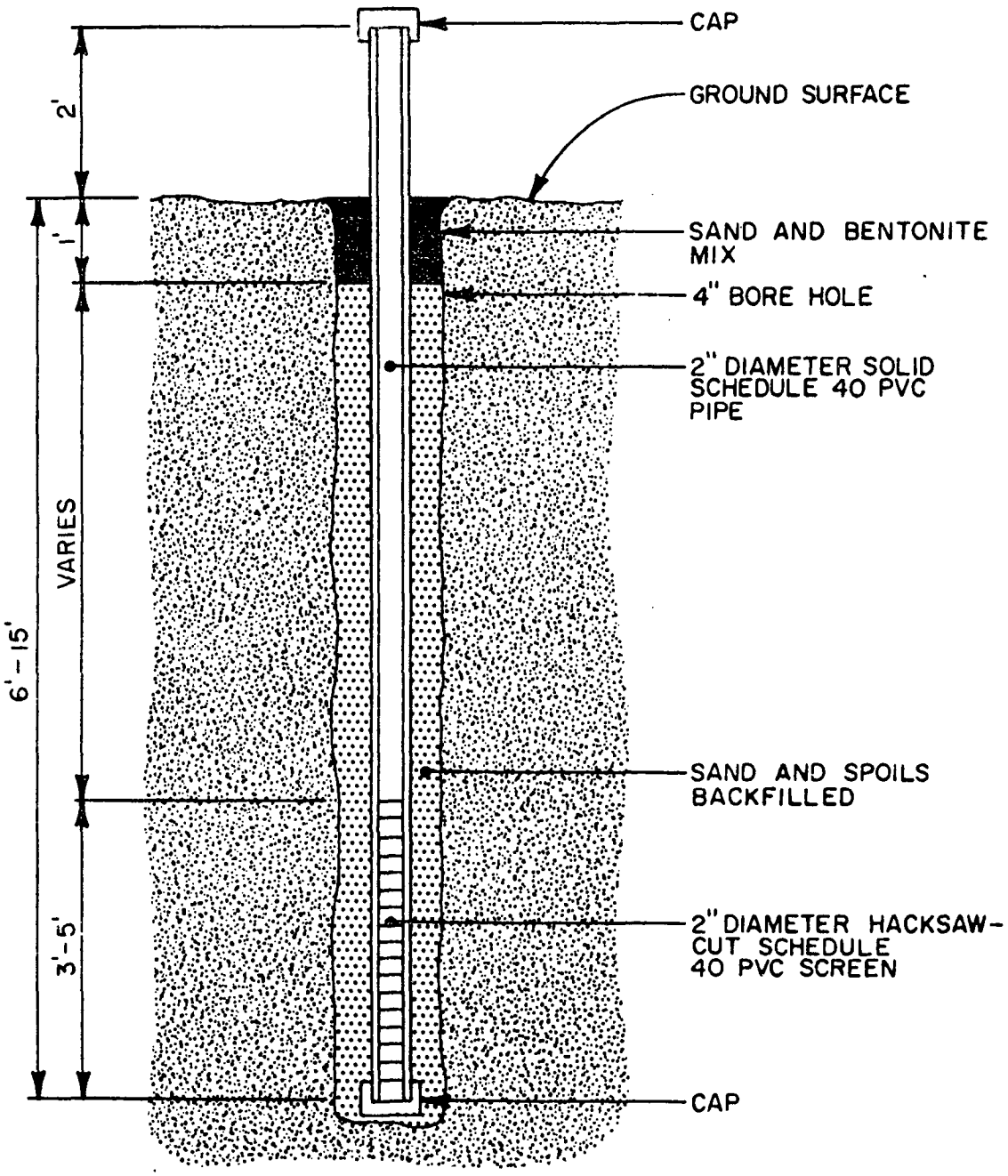
David A. Mevers, E.I.
Project Engineer

Richard A. Mortensen, P.E.
Vice President

DAM/RAM/ls:1869M

Attachments: Plate 1
Sheets 1 and 2

xc: Mr. Bob Tietz

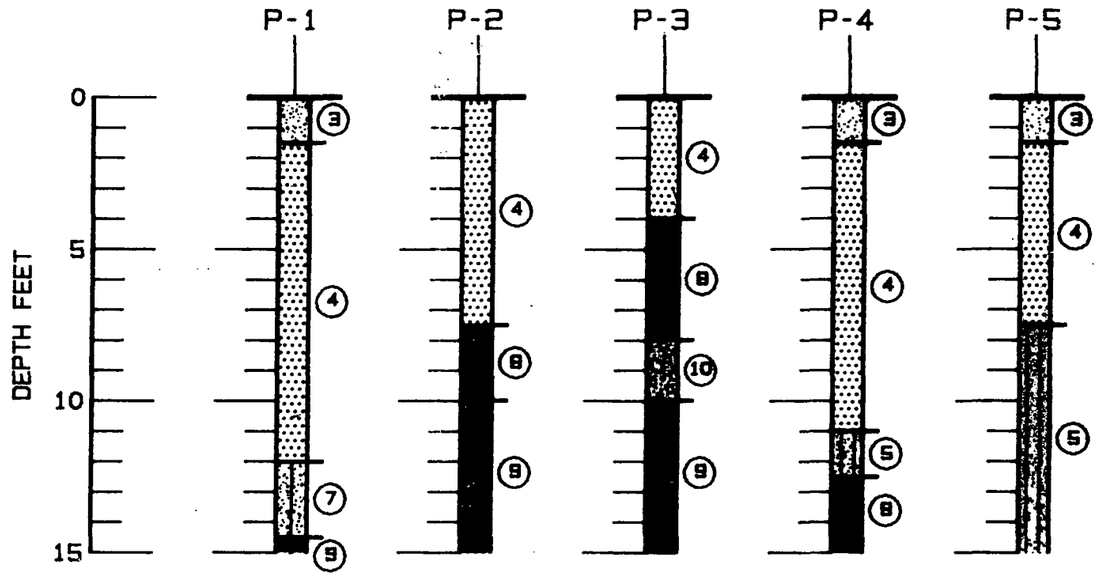


TYPICAL TEMPORARY SHALLOW GROUNDWATER MONITORING WELL DETAIL

GEOTECHNICAL/HYDROGEOLOGIC STUDY
PROPOSED CLASS III LANDFILL-HAYS ROAD SITE
PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

DRAWN: STB	SCALE: NTS	PROJ. NO: 87-30802
CHKD: RAB	DATE: NOV. 87	PLATE 1



SOIL PROFILES

NOTE: THE SHALLOW GROUNDWATER TABLE WAS NOT ENCOUNTERED IN ANY OF THE BORINGS.

LEGEND

1. Black organic debris - MUCK (Pt)
2. Dark gray to black silty to sandy CLAY (CL/CH)
3. Gray slightly silty fine SAND, trace roots (SP-SM)
4. Light brown to brown fine SAND to slightly silty fine SAND (SP/SP-SM)
5. Dark brown slightly silty fine SAND to silty fine SAND (SP-SM/SM)
6. Brown to orange-brown silty fine SAND to slightly clayey fine SAND (SM/SP-SC)
7. Gray clayey SAND (SC)
8. Light gray and reddish-brown mottled sandy CLAY to CLAY (CL/CH)
9. Light brown or greenish-gray to green sandy CLAY to CLAY (CL/CH)
10. White to light brown calcareous silty CLAY, with limestone fragments and traces of green clay (CL-CH)
11. White to light gray weathered LIMESTONE

SC – Unified Soil Classification group symbol as determined by visual examination

DRAWN: JFW/BDB
CHKD: DAM
APPVD: RAM
SCALE: 1"=5'

GEOTECHNICAL/HYDROGEOLOGIC STUDY
PROPOSED CLASS III LANDFILL-HAYS ROAD SITE
PASCO COUNTY, FLORIDA

JAMMAL & ASSOCIATES, INC. Consulting Engineers

DATE: NOV. 87 | PROJ. NO: 87-30802 | SHEET 2 OF 2

DRAPHIX #233264

APPENDIX B

ORDINANCE INTERPRETATION LETTER
ENGINEER OF RECORD -
LETTER OF APPOINTMENT

1887 PASCO COUNTY FLORIDA 1987

★ CENTENNIAL ★

Pasco County Utilities Division
7536 State Street
New Port Richey, Florida 33553
(813) 847-8145

November 19, 1987

Dr. Richard D. Garrity, Manager
Florida Department of Environmental Regulation
450 Oak Fair Boulevard
Tampa, Florida 33610-7347

RE: West Pasco County Class III Landfill
- Engineer of Record

Dear Dr. Garrity:

The authorized Engineer of Record for the West Pasco County Class III Landfill is Dorian Modjeski, P.E. of Camp Dresser & McKee Inc.

If you have any questions regarding this letter of appointment, please contact me at your convenience.

Very truly yours,

George Ellsworth

George Ellsworth, Resource Recovery Manager
Pasco County Utilities Division

dmc
LOT7C.4/8

1887 PASCO COUNTY FLORIDA 1987

★CENTENNIAL★

PASCO COUNTY PLANNING DEPARTMENT
7530 Little Road
New Port Richey, Florida 34654
(813) 847-8132

December 3, 1987

Mr. Dorian Modjeski, P.E.
Camp Dresser & McKee, Inc.
1321 U. S. 19, Suite 100B
Clearwater, Florida 33546

Re: Interpretation of Section 2, Pasco County Ordinance No. 84-04;
Proposed Class III Landfill Facility

Dear Mr. Modjeski:

Please be advised it is my determination that a development or an activity, such as a Resource Recovery/Class I Ashfill Facility, conducted by Pasco County is exempt from the provisions of Ordinance No. 75-21 as amended, and that ancillary or support facilities such as a Class III Landfill would be equally exempt.

It is my hope that this correspondence will meet your needs and expedite the review process for this much needed facility. If I may be of further assistance please do not hesitate to contact me direct.

Sincerely,

Kenneth W. Baginski
Zoning Administrator

KWB/pm

cc: John J. Gallagher, County Administrator
J. Benjamin Harrill, County Attorney
William Munz, Public Works and Utilities Director

APPENDIX C

SITE AND ADJACENT AREA PROPERTY OWNERSHIP

APPENDIX 10.6.1

DEED FOR PROPERTY SURVEY OF 810-ACRE TRACT PURCHASE AGREEMENT

59 Acres of the property have been designated for a Class III landfill to be permitted separately (see Figure 2-6 of Volume I). The remaining 751 acres are dedicated to this project.

17.00 14.50 250 Charge County Attorney -115-002
2358.50 1,871,685.47
TO: 9375.50

(6)

WARRANTY DEED

THIS WARRANTY DEED made this 17th day of December, 1985, by RICHU GROVES PARTNERSHIP, a Florida general partnership and RICHARD M. CLEWIS, III, hereinafter collectively called the Grantor, to PASCO COUNTY, a political subdivision, of the State of Florida, whose post office address is Pasco County Courthouse, Dade City, Florida, hereinafter called the Grantee:

WITNESSETH: That the Grantor for and in consideration of the sum of $10.00 and other valuable considerations, receipt whereof is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms unto the Grantee all that certain land situate in Pasco County, Florida, more particularly described in Exhibit A attached hereto and incorporated herein by reference.

TOGETHER with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

TO HAVE AND TO HOLD, the same in fee simple forever.

AND the Grantor hereby covenants with said Grantee that the Grantor is lawfully seized of said land in fee simple; that the Grantor has good right and lawful authority to sell and convey said land; that the Grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to December 31, 1985 and subsequent years, zoning, restrictions, prohibitions and other requirements imposed by governmental authority and those matters set forth in Exhibit B attached hereto and incorporated herein by reference.

IN WITNESS WHEREOF, the said Grantor has signed and sealed these presents the day and year first above written.

Witnesses:

As to Richard M. Clewis, III

Richard M. Clewis III
RICHARD M. CLEWIS, III

As to Carlisle K. Clewis, General Partner of Richu Groves Partnership

RICHU GROVES PARTNERSHIP

By: Carlisle K. Clewis
CARLISLE K. CLEWIS, General Partner of Richu Groves Partnership

This Instrument prepared by:

Stephen L. Kussner, Esquire
Shackleford, Farrior, Stallings & Evans, Professional Association
Post Office Box 3324
Tampa, Florida 33601

R

FILED FOR RECORD
Dec 30 6 41 PM '85
207.347

RECORD VERIFIED

O.R. 1470 PG 0012

STATE OF FLORIDA

COUNTY OF Hillsborough

The foregoing instrument was acknowledged before me this 17th day of December, 1985, by CARLISLE K. CLEWIS, general partner on behalf of RICHU GROVES PARTNERSHIP, a Florida partnership.

Notary Public, State of Florida at Large

Notary Public, State of Florida
My Commission Expires Oct. 6, 1989

My Commission Expires: 10-6-89

STATE OF FLORIDA

COUNTY OF Hillsborough

The foregoing instrument was acknowledged before me this 17th day of December, 1985 by RICHARD M. CLEWIS, III.

Notary Public, State of Florida at Large

Notary Public, State of Florida
My Commission Expires Oct. 6, 1989

My Commission Expires: 10-6-89

0680K

EXHIBIT A

PARCEL ONE

A portion of the Northeast ¼ of the Northeast ¼ of Section 26 and a portion of the Northwest ¼ of the Northwest ¼ of Section 25, Township 24, Range 17 East, Pasco County, Florida. Beginning at the Northwest corner of Section 25 and running thence; North 89°52'05" East along the North line of Section 25, 906.48 feet to the center line of a Florida Power Corporation right-of-way; thence South 10°10'31" West along the center line of said Florida Power Corporation right-of-way, 1338.58 feet; thence South 89°56'36" West, 665.99 feet to the West line of Section 25 and the East line of Section 26; thence South 00°10'29" East along the West line of Section 25 and the East line of Section 26, 658.05 feet; thence North 89°51'58" West, 2647.92 feet to the East right-of-way line of Hayes Road; thence North 00°07'03" West along the East right-of-way line of Hayes Road, 657.81 feet; thence South 89°52'17" East, 1323.63 feet; thence North 00°08'46" West, 1315.86 feet to the North line of Section 26; thence South 89°52'53" East along the North line of Section 26, 1322.98 feet to the Northwest corner of Section 25 and the point of beginning. Containing 103.73 acres, more or less and subject to a Florida Power Corporation right-of-way along the most easterly line.

PARCEL TWO

A portion of Sections 25 and 26, Township 24 South, Range 17 East, Pasco County, Florida. Beginning at a point on the North line of Section 25, said point being South 89°52'05" West along the North line of Section 25, 661.37 feet from the Northeast corner of said Section 25. Running thence; South 00°04'08" East, 2644.31 feet to the South line of the North ½ of Section 25; thence North 89°58'53" West along the South line of the North ½ of Section 25, 3296.71 feet; thence South 00°05'03" East, 1254.08 feet to the North right-of-way line of Hayes Road; thence North 89°58'20" West along the North right-of-way line of Hayes Road, 1265.79 feet to the Easterly line of lands of Florida Power Corporation; thence North 10°10'31" East along the Easterly line of lands of Florida Power Corporation, 540.00 feet; thence North 79°49'29" West along the Northerly line of lands of Florida Power Corporation, 480.00 feet; thence South 10°10'31" West along the Westerly line of lands of Florida Power Corporation, 625.07 feet to the North right-of-way line of Hayes Road; thence North 89°51'51" West along the North right-of-way line of Hayes Road, 2209.35 feet to the West line of the East ½ of Section 26; thence North 00°07'03" West along the West line of the East ½ of Section 26 and the East right-of-way line of Hayes Road, 1911.82 feet; thence South 89°51'58" East, 2647.92 feet to the East line of Section 26 and the West line of Section 25; thence North 00°10'29" West along the East line of Section 26 and the West line of Section 25, 658.05 feet; thence North 89°56'36" East, 665.99 feet to the center line of the Florida Power Corporation right-of-way; thence North 10°10'31" East along the center line of the Florida Power Corporation right-of-way, 1338.58 feet to the North line of Section 25; thence North 89°52'05" East along the North line of Section 25, 3709.87 feet to the point of beginning. Containing 403.34 acres more or less and subject to a 295 foot wide Florida Power Corporation right-of-way and a Florida Power Corporation easement along the North right-of-way line of Hayes Road as described in O.R. Book 1067, Page 1379 of the Public Records of Pasco County, Florida.

EXHIBIT B

1. Oil, gas, mineral oil and coal reservation conditions and requirements as set forth in Deed Book 156, Page 461; waiver of surface rights recorded in Official Records Book 779, Page 1431, and instruments of conveyance, assignment and transfer recorded in Official Records Book 1266, Page 1258, all of the Public Records of Pasco County, Florida.

2. Easement granted to Florida Power Corporation recorded in Official Records Book 281, Page 111, of the Public Records of Pasco County, Florida.

3. Supplemental easement granted to Florida Power Corporation recorded in Official Records Book 1067, Page 1373, of the Public Records of Pasco County, Florida.

4. Guying easement granted to Florida Power Corporation by instrument recorded in Official Records Book 1067, Page 1380, of the Public Records of Pasco County, Florida.

5. Easement granted to Florida Power Corporation recorded in Official Records Book 1067, Page 1376, of the Public Records of Pasco County, Florida.

200006 30 2444 12-30-85 2105
14:01
9 AUTH
GOV CHG RECORD
21 10 40 1 2.50
115002 ACCT
30 CHARGES TOTAL 1 2.50

200006 10 2443 12-30-85 2105
14:00
RECORDING
01 00 40 1 14.50
DOC STAMPS
01 00 41 1 9358.50
10 CASH TOTAL 1 9373.00

O.R. 1470 PG 0015

N/(

FILED FOR RECORD
Pasco County, Florida
SEP 3 2 14 PM '86

IN THE CIRCUIT COURT OF THE SIXTH JUDICIAL CIRCUIT
OF THE STATE OF FLORIDA, IN AND FOR PASCO COUNTY

PASCO COUNTY, a political subdivision of the State of Florida,

Petitioner,

vs.

Case No. 86-2053CA
Division "H"

SUMNER A. WILLIAMS, as Sole remaining Trustee under the Adelaide S. Bolling Revocable Trust; S. A. WILLIAMS CORPORATION, a Florida corporation; and MIKE OLSON, as Tax Collector for Pasco County, Florida,

Defendants.

EMINENT DOMAIN

FILED FOR RECORD
OLD C.R. CT. PASCO COUNTY, FL
SEP 8 4 29 PM '86

275648

ORDER OF TAKING

THIS CAUSE coming on to be heard by the Court, it appearing that proper notice was first given to all the defendants, and to all persons having or claiming any equity, lien, title, or other interest in or to the real property described in the Petition, that the Petitioner would apply to this Court on the 25th day of August, 1986, for an Order of Taking, and the Court being fully advised in the premises, upon consideration, it is therefore,

ADJUDGED:

1. That the Court has jurisdiction of the subject matter of and the parties to this cause.
2. That the pleadings in this cause are sufficient, and the Petitioner is properly exercising its delegated authority.
3. That fee simple title to the property specified in Exhibit A, attached hereto and incorporated herein by reference, shall vest in the Petitioner upon payment of the deposit hereinafter specified into the Registry of the Court.
4. That the deposit of money will secure the persons lawfully entitled to the compensation which will be ultimately determined by final judgment of this Court.
5. That the deposit does not reflect the fair market value, if any, of timber and mineral deposits on the property, which will be ultimately determined by final judgment of this Court.

R CIRCUIT CIVIL

6. That the sum of money to be deposited in the Registry of the Court within twenty (20) days of the entry of this Order shall be in the amount of One Million One Hundred Fifty-Two Thousand Three Hundred ($1,152,300.00) Dollars.

7. That on deposit as set forth above and without further notice or Order of this Court the Petitioner shall be entitled to possession of the property described in the Petition.

DONE AND ORDERED this 29th day of August, 1986, in Chambers, New Port Richey, Pasco County, Florida.

W. Lowell Bray, Jr.
Circuit Judge

Copies to:

Mark P. Buell, Esq.
Edward B. Helvenston, Esq.
H. Clyde Hobby, Esq.
James G. Murphy, Jr., Esq.

RECORD VERIFIED
JED PITTMAN
Clerk Circuit Court, Pasco County
By CELEX

EXHIBIT "A"

The southeast 1/4 of Section 24, Township 24 South, Range 17 East subject to an easement over and across the east 33 feet of said property as heretofore conveyed to the County of Pasco, Florida for road right-of-way purposes.

AND

The southwest 1/4 of Section 24, Township 24 South, Range 17 East, less a 295' foot wide strip of land extending through the SW 1/4 of said Section, being more particularly described as follows:

From a concrete monument marking the southwest corner of Section 24, Township 24 South, Range 17 East, run N. 89° 52' 06" E along the south boundary of said Section 24, 756.69 feet to the point of beginning; thence N 10° 10' 31" E., 2693.54 feet to a point on the north boundary of the SW 1/4 of Section 24, Township 24 South, Range 17 East that is N. 89° 56' 24" E., 1242.84 feet from the northwest corner of said SW 1/4, thence N. 89° 56' 24" E. along said north boundary, 299.75 feet to a point that is S. 89° 56' 24" W., 1097.79 feet from the northeast corner of said SW 1/4; thence S. 10° 10' 31" W., 2693.16 to a point on the south boundary of the SW 1/4 of Section 24, Township 24 South, Range 17 East that is S. 89° 52' 06" W., 1575.26 feet from the southeast corner of said SW 1/4; thence S. 89° 52' 06" W., 299.83 feet to the point of beginning.

EXHIBIT "A"

EXHIBIT "A"

The southeast 1/4 of Section 24, Township 24 South, Range 17 East subject to an easement over and across the east 33 feet of said property as heretofore conveyed to the County of Pasco, Florida for road right-of-way purposes.

AND

The southwest 1/4 of Section 24, Township 24 South, Range 17 East, less a 295' foot wide strip of land extending through the SW 1/4 of said Section, being more particularly described as follows:

From a concrete monument marking the southwest corner of Section 24, Township 24 South, Range 17 East, run N. 89° 52' 06" E along the south boundary of said Section 24, 756.69 feet to the point of beginning; thence N. 10° 10' 31" E., 2693.54 feet to a point on the north boundary of the SW 1/4 of Section 24, Township 24 South, Range 17 East that is N. 89° 56' 24" E., 1242.84 feet from the northwest corner of said SW 1/4, thence N. 89° 56' 24" E. along said north boundary, 299.75 feet to a point that is S. 89° 56' 24" W., 1097.79 feet from the northeast corner of said SW 1/4; thence S. 10° 10' 31" W., 2693.16 to a point on the south boundary of the SW 1/4 of Section 24, Township 24 South, Range 17 East that is S. 89° 52' 06" W., 1575.26 feet from the southeast corner of said SW 1/4; thence S. 89° 52' 06" W., 299.83 feet to the point of beginning.

FILED FOR RECORD
Pasco County, Florida
SEP 3 2 14 PM '86
JED PITTMAN, CLERK OF CIRCUIT COURT
AND COUNTY COURTS

ATE OF FLORIDA
UNTY OF PASCO
THIS IS TO CERTIFY THAT THE FOREGOING IS A
E AND CORRECT COPY OF THE DOCUMENT ON FILE
OF PUBLIC RECORD IN THIS OFFICE. WITNESS MY
ND AND OFFICIAL SEAL THIS 15th DAY OF
ptember 1986
D PITTMAN, CLERK OF CIRCUIT COURT
Maureen K. Peppers D.C

EXHIBIT "A"

10.00 Charge to County Attorney 115-032

IN THE CIRCUIT COURT OF THE SIXTH JUDICIAL CIRCUIT
IN AND FOR PASCO COUNTY, FLORIDA

PASCO COUNTY, a political subdivision of the State of Florida,

Petitioner,

vs.

Case No. 86-2053 CA
Division "H"

SUMNER A. WILLIAMS, as sole remaining Trustee under the ADELAIDE S. BOLLING Revocable Trust; S. A. WILLIAMS CORPORATION, a Florida corporation, and MIKE OLSON, as Tax Collector for Pasco County, Florida,

Defendants.

_____/

FILED FOR RECORD
SEP 16 6 23 PM '86
CLERK OF THE CIRCUIT COURT
PASCO COUNTY, FL

278153

CERTIFICATE OF CLERK

The undersigned Clerk of the above-entitled Court hereby certifies that the sum of One Million One Hundred Fifty-Two Thousand Three Hundred Dollars ($1,152,300.00) as specified in the Order of Taking of August 29, 1986 relating to the property described in Exhibit "A" attached hereto and incorporated herein by reference, was paid into the Registry of this Court by Pasco County on September 10, 1986.

WITNESS MY HAND AND OFFICIAL SEAL on this 11th day of September, A.D., 1986.

RECORD VERIFIED
JED PITTMAN
Clerk Circuit Court
By M. Hernandez

JED PITTMAN,

CLERK OF THE CIRCUIT COURT OF FLORIDA
IN AND FOR THE COUNTY OF PASCO

County Attorney
R N.P.R.

By Janice Penning
Deputy Clerk

[S E A L]

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the above Certificate of Deposit has been furnished by regular U. S. Mail to JAMES G. MURPHY, JR., ESQ., P. O. Box 3324, Tampa, FL 33601, EDWARD B. HELVENSTON, ESQ., Assistant County Attorney, Pasco County Government Center, 7530 Little Road, New Port Richey, FL 33553 and H. CLYDE HOBBY, ESQ., 6917 County Road 54, New Port Richey, FL 33552, this 11th day of September, 1986.

STATE OF FLORIDA
COUNTY OF PASCO
THIS [illegible] CERTIFY THAT THE FOREGOING IS A TRUE [illegible] COPY OF THE DOCUMENT ON FILE OR OF [illegible] THIS OFFICE. WITNESS MY HAND [illegible] THIS 11 DAY OF [illegible]
JED PITTMAN, CLERK OF CIRCUIT COURT
[illegible]

By Janice Penning
Deputy Clerk

O.R. 1537 PG 1596

A BOUNDARY SURVEY
OF LAND
ENCOMPASSING THE PROPOSED

PASCO COUNTY LANDFILL AREA (WEST)

LYING AND BEING IN TOWNSHIP 24 SOUTH, RANGE 17 EAST, PASCO COUNTY, FLORIDA.
BEING THE SOUTH ONE-HALF OF SECTION 24, THE NORTH ONE-HALF OF SECTION 25, LESS THE EAST ONE-EIGHTH, MORE OR LESS; THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 25, LYING NORTH OF HAYES ROAD, MORE OR LESS,
THE NORTH THREE-QUARTERS OF THE EAST ONE-HALF OF SECTION 26, LYING NORTH AND EAST OF HAYES ROAD, MORE OR LESS; LESS THE NORTHWEST ONE-QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 26 AND SUBJECT TO RIGHTS-OF-WAY AND EASEMENTS OF RECORD, BEING MORE PARTICULARLY DESCRIBED AS:

BEGINNING AT THE SOUTHWEST CORNER OF SECTION 24, TOWNSHIP 24 SOUTH, RANGE 17 EAST, PASCO COUNTY, FLORIDA, RUN N 00°02'29" W ALONG THE WEST BOUNDARY OF SAID SECTION 24 FOR 2,652.47 FEET TO THE WEST QUARTER CORNER SAID SECTION; THENCE S 89°52'32" E ALONG THE EAST-WEST CENTER LINE OF SAID SECTION 24 FOR 5,295.53 FEET TO THE EAST QUARTER CORNER OF SAID SECTION; THENCE S 00°20'48" W ALONG THE EAST BOUNDARY OF SAID SECTION 24 FOR 2,645.44 FEET TO THE SOUTHEAST CORNER OF SAID SECTION 24; THENCE N 89°57'07" W ALONG THE SOUTH BOUNDARY OF SAID SECTION 24 FOR 661.63 FEET; THENCE S 00°06'14" W FOR 2,643.74 FEET; THENCE N 89°48'39" W ALONG THE EAST-WEST CENTER LINE OF SECTION 25 FOR 3,296.94 FEET; THENCE S 00°05'25" W FOR 1,254.12 FEET TO THE NORTH RIGHT-OF-WAY OF HAYES ROAD; THENCE N 89°48'11" W FOR 1,315.46' ALONG SAID NORTH RIGHT-OF-WAY TO THE INTERSECTION WITH THE WEST BOUNDARY OF SECTION 25; CONTINUE THENCE ALONG SAID NORTH RIGHT-OF-WAY OF HAYES ROAD N 89°41'16" W FOR 2,647.38 FEET TO THE POINT OF INTERSECTION WITH THE EASTERLY RIGHT-OF-WAY OF SAID HAYES ROAD AT ROAD TURN TO THE NORTH, BOTH RIGHTS-OF-WAYS BEING 66 FEET WIDE. RUN THENCE N 00°03'45" E ALONG AFORESAID EASTERLY RIGHT-OF-WAY FOR 2,570.05 FEET TO THE INTERSECTION, MORE OR LESS, WITH THE SOUTH BOUNDARY OF THE NORTHWEST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER OF SAID SECTION 25; THENCE S 89°41'29" E FOR 1,323.59 FEET; THENCE N 00°01'28" E FOR 1,315.54' TO THE NORTH BOUNDARY OF SAID SECTION 25; THENCE N 89°42'39" E FOR 1,323.33 FEET TO THE POINT OF BEGINNING.

LESS, THAT CERTAIN PARCEL CONTAINING 18.24 ACRES, MORE OR LESS, FOR A 295 FOOT WIDE RIGHT-OF-WAY FOR FLORIDA POWER CORPORATION LYING IN THE SOUTH ONE-HALF OF SAID SECTION 24 DESCRIBED IN O.R. BOOK 284, PAGE 705, PUBLIC RECORDS OF PASCO COUNTY, FLORIDA, AND

LESS, THAT CERTAIN PARCEL CONTAINING 6.42 ACRES, MORE OR LESS, FOR FLORIDA POWER CORPORATION SUBSTATION LYING IN SAID SECTIONS 25 AND 26 ADJOINING HAYES ROAD AS DESCRIBED IN O.R. BOOK 1068, PAGE 1339, PUBLIC RECORDS OF PASCO COUNTY, FLORIDA, AND

SUBJECT TO A RIGHT-OF-WAY FOR SHADY HILLS ROAD BEING THE EAST 33 FEET OF SAID SECTION 24 ACCORDING TO O.R. BOOK 51, PAGE 450, PUBLIC RECORDS OF PASCO COUNTY, FLORIDA, AND

SUBJECT TO AN EASEMENT FOR A 295 FOOT WIDE RIGHT-OF-WAY FOR FLORIDA POWER CORPORATION ACROSS THE NORTH THREE-QUARTERS OF THE WEST ONE-HALF OF SAID SECTION 25 AS DESCRIBED IN O.R. BOOK 281, PAGES 111-115, PUBLIC RECORDS OF PASCO COUNTY, FLORIDA, AND

SUBJECT TO AN EASEMENT 43 FEET WIDE ALONG THE NORTH RIGHT-OF-WAY OF HAYES IN SAID SECTION 26 AS DESCRIBED IN O.R. BOOK 1067, PAGES 1373-1381, PUBLIC RECORDS OF PASCO COUNTY, FLORIDA, AND

OTHER EASEMENTS, RESTRICTIONS OR RIGHTS-OF-WAY OF RECORD.

CONTAINING 810.26 ACRES, MORE OR LESS,

THE ABOVE DESCRIPTION ENCOMPASSES ALL OF THE LANDS DESCRIBED IN DEEDS OF RECORD FROM THIS COMPOSITE PARCEL IS SURVEYED AND ABOVE REDESCRIBED VIZ;

O.R. BOOK 1470, PAGES 0012-0015; O.R. BOOK 284, PAGE 705; O.R. BOOK 81, PAGES 383 & 385; O.R. BOOK 1068, PAGE 1339, ALL RECORDED IN THE PUBLIC RECORDS OF PASCO COUNTY, FLORIDA.

APPENDIX 10.6.2

COMPLETE LIST OF ABUTTING AND ADJACENT PROPERTY OWNERS

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00900 0010
SC TP RG SUBD BLOCK LOT

NAME 1: LAMBOUSIS ANTON & BESSIE NAME 2:
ST LN1: 29 VETERANS PLAZA ST LN2:
CITY: BERGENFIELD STATE: NJ ZIP: 07621

LEGAL DESCRIPTION FOR PROPERTY

W1/2 OF W1/2 OF S1/2 OF SW1/4 OF NW1/4
RB 1070 PG 1337

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00900 0000
SC TP RG SUBD BLOCK LOT

NAME 1: PETERS RAY E & MARIE E NAME 2:
ST LN1: 540 HAYS RD ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

E3/4 OF S1/2 OF SW1/4 OF NW1/4 LESS A FLORIDA POWER CORP R/W
DESC AS COM AT W1/4 COR OF SEC TH N89DG 56' 24"E TO WLY R/W
OF FLORIDA POWER CORP 1242.82 FT FOR A POB TH N10DG 10' 31"E
432.53 FT TH S00DG 07' 46"E 423.64 FT TH S89DG 56' 24"W
77.37 FT TO POB OR 1388 PG 1596

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00400 0000
SC TP RG SUBD BLOCK LOT

NAME 1: FLORIDA POWER CORP NAME 2:
ST LN1: P O BOX 14042 ST LN2:
CITY: ST PETERSBURG STATE: FL ZIP: 33733

LEGAL DESCRIPTION FOR PROPERTY

A 295 FT WIDE STRIP OF LAND EXTENDING THRU W
1/2 OF SEC 24 CONTAINING APPROX 36.71
ACS AS PER RB 284 PG 618, RB
285 PG 62, RB 284 PGS 171 708, 705 24 24 17

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 01000 0000
SC TP RG SUBD BLOCK LOT

NAME 1: FRANCIS MARY NAME 2: 2011 SUNSET LN
ST LN1: LUTZ FL 33549 ST LN2:
CITY: STATE: ZIP: 33549

LEGAL DESCRIPTION FOR PROPERTY

SW 1/4 OF SE 1/4 OF NW 1/4 EXC RD, EXC BEG SW
COR TH E 222.40 FT TH N 10 DEG 10 MIN
31 SEC E 673.31 FT TH W 342.84 FT TH S 662.66 FT
TO BEG

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00100 0010
SC TP RG SUBD BLOCK LOT

NAME 1: ALONSO MARIA C NAME 2:
ST LN1: 3012 E POWHATAN ST LN2:
CITY: TAMPA STATE: FL ZIP: 33610

LEGAL DESCRIPTION FOR PROPERTY

SE 1/4 OF SE 1/4 OF NW 1/4 EXC S 210 FT OF N 235 FT OF W 420
FT THEREOF & EXC S 25 FT FOR RD

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0015
SC TP RG SUBD BLOCK LOT

NAME 1: HANSEN GARY A & JANET Y NAME 2:
ST LN1: 1713 BLUEBIRD LN-B ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

WEST 150.00 FT OF SOUTH 1/2 OF SOUTH1/4 OF NE1/4;SUBJECT TO
EASEMENT FOR INGRESS & EGRESS ACROSS SOUTH 25.00 FT THEREOF
OR 1476 PG 26

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86
NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0030
SC TP RG SUBD BLOCK LOT

NAME 1: FREEMAN JEAN M & NAME 2: HANSEN GRAY A & JANET Y
ST LN1: 1717 S BLUEBIRD LN ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

EAST 150.00 FT OF WEST 300.00 FT OF SOUTH1/2 OF SOUTH1/4 OF
NE1/4;SUBJECT TO EASEMENT FOR INGRESS & EGRESS ACROSS SOUTH
25.00 FT THEREOF OR 1500 PG 1306

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0013
SC TP RG SUBD BLOCK LOT

NAME 1: ROSS WILLARD B & GAIL B NAME 2:
ST LN1: P O BOX 11072 ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

EAST 150.00 FT OF WEST 1950.00 FT OF S1/2 OF S1/4 OF NE1/4 OF SEC 24
OR 1424 PG 1352

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0011
SC TP RG SUBD BLOCK LOT

NAME 1: HENDERSON RAYMOND & DOROTHY NAME 2:
ST LN1: RT 5 BOX 1728 ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

E 150 FT OF W 2100 FT OF S1/2 OF S 1/4 OF NE 1/4
OR 963 PG 277

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0012
SC TP RG SUBD BLOCK LOT

NAME 1: HENDERSON RAYMOND & DOROTHY NAME 2:
ST LN1: RT 5 BOX 1728 ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

E 150 FT OF W 2250 FT OF S 1/2 OF S 1/4 OF NE 1/4
OR 963 PG 277

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0018
SC TP RG SUBD BLOCK LOT

NAME 1: KENT HAROLD L NAME 2: RT 5 BOX 562
ST LN1: LUTZ FL ST LN2: 33549
CITY: STATE: ZIP: 33549

----------LEGAL DESCRIPTION FOR PROPERTY----------

S 165 FT OF E 394 FT OF S 1/2 OF S 1/4 OF NE 1/4
RB 678 PG 404

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 23 24 17 0030 00000 0250
SC TP RG SUBD BLOCK LOT

NAME 1: HARRIE ROBERT EUGENE & NAME 2: CATHERINE
ST LN1: 522 HAYS RD ST LN2: BROOKSVILLE FL 33512
CITY: STATE: ZIP: 33512

----------LEGAL DESCRIPTION FOR PROPERTY----------

JEAN VAN FARMS UNREC LOT 25 E 1/2 OF SE 1/4 OF SE 1/4 OF NE 1/4 EXC N 31.50 FT
RB 1029 PG 1249

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 23 24 17 0030 00000 0400
SC TP RG SUBD BLOCK LOT

NAME 1: WEIGAND THOMAS & NAME 2: CAROL H
ST LN1: 394 HAYS RD ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

JEAN VAN FARMS UNREC LOT 40 E 1/2 OF NE 1/4 OF NE 1/4 OF SE 1/4 EXC S 31.50 FT
RB 930 PG 891

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 23 24 17 0030 00000 0410
SC TP RG SUBD BLOCK LOT

NAME 1: WITTY YOSHIE NAME 2:
ST LN1: 640 HAYS RD ST LN2:
CITY: BROOKSVILLE STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

JEAN VAN FARMS UNREC LOTS 41 42 55 & 56 E 1/2 OF SE 1/4 OF NE 1/4 OF SE 1/4 EXC N 31.50 FT & W 1/2 OF SE 1/4 OF NE 1/4 OF SE 1/4 EXC N 31.50 FT & W 1/2 OF NE 1/4 OF SE 1/4 OF SE 1/4 EXC S 31.50 FT & E 1/2 OF NE 1/4 OF SE 1/4 OF SE 1/4 EXC S 31.50 FT

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 23 24 17 0030 00000 0570
SC TP RG SUBD BLOCK LOT

NAME 1: GARRETT GLEN A & CAROLYN R NAME 2:
ST LN1: 646 HAYS RD ST LN2:
CITY: BROOKSVILLE STATE: FL ZIP: 33512

----------LEGAL DESCRIPTION FOR PROPERTY----------

JEAN VAN FARMS UNREC PLAT SE1/4 OF SE1/4 OF SE1/4 31.50 FT THEREOF
TRACT 57 DESC AS EAST 1/2 OF SUBJECT TO EASEMENT OVER NORTH
OR 1507 PG 816
OR 1021 PG 1696

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0020
SC TP RG SUBD BLOCK LOT

NAME 1: FREEMAN JEAN
NAME 2:
ST LN1: 1717-S BLUEBIRD LN
ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

EAST 150.00 FT OF WEST 450.00 FT OF SOUTH1/2 OF SOUTH1/4 OF NE1/4;SUBJECT TO EASEMENT FOR INGRESS & EGRESS ACROSS SOUTH 25.00 FT THEREOF OR 1102 PG 643

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0017
SC TP RG SUBD BLOCK LOT

NAME 1: STRAQUADINE DOMINIC
NAME 2:
ST LN1: P O BOX 11164
ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

E 300FT OF W 750FT OF S1/2 OF LOTS 4 & 5 S1/4 OF NE1/4 OF SEC 24 AKA RB 952 PG 1698
RB 960 PG 1822

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 001A
SC TP RG SUBD BLOCK LOT

NAME 1: MCTEAGUE HELEN
NAME 2:
ST LN1: P O BOX 11055
ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

EAST 150.00 FT OF WEST 900.00 FT OF SOUTH1/2 OF SOUTH 1/4 OF NE1/4;SUBJECT TO EASEMENT FOR INGRESS & EGRESS ACROSS SOUTH 25.00 FT THEREOF OR 1106 PG 192
OR 1503 PG 1158

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0019
SC TP RG SUBD BLOCK LOT

NAME 1: MCTEAGUE HELEN
NAME 2:
ST LN1: P O BOX 11055
ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

EAST 150.00 FT OF WEST 1050.00 FT OF SOUTH1/2 OF SOUTH1/4 OF NE1/4;SUBJECT TO EASEMENT FOR INGRESS & EGRESS ACROSS SOUTH 25.00 FT THEREOF OR 1474 PG 1142

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0016
SC TP RG SUBD BLOCK LOT

NAME 1: FAY RICHARD W &
NAME 2: MABEL M
ST LN1: PO BOX 161
ST LN2: LAND O LAKES FL 33539
CITY: STATE: ZIP: 33539

LEGAL DESCRIPTION FOR PROPERTY

E 150 FT OF W 1200 FT OF S1/2 OF S1/4 OF NE1/4
RB 1045 PG 55

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0010
SC TP RG SUBD BLOCK LOT

NAME 1: OSBORNE W ALLEN & MARGARET
NAME 2:
ST LN1: 3508 EUCLID AVE
ST LN2:
CITY: TAMPA STATE: FL ZIP: 33629

LEGAL DESCRIPTION FOR PROPERTY

EAST 150.00 FT OF WEST 1500.00 FT OF SOUTH1/2 OF SOUTH 1/4 OF NE1/4 SUBJECT TO INGRESS & EGRESS EASEMENT OVER SOUTH 25.00 FT THEREOF OR 1494 PG 808

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 24 24 17 0000 00200 0040
SC TP RG SUBD BLOCK LOT

NAME 1: COIANA GINO & PATRICIA
NAME 2:
ST LN1: BLUEBIRD LN
ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

EAST 150.00 FT OF WEST 1800.00 FT OF S1/2 OF S1/4 OF NE1/4 OF SEC 24 OR 1444 PG 1007

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0000 00100 0020
SC TP RG SUBD BLOCK LOT

NAME 1: ZIMMERMAN F CLIFTON NAME 2: 4275 20TH AVE N
ST LN1: ST PETERSBURG FL ST LN2: 33713
CITY: STATE: ZIP: 33713

----------LEGAL DESCRIPTION FOR PROPERTY----------

E1/2 OF NE1/4 OF NE1/4 OF SEC OR 712 PG 173
OR 1230 PG 1455

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0000 00100 0000
SC TP RG SUBD BLOCK LOT

NAME 1: BEASLEY ALPHA Y & SHIRLEY M NAME 2: 1409 TERMINO DR
ST LN1: TAMPA FL ST LN2: 33612
CITY: STATE: ZIP: 33612

----------LEGAL DESCRIPTION FOR PROPERTY----------

NE1/4 OF SE1/4 OF NE1/4 RB 933 PG 1947

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0000 00100 0030
SC TP RG SUBD BLOCK LOT

NAME 1: GANDARA JOSE L & ELMA L NAME 2:
ST LN1: P O BOX 11033 ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

SE 1/4 OF SE 1/4 OF NE 1/4 OR 1174 PG 2

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0000 00100 0010
SC TP RG SUBD BLOCK LOT

NAME 1: MATHIS ANDREW G NAME 2: 3010 SABAL RD
ST LN1: TAMPA FL ST LN2: 33618
CITY: STATE: ZIP: 33618

----------LEGAL DESCRIPTION FOR PROPERTY----------

N 1/2 OF SE 1/4 25 24 17 80 AC
RB 887 PG 1218

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0000 00300 0000
SC TP RG SUBD BLOCK LOT

NAME 1: DORMANY FAMILY REV TRUST NAME 2: AGREEMENT
ST LN1: 14624 LAKE MAGDALENE CIR ST LN2:
CITY: TAMPA STATE: FL ZIP: 33613

----------LEGAL DESCRIPTION FOR PROPERTY----------

E1/2 OF SW1/4 & 1/2 INTEREST IN MINERAL
RIGHTS OR 1424 PG 1586

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0010 00001 0100
SC TP RG SUBD BLOCK LOT

NAME 1: FIVECOAT CLAYTON A NAME 2:
ST LN1: 1380 HAYS RD ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

----------LEGAL DESCRIPTION FOR PROPERTY----------

HIGHLANDS UNREC PLAT LOT 1010 DSCB AS COM AT SW COR OF SEC
TH RUN N89DG46'58"E 1316.10 FT TH N00DG18'33"W 1320.18 FT TH
S89DG46'30"W 565 FT TO POB TH S00DG18'33"E 220 FT TO A PT ON
CRV WITH CENTRAL ANGLE OF 85DG 47'30" RAD 50 FT TANGENT DIST
OF 46.46 FT & CHD S46DG47'38"W 68.07 FT TH ALG SAID CRV AN
ARC DIST OF 74.87 FT TH N86DG 06'03"W 556 FT TH N09DG54'46"E
230 FT TH N89DG46'30"E 563.55 FT TO POB
OR 813 PG 38

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS — DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0010 00001 011B
SC TP RG SUBD BLOCK LOT

NAME 1: SWAN JAMES ALLEN & MARGARET L — NAME 2:
ST LN1: P O BOX 1041 — ST LN2:
CITY: NEW PORT RICHEY — STATE: FL — ZIP: 33552

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT POR LOT 1011 AKA 1011-B DSCB AS COM SW COR SEC TH N89DG 46MIN 58"E 1316.10 FT TH N00DG 18MIN 33"W 1050.18 FT TH S89DG 46MIN 30"W 396.40 FT FOR POB TH S89DG 46 MIN 30"W 118.60 FT TH CV L RAD 50 FT CHD N45DG 16MIN 02"W 70.76 FT TH N00DG 18MIN 33"W 220 FT TH N89DG 46MIN 30"E 168.81 FT TH S00DG 18MIN 33"E 270 FT TO POB
OR 1114 PG 5

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS — DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 25 24 17 0010 00001 0110
SC TP RG SUBD BLOCK LOT

NAME 1: RAMSEY JOSE & VIVIAN — NAME 2:
ST LN1: 1390 HAYS RD — ST LN2:
CITY: SPRINGHILL — STATE: FL — ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT E POR LOT 1011 DSCB AS COM SW COR SEC 25 TH N89DG 46MIN 58"E 1316.10FT FOR POB TH S89DG 46MIN 30"W 270 FT TH N89DG 46MIN 30"E 270 FT TO POB
OR 1114 PG 5

TH N00DG 18MIN 33"W 1050.18FT TH N00DG 18MIN 33"W 396.40FT TH S00DG 18MIN 33"E 396.40FT TH S00DG 18MIN 33"E
OR 1114 PG 1

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS — DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0000 00100 0010
SC TP RG SUBD BLOCK LOT

NAME 1: FLORIDA POWER CORP — NAME 2:
ST LN1: P O BOX 14042 — ST LN2:
CITY: ST PETERSBURG — STATE: FL — ZIP: 33733

LEGAL DESCRIPTION FOR PROPERTY

COM SE COR OF SE 1/4 SEC 26 TH N 0 DG 01 MIN 09" W ALG E BDY SE 1/4 1319.85 FT TO SE COR OF NE 1/4 OF SE 1/4 & SW COR OF NW 1/4 OF SW 1/4 SEC 25 CONT N 0 DG 01 MIN 09" W 66 FT TO PT ON N ROW LN HAYES RD FOR POB TH S 89 DG 56 MIN 54" E ALG N ROW LN 66 FT FROM & // WITH S BDY OF NW 1/4 49.84 FT TO PT ON WLY ROW LN FLORIDA POWER TRANSMISSION LN ROW TH N 10 DG 12 MIN 21" E 540 FT TH N 79 DG 47 MIN 39" W 480 FT TH S 10 DG 12 MIN 21" W 480 FT FROM & // WITH WLY ROW LN 625.06 FT TO PT ON N ROW LN HAYES RD TH S 89 DG 49 MIN 52" E ALG ROW LN 66 FT FROM & // WITH S BDY NE 1/4 OF SE 1/4 437.64 FT TO POB
OR 1068 PG 1339

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS — DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0010 00001 0000
SC TP RG SUBD BLOCK LOT

NAME 1: BERIO ULYSSES D & — NAME 2: VICTORIA
ST LN1: 6116 QUEBEC PL — ST LN2: BERWYN HEIGHTS MD 20740
CITY: — STATE: — ZIP: 20740

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT LOT 1000 DESC AS COM SE COR SEC 26 TH S89DG 53MIN02"W 50.41 FT TH N 09DG 54MIN 46"E 1340.83 FT TH S89DG 46MIN 30"W 187.90 FT TH S89DG 53MIN 15"W 1902.00 FT FOR POB TH S12DG 03MIN 17"W 640.86 FT TO A PT ON A CV RAD 1975.00 FT CHD BRG & DISTANCE OF N75DG 10MIN 40"W 190.72 FT TH N72DG 24MIN 37"W 79.93 FT TH ALG ARC OF CV 190.79 FT TH N 19DG 54MIN 27"E 588.58 FT TH N89DG 53MIN 15"E 194.00 FT TO POB
OR 814 PG 554

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS — DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0010 00001 0010
SC TP RG SUBD BLOCK LOT

NAME 1: CLARK ELEANOR — NAME 2:
ST LN1: P O BOX 943 — ST LN2:
CITY: LAND O LAKES — STATE: FL — ZIP: 33539

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT LOT 1001 DSCB AS COM SE COR SEC 26 TH N09DG 54MIN 46"E 1340.83 FT TH POB TH S04DG 19MIN 27"W 665.01 FT TH N81DG 48MIN 38"W 266.27 FT TH N89DG 53MIN 15"E 100.00 FT TO OR 1152 PG 1251 S89DG 02MIN 02"W 50.41 FT TH S89DG 53MIN 15"W 1722 FT FOR FT TH CV R RAD 1975.00 FT CHD N12DG 03MIN 17"E 640.86 FT TH POB

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0010 00000 9980
SC TP RG SUBD BLOCK LOT

NAME 1: JAMES B E & NAME 2: NODA MARY
ST LN1: 12419 MORGAN DR ST LN2:
CITY: HUDSON STATE: FL ZIP: 33562

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT LOT 998 DSCB AS COM SE COR SEC TH S89 DG 53MIN 02'W 50.41FT TH N09 DG 54MIN 46'E 1340.83FT TH S89DG 46MIN 30'W 187.90FT TH S89DG 53' 15'W 2478.53 FT FOR POB TH S00DG 24' 37'E 249.86 FT TH S89DG 53' 15'W 145.08 FT TH N00DG 24' 37'W 249.86 FT TH N89DG 52' 15'E 145.08 FT TO POB OR 1394 PG 67

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0010 00000 9981
SC TP RG SUBD BLOCK LOT

NAME 1: CROMAN ROBERT LEONARD JR & NAME 2: SUE ELLEN
ST LN1: 1300 HAYS RD ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT POR LOTS 998 & 999 DSCB AS COM SE COR OF SEC TH S89DG 53' 02'W 50.41 FT TH N09DG 54' 46'E 1340.83 FT TH S89DG 46' 30'W 187.90 FT TH S89DG 53' 15'W 2279.25 FT FOR POB TH S12DG 10' 33'W 266.46 FT TH N85DG 51' 39'W 141.65 FT TH N00DG 24' 37'W 249.86 FT TH N89DG 53' 15'E 199.28 FT TO POB OR 1195 PG 1424

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0010 00000 9991
SC TP RG SUBD BLOCK LOT

NAME 1: CREED DAVID A & BRENDA J NAME 2:
ST LN1: 1310 HAYES RD ST LN2:
CITY: SPRING HILL STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT POR LOTS 998 & 999 DSCB AS COM SE COR OF SEC TH S89DG 53' 02'W 50.41 FT TH N09DG 54' 46'E 1340.83 FT TH S89DG 46' 30'W 187.90 FT TH S89DG 53' 15'W 2096.00 FT FOR POB TH S19DG 54' 27'W 288.28 FT TH N85DG 51'39' W 141.65 FT TH N12DG 10' 33'E 266.46 FT TH N89DG 53' 15'E 183.25 FT TO POB OR 1188 PG 924

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0010 00000 9970
SC TP RG SUBD BLOCK LOT

NAME 1: MOORE RAYMOND A SR & NANCY L NAME 2:
ST LN1: 250 HARPER LN ST LN2:
CITY: BROOKSVILLE STATE: FL ZIP: 33512

LEGAL DESCRIPTION FOR PROPERTY

HIGHLANDS UNREC PLAT TRACT 997 TH N00DG 29' 51'W 1320.34 FT TO POB TH CONT N89DG 53' 15'E 240.00 FT TH WEST 460.82 FT TH POB DESC AS COM AT SW COR OF SEC TH N89DG 53' 15'E 2227.45 FT TH S00DG 24' 37'E 395.00 FT TH N15DG 00' 00'E 247.65 FT TO OR 1503 PG 156

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0000 00400 0000
SC TP RG SUBD BLOCK LOT

NAME 1: ALDRICH H J NAME 2:
ST LN1: 1240 HAYS RD ST LN2:
CITY: BROOKSVILLE STATE: FL ZIP: 33526

LEGAL DESCRIPTION FOR PROPERTY

S1/2 OF NW1/4 & N1/2 OF SW1/4 COM SE COR OF SW1/4 THN00DG07' 66 FT TO POB TH N89DG 53' 01'W THS89DG53'01'E9.18FT THCVNWRAD S89DG53'01'E60FT THCVNERAD25FT 53'01'E290FT TH N00DG 06' 59'E N57DG15'08'E31.98FT THS36DG53' 167.22FT THN51DG36'59'E 252.58 59'E35.36FT THN51DG36'59'E60FT 35.36FT THS40DG49'18'E 60.05FT 36.99FT THCVSE RAD 596.4FT CHD 16'56'E285.34FT THS68DG18'00'E S01DG47'12'W 138.77FT TH S89DG 2.32FT THS89DG53'01'E 289.62FT OR 1055 PG 195

EXC E 66FT & EXC POR DESC AS 46'W1320.03FT THN89DG53' 01'W 2282.64FT THN00DG06'59'W35.4FT 25FTCHD N45DG06'59'E35.36FT TH CHDS44DG53'01'E35.36FT THS89DG 300FT TH N89DG40'11'E 150FT TH 48'E 192.7FT TH S40DG 05' 52'E FT TH CVNWRAD25FTCHD N06DG 36' THCVNERAD25FTCHD S83DG 23'01'E THCVSERAD25FTCHD S03DG 54'27'W S53DG30'14'E 201.02FT TH N23DG 90FT THS89DG53'01'E160.55FT TH 53'01'E345.9FT THN00DG 06'59'E TH S00DG07'46'E 304.4FT TO POB OR 1343 PG 1348 & 1349

NEXT-FUNCTION: LD

PASCO COUNTY BUILDING PERMITS DATE: 09/15/86

NAME AND ADDRESS FOR PROPERTY ID: 26 24 17 0000 00500 0010
SC TP RG SUBD BLOCK LOT

NAME 1: WHITLEY ROBERT D JR & NAME 2: BRENDA PATRICK
ST LN1: P O BOX 5067 ST LN2:
CITY: HUDSON STATE: FL ZIP: 33567

LEGAL DESCRIPTION FOR PROPERTY

S 1/2 OF N 1/2 OF NW 1/4 EXC E 66 FT FOR RD ROW OR 1027 PG 1679 OR 1110 PG 1167

APPENDIX D

PERFORMANCE EVALUATION CALCULATIONS AND STORMWATER BASINS

REFERENCE: EPA SW-869 APRIL 1983, LANDFILL AND SURFACE IMPOUNDMENT PERFORMANCE EVALUATION

For a liner system designed w/a slope α;

$$h_{max} = \frac{L}{2N}\left[\sqrt{\frac{e}{Ks} + TAN^2\alpha} - TAN\alpha\right]$$

where: L = Length of spacing between drainlines

N = Porosity

Ks = Permeability

e = Rate of Impingement
(use 1/2 x average annual rainfall)

α = Slope

h_{max} = Maximum head

Assume:

Porosity = N = 0.34

Permeability = K_{si} = 7.76×10^{-3} cm/s, 22 ft./day

Rate of Impingement = e = 1/2 of 53.95 in/yr

= 2.20×10^{-6} cm/sec

Slope = α = 2% = 1.146°

h_{max} = 12" = 30.48 cm

Calculation:

$$30.48 = \frac{L}{2(0.34)}\left[\sqrt{\frac{2.20 \times 10^{-6}}{7.76 \times 10^{-3}} + TAN^2(1.146)} - TAN(1.146)\right]$$

$$30.48 = \frac{L}{2(0.34)}\ [0.00614]$$

3371_{cm} = L = 110' maximum spacing between drainlines

USE 2% SLOPE W/100' PIPE SPACING

NOTE: 53.95" Avg. Annual Rainfall for Brooksville, 1950-80

APPENDIX E

SYNTHETIC LINER SPECIFICATIONS

TECHNICAL SPECIFICATIONS

HIGH DENSITY POLYETHYLENE MEMBRANE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and install the High Density Polyethylene (HDPE) membrane as shown on the Drawings and as specified herein. The work shall include placement and seaming of the liner and all other work as shown on the Drawings and as specified herein.

1.02 RELATED WORK NOT INCLUDED

A. Earthwork and fill materials are to be provided by Owner.

B. Geotextile fabrics (woven and/or nonwoven) are to be provided by Owner.

1.03 CONTRACTOR'S EXPERIENCE

A. The manufacturer shall be the installer of the HDPE membrane and shall have demonstrated by previous experience the ability to do the work. The manufacturer of the lining material described hereunder shall have previously demonstrated his ability to produce this membrane by having successfully manufactured a minimum of ten million square feet of similar liner material for hydraulic lining installations. The manufacturer must be listed by NSF (National Sanitation Foundation) Standard 54 as meeting all the requirements for manufacturing HDPE. The manufacturer/installer shall have installed not less than five comparable installations now giving satisfactory service in the United States. The manufacturer/installer shall submit a work plan to the Owner.

1.04 SUBMITTALS

A. Prior to furnishing and installation of the HDPE membrane, the Contractor shall submit to the Owner for approval, the following:
   1. Samples of HDPE membrane material and field seams for visual inspection and testing.
   2. Shop drawings showing the following:
      a. Proposed layout of the HDPE membrane system.
      b. Details of seaming the HDPE membrane, anchoring, connections, penetrations, boots and other construction details.
   3. Certificates of compliance with the requirements of standards specified herein for the HDPE membrane and its installation.
   4. Installation and erection data and schedule.
   5. Maintenance and repair requirements.
   6. Manufacturer's standard guarantee.
   7. A quality control manual that specifically defines the quality assurance program. The manual shall include daily procedures, welding techniques, field testing procedures, lab testing procedures, specific steps that are to be taken in the event of a

failure or defect, personnel requirements, levels of authority, and all other information necessary to ensure a high quality liner installation. The liner quality control documentation included at the end of this section shall be used unless alternative documentation is approved by the Engineer.

B. The resin manufacturer must submit sampling procedures, sampling frequency, testing methods and test results. Any materials not conforming to the specifications will be rejected. All acceptable results will be forwarded to the Owner and a copy held on file until the completion of the project. Upon completion of the project, the file will be stored in the Owner's archives for the duration of the warranty.

1.05 JOB CONDITIONS

A. Site Preparation
1. The HDPE membrane will be placed over prepared surfaces as constructed by the Owner.

B. HDPE Membrane Protection
1. The surface of the subgrade shall be smooth, uniform, free from sudden changes in grade, rocks, stones, debris, and deleterious materials.
2. The earth subgrade shall be prepared prior to installation of the HDPE membrane. The subgrade will be maintained in a smooth, uniform and compacted condition during installation of the HDPE membrane.
3. No liner material shall be installed when the temperature is lower than 40°F or greater than 100°F.
4. All areas of the membrane damaged prior to acceptance by the Owner as determined by the Owner or their representative shall be repaired by the Contractor as specified herein and at no additional expense.

1.06 MATERIAL WARRANTY

A. The HDPE membrane manufacturer shall warrant the membrane against manufacturing defects and material degradation under outdoor exposure for a period of two years from the date of installation. The manufacturer shall replace at no expense any material which fails from the above causes within the warranty period. The manufacturer shall furnish a written warranty covering the requirements of this paragraph.

1.07 GUARANTEE

A. The Contractor shall guarantee the HDPE membrane against defects in installation and workmanship for the period of two years commencing with the date of final acceptance. The guarantee shall include the services of qualified service technicians and all materials required for the repairs at no expense to the Owner.

1.08 EXTRA STOCK AND REPAIRS

A. Five (5) 100 square foot sections of liner material identical to that installed under this section shall be furnished to the Contracting Officer. The material shall be placed inside a building away from direct sunlight.

B. The Contractor shall provide the Owner written step-by-step instructions on the proper method of repairing any tears.

C. All repairs of the liner shall be performed by the original manufacturer/installer.

D. The manufacturer/installer shall provide one (1) return visit, if necessary, to repair any tears occurring during completion of construction at no expense to the Owner; provided the repair visit can be completed in two days or less by one technician.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General
1. The membrane liner shall be manufactured of new, first-quality products designed and manufactured specifically for the purpose of liquid containment in hydraulic structures, and chemically resistant to leachate.
2. The liner material shall be so produced as to be free of holes, blisters, undispersed raw materials, or any sign of contamination by foreign matter.
3. The lining materials shall be manufactured a minimum 22.5 ft seamless width. Labels on the roll shall identify the thickness, length, width, and manufacturer's mark number.

B. Properties:

MATERIAL PROPERTIES
HIGH DENSITY POLYETHYLENE (HDPE)

Property	Test Method	Unsupported (U) 60
Resin	—	Phillips TR 400 or Chevron 9462
Gauge (nominal)	—	60
Thickness, mils (minimum)	ASTM D1593 Para. 8.1.3	54
Specific Gravity, g/cc (minimum)	ASTM D792 Method A	0.940

MATERIAL PROPERTIES
HIGH DENSITY POLYETHYLENE (HDPE)

Property	Test Method	Unsupported (U) 60
Minimum Tensile Properties (each direction)	ASTM D638	
1. Tensile Strength Yield (lb/in width)		140
2. Tensile Strength at Break (lb/in width)		240
3. Elongation at Yield (percent)		13
4. Elongation at Break (percent)		700
5. Modulus of Elasticity (lb/sq in)		110,000
Tear Resistance (lb, minimum)	ASTM D1004 Die C	45
Puncture Resistance	FTMS 101B	270
Low Temperature, °F	ASTM D746 Procedure B	-112
Dimensional Stability (each direction, percent change maximum)	ASTM D1204 212°F, 15 min.	±2
Melt Index (g/10 min)	ASTM D1238	>0.3
Carbon Dispersion (Score)	ASTM D3015	A-1
Carbon Content (%)	ASTM D1603	2.5
Resistance to Soil Burial[1]	ASTM D3083	
1. Tensile Strength Yield		10
2. Tensile Strength at Break		10
3. Elongation at Yield		10
4. Elongation at Break		10
5. Modulus of Elasticity		10
Environmental Stress Crack (minimum, hours)	ASTM D1693	1,500

MATERIAL PROPERTIES
HIGH DENSITY POLYETHYLENE (HDPE)

Property	Test Method	Unsupported (U) 60
Factory and Field Seam Requirements		
Bonded Seam Strength (shear ppl width)	ASTM D3083	126
Bonded Seam Strength (peel, ppl width)	ASTM D413	70
Peel Adhesion (lb/in minimum)	ASTM D413	FTB[2]
Dead Load		
Room Temperature 73°F		Pass
50% Bonded Seam Load		
Elevated Temperature 158°F		Pass
25% Bonded Seam Load		
Resistance to Soil Burial	ASTM D3083	
Peel Adhesion		FTB[2]
Bonded Seam Strength[1]		-20
% Carbon Black		2.5

[1] Percent change maximum in original value.

[2] FTB - Film Tear Bond.

C. Other Materials
1. All welding material shall be of a type recommended and supplied by the manufacturer and shall be delivered in the original sealed containers - each with an indelible label bearing the brand name, manufacturer's mark number, and complete directions as to proper storage.

PART 3 - EXECUTION

3.01 SUBBASE PREPARATION

A. General
1. Preparation of the subbase is to be provided by the Owner.
2. Anchoring of membrane shall be as shown on an approved shop drawing.
3. The earth subgrade will be maintained in a smooth, uniform, and compacted condition during installation of the HDPE membrane.

3.02 PREPARATION AND INSTALLATION OF HDPE MEMBRANE

A. Preparation
   1. The HDPE membrane material shall be cleaned of all debris and materials which may negatively affect the performance of the system.

B. Installation
   1. Each panel of the HDPE membrane shall be laid out and installed in accordance with the approved shop drawings prepared by the Contractor. The layout shall be designed to keep field joining of the HDPE membrane to a minimum and consistent with proper methods of HDPE membrane installation.
   2. The HDPE membrane shall be installed by crews experienced in making lining installation.
   3. All membrane shall be anchored as shown on the Drawings and consistent with manufacturer's recommendations.
   4. Persons working on the HDPE membrane shall not smoke, wear damaging shoes or involve themselves in any activity that may damage the membrane.
   5. All edges of the HDPE membrane shall be properly weighted to avoid uplift due to wind.
   6. Traffic across the HDPE membrane shall be minimized, all areas exposed to traffic shall be protected by a minimum of two (2) feet of soil cover.
   7. All damage shall be recorded and located in the as-built drawings.
   8. The HDPE membrane shall not be placed in excessive winds.

C. HDPE Boots
   1. HDPE boots or shrouds shall be furnished and installed where indicated on the Drawings. The boots shall be of the same material as the liner.
   2. The liner end of the boots shall terminate in a flare section suitable for welding to the liner. The overlap between the boot and the liner shall be approximately 18 inches. The boot shall be welded to the liner as previously specified herein.
   3. Boots for use with pipe and manholes shall have an inside diameter slightly larger than the outside diameter of the pipe. The boot shall be secured to the pipe or manhole frame using a gum tape and a stainless steel clamp. The gum tape shall be inserted between the boot and the pipe or frame and shall be beneath the clamp such that when the clamp is tightened it will compress the tape between the liner and the pipe or frame. The gum tape shall be a butyl compound, approximately 1-inch wide by 1/8-inch thick and shall remain permanently flexible. The stainless steel clamp shall be 2-inches wide, as manufactured by Bond-It or approved equal. The clamp screws shall be stainless steel. The design of the boot sleeve will be provided by the manufacturer/installer and submitted to the Engineer for approval prior to installation.

D. Field Seams
   1. Individual panels of liner material shall be laid out and overlapped by a minimum of 4-inches prior to welding. Extreme care shall be taken in the preparation of the areas to be welded. The area to be welded shall be cleaned and prepared according to the procedures laid down by the material manufacturer. All sheeting shall be welded together by either of the two processes:

a. A homogeneous overlap extrusion process.
b. Double track hot wedge process.
The composition of any extrudate shall be identical to the lining material.

2. The welding equipment used shall be capable of continuously monitoring and controlling the temperatures and pressures in the zone of contact where the machine is actually fusing the lining material so as to ensure that changes in environmental conditions will not affect the integrity of the weld.
3. No "fish mouths" will be allowed within the seam area. Where "fish mouths" occur, the material shall be cut, overlapped, and an patch fusion weld shall be applied. All welds on completion of the work shall be tightly bonded. Any membrane area showing injury due to excessive scruffing, puncture, or distress from any cause shall be replaced or repaired with an additional piece of HDPE membrane.
4. All seams shall have a seam number that corresponds with the panel numbers. The numbering system shall be used in the development of the as-built drawings. Seam numbers shall be derived from the combination of the two panel numbers that are to be welded together.
5. All fusion welded "T" seams (i.e. the result of geomembrane panels placed perpendicular to each other) shall be double welded. The extrusion process shall be used for the second weld.
6. All extrudate shall be free of dirt, dry and protected from damage.
7. If an extrusion welder is stopped for longer than one minute, it shall be purged to remove heat-degraded extrudate.
8. All seams constructed on sloped surfaces shall be vertical seams.
9. All vertical panels placed on sloped surfaces shall extend five (5) feet inward from the toe of slope or edge of trench.
10. All end seams shall be staggered a minimum of five (5) feet in length between contiguous panels.
11. All fusion welded seams shall extend twelve (12) inches into the anchor trench.
12. All seams that are to be extrusion-welded shall be cleaned of oxidation. This shall be done by using a hand grinder with sanding discs of a grit recommended by the manufacturer to match ambient conditions. Care will be taken as not to damage the geomembrane.

3.03 FIELD QUALITY CONTROL

A. A test weld three feet long from each welding machine shall be run twice during each shift and under the same conditions as exist for the liner welding. The test weld shall be marked with date, ambient temperature, and welding machine number. Samples of weld 1/4-inch to 1/2-inch wide shall be cut from the test weld and tested on site in shear and peel in accordance with ASTM D638 Test Methods. Seams shall be stronger than the material. No welder may start work until the sample weld has been approved.

B. The weld samples shall be submitted by the Contractor to an independent testing laboratory (selected by the Owner) each day for subsequent testing on laboratory tensometer equipment in accordance with the applicable ASTM Standards. Test results for each days testing shall be verbally submitted to the Engineer by the end of the next working day. Certified test results shall be submitted to the Engineer by noontime of the second working day.

C. A quality-control technician provided by the membrane manufacturer shall inspect each foot of seam. Any area showing defect shall be marked and repaired in accordance with the manufacturer's repair procedures.

D. The Contractor shall employ on site non-destructive testing on all welds to ensure watertight homogeneous seams.
   1. Non-destructive testing for the hot wedge weld shall consist of the air pressure test as per manufacturer's recommendations.
      a. For the air pressure test the maximum allowable leak down air pressure shall not exceed thirteen (13%) percent after fifteen (15) minutes of applied recommended pressure.
      b. Should failure occur through excessive leak down over the scheduled time period of the air pressure test, check end seals and retest. Should failure reoccur, trim excess overlap from seam and visually inspect fusion area. If rupture is located, patch and test each side of patch. If rupture is not located, then peel tests shall be performed at the beginning and end of the seam to qualify seam strength. If both samples pass, apply vacuum test procedures. If both samples fail, remove seam and replace. Should one sample pass and the other fail, additional samples shall be taken randomly from the seam and peel tested. If either of these fail, remove and replace seam. If both pass, apply vacuum procedures.
   2. Non-destructive testing for all extrusion welds shall be performed by means of a vacuum box test. Vacuum testing shall follow the following procedure:
      a. A leak indicator spray shall be applied to the section of seam to be tested.
      b. The vacuum box shall be placed over the seam section and a vacuum of at least 8 psi produced within the bell for at least 15 seconds.
      c. Bubbling of the leak indicator spray indicates a leak that must be repaired and retested.
      d. The seam shall be approved only after the area tests clear of any leaks.
      e. Before performing the tests, a detailed vacuum test procedure for welded seams shall be submitted by the Contractor for approval by the Owner.
   3. Vacuum testing will be required in the event of the pressure test failure and on patches, extrusions, penetration joints, and on other areas requiring tests that are not practical to pressure test.

3.04 DISPOSAL OF WASTE MATERIAL

A. On completion of installation, the Contractor shall dispose of all trash, waste material and equipment used in connection with the work hereunder and shall leave the premises in a neat and acceptable condition.

PART 4 - QUALITY ASSURANCE

4.01 MATERIAL GUARANTEE

A. The materials supplied under these specifications shall be first quality products designed and manufactured specifically for the

purposes of this work as specified herein and which have been satisfactorily demonstrated by prior use to be suitable and durable for such purposes. At the time of bidding prior to furnishing and installing the HDPE membrane, the Contractor shall supply the Owner with the name of the lining fabricator and shall submit to the Owner an affidavit from the manufacturer that guarantees that the HDPE membrane material meets the performance requirements specified herein.

4.02 TECHNICAL ASSISTANCE

A. A representative of the manufacturer shall be present during the entire installation procedure and shall provide technical assistance for the installation and anchoring of the HDPE membrane.

4.03 QUALITY CONTROL PLAN

A. The Contractor shall prepare a quality control manual as previously outlined in 1.04A7 and complete the documentation included at the end of this section. A copy of each document will be made and kept on file until the project is complete. Upon completion, all copies will be stored in the Owner's archives for the duration of the warranty.

END OF SECTION

LINER QUALITY CONTROL DOCUMENTATION

Prior to commencing work, the following project personnel shall be identified by name and recorded in the project files:

- o Client's Representative (CR)
- o Liner Supplier's Site Manager (LSSM)
- o Engineer's Field Representative (EFR)
- o Engineer's Office Representative (EOR)
- o Seaming Machine Technician (SMT)
- o Earthwork Contractor's Representative (ECR)
- o Laboratory Technician (LT)

Two duplicate project files shall be maintained. One shall be maintained by the EFR and the other shall be maintained by the LSSM. At the end of each work week the files shall be updated and checked to assure that copies of all pertinent project information is included in each file.

Blank copies of the following nine project forms shall be available onsite throughout the duration of the project:

Form No.	Title
1	Startup
2	Liner Pre-Delivery
3	Liner Delivery
4	Daily Checklist
5	Geomembrane Pond Placement
6	Onsite Geomembrane Welding Report
7	Damage and Failure Report
8	In-Situ Weld Testing Report
9	Post Installation Checklist

Project Name_____

Project No._____

FORM NO. 1

START-UP

	Date
1. Project start-up meeting held with selected manufacturer/installer.	
2. Duplicate project files established.	
3. Project personnel recorded.	
4. Liner construction drawings accepted.	
5. One complete drawing set received onsite.	
6. Drawings and specifications log begun by LSSM.	
7. Verification that all equipment to be used is operating properly to be signed and placed in file by LSSM.	
8. Liner warranty reviewed and accepted by CR.	

Project Name_____ Project No._____

FORM NO. 2

LINER PRE-DELIVERY

	Date
1. Certificates of compliance with specifications received by EOR (including resin and factory seams).	_____
2. Certificates meet specifications.	
- EOR Signature _____	_____
3. - LSSM Signature _____	_____
4. Liner fabrication and installation schedule received by EOR.	_____
5. Schedule is accepted as submitted _____	_____
as revised _____	_____
- EOR Signature _____	_____
- ECR Signature _____	_____
6. Liner shop and installation drawings received by EOR.	_____
7. Copy of installer's affidavit given him by the manufacturer or supplier received by EOR.	_____

Project Name_____

Project No._____

FORM NO. 3

LINER DELIVERY

ROLL # _____

	Date/Time
1. Roll number has been assigned.	_____
2. Copy of test results confirming compliance with all applicable specifications delivered with roll.	_____
3. Roll visually inspected by EFR and LSSM.	_____
4. Checked for agreement with Bill of Lading.	_____
5. Bill of Lading signed by LSSM.	_____
6. Non-conforming material segregated and tagged "Do Not Use" with explanation for non-compliance, dated and signed by LSSM.	_____
7. EFR aware of non-conforming material.	_____
8. Roll Accepted _____ Rejected _____	
- LSSM Signature _____	_____
- EFR Signature _____	_____

Project Name_____

Project No._____
Date_____

FORM NO. 4

DAILY CHECKLIST

Time

1. Surfaces for liner placement meet specifications:

   - LSSM Signature _____ _____
   - EFR Signature _____ _____

2. Optimum seaming process parameters determined based on the following ambient conditions:

   - Temperature _____ °F _____
   - Barometric Atmospheric Pressure _____ in-Hg _____
   - Humidity _____ % _____

4. Test seams inspected:

   - LSSM Signature _____ _____
   - EFR Signature _____ _____

5. All equipment settings and changes recorded by operator and placed in file. _____

6. Non-destructive tests conducted on all seams.

   - No. of failures: _____ _____
   - No. of repairs: _____ _____
   - Failure locations marked on liner. _____ _____
   - Failure locations recorded in file. _____ _____
   - LSSM Signature _____ _____
   - EFR Signature _____ _____

Date_____

FORM NO. 4
(Continued)

DAILY CHECKLIST

		Time
7. Destructive testing completed according to specifications.		_____
- No. of failures.	_____	_____
- No. of repairs.	_____	_____
- Peel and shear test results recorded.	_____	_____
- LSSM Signature	_____	_____
- EFR Signature	_____	_____
8. All SMTs have been thoroughly trained in the use, limitations, adjustment, and repair of each seaming machine.		
- LSSM Signature	_____	_____
- Seaming Machine Operator Names:		
_____		_____to_____
_____		_____to_____
_____		_____to_____
_____		_____to_____
_____		_____to_____
9. Number of rolls installed.	_____	
10. Roll Nos. installed.	_____	

11. LSSM Comments: _____

_____

_____

LSSM Signature _____

Date_____

FORM NO. 4
(Continued)

DAILY CHECKLIST

Time

12. EFR Comments: _____

_____

_____

- Signature _____

13. No. of additional comment pages attached.

Project Name_____
Project No._____
Date_____

FORM NO. 5

GEOMEMBRANE PANEL PLACEMENT

Panel No.	Roll No.	Subgrade Condition	Length	Width	Visual Inspection Pass/Fail	LSSM Initials	EFR Initials

Comments: _____

Project Name_____
Project No._____
Date_____

FORM NO. 6

ON-SITE GEOMEMBRANE WELDING REPORT

Welder:_____ Weld Type:_____

Welding Machine No.:_____ Liner Thickness:_____

Seam ID.	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	LSSM Initials	EFR Initials

Comments: _____

Project Name_____
Project No._____
Date/Page_____

FORM NO. 7

DAMAGE AND FAILURE REPORT

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	LSSM Initials	EFR Initials

Comments: _____

DAILY FIELD LOG

Weather Conditions _____ Date _____

_____ Project No. _____

Project Name _____

Personnel On-site _____

_____

Log _____

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Project Superintendent _____

Project Name_____
Project No._____
Date/Page_____

FORM NO. 8

IN-SITU WELD TESTING REPORT

Sample No.	Test	Test Method	Results	LT Initials	LSSM Initials	EFR Initials

Comments: _____

Project Name_____
Project No._____

FORM NO. 9

POST-INSTALLATION CHECKLIST

PRIMARY _____ SECONDARY _____

		Date
1.	Measurements of installed liner conducted by LSSM and EFR.	_____
2.	No. of deviations from design drawings:	
	No. _____	_____
3.	Deviations acceptable and as-built drawings modified accordingly (No. ____).	_____
4.	Deviations unacceptable and liner installation corrected (No. ____).	_____
	- ESSM Signature _____	_____
	- EFR Signature _____	_____

ATTACHMENT I

PLANS

ATTACHMENT 1

PLANS

Sheet 1 - General Notes, Location Maps and Index of Sheets

Sheet 2 - Area Map, Existing Zoning and 100 Year Flood Prone Area

Sheet 3 - Existing Aerial Topography, Soil Borings, and Onsite Monitoring Wells

Sheet 4 - Access & Perimeter Roadways

Sheet 5 - Boundary Survey and Legal Description

Sheet 6 - Dimension Control Plan

Sheet 7 - Site Grading Plan

Sheet 8 - Leachate Collection System

Sheet 9 - Plan of Operation

Sheet 10 - Final Closeout Contours

Sheet 11 - Typical Cross Section

Sheet 12 - Final Closeout Cross Sections

Sheet 13 - Miscellaneous Details

Sheet 14 - Typical Manhole & Holding Tank Details