ENGINEERING REPORT
AND
APPLICATION FOR PERMIT
TO CONSTRUCT
DISPOSAL UNIT A-2 AT
PASCO COUNTY
RESOURCE RECOVERY FACILITY
CLASS I LANDFILL

Prepared for:
PASCO COUNTY
BOARD OF COUNTY COMMISSIONERS

Prepared by:
LAW ENVIRONMENTAL, INC.
Tampa, Florida

LAW

ENGINEERING AND ENVIRONMENTAL SERVICES

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Revision 1

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SECTION 1.0

COMPLETED APPLICATION FORM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION FOR PERMIT TO CONSTRUCT, OPERATE, MODIFY OR CLOSE A SOLID WASTE MANAGEMENT FACILITY

Please Type or Print

A. GENERAL INFORMATION

1. Type of facility:

Disposal [X]

Class I Landfill	[X]	Ash Monofill	[X]
Class II Landfill	[ ]	Asbestos Monofill	[ ]
Class III Landfill	[ ]	Industrial Solid Waste	[ ]
Other	[ ]	_____	

Volume Reduction [ ]

Incinerator	[ ]	Pulverizer/Shredder	[ ]
Composting	[ ]	Compactor/Bailing Plant	[ ]
Materials Recovery	[ ]	Energy Recovery	[ ]
Other	[ ]	_____	

2. Type of application:

Construction	[X]	Construction/Operation	[ ]
Operation	[ ]	Closure	[ ]

3. Classification of application:

New	[ ]	Substantial Modification	[ ]
Renewal	[ ]	Minor Modification	[ ]

4. Facility name: Pasco County Resource Recovery Facility Class I Landfill

5. DER ID number: _____

6. Facility location (main entrance): Hayes Road, Springhill, Florida

7. Location coordinates:

Section: 24,25,26 Township: 245 Range: 17E

UTMs: Zone _____ _____km E _____ km N

Latitude: 28° 22' 30" Longitude: 82° 34' 00"

8. Applicant name (operating authority): Pasco County Board of County Commissioners

Mailing address: 7536 State Street New Port Richey Florida 33654
Street or P.O. Box City State Zip

Contact person: Douglas Bramlett Telephone: (813) 847-8145

Title: Assistant County Administrator - Utilities Services Branch

9. Authorized agent/Consultant: Law Environmental, Incorporated

Mailing address: 1715 North Westshore Blvd., Suite 875 Tampa Florida 33607
Street or P.O. Box City State Zip

Contact person: Richard E. Mayer Telephone: (813) 289-9491

Title: Principal Engineer

10. Landowner (if different than applicant): N/A

Mailing address: N/A
Street or P.O. Box City State Zip

Contact person: N/A Telephone: N/A

11. Cities, towns and areas to be served: Entire Pasco County including the six incorporated municipalities

12. Population to be served:

Current: 295,000 Five-Year Projection: 318,000

13. Volume of solid waste to be received: 225 (ash) tons/day

14. Date site will be ready to be inspected for completion: 7/96

15. Estimated life of facility: 5 for Disposal Unit A-2 years

16. Estimated costs:

Total Construction: $ 2,000,000 Closing Costs: $

17. Anticipated construction starting and completion dates:

From: 1/95 To: 7/96

* For Disposal Unit A-2

B. DISPOSAL FACILITY GENERAL INFORMATION

1. Provide brief description of disposal facility design and operations planned by this application:

   The West Pasco Landfill Disposal Unit A-2, an ash monofill designed to meet the requirements of Chapters 17-701 and 17-702, F.A.C., is to provide continued disposal of MSW ash from the Pasco County Resource Recovery Facility. The disposal unit is part of a 160-acre landfill footprint permitted under the Power Plant Siting Act.

2. Facility site supervisor: Mr. Vince Mannella

   Title: Solid Waste Facility Manager Telephone: (813) 861-3006

3. Disposal area: Total 160 acres; Used 20 acres; Available 140 acres

4. Weighing scales used: Yes [X] No [ ]

5. Security to prevent unauthorized use: Yes [X] No [ ] (Fenced w/ locked gates)

6. Charge for waste received: N/A $/yds^3 ____ $/ton

7. Surrounding land use, zoning:

Residential	[x]	Industrial	[ ]
Agricultural	[x]	None	[ ]
Commercial	[ ]	Other	[ ] _____

8. Types of waste received:

Residential	[ ]	C & D debris	[ ]
Commercial	[ ]	Shredded/cut tires	[ ]
Incinerator/WTE ash	[X]	Yard trash	[ ]
Treated biohazardous	[ ]	Septic tank	[ ]
Water treatment sludge	[ ]	Industrial	[ ]
Air treatment sludge	[ ]	Industrial sludge	[ ]
Agricultural	[ ]	Domestic sludge	[ ]
Asbestos	[ ]		
Other	[ ]	See Section 3 _____	

9. Salvaging permitted: Yes [ ] No [X]

10. Attendant: Yes [X] No [ ] Trained operator: Yes [X] No [ ]

11. Spotters: Yes [X] No [ ] Number of spotters used: 1

12. Site located in: Floodplain [ ] Wetlands [ ] Other [x] Uplands

13. Property recorded as a Disposal Site in County Land Records: Yes [X] No [ ]

14. Days of operation: Seven (7) days per week.

15. Hours of operation: 7 AM - 5 PM

16. Days Working Face covered: N/A

17. Elevation of water table: 37.0 Ft. NGVD

18. Number of monitoring wells: Twelve (12) existing, additional Seven (7) proposed.

19. Number of surface monitoring points: None

20. Gas controls used: Yes [X] No [ ] Type controls: Active [ ] Passive [X]

Gas flaring: Yes [ ] No [X] Gas recovery: Yes [ ] No [X]

21. Leachate control method - liner type:

Natural soils	[ ]	Double geomembrane	[X]
Single clay liner	[ ]	Geomembrane & composite	[ ]
Single geomembrane	[ ]	Double composite	[ ]
Single composite	[ ]	None	[ ]
Slurry wall	[ ]		
Other	[ ]	_____	

22. Leachate collection method:

Collection pipes	[X]	Sand layer	[X]
Geonets	[X]	Gravel layer	[ ]
Well points	[ ]	Interceptor trench	[ ]
Perimeter ditch	[ ]	None	[ ]
Other	[ ]	_____	

23. Leachate storage method:

Tanks	[X]	Surface impoundments	[ ]
Other	[ ]	_____	

24. Leachate treatment method:

Oxidation	[ ]	Chemical treatment	[ ]
Secondary	[ ]	Settling	[ ]
Advanced	[ ]	None	[ ]
Other	[X]	Off-site @ an applicant-owned WWTP	

25. Leachate disposal method:

Recirculated	[ ]	Pumped to WWTP	[X]
Transported to WWTP	[ ]	Discharged to surface water	[ ]
Injection well	[ ]	Evaporation (ie: Perc Pond)	[ ]
Other	[ ]	_____	

26. For leachate discharged to surface waters:

Name and Class of receiving water: N/A

27. Storm Water:

Collected: Yes [X] No [ ] Type of treatment: Retention pond

Name and Class of receiving water: N/A

28. Management and Storage of Surface Waters (MSSW) Permit number or status: _____

VOLUME REDUCTION FACILITY GENERAL INFORMATION [NOT APPLICABLE]

1. Provide brief description of volume reduction facility design and operations planned by this application:

_____

_____

_____

2. Facility site supervisor:_____

   Title:_____ Telephone (___) _____

3. Disposal area: Total ____ acres; Used ____ acres; Available ____ acres

4. Security to prevent unauthorized use: Yes ( ) No ( )

5. Site located in: Floodplain ( ) Wetlands ( ) Other ( ) _____

6. Days of operation: _____

7. Hours of operation: _____

8. Number of operating staff: _____

9. Expected useful life: _____ years

10. Weighing scales used: Yes (x) No ( )

11. Normal processing rate: _____

12. Maximum processing rate; ____ yd^3/day _____ tons/day _____ gal/day

13. Charge for waste received: _____

14. Type of facility (check one or more):

Incinerator	( )	Composting	( )
Pulverizer/shredder	( )	Materials recovery	( )
Compactor/baling	( )	Energy recovery	( )
Sludge concentration	( )	Pyrolysis	( )
Other	( )	_____	

15. Material recovered, tons/week:

_____ Paper	_____ Glass
_____ Ferrous metals	_____ Non-ferrous metals
_____ Aluminum	_____ Plastics
_____ Other:	_____

16. Energy recover, in units shown:

_____ High pressure steam, lb/hr	_____ Chilled water, gal.hr
_____ Low pressure steam, lb/hr	_____ Oil, gal/hr

____ Electricity, kw/hr
____ Gas, ft^3/hr
____ Other:_____

____ Oil, BTU/hr
____ Gas, BTU/hr

17. Process water management:

Recycled: Yes ( ) No ( )

Treatment method used: _____

Discharged to: Surface water ( ) Underground ( ) Other ( )

Name and Class of receiving water: _____

18. Storm Water:

Collected: Yes ( ) No ( ) Type of treatment: _____

Name and Class of receiving water: _____

19. MSSW Permit number or status: _____

20. Final residue produced:

____ % of normal processing rate

____ % of maximum processing rate

Disposed of at (Site name): _____

21. Supplemental fuel used:

Type: _____ Quantity used/hour: _____

22. Costs:

Estimated operating costs (material-energy revenue): $ _____

Total cost/ton $ _____ Net cost/ton: $ _____

23. State pollution control bond financing amount: $ _____

24. Estimated amount of tax exemption that will be requested: $ _____

LOCATION		N/A	N/C	
D.	SOLID WASTE MANAGEMENT FACILITY PERMIT GENERAL REQUIREMENTS (17-701.320,FAC)			
X	Section 2.1			1. Six copies at minimum, of the completed application form. all supporting data and reports; (17-701.320(5)(a), FAC).
X	Section 2.2			2. Engineering and/or professional certification (signature, date and seal) provided on the applications and all engineering plans, reports and supporting information for the application; (17-701.320(6), FAC).
X	Section 2.3			3. A letter of transmittal to the Department; (17-701.320(7)(b),FAC).
X	Section 2.4			4. A completed application for dated and signed by the applicant; (17-701.320(7)(c).FAC).
	Section 2.5	X		5. Permit fee specified in Rule 17-4.050,FAC and Rule 17-7-1.320(5)(c), FAC in check or money order, payable to the Department; 17-701.320(7)(c),FAC).
X	Section 2.6			6. An engineering report addressing the requirements of this rule and with the following format: a cover sheet, text printed on 8 1/2 inch by 11 inch consecutively numbered pages, a table of contents or index, the body of the report and all appendices including an operation plan, contingency plan, illustrative charts and graphs, records or logs of tests and investigations, engineering calculations; (17-701.320(7)(d), FAC)
X	Section 2.7			7. Operation Plan; (17-701.320(7)(e)1,FAC).
X	Section 2.8			8. Contingency Plan; (17-701.320(7)(e)2,FAC).
				9. Plans or drawings for the solid waste management facilities in appropriate format (including sheet size restrictions, cover sheet, legends, north arrow, horizontal and vertical scales, elevations referenced to NGVD) showing; (17-702.320(7)(f),FAC).
X	Drawing Sheet No.2			a) A regional map or plan with the project location;
X	Drawing Sheet No.4			b) A vicinity map or aerial photograph no more than 1 year old;
X	Drawing Sheet No.4			c) A site plan showing all property boundaries certified by a registered Florida land surveyor;
X	D.S. Nos. 1-13			d) Other necessary details to support the engineering report.
X	Section 2.10			10. Proof of property ownership or a copy of appropriate agreements between the facility operator and property owner authorizing use of property; (17-701.320(7)(g),FAC).
		X		11. For facilities owned or operated by a county, provide a description of how, if any, the facilities covered in this application will contribute to the county's achievement of recycling goals contained in Section 403.706.FS; (17-701.320(7)(h),FAC).

S	LOCATION	N/A	N/C		
___	_____	X	___	12.	Provide a history and description of any enforcement actions taken by the Department against the applicant for violations of applicable statutes, rules, orders or permit conditions relating to the operation of any solid waste management facility in this state; (17-701.320(7)(i),FAC).
___	_____	X	___	13.	Proof of publication in a newspaper of general circulation of notice of application for a permit to construct or substantially modify a solid waste management facility; (17-702.320(8),FAC)
___	_____	X	___	14.	Provide a description of how the requirements for airport safety will be achieved including proof of required notices if applicable; (17-701.320(12),FAC).

E. LANDFILL PERMIT GENERAL REQUIREMENTS (17-701.330,FAC)

X	Section 3.1	___	___	1.	Vicinity map or aerial photograph no more than 1 year old and of appropriate scale showing land use and local zoning within one mile of the landfill and of sufficient scale to show all homes or other structures, water bodies, and roads other significant features of the vicinity. All significant features shall be labeled; (17-701.3340(4)(c),FAC).
X	Section 3.2	___	___	2.	Vicinity map or aerial photograph no more than 1 year old showing all airports that are located within five miles of the proposed landfill; (17-701.330(4)(b),FAC).
X	D.S. 4,5 & 7	___	___	3.	Plot plan with a scale not greater than 200 feet to the inch showing; (17-701.330(4)(c),FAC).
X	Section 3.3.1	___	___	a)	Dimensions,
X	Section 3.3.2	___	___	b)	Locations of proposed and existing water quality monitoring wells;
X	Section 3.3.3	___	___	c)	Locations of soil borings;
X	Section 3.3.4	___	___	d)	Proposed plan of trenching or disposal areas;
X	Section 3.3.5	___	___	e)	Cross sections showing original elevations and proposed final contours which shall be included either on the plot plan or on separate sheets;
X	Section 3.3.6	___	___	f)	Any previously filled waste disposal areas;
X	Section 3.3.7	___	___	g)	Fencing or other measures to restrict access.

4. Topographic maps with a scale not greater than 200 feet to the inch with 5-foot contour intervals showing; (17-701.330(4)(d),FAC).

X	Section 3.4.1	___	___	a)	Proposed fill areas;
X	Section 3.4.2	___	___	b)	Borrow areas;
X	Section 3.4.3	___	___	c)	Access roads;
X	Section 3.4.4	___	___	d)	Grades required for proper drainage;

	LOCATION	N/A	N/C		
X	Section 3.4.5	___	___	e)	Cross sections of lifts;
X	Section 3.4.6	x	___	f)	Special drainage devices if necessary;
X	Section 3.4.7	___	___	g)	Fencing;
X	Section 3.4.8	___	___	h)	Equipment facilities.

5. A report on the landfill describing the following (17-701.330(4)(e),FAC).

X	Section 3.5.1	___	___	a)	The current and projected population and area to be served by the proposed site;
X	Section 3.5.2	___	___	b)	The anticipated type, annual quantity,m and source of solid waste, expressed in tone;
X	Section 3.5.3	___	___	c)	The anticipated facility life;
X	Section 3.5.4	___	___	d)	The source and type of cover material used for the landfill.
X	Section 3.6	___	___	6.	Provide evidence that an approved laboratory shall conduct water quality monitoring for the facility in accordance with Rule 17-160,FAC; (17-701.330(4)(h),FAC).
X	Section 3.7	___	___	7.	Provide a statement of how the applicant will demonstrate financial responsibility for the closing and long-term care of the landfill; (17-701.330(4)(i),FAC)

F. GENERAL CRITERIA FOR LANDFILLS (17-701.340,FAC).

X	Section 4.1	___	___	1.	Describe (and show on a Federal Insurance Administration flood map, if available) how the landfill or solid waste disposal unit shall not be located in the 100-year floodplain where it will restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain unless compensating storage is provided, or result is a washout of solid waste;
X	Section 4.2	___	___	2.	Describe how the minimum horizontal separation between waste deposits in the landfill and the landfill property boundary shall be 100 feet, measured from the toe of the proposed final cover slope; 17-701.340(4)(c),FAC)
X	Section 4.3	___	___	3.	Describe what method shall be taken to screen the landfill from public view where such screening can practically be provided; (17-701.340(4)(d),FAC).

G. LANDFILL CONSTRUCTION REQUIREMENTS (17-701,400,FAC)

X	Section 5.1	___	___	1.	Describe how the landfill shall be designed so that solid waste disposal units will be constructed and closed at planned intervals throughout the design period of the landfill; (17-701.400(2).FAC)

S	LOCATION	N/A	N/C		
				2. Landfill liner requirements; (17-701.400(3),FAC)	
				a. General construction requirements; (17-701.400(3)(a),FAC)	
X	Section 5.2.1			(1)	Provide test information and documentation to ensure that liner will be constructed of materials that have appropriate physical, chemical, and mechanical properties to prevent failure;
X	Section 5.2.2			(2)	Document foundation is adequate to prevent liner failure;
X	Section 5.2.3			(3)	Constructed so bottom liner will not be adversely impacted by fluctuation of the ground water;
	Section 5.2.4	X		(4)	Designed to resist hydrostatic uplift if bottom liner located below seasonal high ground-water table;
X	Section 5.2.5			(5)	Installed to cover all surrounding earth which could come into contact with the waste or leachate.
				b. Composite liners; (17-701.400(3)(b),FAC).	
		X		(1)	Upper geomembrane thickness and properties;
		X		(2)	Design leachate head for primary LCRS including leachate recirculation if appropriate;
		X		(3)	Design thickness in accordance with Table A and number of lifts planned for lower soil component.
				c. Double liners; (17-701.400(3)(c),FAC).	
X	Section 5.3.1			(1)	Upper and lower geomembrane thicknesses and properties;
X	Section 5.3.2			(2)	Design leachate head for primary LCRS to limit the head to one foot above the liner;
X	Section 5.3.3			(3)	Lower geomembrane sub-base design;
X	Section 5.3.4			(4)	Leak detection and secondary leachate collection system minimum design criteria (k 1 cm/sec, head on lower linear 1 inch, head not to exceed thickness of drainage layer);
				d. Standards for geomembranes; (17-701.400(3)(d),FAC)	
X	Section 5.4.1			(1)	Field seam test methods to ensure all field seams are at least 90 percent of the yield strength for the lining material;
X	Section 5.4.2			(2)	Design of 24-inch-thick protective layer above upper geomembrane liner;

	LOCATION	N/A	N/C		
X	Section 5.4.3	___	___	(3)	Describe operational plans to protect the liner and leachate collection system when placing the first layer of waste above 24-inch-thick protective layer.
				e.	Geosynthetic specification requirements; (17-701.400(3)(e),FAC)
X	Section 5.5.1	___	___	(1)	Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program;
X	Section 5.5.2	___	___	(2)	Material specifications for geomembranes, geotextiles, geogrids, and geonets;
X	Section 5.5.3	___	___	(3)	Manufacturing and fabrication specifications including geomembrane raw material and roll QA, fabrication personnel qualifications, seaming equipment and procedures, overlaps, trial seams, destructive and nondestructive seam testing, seam testing location, frequency, procedure, sample size and geomembrane repairs;
X	Section 5.5.4	___	___	(4)	Geomembrane installation specifications including earthwork, conformance testing, geomembrane placement, installation personnel qualifications, field seaming and testing, overlapping and repairs, materials in contact with geomembrane and procedures for system acceptance;
X	Section 5.5.5	___	___	(5)	Geotextile and geogrid specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials;
X	Section 5.5.5	___	___	(6)	Geonet specifications including handling and placement, conformance testing, stacking and joining, repair and placement of soil materials;
				f.	Standards for soil components; 17-701.400(3)(f),FAC)
X	Section 5.6.1	___	___	(1)	Description of construction procedures including over-excavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil component in layers;
X	Section 5.6.2	___	___	(2)	Demonstration of compatibility of the soil component with actual or simulated leachate in accordance with EPA Test Method 9100 or an equivalent test method;
X	Section 5.6.3	___	___	(3)	Procedures for testing in-situ soils to demonstrate they meet the specifications for soil liners;
				(4)	Specifications for soil component of liner including at a minimum:
X	Section 5.6.4	___	___	(a)	Allowable particle size distribution, Atterberg limits, shrinkage limit;

S	LOCATION	N/A	N/C		
X	Section 5.6.4	___	___	(b)	Placement moisture and dry density criteria;
X	Section 5.6.4	___	___	(c)	Maximum laboratory-determined saturated hydraulic conductivity using simulated leachate;
X	Section 5.6.4	___	___	(d)	Minimum thickness of soil liner;
X	Section 5.6.4	___	___	(e)	Lift thickness;
X	Section 5.6.4	___	___	(f)	Surface preparation (scarification);
X	Section 5.6.4	___	___	(g)	Type and percentage of clay mineral within the soil component;
X	Section 5.6.4	___	___	(5)	Procedures for constructing and using a field test section to document the desired saturated hydraulic conductivity and thickness can be achieved in the field.

3. Leachate collection and removal system, (LCRS); (17-701.400(4)(a),FAC)

a. The primary and secondary LCRS requirements; (17-701.400(4)(a),FAC).

X	Section 5.7.1	___	___	(1)	Constructed of materials chemically resistant to the waste and leachate;
X	Section 5.7.2	___	___	(2)	Have sufficient mechanical properties to prevent collapse under pressure.
X	Section 5.7.3	___	___	(3)	Have granular material or synthetic geotextile to prevent clogging;
X	Section 5.7.4	___	___	(4)	Have method for testing and cleaning clogged pipes or contingent designs for rerouting leachate around failed areas;

b. Primary LCRS requirements; (17-701.400(4)(b),FAC).

X	Section 5.8.1	___	___	(1)	Bottom 12 inches having hydraulic conductivity 1×10^{3} cm/sec;
X	Section 5.8.2	___	___	(2)	Total thickness of 24 inches of material chemically resistant to the waste and leachate;
X	Section 5.8.3	___	___	(3)	Bottom slope design to accommodate for predicted settlement;
___	_____	X	___	(4)	Demonstration that synthetic drainage material, if used, is equivalent or better than granular material in chemical compatibility, flow under load and protection of geomembrane liner.

4. Leachate recirculation (17-701.400(5),FAC).

	LOCATION	N/A	N/C		
___	_____	X	___	a.	Describe general procedures for recirculating leachate;
___	_____	X	___	b.	Describe procedures for controlling leachate runoff and minimizing mixing of leachate runoff with stormwater;
___	_____	X	___	c.	Describe procedures for preventing perched water conditions and gas buildup;
___	_____	X	___	d.	Describe alternate methods for leachate management when it cannot be recirculated due to weather of runoff conditions, surface seeps, wind-blown spray, or elevated levels of leachate head on the liner;
___	_____	X	___	e.	Describe methods of gas management to control odors and migration of methane;
___	_____	X	___	f.	If leachate irrigation is proposed, describe treatment methods and standards for leachate treatment prior to irrigation over final cover and provide documentation that irrigation does not contribute significantly to leachate generation.

5. Leachate storage tanks and leachate surface impoundments; (17-701.400(6),FAC)

a. Surface impoundment requirements; 17-701.400(6),FAC)

___	_____	X	___	(1)	Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water;
___	_____	X	___	(2)	Designed in segments to allow for inspection and repair as needed without interruption of service;
___	_____	X	___	(3)	General design requirements;
___	_____	X	___	(a)	Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane;
___	_____	X	___	(b)	Leak detection and collection system with hydraulic conductivity 1 cm/sec;
___	_____	X	___	(c)	Lower geomembrane placed on sub-base 6 inches thick with k $1x10^{-5}$cm/sec;
___	_____	X	___	(d)	Design calculation to predict potential leakage through the upper liner;
___	_____	X	___	(e)	Daily inspection requirements and notification and corrective action requirements leakage rates exceed that predicted by design calculations;
___	_____	X	___	(4)	Description of procedures to prevent uplift, if applicable;

S	LOCATION	N/A	N/C	
___	_____	X	___	(5) Design calculations to demonstrate minimum two feet of freeboard will be maintained;
___	_____	X	___	(6) Procedures for controlling vectors and off-site odors.

b. Above-ground leachate storage tanks; (17-701.400 (6) (c), FAC)

___	_____	X	___	(1) Describe tank materials of construction and ensure foundation is sufficient to support tank;
___	_____	X	___	(2) Describe procedures for cathodic protection if needed for the tank;
___	_____	X	___	(3) Describe exterior painting and interior lining of the tank to protect it from the weather and the leachate stored;
___	_____	X	___	(4) Describe secondary containment design to ensure adequate capacity will be provided and compatibility of materials of construction;
___	_____	X	___	(5) Describe design to remove and dispose of stormwater from the secondary containment system;
___	_____	X	___	(6) Describe an overall prevention system such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling;

(7) Inspections, corrective action and reporting requirements;

___	_____	X	___	(a) Overfill prevention system weekly;
___	_____	X	___	(b) Exposed tank exteriors weekly;
___	_____	X	___	(c) Tank interiors when tank is drained or at least every three years;
___	_____	X	___	(d) Procedures for immediate corrective action if failures detected;
___	_____	X	___	(e) Inspection reports available for department review.

c. Underground leachate storage tanks;
(17-701.400 (6) (d), FAC)

___	_____	X	___	(1) Describe materials of construction;
___	_____	X	___	(2) A double-walled tank design system to be used with the following requirements;
___	_____	X	___	(a) Interstitial space monitoring at least weekly;

	LOCATION	N/A	N/C	
___	_____	X	___	(b) Corrosion protection provided for primary tank interior and external surface of outer shell;
___	_____	X	___	(c) Interior tank coatings compatible with stored leachate;
___	_____	X	___	(d) Cathodic protection inspected weekly and repaired as needed;
___	_____	X	___	(3) Describe an overfill prevention system such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling and provide for weekly inspections;
___	_____	X	___	(4) Inspection reports available for department review.
___	_____	X	___	d. Schedule provided for routine maintenance of LCRS; (17-701.400 (6) (e), FAC)

6. Liner systems construction quality assurance (CQA): (17-701.400 (7), FAC)

a. Provide CQA Plan including:

X	Section 5.9.1	___	___	(1) Specifications and construction requirements for liner system;
X	Section 5.9.1	___	___	(2) Detailed description of quality control testing procedures and frequencies;
X	Section 5.9.1	___	___	(3) Identification of supervising professional engineer;
X	Section 5.9.1	___	___	(4) Identify responsibility and authority of all appropriate organizations and key personnel involved in the construction project;
X	Section 5.9.1	___	___	(5) State qualifications of CQA professional engineer and support personnel;
X	Section 5.9.1	___	___	(6) Description of CQA reporting forms and documents;
X	Section 5.9.2	___	___	b. An independent laboratory experienced in the testing of geosynthetics to perform required testing;

7. Surface Water management systems; (17-701.400 (9), FAC)

X	Section 5.10	___	___	a. Design of surface water management system to isolate surface water from waste filled areas and to control stormwater run-off;
X	Section 5.10	___	___	b. Details of stormwater control design including retention ponds, detention ponds, and drainage ways;

8. Gas control systems; (17-701.400 (10), FAC)

___	Section 5.11	X	___	a. Design details for gas control system including collection pipes and vents, and passive venting or vacuum extraction details;

S	LOCATION	N/A	N/C		
___	_____	X	___	b.	Documentation that the gas control system will not impact the liner or leachate control system;
___	_____	X	___	c.	Proposed methods of odor control including flaring designs in accordance with Chapter 17-210, FAC;
				d.	Description of a routine gas monitoring program to ensure gas control system is operating property including:
___	_____	X	___	(1)	Location of monitoring points;
___	_____	X	___	(2)	Requirements for quarterly sampling of all monitoring points;
___	_____	X	___	(3)	Description of corrective measures to be completed within 60 days of detection of elevated levels of explosive gases;
___	_____	X	___	e.	Description of condensate collection and disposal methods.
				9.	Landfill gas recovery facilities; (17-701.400 (11), FAC)
___	_____	X	___	a.	Information required in Rules 17-701.320 (7) and 17-701.330 (4), FAC supplied;
___	_____	X	___	b.	Information required in Rule 17-701.600 (4), FAC supplied where relevant and practical;
___	_____	X	___	c.	Estimate of current and expected gas generation rates and description of condensate disposal methods provided;
___	_____	X	___	d.	Description of procedures for condensate sampling, analyzing and data reporting provided;
___	_____	X	___	e.	Closure plan provided describing methods to control gas after recovery facility ceases operation;
___	_____	X	___	f.	Performance bond provided to cover closure costs if not already included in other landfill closure costs.
___	_____	X	___	10.	For landfills designed in ground water, provide documentation that the landfill will provide a degree of protection equivalent to landfills designed with bottom liners not in contact with ground water; (17-701.400 (12), FAC)

H. HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS (17-701.410, FAC)

1. Submit a hydrogeological investigation and site report including at least the following information:

X	Section 6.1.1	___	___	a.	Regional and site specific geology and hydrogeology;
X	Section 6.1.2	___	___	b.	Direction and rate of ground-water and surface-water flow including seasonal variations;

	LOCATION	N/A	N/C		
X	Section 6.1.3			c.	Background quality of ground water and surface water;
X	Section 6.1.4			d.	Any on-site hydraulic connections between aquifers;
X	Section 6.1.5			e.	Site stratigraphy and aquifer characteristic for confining layers, semi-confining layers, and all aquifers below the landfill site that may be affected by the landfill;
X	Section 6.1.6			f.	Site topography and soil characteristics;
X	Section 6.1.7			g.	Inventory of all public and private water wells within a one-mile radius of the landfill including well top of casing and bottom elevations, name of owner, age and usage of each well, stratigraphic unit screened, well construction technique and static water level;
	Section 6.1.8	X		h.	Existing contaminated areas on landfill site.
X	Section 6.2			2.	Report signed, sealed and dated by PE or PG.

I. GEOTECHNICAL INVESTIGATION REQUIREMENTS (17-701.420, FAC)

1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:

X	Section 7.1			a.	Description of subsurface conditions including soil stratigraphy and ground-water table conditions;
X	Section 7.2			b.	Investigate for the presence of muck, previously filled areas, soft ground, lineaments and sink holes;
X	Section 7.3			c.	Estimates of average and maximum high water table across the site;
				d.	Foundation analysis including:
X	Section 7.4.1				(1) Foundation bearing capacity analysis;
X	Section 7.4.2				(2) Total and differential subgrade settlement analysis;
X	Section 7.4.3				(3) Slope stability analysis;
X	Section 7.5			e.	Description of methods used in the investigation and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations and conclusions;
X	Section 7.6			f.	Report signed, sealed and dated by PE or PG.

J. VERTICAL EXPANSION OF LANDFILLS (17-701.430, FAC)

		X		1.	Describe how the vertical expansion shall not cause or contribute to leachate leakage from the existing landfill or adversely affect the closure design of the existing landfill;

S	LOCATION	N/A	N/C		
___	_____	X	___	2.	Describe how the vertical expansion over unlined landfills will meet the requirements of Rule 17-701.400, FAC with the exceptions of Rule 17-701.430 (1) (c), FAC);
___	_____	X	___	3.	Provide foundation and settlement analysis for the vertical expansion;
___	_____	X	___	4.	Provide total settlement calculations demonstrating that the final elevations of the lining system, that gravity drainage, and that no other component of the design will be adversely affected;
___	_____	X	___	5.	Minimum stability safety factor of 1.5 for the lining system component interface stability and deep stability;
___	_____	X	___	6.	Provide documentation to show the surface water management system will not be adversely affected by the vertical expansion;
___	_____	X	___	7.	Provide gas control designs to prevent accumulation gas under the new liner for the vertical expansion.

K. LANDFILL OPERATION REQUIREMENTS (17-701.500, FAC)

X	Section 8.1	___	___	1.	Provide documentation that landfill will have at least one trained operator during operation and at least one trained spotter at each working face; (17-701.500 (1), FAC)

2. Provide a landfill operation plan including procedures for: (17-701.500 (2), FAC)

X	Section 8.2.1	___	___	a.	Designating responsible operating and maintenance personnel;
X	Section 8.2.2	___	___	b.	Contingency operations for emergencies;
X	Section 8.2.3	___	___	c.	Controlling types of waste received at the landfill;
X	Section 8.2.4	___	___	d.	Weighing incoming waste;
X	Section 8.2.5	___	___	e.	Vehicle traffic control and unloading;
X	Section 8.2.6	___	___	f.	Method and sequence of filling waste;
X	Section 8.2.7	___	___	g.	Waste compaction and application of cover;
X	Section 8.2.8	___	___	h.	Operations of gas, leachate, and stormwater controls;
X	Section 8.2.9	___	___	i.	Water quality monitoring.
X	Section 8.3	___	___	3.	Provide a description of the landfill operation record to be used at the landfill; (17-701.500 (3), FAC)
X	Section 8.4	___	___	4.	Describe the waste records that will be compiled monthly and provided to the Department quarterly; (17-701.500 (4), FAC)

	LOCATION	N/A	N/C		
X	Section 8.5	___	___	5.	Describe methods of access control; (17-701.500 (5), FAC)
X	Section 8.6	___	___	6.	Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized wastes at the landfill; (17-701.500 (6), FAC)
				7.	Describer procedures for spreading and compacting waste at the landfill that include: (17-701.500 (7), FAC)
X	Section 8.7.1	___	___	a.	Waste layer thickness and compaction frequencies;
X	Section 8.7.2	___	___	b.	Special considerations for first layer of waste placed above liner and leachate collection system;
X	Section 8.7.3	___	___	c.	Slopes of disposal unit working face and side grades above land surface, planned lift depths during operation;
X	Section 8.7.4	___	___	d.	Maximum width of working face;
X	Section 8.7.5	___	___	e.	Procedures for applying initial cover including minimum cover frequencies;

S	LOCATION	N/A	N/C		
X	Section 8.7.6	___	___	f.	Procedures for applying intermediate cover;
X	Section 8.7.7	___	___	g.	Time frames for applying final cover;
X	Section 8.7.8	___	___	h.	Description of litter policing methods;
X	Section 8.7.9	___	___	i.	Erosion control procedures.
				8.	Describe operational procedures for leachate management including; (17-701.500 (8), FAC)
X	Section 8.8.1	___	___	a.	Leachate level monitoring, sampling, analysis and data results submitted to the Department;
X	Section 8.8.2	___	___	b.	Operation and maintenance of leachate collection and removal system, and treatment as required;
X	Section 8.8.3	___	___	c.	Procedures for managing leachate if it becomes regulated as a hazardous waste;
X	Section 8.8.4	___	___	d.	Agreements for off-site discharge and treatment of leachate;
X	Section 8.8.5	___	___	e.	Contingency plan for managing leachate during emergencies or equipment problems;
X	Section 8.8.6	___	___	f.	Procedures for recording quantities of leachate generated in gal/day;
X	Section 8.8.7	___	___	g.	Procedures for comparing precipitation experienced at the landfill with leachate generation rates.

S	LOCATION	N/A	N/C		
X	Section 8.9	___	___	9.	Describe routine gas monitoring program for the landfill as required by Rule 17-701.400 (10), FAC; (17-701.500 (9), FAC)
X	Section 8.10	___	___	10.	Describe procedures for operating and maintaining the landfill stormwater management system to comply with the standards of Chapters 17-3, 17-302, and 17-25, FAC; (17-701.500 (10), FAC)
				11.	Equipment and operation feature requirements; (17-701.500 (11), FAC)
X	Section 8.11.1	___	___	a.	Sufficient equipment for excavating, spreading, compacting and covering waste;
X	Section 8.11.2	___	___	b.	Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;
X	Section 8.11.3	___	___	c.	Communications equipment;
X	Section 8.11.4	___	___	d.	Personnel shelter and sanitary facilities, first aid equipment;
X	Section 8.11.5	___	___	e.	Dust control methods;
X	Section 8.11.6	___	___	f.	Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;
X	Section 8.11.7	___	___	g.	Litter control devices;
X	Section 8.11.8	___	___	h.	Signs indicating operating authority, traffic flow, hours of operation, disposal restrictions.
X	Section 8.12	___	___	12.	Provide a description of all-weather access road, inside perimeter road and other roads necessary for access which shall be provided at the landfill; (17-701.500 (12), FAC)
				13.	Additional record keeping and reporting requirements; (17-701.500 (13), FAC)
X	Section 8.13.1	___	___	a.	Records used for developing permit applications and supplemental information maintained for the design period of the landfill;
X	Section 8.13.2	___	___	b.	Monitoring information, calibration and maintenance records, copies of reports required by permit maintained for at least 10 years;
X	Section 8.13.3	___	___	c.	Background water quality records shall be maintained for the design period of the landfill;
X	Section 8.13.4	___	___	d.	Maintain annual estimates of the remaining life of constructed landfills and of other permitted areas not yet constructed and submit this estimate annually to the Department.

LOCATION	N/A	N/C	

L. WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS (17-701.510, FAC)

X	Section 9.1			1. Water quality and leachate monitoring plan shall be submitted describing the proposed ground water, surface water and leachate monitoring systems and shall meet at least the following requirements;
X	Section 9.1.1			a. Based on the information obtained in the hydrogeological investigation and signed, dated and sealed by the PG or PE who prepared it; (17-701.510 (2) (a), FAC)
X	Section 9.1.2			b. All sampling and analysis performed by organizations having Department approved Comprehensive Quality Assurance Plans; (17-701.510 (2) (b), FAC)
X	Section 9.1.3			c. Ground-water monitoring requirements;(17-701.510 (3), FAC)
X	Section 9.1.3.1			(1) Detection wells located downgradient from and within 50 feet of disposal units;
X	Section 9.1.3.2			(2) Downgradient compliance wells as required;
X	Section 9.3.1.3			(3) Background wells screened in all aquifers below the landfill that may be affected by the landfill;
X	Section 9.3.1.4			(4) Location information for each monitoring well;
X	Section 9.3.1.5			(5) Well spacing no greater than 500 feet apart for downgradient wells and no greater than 1500 feet apart for upgradient wells unless site specific conditions justify alternate well spacings;
X	Section 9.3.1.6			(6) Well screen locations properly selected;
X	Section 9.1.3.7			(7) Procedures for properly abandoning monitoring wells;
	Section 9.3.1.8	X		(8) Detailed description of detection sensors if proposed.
				d. Surface-water monitoring requirements; (17-701.510 (4), FAC)
X	Section 9.1.4.1			(1) Location of and justification for all proposed surface-water monitoring points;
X	Section 9.1.4.2			(2) Each monitoring location to be marked and its position determined by a registered Florida land surveyor;
X	Section 9.1.5			e. Leachate sampling locations proposed; (17-701.510 (5), FAC)
				f. Routine sampling frequency and requirements; (17-701.510 (6), FAC)

S	LOCATION	N/A	N/C		
X	Section 9.1.6.1			(1)	Background ground-water and surface-water sampling and analysis requirements;
X	Section 9.1.6.2			(2)	Leachate quarterly and annual sampling and analysis requirements;
X	Section 9.1.6.3			(3)	Detention well quarterly sampling and analysis requirements;
X	Section 9.1.6.4			(4)	Compliance well sampling and analysis as per requirements;

S	LOCATION	N/A	N/C		
X	Section 9.1.6.5			(5)	Surface-water sampling and analysis requirements.
X	Section 9.1.7			g.	Describe procedures for implementing assessment monitoring and corrective action as required; (17-701.510 (7), FAC)

h. Water quality monitoring report requirements; (17-701.510 (9), FAC)

X	Section 9.1.8.1			(1)	Quarterly report requirements;
X	Section 9.1.8.2			(2)	Annual report requirements including a report submitted to the Department which is signed, dated and sealed by PG or PE.

M. SPECIAL WASTE HANDLING REQUIREMENTS (17-701.520, FAC)

		X		1.	Describe procedures for managing motor vehicles; (17-701.510 (1), FAC
		X		2.	Describe procedures for landfilling shredded waste; (17-701.520 (3), FAC)
		X		3.	Describe procedures for asbestos waste disposal; (17-701.520 (4), FAC)

N. LANDFILL FINAL CLOSURE REQUIREMENTS (17-701.600, FAC)

1. Closure schedule requirements; (17-701.600 (2), FAC)

X	Section 10.1			a.	Documentation that a written notice including a schedule for closure will be provided to the Department at least one year prior to final receipt of wastes;
X	Section 10.1			b.	Notice to user requirements within 120 days of final receipt of wastes;
X	Section 10.1			c.	Notice to public requirements within 10 days of final receipt of wastes.

2. Closure permit general requirements; (17-701.600 (3), FAC)

X	Section 10.2			a.	Application submitted to Department at least 90 days prior to final receipt of wastes;

	LOCATION	N/A	N/C		
				b.	Closure plan shall include the following;
X	Section 10.2			(1)	Closure report;
X	Section 10.2			(2)	Closure design plan;
X	Section 10.2			(3)	Closure operation plan;
S	LOCATION	N/A	N/C		
X	Section 10.2			(4)	Closure procedures;
X	Section 10.2			(5)	Plan for long term care;
X	Section 10.2			(6)	A demonstration that proof of financial responsibility for long term care will be provided.

3. Closure report requirements; (17-701.600 (4), FAC)

				a.	General information requirements;
	Section 10.3	X		(1)	Identification of landfill;
	Section 10.3	X		(2)	Location, description and vicinity map;
	Section 10.3	X		(3)	Total acres of disposal areas and landfill property;
	Section 10.3	X		(4)	Legal property description;
	Section 10.3	X		(5)	History of landfill;
	Section 10.3	X		(6)	Identification of types of waste disposed of at the landfill.
	Section 10.3	X		b.	Geotechnical investigation report and water quality monitoring plan required by Rule 17-701.330 (4), FAC);
	Section 10.3	X		c.	Land use information report indicating: identification of adjacent landowners; zoning; present land uses; and roads, highways right-of-way, or easements.
	Section 10.3	X		d.	Report on actual or potential gas migration at landfills containing biodegradable wastes including detailed description of test and investigation methods used;
	Section 10.3	X		e.	Report assessing the effectiveness of the landfill design and operation including results of geotechnical investigations, surface water and storm water management, gas migration and concentrations, condition of existing cover, and nature of waste disposed of at the landfill;

4. Closure design requirements to be included in the closure design plan: (17-701.600 (5), FAC)

X	Section 10.4.1			a.	Plan sheet showing phases of site closing;

S	LOCATION	N/A	N/C		
X	Section 10.4.2			b.	Drawings showing existing topography and proposed final grades;
X	Section 10.4.3			c.	Provisions to close units when they reach approved design dimensions;
X	Section 10.4.4			d.	Final elevations before settlement;
X	Section 10.4.5			e.	Side slope design including benches, terraces, down slope drainage ways, energy dissipators and discussion of expected precipitation effects;
				f.	Final cover installation plans including:
	Section 10.4.6	X		(1)	CQA plan for installing and testing final cover;
X	Section 10.4.6			(2)	Schedule for installing final cover after final receipt of waste;
X	Section 10.4.6			(3)	Description of drought-resistant species to be used in the vegetative cover;
X	Section 10.4.6			(4)	Top gradient design to maximize runoff and minimize erosion;
X	Section 10.4.6			(5)	Provisions for cover material to be used for final cover maintenance.
				g.	Final cover design requirements:
X	Section 10.4.7			(1)	Protective soil layer design;
	Section 10.4.7	X		(2)	Barrier soil layer design;
X	Section 10.4.7			(3)	Erosion control vegetation;
X	Section 10.4.7			(4)	Geomembrane barrier layer design.
X	Section 10.4.8			h.	Proposed method of stormwater control;
X	Section 10.4.9			i.	Proposed method of access control;
X	Section 10.4.10			j.	Description of proposed final use of the closed landfill, if any;
				5.	Closure operation plan shall include: (17-701.600 (6), FAC)
X	Section 10.5.1			a.	Detailed description of actions which will be taken to close the landfill;
X	Section 10.5.2			b.	Time schedule for completion of closing and long term care;
X	Section 10.5.3			c.	Describe proposed method for demonstrating financial responsibility;
X	Section 10.5.4			d.	Indicate any additional equipment and personnel needed to complete closure.

	LOCATION	N/A	N/C		
___	_____	X	___	6.	Justification for and detailed description of procedures to be following for temporary closure of the landfill, if desired; (17-701.600 (7), FAC)

O. CLOSURE PROCEDURES (17-701.610, FAC)

___	Section 11.0	X	___	1.	Survey monuments; (17-701.610 (2), FAC)
___	Section 11.0	X	___	2.	Final survey report; (17-701.610 (3), FAC)
___	Section 11.0	X	___	3.	Certification of closure construction completion; (17-701.610 (4), FAC)
___	Section 11.0	X	___	4.	Declaration to the public; (17-701.610 (5), FAC)
___	Section 11.0	X	___	5.	Official date of closing (17-701.610 (6), FAC)
___	Section 11.0	X	___	6.	Use of closed landfill areas; (17-701.610 (7), FAC)

P. LONG TERM CARE REQUIREMENTS (17-701.620, FAC)

___	Section 12.0	X	___	1.	Right of property access requirements; (17-701.620 (4), FAC)
_	Section 12.0	X	___	2.	Successors of interest requirements; (17-701.620 (5), FAC)
___	Section 12.0	X	___	3.	Requirements for replacement of monitoring devices; (17-701.620 (7), FAC)

Q. FINANCIAL RESPONSIBILITY REQUIREMENTS (17-701.630, FAC)

X	Section 13.1	___	___	1.	Provide cost estimates for closure costs and long term care costs estimated by a PE for a third party performing the work, on a per unit basis, with the source of estimates indicated; (17-701.630 (3), FAC)
X	Section 13.2	___	___	2.	Describe procedures for providing annual cost adjustments to the Department based on inflation and changes in the closure and long-term care plans; (17-701.630 (4), FAC)
X	Section 13.3	___	___	3.	Describe funding mechanisms for providing proof of financial responsibility and include appropriate financial responsibility forms; (17-701.630 (5) & (6), FAC)

R. VOLUME REDUCTION PLANT REQUIREMENTS (17-701.700, FAC)

___	_____	X	___	1.	Proof of posting a performance bond payable to the Department to cover closing costs, if required; (17-701.700 (4), FAC)
___	_____	X	___	2.	Materials recovery facility requirements; (17-701.700, FAC)
_	_____	X	___	a.	Submit information required in Rule 17-701.320, FAC
___	_____	X	___	b.	Submit an engineering report including the following:

S	LOCATION	N/A	N/C		
___	_____	X	___	(1)	Description of the solid waste proposed to be collected, stored, processed or disposed;
___	_____	X	___	(2)	Projection with assumptions for waste types and quantities expected in future years;
___	_____	X	___	(3)	Description of operation and functions of all processing equipment with design criteria and expected performance;
___	_____	X	___	(4)	Description of flow of solid waste, expected regular facility operations, procedures for start up and shut down, potential safety hazards and control methods including fire protection;
___	_____	X	___	(5)	Description of loading, unloading, processing areas;
___	_____	X	___	(6)	Identification and capacity of temporary on-site storage areas for materials handled and provisions for solid waste and leachate containment;
___	_____	X	___	(7)	Identification of potential ground-water and surface-water contamination;
___	_____	X	___	(8)	Plan for disposal of unmarketable recyclables and residue and contingencies for waste handling during breakdowns.

c. Submit the following operational information:

___	_____	X	___	(1)	Operation and maintenance manual;
___	_____	X	___	(2)	Waste control plan to manage unauthorized wastes;
___	_____	X	___	(3)	Contingency plan for emergencies;
___	_____	X	___	(4)	Closure plan including the following:
___	_____	X	___	(a)	Notification to Department 180 days prior to closure;
___	_____	X	___	(b)	Procedures for removal of all waste within 30 days of receipt of final waste;
___	_____	X	___	(c)	Completion of closure activities within 180 days of receipt of final waste and notification to the Department that closure is complete.

S. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

A. Applicant

The undersigned applicant or authorized representative of Pasco County, Florida is aware that statements made in this form and attached information are an application for a landfill construction Permit from the Florida Department of Environmental Regulation and certifies that the information in this application is true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403, Florida Statutes,

S. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

A. Applicant

The undersigned applicant or authorized representative of Pasco County, Florida is aware that statements made in this form and attached information are an application for a landfill construction Permit from the Florida Department of Environmental Regulation and certifies that the information in this application is true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403, Florida Statutes, and all rules and regulations of the Department. It is understood that the Permit is not transferable, and the Department will be notified prior to the sale or legal transfer of the permitted facility.

Signature of Applicant or Agent

Douglas S. Bramlett, Assistant County Administractor
Name and Title

Date: July 8, 1994

Attach letter of authorization if agent is not a governmental official, owner, or corporate officer.

B. Professional Engineer Registered in Florida or Public Officer as required in Section 403.707 and 403.707 (5), Florida Statutes.

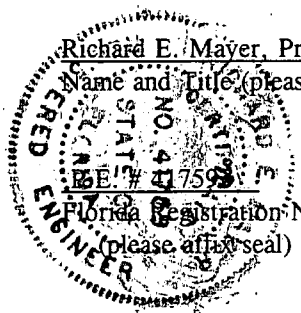
This is to certify that the engineering features of this solid waste management facility have been designed/examined by me and found to conform to engineering principals applicable to such facilities. In my professional judgement, this facility, when properly maintained and operated, will comply with all applicable statutes of the State of Florida and rules of the Department. If it agreed that the undersigned will provide the applicant with a set of instructions of proper maintenance and operation of the facility.

Signature

4919 West Laurel Street
Mailing Address

Richard E. Mayer, Principal Engineer
Name and Title (please type)

Tampa, Florida 33607
City, State, Zip Code



FE # 41759
Florida Registration Number
(please affix seal)

(813) 289-0750
Telephone Number

Date: July 8, 1994

SECTION 2.0

SOLID WASTE MANAGEMENT FACILITY PERMIT GENERAL REQUIREMENTS

SECTION 2.0

SOLID WASTE MANAGEMENT FACILITY PERMIT GENERAL REQUIREMENTS

2.1 Six copies at minimum, of the completed application form with all supporting data and reports

Six copies are provided.

2.2 Engineering and/or professional certification (signature, date and seal) provided on the applications and all engineering plans, reports and supporting information for the application

The data have be properly sealed.

2.3 A letter of transmittal to the Department

The transmittal letter has been provided.

2.4 A completed application dated and signed by the applicant

The application is complete and signed.

2.5 Permit fee specified in Rule 17-4.050,FAC and Rule 17-7-1.320(5)(c), FAC in check or money order, payable to the Department

Not required.

2.6 An engineering report addressing the requirements of this rule and with the following format: a cover sheet, text printed on 8 1/2 inch by 11 inch consecutively numbered pages, a table of contents or index, the body of the report and all appendices including an operation plan, contingency plan, illustrative charts and graphs, records or logs of tests and investigations, engineering calculations.

The Engineering Report is provided in Sections 3 - 13.

2.7 Operation Plan

The Operation Plan is provided in Appendix 8

2.8 Contingency Plan

Solid waste due to a natural disaster will be stockpiled for later removal to the Resource Recovery Facility, or debris may be isolated and burned in an area adjacent to the operational phase in an unused area. Cooled ash would then be landfilled. Special access roads can be built at the landfill to allow normal operations under adverse conditions. Cooperative lending agreement with other Pasco County departments will be made for backup equipment and manpower.

2.9 Plans or drawings for the solid waste management facilities in appropriate format (including sheet size restrictions, cover sheet, legends, north arrow, horizontal and vertical scales, elevations referenced to NGVD) showing:

A regional map or plan - See Drawing Sheet No. 2

A vicinity map - See Drawing Sheet No. 4

A site plan with property boundaries certified by a registered land surveyor - See Drawing Sheet No. 4.

Drawing sheets to support the engineering report - Refer to the attached drawing set.

2.10 Proof of property ownership or a copy of appropriate agreements between the facility operator and property owner authorizing use of property -

Not applicable, proof provided in Power Plant Site Certification Application

2.11 For facilities owned or operated by a county, provide a description of how, if any, the facilities covered in this application will contribute to the county's achievement of recycling goals.

The facility is an integral part of comprehensive solid waste management plan which includes numerous recycling programs designed to assist the County in meeting State goals.

2.12 Provide a history and description of any enforcement actions taken by the Department against the applicant for violations of applicable statutes, rules, orders or permit conditions relating to the operation of any solid waste management facility in this state. -

If required information will be provided by the County under separate cover.

2.13 Proof of publication in a newspaper of general circulation of notice of application for a permit to construct or substantially modify a solid waste management facility

Not applicable, provided in Power Plant Site Certification permit application.

2.14 Provide a description of how the requirements for airport safety will be achieved including proof of required notices if applicable.

Not applicable, provided in Power Plant Site Certification permit application.

SECTION 3.0

LANDFILL PERMIT GENERAL REQUIREMENTS

SECTION 3.0

LANDFILL PERMIT GENERAL REQUIREMENTS

3.1 Vicinity map or aerial photograph, no more than one year old and of appropriate scale, showing land use and local zoning within one mile of the landfill and of sufficient scale to show all homes or other structures, water bodies, roads, and other significant features of the vicinity. All significant features should be labeled; (Ch. 17-701.330 (4) (a), FAC).

Aerial photographs of the site were provided with the Application for Power Plant Site Certification on Drawing Sheets Nos. 2, 3, 4, and 5. Reductions of these original drawings are provided in Appendix 3. No expansion of the landfill area is being requested. Disposal Unit A-2 is within the 160 acre footprint of permitted landfill, which is well buffered inside the 800 acre site.

3.2 Vicinity map or aerial photograph, no more than one year old, showing all airports that are located within five miles of the proposed landfill: (Ch. 17-701.330 (4) (b), FAC).

The landfill is located more than ten thousand feet from any airport, as stated in the Power Plant Site Certification and shown on Drawing Sheet No. 2, Appendix 3. The nearest airport, Pilots County Estates Airport, is located approximately 10 miles southeast of the landfill near U.S. Highway 41 and State Road 52. Hidden Lake Airport (PVT) is located approximately 14 miles southwest of the landfill near Moon Lake Road and the Hernando County Airport is approximately 15 miles to the northeast.

3.3 Plot Plan with a scale not greater than 200 feet to the inch showing: (Ch. 17-701.330(4)(c), FAC).

3.3.1 Dimensions

Dimensions of Disposal Unit A-2 are shown on Drawing Sheet No. 5 of this application. Disposal Unit A-2 dimensions are approximately 390 feet by 970 feet. The disposal unit covers approximately ten acres.

3.3.2 Locations of Proposed and Existing Water Quality Monitoring Wells

Water quality monitoring wells are shown on Drawing Sheet No. 4 and on Figure 1 in Appendix 9. The Florida Aquifer monitoring wells are designated 4MW and the Surficial Aquifer monitoring wells 2MW.

3.3.3 Location of Soil Borings

Location of the soil borings are shown on Drawing Sheet No. 6.

3.3.4 Proposed Plan of Trenching or Disposal Areas

The location of Disposal Unit A-2 is shown on Drawing Sheet No. 5. The facility layout, depicting location of sixteen contiguous disposal units within the permitted foot print of the landfill, is shown on reduced copies of the Application for Site Certification Permit Drawings provided in Appendix 3.0 (see Drawing Sheet No. 8).

3.3.5 Cross Sections Showing Original Elevations and Proposed Final Contours Which Shall Be Included on the Plot plan or on Separate Sheet.

Original elevations and contours for Disposal Unit A-2 are shown on Drawing Sheet No. 7. Original elevations and proposed final contours for the entire permitted landfill remain unchanged from the closure plan submitted in Application for Power Plant Site Certification (see Appendix 3.0, Drawing Sheet Nos. 9, 11, and 15). Proposed final elevation is 152.0 feet NGVD, which is approximately 100 feet above surrounding ground level at 48 feet NGVD.

3.3.6 Any previously Filled Waste Disposal Areas

To date only Disposal Unit A-1 has received solid waste (see Drawing Sheet No. 5).

3.3.7 Fencing or Other Measures to Restrict Access

A perimeter fence, constructed of barbed wire and chain link, encloses the entire 800 acre site. Internally, the Resource Recovery Facility, the West Pasco Class III Landfill and Recycling Center and the West Pasco Class I Landfill are separated by additional chain link fencing. The Resource Recovery Facility and the West Pasco Class III Landfill, and Recycling Center have separate entrance gates that restrict access to the sites. No external access to the West Pasco Class I Landfill exists. Entry into the West Pasco Class I Landfill can be made through internal gates which are locked during non-operating hours: (See Drawing Sheet No. 4).

3.4 Topographic Maps with a Scale Not Greater than 200 feet to the inch with 5-foot Contour Intervals Showing:

3.4.1 Proposed Fill Areas

The layout for the planned disposal units are shown on the permit drawings submitted with the Power Plant Site Certification Permit Application (see Appendix 3, Drawing Sheet Nos. 8 and 9). The proposed fill area, Disposal Unit A-2, is located adjacent to Disposal Unit A-1 and is shown on Drawing Sheet No. 7.

3.4.2 Borrow Areas

Borrow areas remain unchanged from the Power Plant Site Certification Application and are shown on the permit drawings submitted with that application (See Appendix 3, Drawing Sheet No. 7).

3.4.3 Access Roads

The access road is shown on Drawing Sheet Nos. 4 and 5 and with contours on Drawing Sheet No. 7. Access into Disposal Unit A-2 will be through the entrance ramp to Disposal Unit A-1.

3.4.4. Grades Required for Proper Drainage

The stormwater management system has been constructed. Currently swales around Disposal Unit A-1 direct stormwater runoff from surrounding area through a culvert under the access road in a stormwater retention pond. Existing swales will be modified to direct stormwater runoff from areas surrounding both disposal units to the retention pond. Both the existing swales and the proposed modifications are shown on Drawing Sheet No. 7.

3.4.5 Cross Sections of Lifts

See Appendix 3, Drawing Sheet No. 10.

3.4.6 Special Drainage Devices If Necessary

A temporary side slope riser and pump arrangement will be used to pump uncontaminated stormwater from the disposal unit during the initial stages of filling. The bottom of the disposal unit is sloped from the southwest corner to the northeast corner. The leachate collection system piping will be laid to drain the same direction. Filling of the unit will begin in the east (lowest) part and proceed westward. Therefore, stormwater that accumulates in the areas to the west of the filling area would not come into contact with the ash and can be removed and disposed of without treatment. In order to accomplish the removal, two valves will be placed in the primary leachate collection header pipe and be closed to block flows from upstream collector pipes. One, valve will be located at a point approximately one-third of the distance from the west end of the disposal unit. The second valve will be located at two-thirds of the distance (refer to Drawing Sheet No. 8). A vertical piece of geomembrane extending from the surface of the drainage layer down two feet to the primary liner will block upstream stormwater flow (see Drawing Sheet No. 10). This geomembrane piece or "flap" will be long enough to extend across the disposal unit width and will be welded to the top liner. Stormwater will be pumped from the area upstream from the closed valve and geomembrane flap using a side slope riser and pump (refer to Section 5 for a description of the side slope riser and pump). Water pumped from the disposal unit will be piped across the width of the disposal unit and discharged into the swale on the south side of the unit. The side slope riser will initially be located at the valve nearest the west end. Then, as filling of the unit proceeds westward to the first withdrawal point, the pump will be removed from the first riser and inserted into the riser at the next withdrawal point. Refer to Drawing Sheet Nos. 13 and 14 for details.

The pump is sized to remove the volume of water that will accumulate from a one in 25-year, 24-hour storm and an area two-thirds of the total unit size or 1.6 million gallons in seven days.

3.4.7 Fencing

See response to 3.3.7.

3.4.3 Access Roads

The access road is shown on Drawing Sheet Nos. 4 and 5 and with contours on Drawing Sheet No. 7. Access into Disposal Unit A-2 will be through the entrance ramp to Disposal Unit A-1.

3.4.4. Grades Required for Proper Drainage

The stormwater management system has been constructed. Currently swales around Disposal Unit A-1 direct stormwater runoff from surrounding area through a culvert under the access road in a stormwater retention pond. Existing swales will be modified to direct stormwater runoff from areas surrounding both disposal units to the retention pond. Both the existing swales and the proposed modifications are shown on Drawing Sheet No. 7.

3.4.5 Cross Sections of Lifts

See Appendix 8, Figure 2.

3.4.6 Special Drainage Devices If Necessary

A temporary side slope riser and pump arrangement will be used to pump uncontaminated stormwater from the disposal unit during the initial stages of filling. The bottom of the disposal unit is sloped from the southwest corner to the northeast corner. The leachate collection system piping will be laid to drain the same direction. Filling of the unit will begin in the east (lowest) part and proceed westward. Therefore, stormwater that accumulates in the areas to the west of the filling area would not come into contact with the ash and can be removed and disposed of without treatment. In order to accomplish the removal, two valves will be placed in the primary leachate collection header pipe and be closed to block flows from upstream collector pipes. One, valve will be located at a point approximately one-third of the distance from the west end of the disposal unit. The second valve will be located at two-thirds of the distance (refer to Drawing Sheet No. 8). A vertical piece of geomembrane extending from the surface of the drainage layer down two feet to the primary liner will block upstream stormwater flow (see Drawing Sheet No. 10). This geomembrane piece or "flap" will be long enough to extend across the disposal unit width and will be welded to the top liner. Stormwater will be pumped from the area upstream from the closed valve and geomembrane flap using a side slope riser and pump (refer to Section 5 for a description of the side slope riser and pump). Water pumped from the disposal unit will be piped across the width of the disposal unit and discharged into the swale on the south side of the unit. The side slope riser will initially be located at the valve nearest the west end. Then, as filling of the unit proceeds westward to the first withdrawal point, the pump will be removed from the first riser and inserted into the riser at the next withdrawal point. Refer to Drawing Sheet Nos. 13 and 14 for details.

The pump is sized to remove the volume of water that will accumulate from a one in 25-year, 24-hour storm and an area two-thirds of the total unit size or 1.6 million gallons in seven days.

3.4.7 Fencing

See response to 3.3.7.

3.4.8 Equipment Facilities

A maintenance facility is located on-site immediately southwest of landfill adjacent to the access road (see Drawings Sheet Nos. 4 and 5). The facility consists of two work bays for repair and maintenance of heavy equipment and office and restroom facilities for the landfill supervisor and staff.

3.5 Report on the Landfill Describing the Following (17-701.330(4)(e), FAC)

3.5.1 Current and Projected Population and Area to be Served by the Proposed Site;

The area to be served by the West Pasco Class I Landfill includes the incorporated and unincorporated areas of Pasco County. Each of the six municipalities located within the County has an Interlocal Agreement with the County for the purpose of designating the County as the lead solid waste agency.

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

Year	Population
1994	290,000
2000	340,000

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.

In addition, Pasco County has agreements with Hernando Co., Hillsborough Co., and the City of Plant City for solid waste to be processed at the Resource Recovery Facility. Ash from the combustion of solid waste provided under these interlocal agreements will be disposed of at the West Pasco Class I Landfill. No non-processible waste will be received under these agreements.

3.5.2 Anticipated Type, Annual Quantity, and Source of Solid Waste

The West Pasco Class I Landfill will accept only solid waste which may be disposed at a Class I Landfill as defined in Chapter 17-701, FAC. Hazardous or biohazardous waste as defined by the U.S. EPA and FDEP will not be accepted. The landfill will accept ash residue, non-processible waste that cannot be directed to the West Pasco Class III Landfill, East Pasco Landfill, or recycling activities (i.e. scrap metal) and raw solid waste which exceeds the resource recovery facility capacity. Only ash will go to the ash monofill disposal units.

The projected annual quantities of solid waste are presented in below.

Year	Ash (in tons)
1994	82,125
2000	82,125

The solid waste is primarily from domestic and commercial sources.

3.5.3 Anticipated Facility Life

The anticipated life of the West Pasco Class I Landfill is in excess of 50 years. Disposal Unit A-1 initial filling phase provided for approximately five years of disposal capacity. Disposal Unit A-2 initial filling phase also is anticipated to provide for five years of disposal capacity of ash produced at the Resource Recovery Facility.

Disposal Unit SW-1 is designed to accept solid waste only if the input volume exceeds the capacity of the Resource Recovery Facility and has not been placed in service. The operating capacity of the Resource Recovery Facility has not been exceeded partly due to alternative disposal methods provided by the County at the West Pasco Class III Landfill and Recycling Center, the East Pasco Transfer Station and Recycling Center, and the East Pasco Landfill.

3.5.4 Source and Type of Cover Material Used for the Landfill

The source of daily and intermediate cover material is from the on-site excavation of surface water management pond and was stockpiled during initial site construction. Additional soil material is available from potential borrow areas outside the 160 acre landfill site but within the 800 acre facility site.

The type of material is native sandy soils. These soils are unconsolidated fine-grained sands, in part silty and/or clayey.

3.6 Evidence that an Approved Laboratory Shall Conduct Water Quality Monitoring for the Facility in Accordance with Rule 17-160, FAC.

Pasco County Environmental Laboratory has been and will continue to conduct the required water quality sampling and analyses for the West Pasco Class I Landfill. The laboratory's approved Comprehensive Quality Assurance Plan is FDEP 870167G.

Chemical analyses that cannot be performed by the County laboratory are contracted out under an annual contract. Currently, the County has five FDEP approved laboratories under annual contract.

3.7 Provide a Statement of how the Applicant will Demonstrate Financial Responsibility for the Closing and Long-Term Care of the Landfill

Pasco County has established a landfill management escrow account for the closure and long term care of the West Pasco Class I Landfill. Cost estimates for closure and long term care (30 years) are made by a professional engineer based on third-party performance of the work for each disposal unit. See Section 13 for detail costs. Annual cost adjusts for closure and long-term care are also made pursuant to Chapter 17-701.630, FAC.

The County's procedure has been approved by the Department. Annual adjustments and statements are on file with the Department.

SECTION 4.0

GENERAL CRITERIA FOR LANDFILLS

SECTION 4.0

GENERAL CRITERIA FOR LANDFILLS

4.1 Describe how landfill or solid waste disposal unit shall not be located in the 100-year floodplain where it will restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain unless compensating storage is provided or result is a washout of solid waste.

The West Pasco Class I Landfill is not located in the 100-year floodplain. The landfill is on a topographically high area with an average elevation of 50 feet above mean sea level.

4.2 Describe how the minimum horizontal separation between waste deposits in the landfill and the landfill property boundary shall be 100 feet measured from the toe of the proposed final cover slope.

The West Pasco Class I Landfill planned disposal area covers approximately 160 acres and is situated within a larger 800-acre solid waste management site. The horizontal separation is well in excess of required 100-foot buffer (see Drawing Sheet No. 4).

4.3 Describe what method shall be taken to screen the landfill from public view where such screening can practically be provided.

The West Pasco Class I Landfill is obscured from public view by pine trees and other vegetation on the east, south, and west boundaries. The landfill is partially obscured from public view on the north boundary. Additional trees and vegetation have been planted to further limit the landfill from public view.

SECTION 5.0

LANDFILL CONSTRUCTION REQUIREMENTS

SECTION 5.0

LANDFILL CONSTRUCTION REQUIREMENTS

5.1 Describe how the landfill shall be designed so that disposal units will be constructed and closed at planned intervals throughout the design period of the landfill

The landfill was designed to be constructed in a phased series of sixteen-10 acre disposal units each with a capacity sufficient to contain the ash generated during a 5-year period. These disposal units are prepared by construction of a perimeter berm using borrow from limited excavation of soil within the disposal unit area and from other sources. An on-site source has been identified and is shown in Drawing Sheet No. 5. As each disposal unit is filled to the top of perimeter berm, an adjacent disposal unit will be constructed. Intermediate cover will be applied to the filled disposal unit and disposal will begin in the new unit. The process will be repeated until all the disposal units are filled. Refer to Appendix 3 for an illustration of closure procedures.

5.2 Landfill liner requirements

A double liner system is proposed for this disposal unit. The system includes two High Density Polyethylene (HDPE) geomembranes placed on a compacted soil foundation.

5.2.1 General Construction Requirements

The liner system has been designed to meet the requirements contained in Chapter 17 - 701.400(3) of the Florida Administrative Code (FAC). Test results are provided at the end of this section (Appendix 5, Section A 5.1) to demonstrate liner compatibility, physical, chemical and mechanical properties.

5.2.2 Document foundation is adequate to prevent liner failure

A geotechnical investigation has been conducted to evaluate the foundation to avoid liner failure. Total settlement of the landfill at closure height is anticipated to be 1.5 to 2.0 feet. If the settlement were to be 9 to 12 inches in the middle of a disposal unit, the elongation of the liner would be 0.2 % which is within tolerance for the geomembrane proposed (maximum elongation is 13 %). Settlement in a concentrated area could be the critical condition in regard to potential failure. This type of settlement could occur as a result of sinkhole activity or an unrealized "soft spot". The potential for future sinkhole activity was evaluated using soil borings and ground penetrating radar survey. The results of this survey indicate a few anomalies in the foundation. The foundation will be proof-rolled prior to placement of the geomembrane to consolidate localized soft spots. Refer to Section 7 for the complete geotechnical investigation and results and to Section 6.1.1.2.

5.2.3 Constructed so bottom liner will not be adversely by fluctuation of the ground water

The elevation of the bottom of the liner system is above the seasonal ground-water level. The seasonal ground-water elevation was determined using water level measurements from existing monitoring wells located around the site.

5.2.4 Design to resist hydrostatic uplift

Not Applicable. See response in Section 5.2.3.

5.2.5 Cover to protect surrounding earth

The berms will be constructed to contain the waste within each disposal unit and these berms and the entire area within the berms will be lined with the geomembrane. The geomembrane will be made continuous across disposal units by welding existing and new geomembranes together. Special precautions will be to avoid folds and creases in the membrane during placement of the cover soils and in corners of the disposal unit. The liner will have no penetrations. Leachate and uncontaminated stormwater will be pumped from the disposal unit.

5.3 Double Liner system details

5.3.1 Upper and lower geomembrane thickness and properties

The proposed primary and secondary liner will be 60 mils nominal thickness with properties as listed in Table 1 of Section 02280 of the specifications included in Appendix 5, Section 5.2 located at the end of this section.

5.3.2 Head over liner

The primary leachate collection and removal system is designed to limit the head on the top liner to 12 inches or less. This system consists of a 24-inch thick granular soil drainage layer above the geomembrane with a hydraulic conductivity of not less than 1 x 10^{-3} cm/sec. Leachate that passes through the drainage layer will be collected by perforated pipes. These pipes are sloped to allow leachate to drain to a collection sump. Leachate that collects in the sump will be pumped out of the disposal unit. An estimate of the head over the liner using the proposed design configuration was made using the US Army Corps of Engineers computer model Hydrologic Evaluation of Landfill Performance (HELP). The results of the calculations using the model are in Appendix 5, Section A 5.3 at the end of this section.

The sump is divided into two areas; one for the primary system and the second for the leak detector or secondary system (refer to Drawing Sheet No. 12). These sump areas will be created by extending the double liner through an area excavated below the grade of the bottom of the disposal unit. For additional protection a geosynthetic clay liner will be added beneath each liner in the sump area. The sump will be filled with gravel. A geotextile will be placed between the gravel and the liners for extra protection. The dimensions of the sump (30' x 30' x 2.5' deep) will provide 6,000 gallons in the primary and 2,250 gallons in the secondary sump (assuming a 50 percent void ratio in the gravel in the sump) refer to the calculations in Appendix 5 for sizing of the sumps.

Leachate will be pumped from the sumps using submersible pumps. The pumps are fitted with wheels and are lowered into the sump area down a pipe laid on the side slope of the outer berm of the disposal unit. The bottom end of the pipe is closed off with a screen to allow water but not gravel or sand to enter into the pump intake. At the top the riser is open for access for withdrawing pump and leachate level measurements.

5.2.4 Design to resist hydrostatic uplift

Not Applicable. See response in Section 5.2.3.

5.2.5 Cover to protect surrounding earth

The berms will be constructed to contain the waste within each disposal unit and these berms and the entire area within the berms will be lined with the geomembrane. The geomembrane will be made continuous across disposal units by welding existing and new geomembranes together. Special precautions will be to avoid folds and creases in the membrane during placement of the cover soils and in corners of the disposal unit. The liner will have no penetrations. Leachate and uncontaminated stormwater will be pumped from the disposal unit.

5.3 Double Liner system details

5.3.1 Upper and lower geomembrane thickness and properties

The proposed primary and secondary liner will be 60 mils nominal thickness with properties as listed in Table 1 of Section 02280 of the specifications included in Appendix 5, Section 5.2 located at the end of this section.

5.3.2 Head over liner

The primary leachate collection and removal system is designed to limit the head on the top liner to 12 inches or less. This system consists of a 24-inch thick granular soil drainage layer above the geomembrane with a hydraulic conductivity of not less than 1 x 10^{-3} cm/sec. Leachate that passes through the drainage layer will be collected by perforated pipes. These pipes are sloped to allow leachate to drain to a collection sump. Leachate that collects in the sump will be pumped out of the disposal unit. An estimate of the head over the liner using the proposed design configuration was made using the US Army Corps of Engineers computer model Hydrologic Evaluation of Landfill Performance (HELP). The results of the calculations using the model are in Appendix 5, Section A 5.3 at the end of this section.

The sump is divided into two areas; one for the primary system and the second for the leak detector or secondary system (refer to Drawing Sheet No. 12). These sump areas will be created by extending the double liner through an area excavated below the grade of the bottom of the disposal unit. For additional protection a geosynthetic clay liner will be added beneath each liner in the sump area. The sump will be filled with gravel. A geotextile will be placed between the gravel and the liners for extra protection. The dimensions of the sump (30' x 30' x 2.5' deep) will provide 12,000 gallons in the primary and 4,500 gallons in the secondary sump.

Leachate will be pumped from the sumps using submersible pumps. The pumps are fitted with wheels and are lowered into the sump area down a pipe laid on the side slope of the outer berm of the disposal unit. The bottom end of the pipe is closed off with a screen to allow water but not gravel or sand to enter into the pump intake. At the top the riser is open for access for withdrawing pump and leachate level measurements.

The side slope riser pumping system has a level switch that activates the pump at a pre-set leachate level. The lower level switch shuts off the pump to prevent damage. The pumping rate is recorded as well as the leachate level fluctuations. The elevation of leachate in the sumps (disposal unit) can also be measured manually through the riser pipe.

The pumps and sump were sized based on data from the existing system. Currently, stormwater flowing across the ash is collected in the southeast corner of Disposal Unit A-1. This contaminated stormwater passes through the primary collection system and discharges into the manholes and flows to a holding tank. Two pumps, each having a capacity of 150 gallons per minute, pump leachate to a pump station at Disposal Unit SW-1. Once A-2 is opened, the ash in Unit A-1 will be shaped for drainage and intermediate cover will be placed over the ash (refer to Drawing Sheet 7A). The flow rates from A-1, with intermediate cover, will be 15 to 20 gpm or about ten percent of the current pumping capacity. Therefore, the pump used to draw leachate from the primary sump in A-2 will have a capacity of 150 gpm. A spare riser pipe will be installed into the primary sump to allow adding a second pump, if necessary.

The capacity of the secondary pump is 5 to 10 gpm. The County had a study performed to determine the quantity of secondary leachate, and the results indicate 5 to 10 gpm will be more than adequate.

5.3.3 Lower geomembrane sub-base

The sub-base beneath the lower geomembrane will be six inches thick and have a saturated hydraulic conductivity of less than or equal to 1×10^{-5} cm/sec. The stability of this sub-base will be evaluated by proof rolling the area. Prior to placing the geomembrane the liner installation contractor will walk the entire area and certify that the base is free of sharp objects that might penetrate the geomembrane (refer to the liner quality assurance document in Section 5.9).

5.3.4 Leak detection

Leachate that may pass through the top liner will be collected using a geonet place between the two geomembranes. This geonet will be sloped to drain to collection pipes which flow into a sump in the northeast corner of the disposal unit for pump out. The geonet will have a hydraulic conductivity of 10 cm/sec and the system will limit the head over the secondary liner to less than the thickness between the liners (refer to Section 5.8.4). The transmissivity of the geonet can be maintained even under full loading (15,000 pounds per square foot). The selected manufacturer provided catalogue data to show this to be true. See Calculations in Section A5.4 of Appendix 5.

5.4 Standards for geomembrane

5.4.1 Field seam test methods

Field seam testing includes non-destructive and destructive testing and these are described in Section 02280 of the specifications enclosed in Appendix 5, Section A5.2

5.4.2 Protective layer design

The protective layer will be designed to meet minimum requirements for the drainage layer (5 x 10^{-3} cm/sec hydraulic conductivity). No, separate 12-inch thick protective layer is proposed. Instead, the drainage layer above the geomembrane will be 24 inches thick. Refer to the calculations in Appendix 5, Section A5.4.

5.4.3 Operational plans during initial waste placement

The first layer of waste will be placed in a compacted lift four feet in compacted thickness and it will consist of selected waste containing no large rigid objects that could damage the geomembrane or leachate collection system. The ash material is screened prior to hauling to the disposal unit so the materials required for the initial layer should be readily available.

5.5 Geosynthetic specifications

5.5.1 Definition and qualifications

The duties and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program are presented in the liner quality assurance program in Section A.5.2 of Appendix 5.

5.5.2 Material Specifications

Geomembranes - Refer to Part 2, Section 02280 of the specifications provided in Appendix 5, Section A5.2

Geotextiles - Refer to Part 2, Section 02278 of the specifications provided in Appendix 5, Section A5.2

Geonet - Refer to Part 2, Section 02279 of the specifications provided in Appendix 5, Section A5.2

5.5.3 Manufacturing and fabrication specifications

Manufacturing and fabrication specifications are provided in Section 02280 of the specifications provided in Appendix 5, Section A5.2.

5.5.4 Geomembrane installation specifications

Earthwork specifications are provided in Section 02200 and remaining specifications for installation of the membrane are provided in Section 02280 of the specifications see Appendix 5, Section A5.2.

5.5.5 Geotextile and geonet specifications

Specifications for the geotextile and geonet are provided in Sections 02278 and 02279, respectively located in Section 5.2 of Appendix 5.

5.6 Standards for soil components

5.6.1 Construction procedures

Specifications for proof-rolling the liner subbase prior to liner placement and correcting potential problem areas are discussed in Section 02200 of Appendix 5, Section A5.2.

5.6.2 Compatibility

The sand and clay are compatible with the ash material. No adverse impacts have been noted during the placement of this waste in Disposal Unit A-1 over the last five years.

5.6.3 Testing procedures

Testing procedures are provided in Sections 02200 and 02215 of the specifications in Appendix 5, Section A5.2.

5.6.4 Specifications for soil

Specifications for soil components and earthwork are provided in Sections 02200 and 02215 of the specification (see Appendix 5, Section A5.2).

5.6.5 Field test section

A field test section is not planned.

5.7 Leachate collection and removal system (LCRS).

5.7.1 Compatibility

The piping and geonet are to be manufactured of HDPE materials similar to the liner and will therefore be resistant to the waste and leachate. Refer to Appendix 5, Section A5.1.

5.7.2 Mechanical properties

Design calculations for pipe loading are enclosed at the end of this section of the application in Appendix 5, Section 5.4.

5.7.3 Design to avoid clogging

The drainage materials and geotextiles have been designed to prevent clogging. Fabric will be used as a cushion to protect the geomembrane but not as a filter material. Filtration to prevent clogging will be accomplished by gradation design of adjacent soils. The calculations are enclosed in Appendix 5, Section 5.4.

5.7.4 Testing collection pipes

Cleanouts are provided at both ends of header pipes and collector pipes. The condition of collection and header pipes can be verified using television cameras similar to those used in sewer applications. Clean out could also be accomplished using methods currently employed for sewers.

5.8 Primary LCRS requirements

5.8.1 Drainage layer

A 24-inch drainage layer is proposed with a saturated hydraulic conductivity of 5×10^{-3} cm/sec will be installed.

5.8.2 Drainage Protective layer thickness

The total thickness of the drainage layer will be 24 inches with a minimum hydraulic conductivity of 5×10^{-3} cm/sec, and the soil material will be chemically resistant to the waste and the leachate.

5.8.3 Allowance for Settlement

The bottom slope of collection pipes and header is 0.5 % , which is adequate to allow flow after the predicted settlement has taken place (refer to Appendix 5, Section A5.4).

5.9 Liner System Construction Quality Assurance (CQA)

5.9.1 CQA Plan

A CQA Plan is provided in Section A5.2 of Appendix 5. The plan includes:

- Specifications and construction requirements for liner system
- Detailed description of quality control testing procedures and frequency
- Identification of supervising professional engineer
- Qualifications of CQA professional engineer and support personnel
- Description of CQA reporting forms

5.9.2 Independent Laboratory Testing

The County will contract with a third-party laboratory experienced in geosynthetic liner testing to conduct independent testing. Coupons for destructive tests will be split, splits will be given to the third party testing laboratory and the installer. A third split will be retained on site for reference.

5.10 Surface Water Management System

The surface water management system has been designed to isolate surface water from waste filled areas and to control storm water runoff. All the designed stormwater management system has been constructed with the exception of stormwater retention pond No. 4 which was designed to receive stormwater runoff from future disposal units to be constructed on the west side of the permitted landfill area.

Details of the stormwater control design including retention ponds and drainage ways are shown on Drawing Sheets No. 4 and 5.

5.11 Gas Control System

Designs for passive gas venting in solid waste monofill disposal units were included in the Power Plant Site Certification permit application. No gas control system is needed for the ash monofill disposal units.

SECTION 6.0

HYDROGEOLOGICAL INVESTIGATION REQUIREMENT

SECTION 6.0

HYDROGEOLOGICAL INVESTIGATION REQUIREMENT

6.1 Hydrogeological Investigation and Site Report for the West Pasco Class I Landfill

6.1.1 Regional and Site Specific Geology and Hydrogeology

6.1.1.1 Regional Geology and Hydrogeology

In Pasco County, undifferentiated surficial deposits of Pliocene to recent age sands of variable thickness overlie Cretaceous and Tertiary carbonates and clays. The Tertiary carbonates (primarily limestones) deposited during the Oligocene and Eocene periods, are called the Suwannee, Ocala, and Avon Park Formations in descending order. Separating the surficial sands from the underlying carbonates are clayey sands, sandy clays, and clays which are remnants of or a residual from the Hawthorn and Tampa Formations of upper and lower Miocene age. Both the Hawthorn and the Tampa Formation are thicker further to the south and east.

The importance of the residual clay of the Hawthorn and Tampa Formations, where present, is that the unit comprises the confining layer separating the underlying Floridan aquifer system from the overlying surficial aquifer. Regionally, the Floridan aquifer is known to be only semi-confined, which is attributed to the presence of karst features (sinkholes) and the thinning or absence of the confining layer. See Table 1 in Appendix 6 for the regional stratigraphic and hydrogeologic nomenclature.

6.1.1.2 Site Specific Geology and Hydrogeology

In addition to the extensive site investigation conducted prior to and during the Resource Recovery Facility Power Plant Site certification in 1989, a more localized hydrogeological investigation was made in the immediate vicinity of the next landfill disposal unit to be constructed, Disposal Unit A-2. The purpose of the additional site work was to define further the characteristics of the surficial aquifer, the presence of the confining layer, and the attitude of underlying limestone.

Sixteen soil borings were conducted to achieve this goal; six piezometers also were installed locally in the surficial aquifer. A confining layer of clay was encountered in all soil borings except LB-2 which was not augured deep enough to penetrate the clay or underlying limestone. The piezometers were installed with ten foot screened intervals at the base of the surficial sands to detect even minimal water levels in the surficial aquifer. The piezometers were checked periodically during the hydrogeologic investigation and were found to be dry even in the deepest screened interval (22.6 to 32.6 feet, N.G.V.D. in piezometer LB-3).

Generally, the confining layer clay was found to be gradational with the overlying surficial sands, coarsening upward from a clay to sandy clay to a clayey sand, enough so that the actual base of the surficial aquifer unit was very high and dry (see Drawing Sheet No. 6, Geologic Data). Soil boring lithologic descriptions and piezometer construction details are provided in the Appendix 6. Geologic cross-section depicting the site stratigraphy is shown in Figure 1 in Appendix 6.

6.1.2 Direction and Rate of Ground-Water and Surface-Water Flow Including Seasonal Variations

Water level data from the existing ground-water monitoring system which has been in place since the start up of the Resource Recovery Facility and landfill operations in 1990,were evaluated. Additional ground-water monitoring data was available from an adjacent Class III Landfill Site (see Table 2 in Appendix 6).

Two Floridan aquifer potentiometric surface maps for September 1992 and March 1993 were drawn. Both maps show a northwest direction for ground-water flow for the Floridan aquifer towards Weeki Wachi Springs (see Figures 2 & 3 in Appendix 6). Two surficial aquifer water table maps also were drawn for September 1991 and March 1992. The flow direction in the surficial aquifer is less definitive, but appears to be to the northwest or north, probably deflecting around the existing high the landfill is sited on (see Figures 4 & 5 in Appendix 6).

The hydraulic gradient for the surficial aquifer based on the September 1991 water table map is approximately 0.001. The hydraulic gradient for the Floridan aquifer appears to be higher at the end of the wet period (based on the September 1992 potentiometric surface map) than it is near the end of the dry season (based on the March 1993 map). The hydraulic gradients ranged from approximately 0.002 in September 1992 to 0.0015 in March 1993.

6.1.3 Background Quality of Ground-Water and Surface Water

Ground-water monitoring wells, 2MW-1 through 2MW-4 and 4MW-1 through 4MW-4 were installed in 1981 prior to construction of the landfill. Analytical results from the 1987 sampling event are provided in Appendix 6.

Ground-water monitoring wells, 2MW-5, 2MW-6, 4MW-5, and 4MW-6, were installed in 1991 after construction of Disposal Units A-1 and SW-1. Analytical results from the 1991 sampling event are provided in Appendix 6.

Monitoring wells designated 2MW are surficial aquifer wells. Wells designated 4MW are Floridan Aquifer monitoring wells. Well locations are shown on Figures 2 through 5 in Appendix 6. No surface water bodies exist on the landfill consequently no surface water samples have been taken.

6.1.4 Any On-Site Hydraulic Connections Between Aquifers

There does not appear to be any hydraulic connections between the aquifers within the footprint of the landfill site. All soil borings advanced deep enough during this investigation encountered clay before limestone which is an indication of the continuity of the confining layer. Soil boring LB-2 was terminated at 23.8 feet, N.G.V.D., before reaching the confining layer clay of the Floridan aquifer limestones. Outside the landfill area to the southwest are known sinkholes which provide a connection between the aquifers.

Soil boring LB-5 encountered water 12.5 feet into the clay layer after penetrating 21.5 feet of surficial sands. The estimated elevation of the water is 18.1 feet, N.G.V.D., which is well below any water level reported for the surficial aquifer or the Floridan aquifer in the routine groundwater monitoring. No water was encountered above the top of the clay unit at 30.6 feet, N.G.V.D. It was concluded that the surficial aquifer was dry and that their was no hydraulic connection between aquifers at this location.

Soil boring LB-2 was also reported to have encountered water at 18 feet below ground level or at an elevation of 31.8 feet, N.G.V.D. The boring was terminated short of penetrating clay or limestone at a total depth of 26 feet below ground level or at an elevation of 23.8 feet, N.G.V.D. The next soil boring LB-3,located less than 150 feet from LB-2, was continued deeper until it penetrated clay at 23.6 feet, N.G.V.D. A piezometer was

installed with a screened interval from 22.6 to 32.6 feet, N.G.V.D., which was deep enough to have intercept the water reported in soil boring LB-2 at 31.8 feet, N.G.V.D. No water was encounter in LB-3. It was concluded that the aquifer was dry and that no hydraulic connection between aquifers exits in the vicinity of soil boring LB-3. It was also concluded that if water was actually encountered in soil boring LB-2 that it should have been encountered in LB-3.

In locations where ground-water monitoring wells for the surficial aquifer and the Floridan aquifer are close or clustered and the surficial is partially saturated, the hydraulic level of the surficial aquifer is generally slightly higher than in the underlying Floridan aquifer and the differential between them is greater as the distance away from the sinkholes increases (see Table 2 in Appendix 6). This was concluded to be additional evidence that an effective hydraulic separation exists between the aquifers in the vicinity of the landfill.

6.1.5 Site Stratigraphy and Aquifer Characteristics for Confining Layers, Semi-Confining Layers, and All Aquifers Below the Landfill Site That May Be Affected by the Landfill.

The site stratigraphy is illustrated on Figure 1 in Appendix 6. The stratigraphy at the site differs only slightly from the regional stratigraphy. The undifferentiated surficial deposits are present, but slightly thinner. The Hawthorn and Tampa Formations are either absent or not distinguishable and probably represented by the residual clay, which grades upward into the surficial sands. The residual clay lies unconformably on the underlying Suwannee Formation. Limestones of the Suwannee Formation have only been partially penetrated by some of the soil borings and by the installation of the Floridan Aquifer Monitoring Wells. Thicknesses of these units are given in Table 3 in Appendix 6 along with other pertinent characteristics.

Hydraulic conductivities were determined for three undisturbed samples taken from the confining layer clay penetrated in soil borings LB-4, LB-5, and LB-8. The values ranged from 2.2×10^{-6} feet per day to 6.9×10^{-6} feet per day.

The confining layer below the landfill site is assumed to be continuous. No soil borings penetrated the Floridan aquifer limestone without first penetrating the confining layer clay. Hydrogeologically, the Floridan aquifer is considered to be only semi-confined in West Pasco due to the regional thinning of its confining unit from the southeast to the northwest out of Hillsborough County, and due to the presence of karst features.

Water levels in both the surficial aquifer and Floridan aquifer have remained below 40 feet NGVD at the site during the period from 1991 to 1993 (see Figure 6 in Appendix 6). The surficial aquifer has been generally dry. Only in Monitoring Well MW-2 has water been consistently present.

6.1.6 Site Topography and Soil Characteristics

The West Pasco Class I Landfill is located in a relatively flat section of the Pamlico Terrace of the Gulf Coastal Lowlands physiographic province along the west coast of Florida. Topographic relief across the site ranges from about 20 to 30 feet in the southwestern portion and about 10 feet throughout the remainder of the site and within the footprint of the landfill.

Numerous lakes and ponds exist to the south of the permitted landfill area, but none occur within the landfill area itself. The area is drained primarily by Buckhorn Creek and the Pithachascotee River. The major surface water feature in the vicinity of the landfill is Crews Lake located approximately 1.5 miles to the east. Crews Lake, a lenticular body and headwaters of the Pithachascotee River, forms a northeast-trending lineament with the river.

The soil characteristics for the landfill area are given as Candler and Tavares sands, which are described as nearly level to sloping, excessively drained soils that are sandy throughout with occasional thin lamellae of loamy sand below a depth of 50 inches in the soil survey of Pasco County, Florida. This is consistent with the lithologic description and grain-size analysis performed on samples taken from the surficial sands in the soil borings. The sands appear to be fine-grained, well sorted sands until they begin to grade into the underlying clay confining unit.

6.1.7 Inventory of All Public and Private Water Wells within a One-Mile Radius of the Landfill including Top of Well Casing and Bottom Elevations, Name of Owner, Age and Usage of Each Well, Stratigraphic Unit Screened, Well Construction Technique and Static Water Level.

A listing of all public and private water wells within a one-mile radius of the landfill was obtained from the Southwest Florida Water Management District for Sections 13, 14, 23, 24, 25, 26, 35 & 36, Township 24 South, Range 17 East, and Sections 18, 19, 30 & 31, Township 24 South, Range 18 East. Each section comprises one square mile and the required one--mile radius of the landfill falls within these twelve (12) sections. The listing is provided in the Appendix 6. In Pasco County properties are listed on the tax rolls by identication numbers based on its specific township, range and section location. A listing can be derived from the tax roll by sorting on section, township and range and used to contact residents within the one-mile radius of the landfill if the necessity arises.

6.1.8 Existing Contaminated Areas on Landfill Site

There are no known existing contaminated areas on the landfill site.

6.2 Report Signed, Sealed and Dated by PE or PG

The hydrogeological investigation and site report for the West Pasco Class I Landfill is signed, sealed and dated by George W. Ellsworth, a licensed Professional Geologist (No. 0000848) in the State of Florida.

SECTION 7.0

GEOTECHNICAL INVESTIGATION REQUIREMENTS

SECTION 7.0

GEOTECHNICAL INVESTIGATION REQUIREMENTS

7.1 Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:

A report of the results of the geotechnical site investigation is provided in Appendix 7. A report of the results of the hydrogeological site investigation is provided in Appendix 6.

7.1.1 Description of subsurface conditions including soil stratigraphy and ground-water conditions.

Test boring records for the five soil borings LB-1, LB-3, LB-5, LB-7 and LB-11 are provided in geotechnical site investigation report. The soil borings penetrated unconsolidated surficial sands and clays. Two of the borings were terminated after reaching limestone. Detailed lithologic descriptions and a discussion regarding the water table are provided in the hydrogeological site investigation report. The surficial aquifer was unsaturated.

7.2 Investigation for presence of muck, previously filled areas, soft ground, lineaments and sink holes.

A detailed discussion regarding the presence of the above referenced features was provided in the Power Plant Site Certification Application. The 160 acre landfill footprint was selected as the area most suitable considering the above criteria. No anomalies were encountered during this site investigation.

7.3 Estimates of average and maximum high water table across the site.

Based on site specific water table levels, the surficial aquifer is not expected to be saturated above 40 feet, NGVD. A detailed discussion is provided in the hydrogeological site investigation provided in Appendix 6.

7.4 Foundation Analysis including:

7.4.1 Foundation bearing capacity analysis

The stress from filling Disposal Unit A-2 to 100 feet above grade was calculated to be 8.5 ksf. The ultimate bearing capacity was calculated to be over 15 ksf, which is sufficient to support the calculated stress.

7.4.2 Total and differential subgrade settlement analysis

The total subgrade settlement is calculated 1.5 to 2.0 feet. The differential settlement between the interior portion of the disposal unit and the exterior portion will not be enough to effect the leachate collection system designed flow.

7.4.3 Slope stability analysis.

The calculations are given in Appendix 7 and are attached to the geotechnical report.

7.5 Description of the methods used in the investigation and includes soil boring logs, laboratory results, analytical calculations and conclusions;

The report, Results of Geotechnical Exploration is provided in Appendix 7. Supporting data is included in the report.

7.6 Report signed, sealed and dated by PE or PG.

The report is signed, sealed and dated by a Professional Engineer.

SECTION 8.0

LANDFILL OPERATION REQUIREMENTS

SECTION 8.0

LANDFILL OPERATIONS

The landfill addressed in this application is an integral unit of the Pasco County Solid Waste System ("System"). The System is comprised of: a mass-burn resource recovery facility; the West Pasco Class I Landfill, the West Pasco Class III Landfill and Recycling Center, the East Pasco Transfer Station and Recycling Center, and the East Pasco Class I Landfill. The Resource Recovery Facility, the West Pasco Class I Landfill, and the West Pasco Class III Landfill and Recycling Center are co-located on an 800-acre site. The Resource Recovery Facility and the West Pasco Class I Landfill are permitted under the Florida Electrical Power Plant Siting Act, while the West Pasco Class III Landfill and Recycling Center was permitted separately under Chapter 17-701, F.A.C.

The Resource Recovery Facility is designed to receive and process 1,050 tons per day of waste generated by residential, commercial and industrial sources. Three separate combustion units with a capacity of 350 tons per day and a boiler system generate steam for conversion to electrical energy. Emissions controls include dry scrubbers and fabric filter baghouses for each combustion unit. The residue ash handling system is completely enclosed. Bottom ash and grate siftings from the combustion units, as well as fly ash and spent scrubber reagent, are collected and quenched. Ash is moved by conveyor through a scalper screen to remove large materials and through a magnetic separator to remove ferrous metal. Processed residue (MSW ash) is loaded into trucks for disposal in an ash monofill disposal unit at the adjacent West Pasco Class I Landfill.

Currently no delivery of municipal solid waste (MSW) is made directly to the West Pasco Class I Landfill. Deliveries are accepted at the Solid Waste Resource Recovery Facility (SWRRF) 10 hours each day, Monday through Saturday, except legal holidays. Refuse is delivered to the SWRRF in standard packer vehicles, open body dump trucks, semi-truck transfer trailers, and by smaller private vehicles. The waste transferring vehicles pass through an entrance and exit over an automated truck scale system. The scale system is operated by an adjacent scale house with a computerized record keeping system that maintains an accurate accounting of all refuse delivered and ash residue removed from the building.

All processible waste received is dumped inside the Resource Recovery Facility in a refuse storage pit with the exception of some waste from small private vehicles which are directed to a public drop-off area outside the building. Inside the facility building on the tipping floor rollover containers are provided for removing of non-processible waste. The County provides a trained spotter on the tipping floor to observe refuse dumping. The spotter has communication links with the scale house and the facility operators to advise them of the delivery of an unacceptable waste.

The West Pasco Class I Landfill was designed and permitted to be constructed in a phased series of individual disposal units, with a total of 16 disposal units. Six disposal units (A-1 to A-6) are designated for ash disposal, eight disposal units (SW-1 to SW-8) for non-processible or by-pass waste, and two disposal units (I-1 and I-2) were left undesignated. The layout of the disposal units is shown in Figure 8.1. The disposal area covers approximately 160 acres, each disposal unit is approximately 10 acres in size. The initial phase of construction was completed in 1990, with the construction of disposal units SW-1 and A-1, eastern portion of the perimeter access road, retention ponds 1 and 2, an equipment maintenance building, and other associated drainage work.

The entire 800-acre site is enclosed by chain-link and barbed wire fence to limit access. To further limit access the Resource Recovery Facility, the West Pasco Class I Landfill, and the West Pasco Class III Landfill and Recycling Center are separated internally by a chain-link and barbed wire fence to control movement between the units.

8.1 Operating Personnel Training

The Pasco County Utilities Services Branch (PCUSB) has a pro-active approach to training and certification of all landfill personnel and currently has trained operators who have satisfied the requirements of Chapter 17-703 FAC. Additionally, Pasco County currently has other staff members who have attended the TREEO Solid Waste Landfill Operator Short Course and are used as trained spotters at the landfill and elsewhere in the solid waste management system. Copies of their course completion certificates are kept on file. The landfill will have at least one trained operator at the landfill during all times when the landfill receives waste. At least one trained spotter will be at each working face at all times when the landfill receives waste other than ash to detect unauthorized wastes.

8.2 Landfill Operation Plan

8.2.1 Designated Responsible Operating and Maintenance Personnel

The Pasco County Board of County Commissioners sets policy for the administration and management of the disposal of solid waste in the County. Douglas S. Bramlett, Assistant County Administrator, Utilities Services Branch coordinates solid waste management in the County. He is assisted by Vince Mannella, Solid Waste Facilities Manager, who manages the operation and maintenance of the solid waste management facilities.

The following current schedule is typical of the staffing for the West Pasco Class I Landfill.

Certified Landfill Operators	Six Days*
Jim Gerger, Supervisor	MTWTF_
Walter Dransky	_____S
Equipment Operator/Spotters	
Keith Wallace	MTWT__
Barry Wright	___WTFS

*Landfill is closed on Sundays. No ash is hauled to ashfill disposal unit.

8.2.2 Contingency Operations for Emergencies

8.2.2.1 Fire Emergency Procedures

In the highly unlikely event that an **uncontrollable fire** does occur at the landfill site:

- field staff will contact scale attendant by 2-way radio and provide details;
- scale attendant will contact 911 to request fire department assistance;
- scale attendant will contact Landfill Supervisor;
- Landfill Supervisor will direct additional equipment and manpower to the scene as necessary.

If the fire is controllable:

- field staff will contact scale attendant by 2-way radio and provide details;
- field staff will snuff out fire using landfill equipment and soil from an on-site stockpile maintained for suppressing fires.
- scale attendant will contact Landfill Supervisor;
- Landfill Supervisor will inspect scene.

8.2.2.2 Natural Disasters Procedure

If notice is available of a pending natural disaster (tornado, hurricane, etc.) the Landfill Supervisor will direct staff to:

- Check stormwater management system for any blockages at culverts, pipes, etc.
- Check leachate management system levels, pumping units, etc.
- Apply daily cover to working face where appropriate.
- Secure equipment where appropriate.

After the natural disaster has occurred, the Landfill Supervisor will direct staff to assess damage to and operational status of:

- Access roads
- Stormwater management system
- Leachate management system
- Landfill equipment
- Disposal units

8.2.2.3 Equipment Failure Procedures

If equipment fails the Landfill Supervisor will be notified so that arrangements can be made for the equipments repair. If the downtime is expected to hinder landfill operations, the Landfill Supervisor will obtain backup equipment under established cooperative lending agreements with other solid waste management facilities or other County departments.

8.2.2.4 End of Work Week Procedures

At the end of the work week, prior to shut down, the Landfill Supervisor will direct staff to:

- Check stormwater management system for any blockages at culverts, pipes, etc.
- Check leachate management system levels, pumping units, etc.
- Apply daily cover to working face where appropriate.
- Secure equipment where appropriate.

At the beginning of the work, immediately after opening, the Landfill Supervisor will direct staff to observe the condition of and record deficiencies of:

- Access roads
- Stormwater management system
- Leachate management system
- Landfill equipment
- Disposal units

Particular attention is to be paid to the leachate management system pumps, operability and the leachate levels in the disposal units.

8.2.3 Controlling Types of Waste Received at Landfill

One spotter will be located at each working face receiving wastes to inspect waste being dumped at the working face. In the event Resource Recovery Facility is not receiving waste and waste is being by-passed to landfill or other permitted facilities, the spotter(s) assigned to the Resource Recovery Facility tipping floor will be reassigned by the landfill supervisor to the specific Class I landfill.

If in the highly unlikely case a hot load of ash is spotted, the vehicle will be directed to return to the ash handling facility for requenching or the load may be dumped on the paved entry to the disposal unit and allowed to cool. The Landfill Supervisor will be notified so that the Resource Recovery Facility Manager can be advised of the receipt of the hot load and quenching operations be checked.

If prohibited types of waste are observed by the spotter in any by-pass waste, the Landfill Supervisor will be notified so that arrangement for the observed wastes can be removed.

Batteries, tires, and used oil can be removed to the adjacent Class III Landfill and Recycling Center, which has facilities for handling these prohibited wastes. Hazardous and medical wastes can be removed under existing arrangements for the proper handling and disposal. These wastes should be removed under the direction of the County Hazardous Waste Coordinator.

8.2.4 Weighing Incoming Waste

No waste can enter the site without passing over the weighing facilities at the Resource Recovery Facility and the West Pasco Class III Landfill. The Landfill Supervisor will periodically check ash trucks to see if they are crossing the scales by observing them as they leave the ash handling facility.

8.2.5 Vehicle Traffic Control and Unloading

Private refuse haulers are not allowed in the West Pasco Class I Landfill except during the highly unlikely event when non-processible waste and by-pass waste are being delivered to the solid waste disposal unit. During these exceptions the Landfill Supervisor will assign additional landfill staff to control traffic and direct unloading.

8.2.6 Method and Sequence of Filling Waste

The West Pasco Class I Landfill will be developed using 16 disposal units as shown on Figure 8.1. Each disposal unit is approximately 10 acres. Figure 8.2 depicts the sequencing progression of lifts within a typical disposal unit. As this sheet indicates, the liner and leachate collection system will be constructed one disposal unit at a time with temporary roads and swales for access and surface water management.

Disposal Units SW-1 through SW-8 are currently designated for disposal of solid waste. Disposal Units A-1 through A-6 are currently designated for ash disposal. Depending on future volumes, Disposal Units I-1 and I-2 may be used for either ash or solid waste. The ash and solid waste will not be co-disposed. The ash residue will be monofilled, no mixing of the two materials will be allowed.

The method of filling wastes in a individual disposal unit is described as follows. The edge of liner at the top of berm will be flagged or marked with traffic cones except at berms common between the new operating disposal unit and the adjacent filled disposal unit. Ash/solid waste will not be placed within ten feet of this flagged or marked line. All incoming ash/solid waste will be directed to the working face. Berms will be maintained around the entire working disposal area to intercept and contain leachates and divert stormwater to the surface water management system. See Figure 8.3. Ash/solid waste will be placed against the side slope of the previous day's refuse. The first row will act as a guide for the placement of refuse for the remaining rows. In each row, disposal units will be constructed having a minimum length 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 (Figure 8.3). A slope of 3 to 1 on a 50-foot wide working face will provide for centralization of operations, while providing maneuvering area for large private and commercial vehicles unloaded each day.

The sequence of filling future lined disposal unit 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 disposal unit.
- Direct the surface runoff from unused portions of disposal units away from ash/solid waste using control valves and berms.
- Design landfill slopes during operation to maximize surface runoff away from the working face and minimize leachate generation.
- Provide bench terraces 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 disposal unit 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 Figure 8.4.

8.2.7 Waste Compaction and Application of Cover

In the solid waste disposal unit sufficient cover material will be stockpiled near the working face to provide an adequate supply for at least one week of operation. No daily cover is required in the ash monofill disposal units. In areas near a borrow area, stockpiling may not be necessary. The ash/solid waste is to be placed at the bottom of the working face, within the bermed working area, and spread up toward the top in 2-foot layers. The solid waste will be compacted with a minimum of three to five passes of a compactor. The ash will be compacted as necessary by a front end loader or bulldozer. The spreading of refuse is a continuous operation.

Application of initial, intermediate, and final cover is to be performed as required per Chapter 17-701, FAC. Six inches of initial cover will be applied to the working face of the solid waste disposal unit. The ash monofill disposal unit will not require initial cover. Intermediate cover consisting of 1 foot of compacted sandy soil from an on-site borrow pit will be applied within 7 days of disposal unit completion if final cover or an additional lift is not to be applied within 180 days of disposal unit completion. All intermediate cover areas will be seeded or covered with wood chips, straw or other appropriate cover material to avoid slope erosion and sloped at 2 percent to allow stormwater to drain off and be removed from the disposal unit.

The initial intermediate and 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 disposal units will have a slope of 4:1 to minimize erosion. Final cover will be applied to the landfill once the final grades are reached. Areas with final cover will be seeded or planted with grass or suitable cover vegetation.

8.2.8 Operations of Gas, Leachate, and Stormwater Controls

Since the site closure plan includes a low permeability top cap, the gas venting system in the solid waste disposal units will be installed as the disposal units are constructed. Gas vents will not be installed in the ash monofill disposal units. The detail of this gas vent is shown on Figure 8.5. 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 consists of gravity drains, sumps (manholes), and isolation valves in Disposal Units SW-1 and A-1. The normal operation is by gravity drain to the leachate collection tank(see Figure 8.6). When the leachate reaches a predetermined level which is less than one foot in the storage tank(s), leachate is automatically pumped to the Pasco County Shady Hills 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 leachate collection system in Disposal Unit A-2 consists of gravity drains to sumps inside the primary and inside the secondary liner and isolation valves. The leachate is pumped up out of the sump through a pipe to the top of the berm into a double-walled transmission pipe to a lift station at Disposal Unit A-1. See Drawing Sheets 8 through 12.

The stormwater controls shown on Drawing Sheets 8, 13 and 14 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 solid waste will be intercepted and contained by terms, and will be handled as leachate. Only stormwater that has not contact ash or solid waste may be discharged to the surface water management system.

8.2.9 Water Quality Monitoring

The water quality monitoring will be performed by the Pasco County Environmental Laboratory. The water quality monitoring plan meets the requirements of Chapter 17-701.510, FAC.

If any of the ground-water monitoring wells are damaged or found to be damaged, they will be reported immediately to the Landfill Supervisor who will note the occurrence in his daily operational log. The Landfill Supervisor will also notify the Operations and Maintenance Director of the damaged well so that the Department can be notified.

8.3 Operating Record

The Operating Record shall consist of all records, reports, analytical results, demonstrations, and notifications required by Chapter 17-701, FAC, including the Department approved permit, engineering drawings, and supporting information, and the landfill operator training verifications required by Chapter 17-703, FAC. The record is considered part of the operation plan and is kept at the Pasco County Government Center Utilities Services Branch office located in New Port Richey. Duplicates of the permit, engineering drawings, and the operating plan are kept on-site at the office of the Landfill Supervisor.

The Operating Record will be available for inspection at reasonable times by Department personnel.

8.4 Waste Record

All solid waste will be weighed as it is received at the weighing facilities located at the Resource Recovery Facility. Additionally, all ash residue transported from the Resource Recovery Facility to the West Pasco Class I Landfill will be weighed at the same weighing facilities. All solid waste will be recorded in tons per day.

To the extent possible, the amount of solid waste received by the type of waste will be determined as listed under Chapter 17-701.5(4)(b), FAC. Where possible, such as ash-residue, actual weights in tons per day will be recorded. Waste reports will be completed monthly, and copies will be provided to the Department.

8.5 Access Control

To prevent unauthorized access to the 800-acre site in West Pasco, the entire site is enclosed with either barbed wire or chain-link fencing. Interior fencing separates the Resource Recovery Facility, West Pasco Class I Landfill, and the West Pasco Class III Landfill and Recycling Center. Entrance gates at the Resource Recovery and the West Pasco Class III Landfill are chain-link and are closed and secured during non-working hours. The entrance gate to the Class I Landfill is internal.

The Landfill Supervisor will check or have checked the integrity of the perimeter fencing on a regular basis. The Landfill Operators will secure the entrance gates at the end of the operating day. The Landfill Supervisor will ensure that the existing signs indicating the hours of operations and types of waste accepted are maintained.

8.6 Monitoring of Waste

Examination of the waste received is accomplished both at the East Pasco Transfer Station and at the Resource Recovery Facility tipping floor. At the East Pasco Transfer Station all loads are dumped on the transfer station tipping floor. At the Resource Recovery Facility all loads are dumped into the refuse pit, except those loads directed to dump on the floor. The SWRRF has a written plan for the identification, isolation, and handling of unacceptable materials.

Routinely, only ash residue loads are monitored at the Class I Landfill for hot loads. In the highly unlikely event that significant by-pass waste from the Resource Recovery Facility occurs, the Landfill Supervisor will establish random examination of solid waste deliveries at least three times per week. Randomly at least three loads of solid waste will be examined by the assigned spotters.

If unauthorized wastes are detected, the spotter will notify the Facility Operator who will contact the generator, hauler, or other party responsible for shipping the waste to the County facility. The facility operator will attempt to determine the identify of the waste sources, and facilitate its removal, proper disposal and correct handling in the future.

If the Facility Operator or other trained personnel determines the detected unauthorized waste to be hazardous waste, the area where the wastes are deposited will be cordoned off from public access until proper cleanup, transportation to, and/or disposal at a permitted hazardous management facility has been assured. The Facility Operator will promptly notify the Department of the person responsible for shipping the wastes to the facility, and the generator of the wastes, if known.

The information and observations resulting from each random inspection will be recorded in writing and retained at the facility for at least three years. The recorded information will include the following:

- Date and time of inspection
- Name of the hauling firm or vehicle owner
- Driver of the vehicle
- Vehicle license plate number
- Source of waste
- Observations made
- Name and signature of the inspector

8.7 Procedures for Spreading and Compacting Waste

8.7.1 Waste Layer Thickness and Compaction Frequencies

All solid waste if required will be spread in layers of approximately two (2) feet in thickness and compacted to as thin a layer as practical, depending on the type of waste received, before the next layer is applied. Ash residue will require only one or two passes with the heavy equipment. By-pass waste will require three to five passes with the heavy equipment and should be compacted to approximately one (1) foot in thickness.

8.7.2 Special Considerations for First Layer of Waste Placed in a Disposal Unit

An additional foot of protective layer soil material will be placed on the side slope and covered with a geotextile at the initial point of entry into the new disposal unit. The first layer of waste will be selected to be free of large rigid objects that may damage the liner or leachate collection system. The thickness of the first layer will be at least four feet of compacted waste. Placement of the first layer will be conducted by a trained operator.

8.7.3 Construction of Lifts

Solid waste will be placed into disposal units to construct lifts. The working face of the disposal unit, and side grades at a slope, no greater than three feet horizontal to one foot vertical rise. Lift thickness should not exceed ten (10) feet. A temporary berm will be constructed around the working face to minimize the formation of leachate (see Figure 8.3). The temporary berm will be moved as the working face/lift progresses.

8.7.4 Working Face Width

The working face will be only wide enough to accommodate vehicles dumping waste. In the ashfill disposal units and solid waste disposal units, the working face under normal operating conditions should be minimal ($\pm$50 feet). During periods when the volume of by-pass waste is high, the size of the working face will be greater to accommodate the increased traffic.

8.7.5 Initial Cover

Initial cover will be applied to solid waste disposal units in order to minimize any adverse environmental, safety, or health effects such as those resulting from birds, blowing litter, odors, disease vectors, or fires. Initial cover will not be necessary for the ash monofill disposal units.

Initial cover at the solid waste disposal units will be applied at the end of each working day. The initial cover will be comprised of soil material and be six (6) inches in compacted thickness.

8.7.6 Intermediate Cover

Intermediate cover, in addition to six-inch initial cover, will be applied and maintained within seven days of disposal unit completion if additional solid waste will not be deposited within 180 days of disposal unit completion. The intermediate cover, when disposal to the initial fill phase and disposal activity is shifted to a new adjacent disposal unit for more than 180 days, will be graded to provide a surface slope and will also be seeded or sodded with grass to further promote runoff and minimize infiltration. When disposal activity is resumed in the disposal unit, the intermediate cover will be pushed aside and stockpiled for use as initial cover for the resumed disposal activity.

8.7.7 Final Cover

Once the solid waste disposal units have been filled to the final grades, final cover will be applied in accordance with the closure plan. The top of the landfill area will be convex with an outward slope of 2 to 4 percent from

the center. The side will be completed with slopes of 4:1. Areas with final cover will be seeded or sodded with grass or suitable cover vegetation.

8.7.8 Litter Policing Methods

Litter generated within the landfill site is expected to be nominal because the litter generating waste is currently combusted at the Resource Recovery Facility. In the event the litter generating waste by-passes the Resource Recovery Facility, the Landfill Supervisor will initiate the following litter control methods:

- Require delivery vehicles remain covered until entry into landfill
- Routine clean-up around disposal unit and access roads
- Maintain small workface and effective initial cover

Clean-up along the Resource Recovery Facility access road, Hayes Road, and within the Facility grounds, particularly around the private drop-off area will be maintained. County crews will routinely police these areas.

8.7.9 Erosion Control Procedures

Grass vegetative cover will be established and maintained on all landfill berms outer slopes, stormwater retention pond outer slopes, and along interior access roads. The Landfill Supervisor or his designee will conduct routine inspections during the wet seasons and immediately after heavy storms to detect any emerging erosion. Detected erosion will be repaired by landfill staff.

8.8 Describe Operational Procedures For Leachate Management Including:

8.8.1 Leachate Level Monitoring, Sampling, Analyses and Data Results Submitted to the Department;

The leachate sampling and analysis will be performed semi-annually by the Pasco County Environmental Laboratory as part of the Water Quality Monitoring Plan. The results will be reported to the Department. Leachate level monitoring will be performed daily (except for non-operational days). Results, including leachate generation rates, pumpage, and rainfall data will be reported to the Department quarterly. A copy of the form that will be used to record the data is included in Table 8.1.

8.8.2 Operation and Maintenance of Leachate Collection and Removal System, and Treatment as Required;

The landfill supervisor will review daily the leachate collection and removal system data to insure that the head over the liner is maintained below its maximum allowable level and that generation rates measured in the secondary leachate collection system are not excessive. Refer to Appendix A5.4 for calculations of this value. If exceedance are detected, the Operations and Maintenance Director will be notified so the exceedances can be addressed promptly.

8.8.3 Procedures for Managing Leachate if it Becomes Regulated as a Hazardous Waste

Pasco County is evaluating options for pretreating the leachate prior to it being transmitted to the Shady Hills Subregional Wastewater Treatment Plant (WWTP).

8.8.4 Agreements for Off-Site Discharge and Treatment of Leachate.

No agreement for off-site discharge and treatment is necessary. Treatment and discharge is provided by the Shady Hills WWTP. Back-up treatment and discharge will be provided by the Hudson WWTP. The West Pasco Class I Landfill and the Shady Hills and the Hudson WWTPs are owned by Pasco County and operated by the Utilities Services Branch.

8.8.5 Contingency Plan for Managing Leachate During Emergencies or Equipment Problems

If equipment problems occur such as pump failure so that leachate cannot be removed from the leachate holding tanks or leachate pumps, the landfill supervisor will be notified so that arrangements can be made for equipment repair or replacement. If problems occur with the leachate transmissive pipeline or with the WWTP, the landfill supervisor will be notified so that arrangements can be made to correct the problem and if necessary, arrangements be made to transport leachate by tanker truck to the Shady Hills WWTP or the Hudson WWTP.

8.8.6 Procedures for Recording Quantities of Leachate generated in gal/day

The landfill supervisor will direct staff to daily record the leachate levels measured in the tanks and sumps and flow meters readings. Flow meter results will be subtracted from the previous day's results to determine the quantity of leachate generated, in gallons per day. Quantities will be measured and recorded daily for each primary and secondary liner system.

8.8.7 Procedures for Comparing Precipitation Experienced at the Landfill with Leachate Generation Rates

The landfill supervisor will direct staff to daily check and record rainfall collected in an on-site rain gauge. The data will be recorded along with the leachate generation data. Leachate generation rates for each disposal unit measured and the amount of rainfall will be graphed and compared.

8.9 Describe Routine Gas Monitoring Program for the Landfill as Required

Routine gas monitoring will be initiated after the burial of putrescible waste or by-pass waste in the SW disposal units. No gas monitoring will be conducted relative to the last monofill disposal units.

8.10 Describe procedures for Operating and Maintaining the Landfill Stormwater Management System to Comply With the Standards of Chapters 17-3, 17-302, and 17-23, FAC.

The access road encompassing the landfill area and the disposal unit berms are elevated above existing ground elevations to prevent any surface water from entering the waste-filled area.

Additionally, a large swale is located at the base of the landfill slope on the interior side of the access road. The swale is designed to receive runoff from the predeveloped and any closed-out areas of the landfill and direct it to one of four major retention basins.

The bottom of the landfill disposal units are lined and positioned above the seasonal high water table to prevent any lateral flow into the waste-filled areas, if in the unlikely event that standing water was to occur in the swales. Also any closed-out disposal units will be capped with an 18-inch clay cap to inhibit vertical infiltration/percolation of rain.

The landfill supervisor will routinely inspect the stormwater management system. Particular attention will be given to inspecting the culverts under the access road for any blockage. The stormwater management system will also be inspected prior to a natural disaster if sufficient notice is available, and after any natural disaster (see Section 8.2.2.2.)

8.11 Equipment and Operation Feature Requirements.

8.11.1 Sufficient equipment for Excavating, Spreading, Compacting and Covering Waste.

The West Pasco Class I Landfill has been operating since 1990. Existing equipment has proved sufficient. The equipment available at the West Pasco Landfill is as follows:

Compactor	1
Bulldozer	2
Front-end loaders	2
Leachate Transport Truck and 6,000-gallon tanker	1
Dump Truck	1
Leachate Pumps	2
Dump Trucks	2

8.11.2 Reserve Equipment or Arrangements to Obtain Additional Equipment Within 24 Hours of Breakdown

Reserve equipment is available from the County's Public Works Division. All equipment on the list with the exception of the compactor are available from Public Works on a temporary basis. Additionally, the County provides for the replacement of equipment through a replacement account funded monthly during the expected life of the equipment.

8.11.3 Communication Equipment

Communication between personnel in the West Pasco Landfill Maintenance Building Resource Recovery Facility Scalehouse, and the West Pasco Class III Scalehouse and landfill staff operating equipment is maintained by two-way radios and the master communication system maintained for all County departments. Additionally, landfill staff can contact each other by two-way radios.

8.11.4 Personnel Shelter and Sanitary Facilities, First Aid Equipment

The West Pasco Landfill Maintenance Building provides the nearest shelter to the West Pasco Class I Landfill staff. The building includes office space, restrooms, and showers as well as two equipment/vehicle bays. Basic first aid is available at the maintenance building.

8.11.5 Dust Control Methods

That access road is paved. Unpaved, interior roads will be wet down with water using a spray truck on an as needed basis. Heavy equipment is enclosed and air conditioned. Dust masks, goggles, and hard hats are available to personnel working in excessively dusty area.

8.11.6 Fire Protection Capabilities and Procedures for Notifying Local Fire Department Authorities in Emergencies

Fire extinguishers are provided on all heavy equipment operating in the wastefill areas. Staff are directed to contact the Fire Department as discussed under Section 8.2.2.1 Fire Emergency Procedures.

8.11.7 Litter Control Devices

Private refuse haulers are not allowed in the West Pasco Class I Landfill except when non-processible or by-pass waste are being delivered to the solid waste disposal unit. During these exceptions, the landfill supervisor will require loads be covered, working face be kept to a minimum, cover applied efficiently, and routine clean-up occur, to control litter.

8.11.8 Signs Indicating Operating Authority, Traffic Flow, Hours of Operation, Disposal Restrictions

Signage indicating operating authority, traffic flow, hours of operation, disposal restrictions are provided at the entrances to the Resource Recovery Facility and the West Pasco Class III Landfill and Recycling Center. The landfill supervisor will ensure the signage is maintained.

8.12 Provide a Description of All-Weather Access Road, Inside Perimeter Road and Other Roads Necessary for Access Which Shall Be Provided at the Landfill.

All roads providing access to the landfill disposal units are paved with asphalt. These roads include access roads from the Resource Recovery Facility and the West Pasco Class III Landfill and Recycling Center, a perimeter road and entrance ramps to the constructed disposal units.

8.13 Additional Recordkeeping and Reporting Requirements

8.13.1 Records Used For Developing Permit Applications and Supplemental Information Maintained For the Design Period of the Landfill

Records used for developing permit applications and other Supplemental information will be maintained for the design period of the landfill in the Utilities Services Branch files.

8.13.2 Monitoring Information Calibration and Maintenance Records, Copies of Reports Required By Permit Maintained For At Least Ten Years

Reports required by the permit will be maintained for at least 10 years in the Utilities Services Branch files.

8.13.3 Background Water Quality Records Shall be Maintained for the Design Period of the Landfill

Background water quality records will be maintained for the design period of the landfill in the Utilities Services Branch files.

8.13.4 Maintain Annual Estimates of the Remaining Life of Constructed Landfills and of Other Permitted Areas Not Yet Constructed and Submit This Estimate Annually to the Department

The Operations and Maintenance Director will submit annually to the Department estimates of other remaining capacity of the constructed and unconstructed, permitted waste disposal units. Estimates will be maintained in the Utilities Services Branch Files.

8.13.5 Annual Report Requirements Including a Report Submitted to the Department Which Is Signed, Dated and Sealed by P.G. or P.E.

A technical report, prepared, signed and sealed by a P.G. or P.E. with experience in hydrogeologic investigations, will be submitted to the Department every two years. The report will summarize and interpret the water quality data and water level measurements collected during the previous two years.

The report will also include tabular and graphical displays of any parameters detected and water level hydrographs for all monitoring wells. The report will further show trends and comparisons between zones or aquifers, comparisons between upgradient and downgradient wells, correlations between related parameters, any discussions of erratic and/or poorly correlated data. Ground-water contour maps will be interpreted as to ground-water flow direction and rates. The report will further evaluate the adequacy of the water quality monitoring frequency and sampling locations based upon the site conditions. The report will be signed, dated and sealed by a P.G. or P.E.

TABLE 8.1
WEST PASCO CLASS I LANDFILL
DAILY LEACHATE FLOW METER AND RAINFALL READINGS

Mo./Yr. Day	Rainfall (in inches)	CUMMULATIVE FLOW METER READINGS in Gallons						TOTAL
		CELL A-1		CELL A-2		CELL SW-1		
		Prim.	Sec.	Prim.	Sec.	Prim.	Sec.	
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
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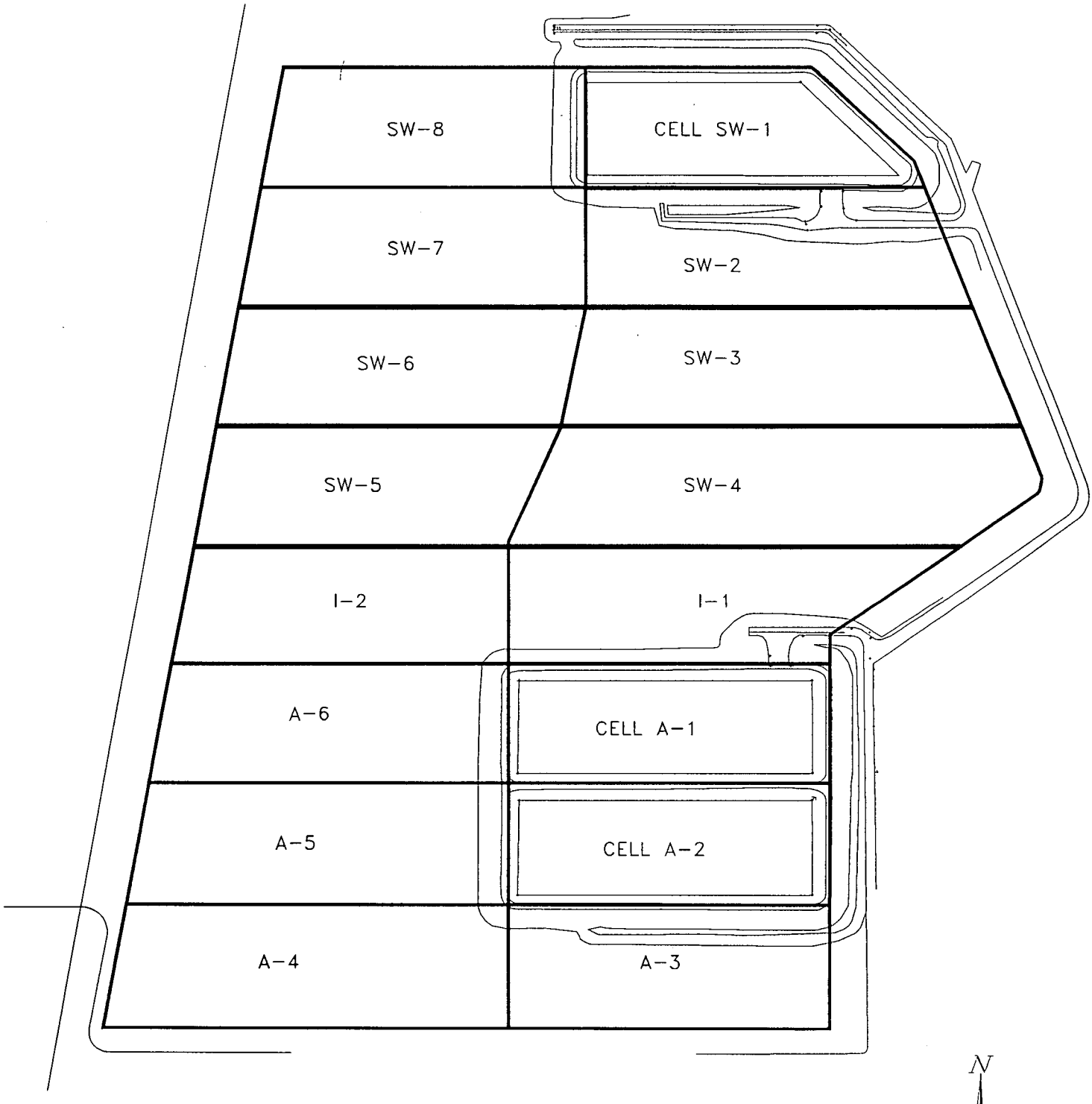
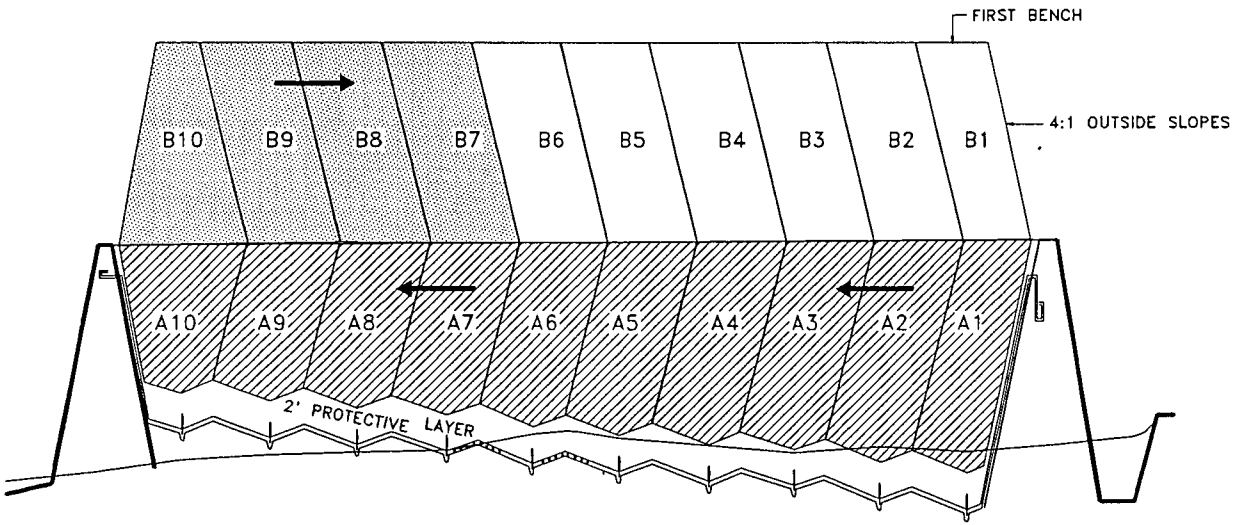


Not To Scale

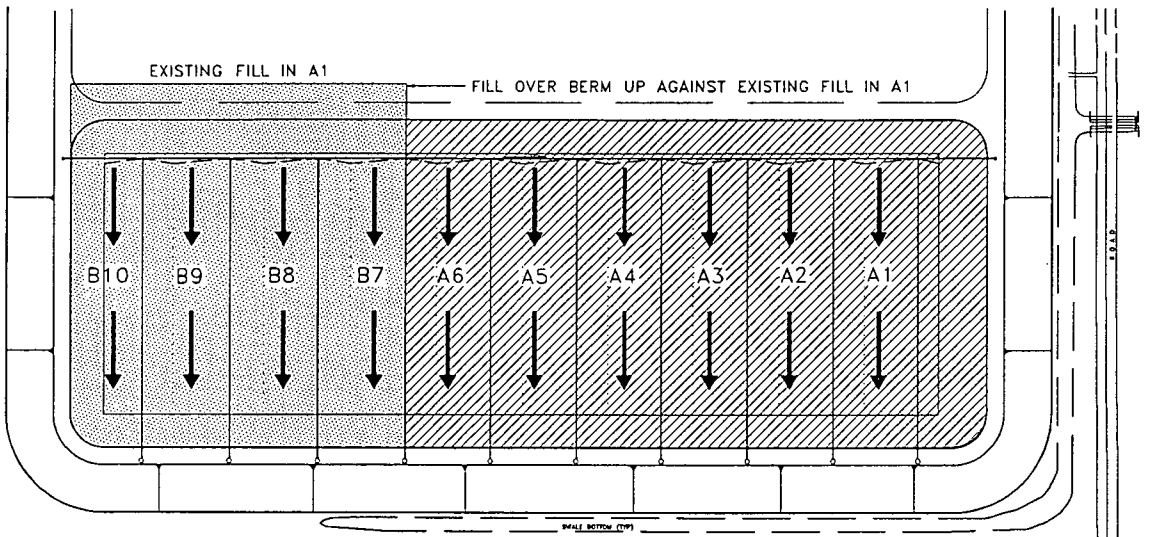
Prepared/Date:
Checked/Date:

ACAD=48356581

Pasco County Board of County Commissioners Utility Services Branch Pasco County, Florida	LAW ENGINEERING AND ENVIRONMENTAL SERVICES	Resource Recovery Facility Pasco County, Florida West Pasco Class I Landfill Footprint Schematic Project 464-83565.01 Figure 8.1



CROSS-SECTION CELL A-2



CROSS-SECTION CELL A-2

LEGEND

LIFT A

LIFT B

FILL DIRECTION

N

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Prepared/Date:
Checked/Date:

ACAD=48356582

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Pasco County, Florida

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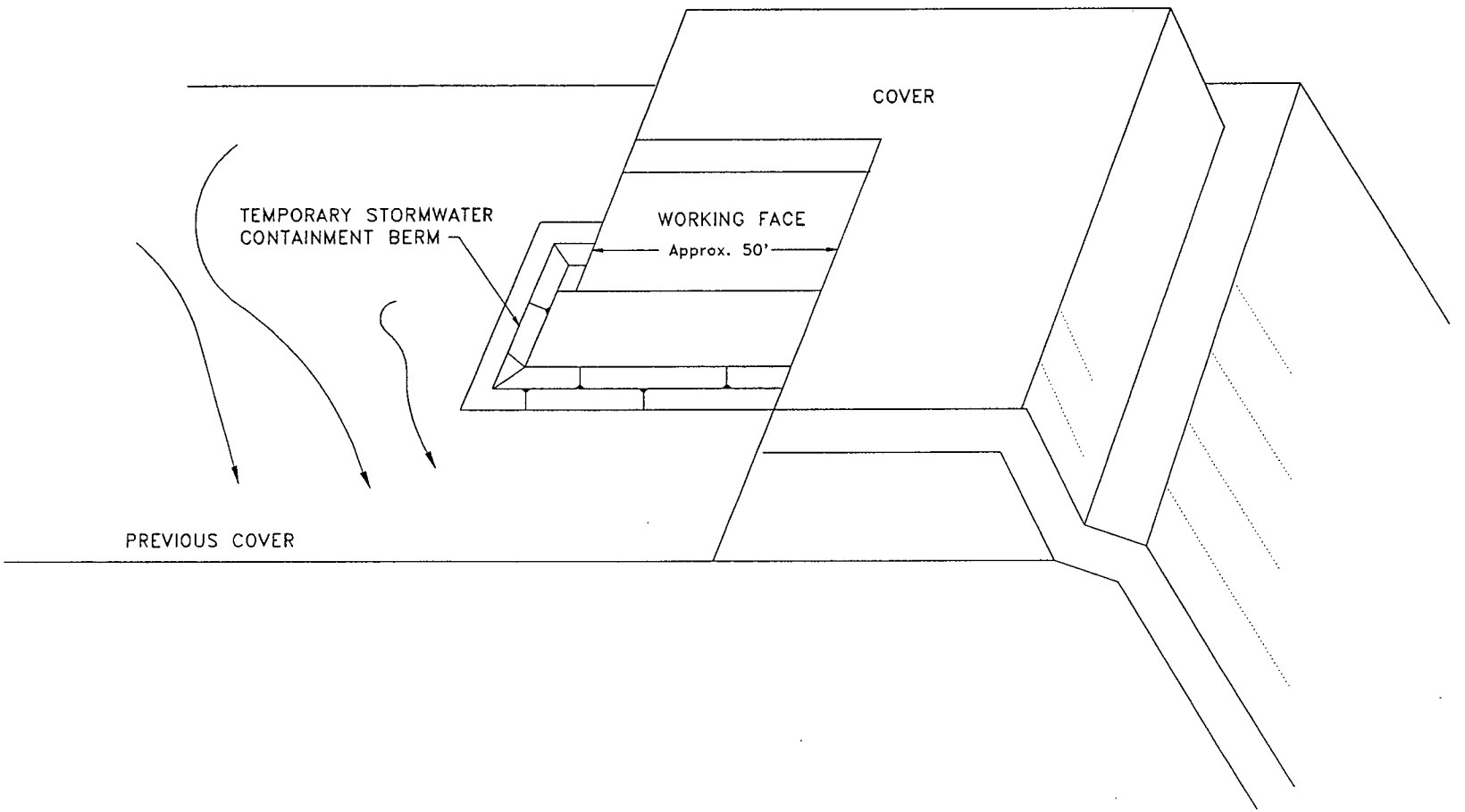
Resource Recovery Facility
Pasco County, Florida

Lift Sequence Schematic

Project 464-83565.01

Figure 8.2



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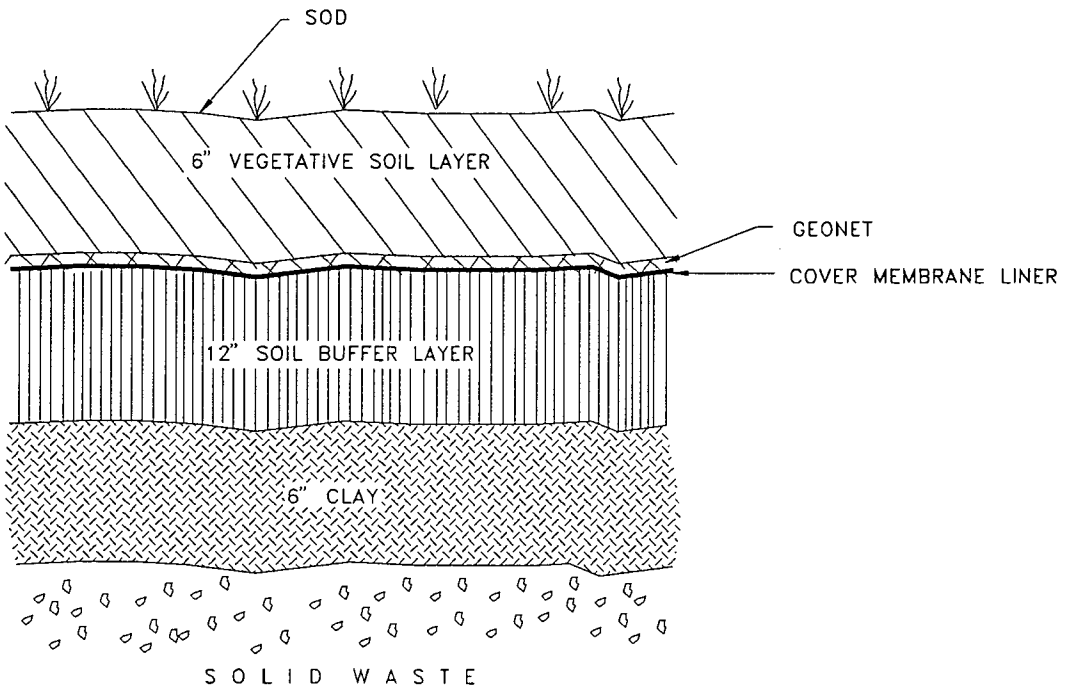
Resource Recovery Facility
Pasco County, Florida

Working Face Schematic

Project 464-83565.01

Figure 8.3



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Pasco County, Florida

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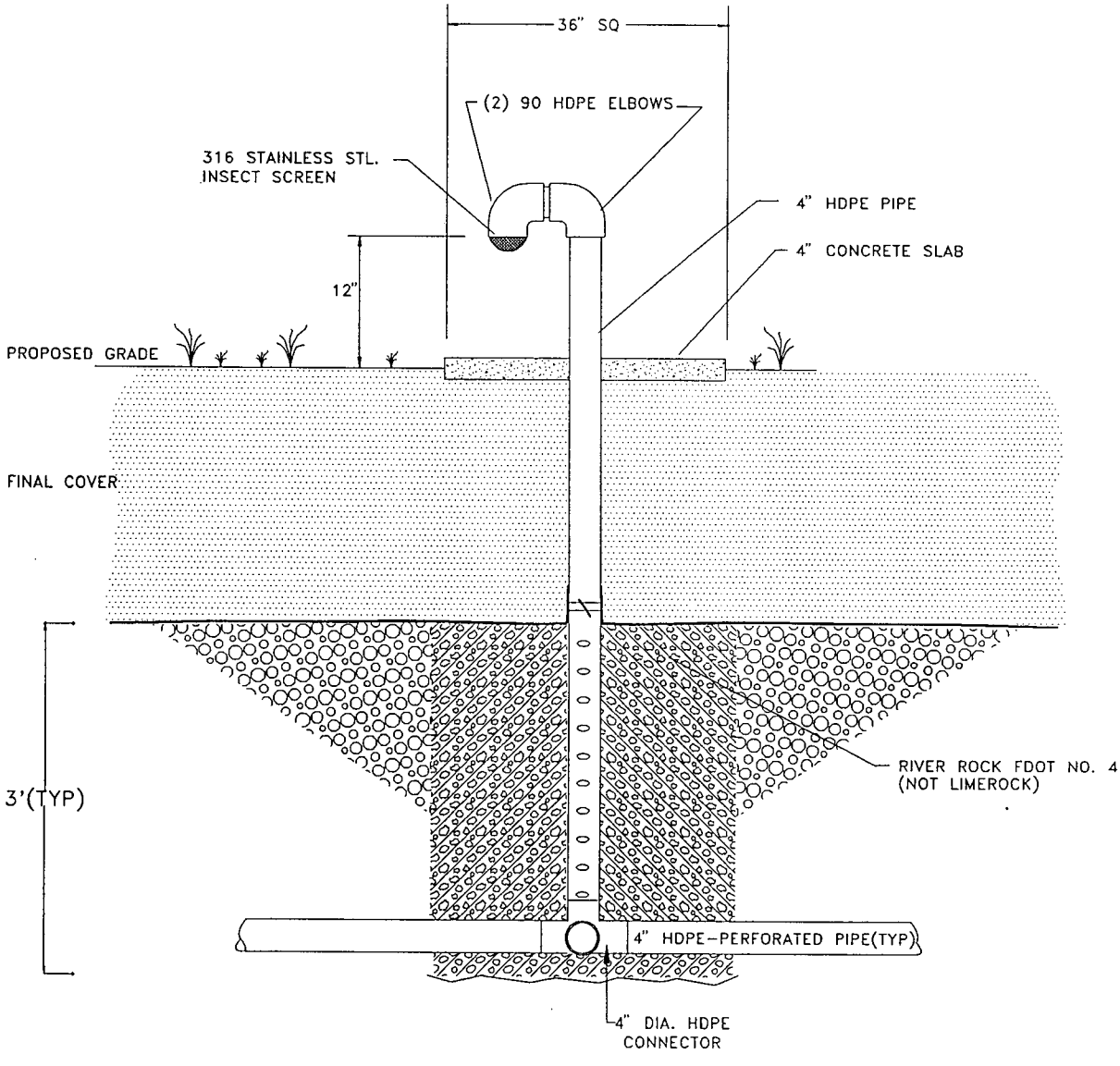
Resource Recovery Facility
Pasco County, Florida

Final Cover Detail

Proje~~ct~~ 464-83565.01

Figure 8.4



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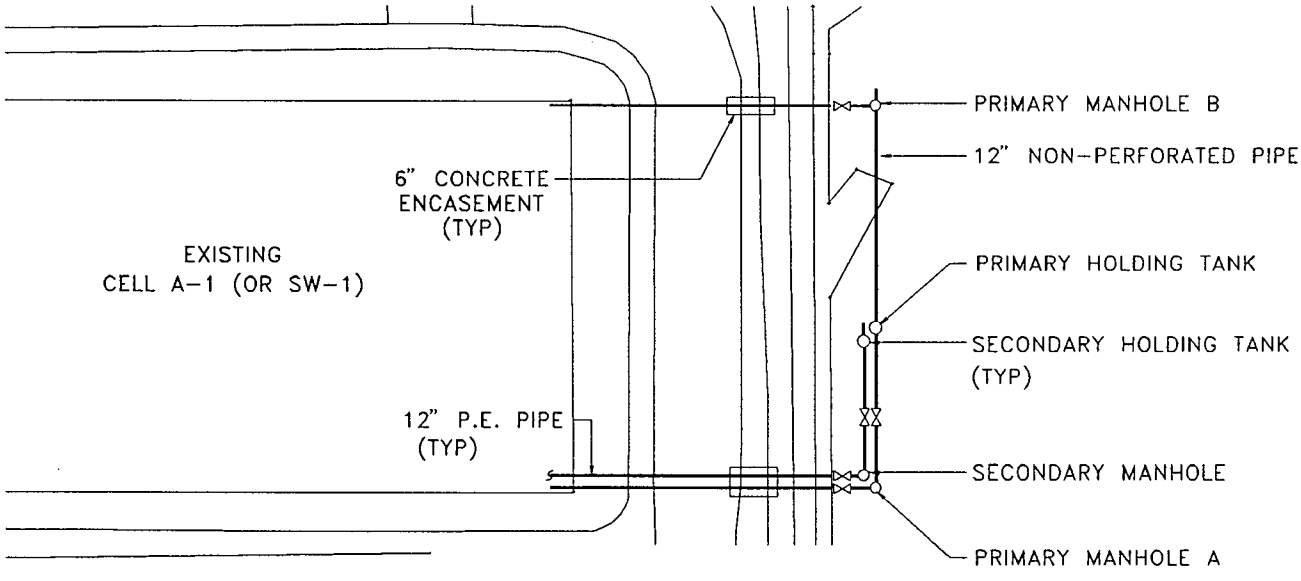
Pasco County Board of County Commissioners Utility Services Branch Pasco County, Florida	LAW ENGINEERING AND ENVIRONMENTAL SERVICES	Resource Recovery Facility Pasco County, Florida Gas Vent Detail Project 464-83565.01 Figure 8.5



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Pasco County Board of County Commissioners Utility Services Branch Pasco County, Florida	LAW ENGINEERING AND ENVIRONMENTAL SERVICES	Resource Recovery Facility Pasco County, Florida Leachate Collection System Schematic Cell SW-1 and Cell A-1 Project 464-83565.01 Figure 8.6

Jan 5, 1995
Revision 3

SECTION 9.0

WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

SECTION 9.0

WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

9.1 Water Quality and Leachate Monitoring Plan Shall Be Submitted Describing the Proposed Ground-Water, Surface-Water and Leachate Monitoring Systems and Shall Meet at least the Following Requirements;

The following plan is designed to meet the current rule requirements in Chapter 17-701.510, F.A.C. by upgrading the existing ground-water monitoring plan as discussed in the pre-application meeting dated April 13, 1994.

9.1.1 Based on the Information Obtained in the Hydrogeological Investigation and signed, Dated and Sealed by the P.G. or P.E. Who Prepared It (17-701.510(2)(a), FAC).

The plan is based on the hydrogeological investigation provided in Section 6 of this application. The hydrogeological investigation included a review of the initial hydrogeological investigation the existing ground-water monitoring plan and subsequent water quality sampling and analysis.

9.1.2 All Sampling and Analyses Performed by Organizations Have Department-Approved Comprehensive Quality Assurance Plans; (17-701.510(2)(b), FAC).

The Pasco County Environmental Laboratory conducts the required ground-water sampling and analysis for the West Pasco County Landfill. Chemical analyses that are not performed at the county lab are contracted out under an annual agreement with other state approved labs.

Pasco County Environmental Laboratory's approved Comprehensive Quality Assurance Plan is FDEP #870167G.

9.1.3 Ground-Water Monitoring Requirements; (17-701.510(3), FAC).

9.1.3.1 Detection wells located downgradient from and within 50 feet of disposal units;

The detection wells are located downgradient from Disposal Units A-1 and A-2, with the exception of well 4MW-16D which is upgradient, and are within 50 feet of disposal units. The detection wells are depicted on Figure 9.1 and on Drawing Sheet 5 as proposed detection wells 4MW-11D through 16D and 2MW-13D. The 4MW detection wells are to be 4-inch PVC Type II monitoring wells screened in the Floridan aquifer and the 2MW detection well is to be 2-inch PVC Type II wells screened in the Surficial aquifer. Typical well construction diagrams for Type II monitoring wells are shown in Figure 9.2.

9.1.3.2 Downgradient Compliance Wells as required;

The downgradient compliance wells are located to the east, north, northwest and west of the landfill footprint, The downgradient compliance wells are existing wells and are depicted on Figure 9.1 as existing ground-water

monitoring wells, 2MW-3 through 6 and 4MW-3 through 6. The 2MW wells are 2-inch PVC, Type II monitoring wells, screened in the surficial aquifer and the 4MW wells are 4-inch PVC Type II monitoring wells, screened in the Floridan aquifer.

9.1.3.3 Background wells screened in all aquifers below the landfill that may be affected by the landfill.

Background wells are depicted on Figure 9.1 as existing ground-water monitoring wells, 2MW-1 and 2 and 4MW-1 and 2. The 2MW wells are 2-inch PVC Type II monitoring wells, screened in the surficial aquifer and the 4MW wells are 4-inch PVC Type II monitoring wells screened in the Floridan aquifer.

9.1.3.4 Location Information for Each Monitoring Well.

All existing and proposed ground-water monitoring wells are shown on Figure 9.1. Location and completion data for the existing wells are provided in Table 9.1. All proposed monitoring well locations will be surveyed by a registered Florida Land Surveyor. Monitoring wells are protected by bumper posts (for example, 4MW-5 near proposed borrow area.

9.1.3.5 Well Spacing No Greater Than 500 Feet Apart for Downgradient Wells and no Greater Than 1500 Feet Apart for Upgradient Wells Unless Site Specific Conditions Justify Alternate Well Spacings;

The downgradient detection wells 4MW-11D through 4MW-15D are located 500 feet apart. The upgradient detection well, 4MW-16D is not greater than 1500 feet from the nearest detection well.

Ground-water monitoring data accumulated to date indicate the surficial aquifer to be dry in the immediate vicinity of the landfill. Consequently, the site specific conditions do not justify the installation of detection wells in the surficial aquifer on 500 feet and 1500 feet spacings. Detection well 2MW-13D is proposed as the only detection well in surficial aquifer.

9.1.3.6 Well Screen Locations Properly Selected;

The surficial aquifer ground-water monitoring wells will be screened in the base of permeable sand unit. The impermeable clayey sands encountered, immediately below the permeable, well-sorted, fine-grained sands are considered to be a part of confining layer. The screened interval will be 10 feet as depicted in the Well Construction Diagrams in Figure 9.2. The grain size of the sand pack will be adjusted in the field during installation, depending on the grain size of the formation sand in the screened interval.

The Floridan aquifer ground-water monitoring wells will be drilled and cased approximately 3 feet into the limestone. An open hole interval of approximately 10 feet will be drilled below the base of the casing into the Floridan aquifer.

9.1.3.7 Procedures for Properly Abandoning Monitoring Wells;

Any monitoring wells or piezometers which are abandoned or which will be lost due to lateral expansions of the landfill or the construction of new solid waste disposal units will be plugged as necessary so that they do not act as a conduit for any leachate release to the ground water. All such wells will be filled and sealed in accordance with the rules of the Southwest Florida Water Management District (SWFWMD), from bottom to top with neat cement grout.

The Department will be notified in writing before any monitoring wells are abandoned or plugged and will be given access, at reasonable times, to witness or inspect the plugging.

9.1.3.8 Detailed Description of Detection Sensor If Proposed

No sensors are proposed. The landfill design includes a leak detection system between the primary and secondary 60 mil HDPE liners. In the design for Disposal Unit A-2, an added barrier of protection will be placed immediately underneath the primary liner below the leachate collection header pipe. The added barrier, a geosynthetic clay liner, will provide a sealing capability to potential leaks at the hydraulic low points in the primary leachate collection system.

9.1.4 Surface-Water Monitoring Requirements; (17-701.510(4), F.A.C.).

9.1.4.1 Location of and Justification for All Proposed Surface-Water Monitoring permits.

No surface water bodies exist within the landfill site boundaries, and the stormwater management system provides for the retention of all collected stormwater runoff. The stormwater retention ponds are generally dry; consequently, no surface-water monitoring points are proposed.

9.1.4.2 Each Monitoring Location to be Marked and Its Position Determined by a Registered Florida Land Surveyor;

Not applicable, there are no proposed surface-water sampling locations.

9.1.5 Leachate Sampling Locations Proposed; (17-701.510(5), F.A.C.)

Double liner systems are in place in the existing disposal units and are proposed for the construction of Disposal Unit A-2. The double liner system, in addition to consisting of an upper and lower 60 mil HDPE geomembrane, also includes a primary leachate collection and removal system lying above the upper geomembrane and a leak detection and secondary leachate collection system between the upper and lower liners. Leachate samples will be taken from both the primary and secondary leachate collection systems.

Leachate removal from existing Disposal Unit A-1 is by gravity drainage through penetrations in disposal unit berm and liners to the leachate holding tanks. In this disposal unit, leachate samples will be taken from the influent to the primary and secondary leachate collection system holding tanks.

Leachate removal from Disposal Unit A-2 will be by pumping from a sump through a riser pipe to the top of the disposal unit berm then into the leachate management system. No penetration of the disposal unit berm or liners will occur. Leachate samples will be taken from the sample ports provided at the sideslope riser pump station primary and secondary leachate collection system.

9.1.6 Routine Sampling Frequency and Requirements; (17-701.510(6), FAC)

9.1.6.1 Background Ground-Water and Surface-Water Sampling and Analysis Requirements;

Background ground-water quality data has been collected for the existing ground-water monitoring system and is provided in the Appendix to this section. Background ground-water quality for proposed detection wells in this construction application will be taken prior to accepting ash into Disposal Unit A-2. Sampling and analysis for background water quality will be for the following parameters:

Field Parameters	Laboratory Parameters
Static water levels in wells before purging	Total ammonia - N
Specific Conductivity	Chlorides
Ph	Iron
Dissolved Oxygen	Mercury
Turbidity	Nitrate
Temperature	Sodium
Colors and Sheens (by observation)	Total Dissolved Solids (TDS)

INAPPROPRIATE FOR SW SAMPLES

Those parameters are listed in 40 C.F.R. Part 258, Appendix I and Appendix II.

No surface-water monitoring is required.

9.1.6.2 Leachate Semi-Annual and Annual Sampling Requirements.

Leachate will be sampled and analyzed semi-annually for the following parameters:

Field Parameters	Laboratory Parameters
Specific Conductivity	Total ammonia - N
Ph	Bicarbonate
Dissolved Oxygen	Chlorides
	Iron
	Mercury
	Nitrate
	Sodium
	Total Dissolved Solids (TDS)

DOES NOT SPECIFICALLY INDICATE HOW MANY LEACHATE SAMPLES WILL BE COLLECTED

Those parameters are listed in 40 C.F.R. Part 258, Appendix I.

In addition, leachate will be sampled and analyzed annually for the parameters listed in 40 C.F.R., Part 258, Appendix II.

9.1.6.3 Detection Well Semi-Annual Sampling and Analysis Requirements;

All detection wells and background wells (2MW-1 and 2MW-2, 4MW-1 and 4MW-2) will be sampled and analyzed semi-annually (as provided for lined landfills under Chapter 17-701.510(6)(c)) for the following parameters:

Field Parameters	Laboratory Parameters
Static water levels in wells before purging	Total ammonia - N
Specific Conductivity	Chlorides
Ph	Iron
Dissolved Oxygen	Mercury
Turbidity	Nitrate
Temperature	Sodium
Colors and Sheens (by observation)	Total Dissolved Solids (TDS)

DOES NOT PRESENT SW PARAMETERS IN THE EVENT OF A DISCHARGE TO SW.

Those parameters are listed in 40 C.F.R. Part 258, Appendix I.

9.1.6.4 Compliance Well Sampling and Analysis Requirements;

Compliance wells, 2MW-3 through 2mw-6 and 4MW-3 through 4MW-6 will be sampled and analyzed semi-annually for the same parameters listed for the detection wells.

9.1.6.5 Surface-Water Sampling and Analysis Requirements.

Not applicable; no surface-water bodies exist.

9.1.7 Procedures for Implementing Assessment Monitoring and Corrective Action as Required; (17-701.510(7), F.A.C.)

If monitoring parameters are detected in detection wells in concentrations which are significantly above background water quality or which are at levels above the Department's water quality standards or criteria specified in Chapter 17-520, F.A.C., the County will resample the wells within 15 days after the sampling data is received to confirm the data. The County will notify the Department in writing within 14 days of this finding, in addition to its scheduled water quality monitoring report. Upon notification by the Department, the County will initiate assessment monitoring as follows:

- Continue routine monitoring of monitoring wells and leachate sampling locations as required under the permit.

listed in 40 C.F.R., Part 258, Appendix II. Any new parameters detected and confirmed in the affected downgradient wells will be added to their routine ground-water monitoring suite.

- Install additional compliance monitoring wells at the compliance line of the zone of discharge and downgradient from the affected detection monitoring wells within ninety days of notice to initiate assessment monitoring. These wells will be sampled and analyzed quarterly for the routine ground-water suite plus the parameters listed in 40 C.F.R., Part 258, Appendix I and II.

- Submit a contamination assessment plan within 180 days of the notice to initiate assessment monitoring that is designed to delineate the extent and cause of the contamination, potential violations outside the zone of discharge, and evaluate methods to prevent any such violations. Upon approval by the Department the County will implement the plan and submit a contamination assessment report in accordance with the plan.

- Discontinue assessment monitoring, if for two consecutive sampling events the concentrations of all parameters including 40 C.F.R., Part 258, Appendixes I and II are at or below background values, upon receiving approval by the Department after which the County can return to routine monitoring requirements.

- Submit a Remedial Action Plan to the Department if the Contamination Assessment Report indicates water quality standards are likely to be violated outside the zone of discharge. Upon approval by the Department, the County will initiate the corrective actions outlined in the plan.

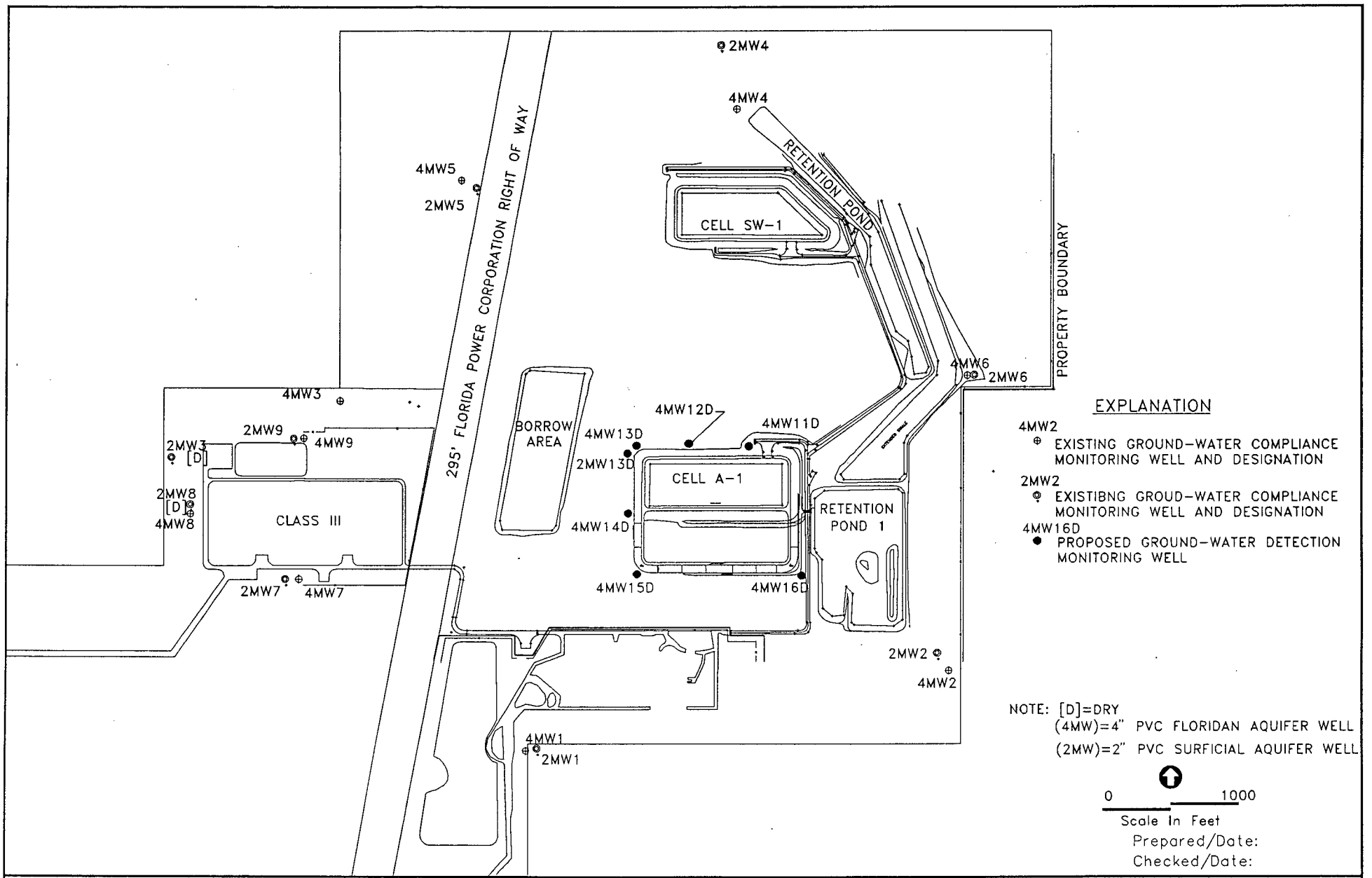
9.1.8 Water Quality Monitoring Report Requirements (17-701.510(a), F.A.C)

9.1.8.1 The County Will Report All Water Quality and Leachate Monitoring Results to the Department Semi-Annually. The County Will Notify the Department in at least 14 Days before the Sampling Is Scheduled to Occur so that the Department May Collect Split Samples. The Report Will Contain the Following Data:

Facility name and identification ;
Sample collection and analyses dates;
Analytical results, including all peaks;
Identification number and designation of all monitoring points;
Applicable water quality standards;
Quality assurance, quality control notations;
Method detection limits;
Street code;

Water level data including elevation at top of casing and surface for each well on site at a precision of plus or minus 0.01 ft (NGVD);

The report will also provide updated ground-water maps at contour intervals no greater than one-foot with ground-water elevations and flow directions, and a summary of any water quality standards or criteria that have been exceeded.



ACAD=48356591

Pasco County
Board of County Commissioners
Utility Services Branch
Pasco County, Florida

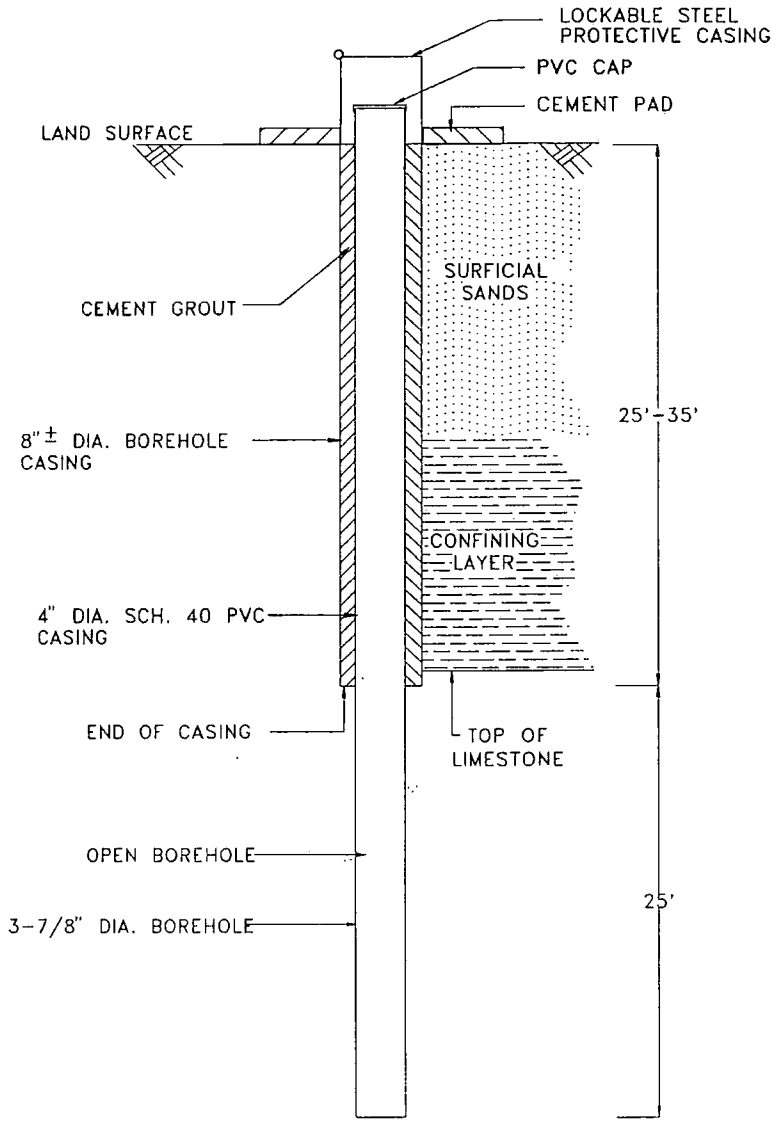
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

Resource Recovery Facility
Pasco County, Florida

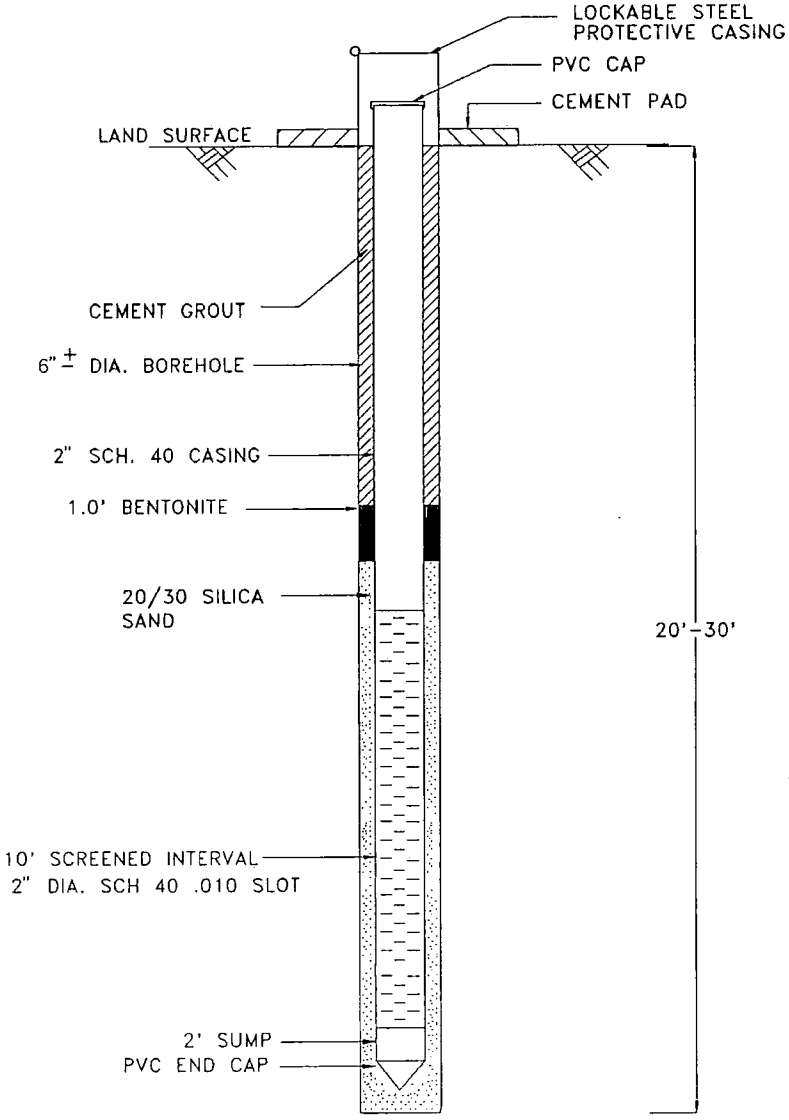
Ground-Water Monitoring
Well Locations

Project 464-83565.01

Figure 9.1



FLORIDAN AQUIFER MONITORING WELL



SURFICIAL AQUIFER MONITORING WELL

REVISED TO 10 FT OF SLOT HOLE FOR FLORIDAN WELLS

Prepared/Date:
Checked/Date:

Not To Scale

ACAD=48356592

Pasco County
Board of County Commissioners
Utility Services Branch
Pasco County, Florida

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

Resource Recovery Facility
Pasco County, Florida

Typical Well Construction Diagrams

Project 464-83565.01 Figure 9.2

TABLE 9.1
EXISTING GROUND-WATER MONITORING WELLS
LOCATION and COMPLETION DATA

WELL	Location Latitude North	Longitude West	Ground * Level	Casing * Top	Casing * Bottom	Screened Interval * Top	Screened Interval * Bottom	Total Depth
2MW-1	28 22' 05.8"	82 33' 48.1"	46.7'	49.97'	28.2'	38.2'	28.2'	18'
4MW-1	28 22' 05.5"	82 33' 48.1"	46.5'	49.61'	14.5'	open hole		60'
2MW-2	28 22' 12.3"	82 33' 11.9"	52.8'	56.26'	17.8'	23.3'	18.3'	35'
4MW-2	28 22' 12.2"	82 33' 11.9"	53.0'	55.76'	11.0'	open hole		70'
2MW-3	28 22' 26.7"	82 34' 17.8"	41.7'	49.94'	26.7'	31.2'	26.2'	15'
4MW-3A	28 22' 31.5"	82 34' 03.3"	50.6'	52.84'	28.6'	open hole		50'
2MW-4	28 22' 57.7"	82 33' 31.4"	51.3'	54.31'	35.3'	40.8'	35.8'	15'
4MW-4	28 22' 52.5"	82 33' 30.3"	48.1'	50.52'	26.1'	open hole		50'
2MW-5	28 22' 46.7"	82 33' 52.2"	45.3'	48.13'	37.3'	41.3'	37.3'	8'
4MW-5	28 22' 47.2"	82 33' 53.4"	45.4'	48.26'	-22.6'	open hole		100'
2MW-6	28 22' 32.7"	82 33' 11.1"	53.0'	55.64'	23.0'	33.0'	23.0'	20'
4MW-6	28 22' 32.7"	82 33' 11.3"	52.4'	55.03'	-20.6'	open hole		100'

SECTION 10.0

LANDFILL FINAL CLOSURE REQUIREMENTS

SECTION 10.0

LANDFILL FINAL CLOSURE REQUIREMENTS

10.1 Closure Schedule Requirements

A written notice, including a schedule for closure will be provided to the Department at least one year prior to final receipt of wastes. Final receipt of waste is not anticipated for at least fifty years.

The original permit for this landfill included space for monofilling solid waste and ash from the resource recovery facility. Pasco County operates the facility and are the users of the space designated for ash. Other authorized users of the solid waste management system are directed to deliver their wastes to either the adjacent Resource Recovery Facility or the West Pasco Class III Landfill and Recycling Center. If the solid waste disposal units are used in the future by other authorized users and that portion of the landfill is to be closed, the other authorized users will be notified 120 days prior to final receipt of waste.

Furthermore, the public will be notified within ten days prior to final receipt of waste. If closure of the entire facility would impact outside users notifications will be given according to the schedule for closure of the solid waste portion.

10.2 Closure permit general requirements

The application for a closure permit will be submitted to the FDEP 90 days prior to final receipt of wastes at the landfill.

A closure plan will be submitted as part of the application for closure of the facility. The closure plan will include at a minimum a closure report, a closure design plan, closure operation plan, closure procedures, and plan for long term care, and a demonstration of proof of financial responsibility for long term care will be provided.

10.3 Closure report requirements

The general information remains essentially unchanged from the Power Plant Site Certification Application. The information will be updated at the time the application is submitted for the closure permit. A geotechnical investigation will be conducted to the extent necessary at that time and the water quality monitoring plan revised accordingly. Additionally the report will include a land use information report, an actual gas migration report if biodegradable waste has been accepted at the landfill, and a report assessing the effectiveness of the landfill design and operation, as required in Ch.17-701.600(4), FAC.

10.4 Closure design requirements

A set of drawings were prepared and submitted with the original application to construct this landfill and reduced copies of these drawings are provided as an attachment.

10.4.1 Plan sheet showing phases of site closing

A reduced set of Power Plant Site Certification permit application Drawing Sheet No.8, Facilities Layout and Landfill Liner Limits and Drawing Sheet No.10, Plan of Operation is attached in Appendix 3. The facilities layout shows the individual disposal units.

10.4.2 Drawings showing existing topography and proposed final grades

Refer to Drawing Sheet 7 for the existing topography and final grading of site prior to receipt of waste.

10.4.3 Provisions to close units when they reach design dimensions

The plan of operation shows the filling sequence to the first bench level at 75 ft.,NGVD. Each Disposal Units A-1 through A-6 will be filled sequentially to the first bench level receive intermediate cover. The ashfill area will be taken up successive bench levels at 100 ft and 125 ft.,NGVD and receive intermediate cover after reaching each bench level. The final bench level will go a peak elevation of 150 ft.,NGVD and receive final cover.

10.4.4 Final elevation before settlement

The final elevation will be elevation 152 feet.

10.4.5 Side slope design including benches, terraces, downslope drainage ways, energy dissipators and a discussion of expected precipitation effects

These features are shown in the original permit application drawing set. See Drawing Sheet No. 10 in Appendix 3. Side slopes decrease upward after specific bench levels.

10.4.6 Final cover installation plans

At least 90 days prior to final receipt waste Pasco County will submit an application for final closure of the landfill. At that time the final cover installation plans will be submitted to the FDEP for approval. The plans included with the submittal of the original application will be revised at that time to reflect the FDEP requirements at the time of that submittal.

10.4.7 Final cover design requirements

The plans provided herein from the original application are in general conformance with the current design requirements. The cover design is designed to promote runoff so as to minimize infiltration and leachate generation. It includes 6 inches of top soil over 18 inches of clayey material. The design will be modified (if necessary) to conform to FDEP requirements at the time the facility is finally closed.

10.4.8 Proposed method of stormwater control

A stormwater management system was developed as part of the closure plans included in the original application submittal. The system has been permitted by the Southwest Water Management District. If it is necessary at the time of closure, this system will be modified to conform to requirements at that time.

10.4.9 Proposed method of access control

Access is restricted by a fence and manned gate at this time.

10.4.10 Proposed final use of the closed landfill

The site will be used for recreational purposes after the foundation and cover have stabilized.

10.5 Closure operation plan

10.5.1 Description of actions which will be taken to close the landfill

The sequence of activities that will be performed at final closure are:

- final grading and compaction of the top surface to conform to the slopes in the design plans
- inspection of the top surface to eliminate any objects that my damage the barrier layer
- placement of a barrier layer
- placement of the vegetative cover layer
- establishing grass on the surface
- placing survey monuments and final topographic survey

10.5.2 Time schedule for completion of closing and long term care

The estimated time required for construction of the closure should range from 200 to 270 days. The additional time required for bidding will add 100 days so the entire closure construction should take about one year after final receipt of waste. The long term care period will be 30 years unless the FDEP approves a reduced care period.

10.5.3 Describe the proposed method for demonstrating financial responsibility

Provisions for long term care will be the same as established for Disposal Unit A-1.

10.5.4 Additional equipment and personnel needed to complete the closure

Pasco County will contract to third party for the construction of the closure.

SECTION 11.0

CLOSURE PROCEDURES

SECTION 11.0

CLOSURE PROCEDURES

Not applicable at this time. The closure plan will include provision for survey monuments relative to closure. A final survey report will be prepared after closure and closure construction will be certified. Declarations to the public will be made as required. No projected closing date is available. The permitted landfill site is projected to last a minimum of fifty years. Increased recycling rates, waste stream reduction and potential ash reuse will extend the projected life of the facility even further. Eventually, when closed the site is to be considered for some form of recreation use.

SECTION 12.0

LONG-TERM CARE REQUIREMENTS

SECTION 12.0

LONG-TERM CARE REQUIREMENTS

The Department will be given the right of property access after closure as required by Ch. 17-701, FAC. Pasco County has no plans at this time to sell the property after closure. The County will maintain and replace when necessary monitoring devices installed as part of the closure.

SECTION 13.0

FINANCIAL RESPONSIBILITY REQUIREMENTS

SECTION 13.0

FINANCIAL RESPONSIBILITY REQUIREMENTS

The following cost figures are based on recent landfill closure construction bids and on supply quotes.

APPENDIX 3

REDUCED

POWER PLANT SITE CERTIFICATION

DRAWINGS

APPENDIX 3

REDUCED
POWER PLANT SITE CERTIFICATION
DRAWINGS

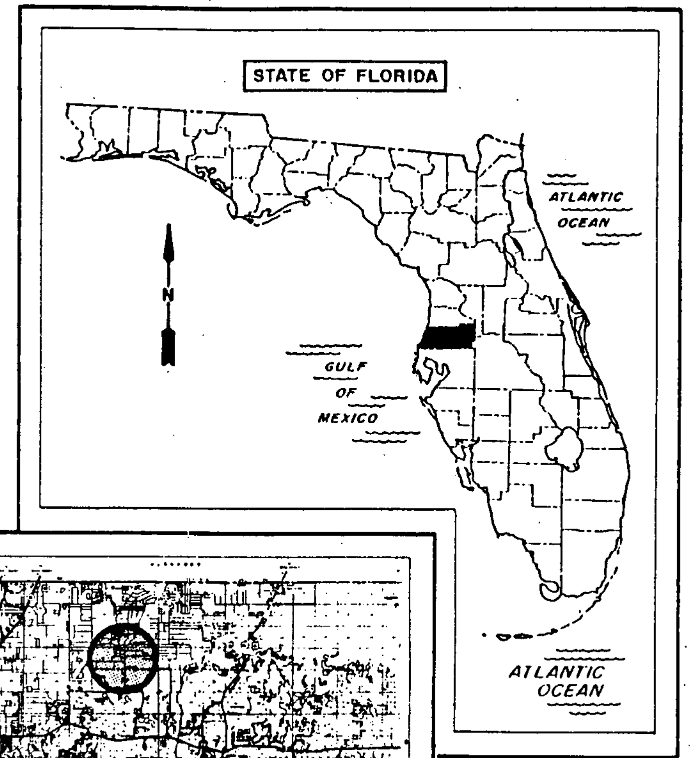
SECTION 3/8" = 1'-0" (3) — SECTION IDENTIFICATION NUMBER; SHEET ON WHICH SECTION IS CUT

DETAIL 1/2" = 1'-0" (A) — DETAIL DESIGNATION; SHEET ON WHICH DETAIL IS DRAWN

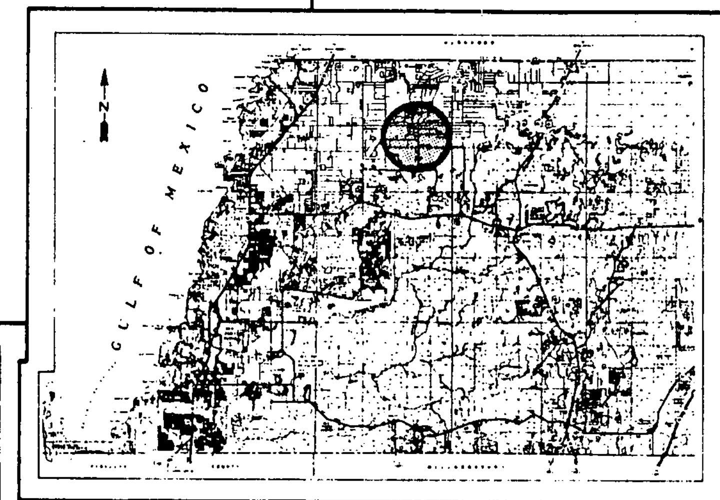
DETAIL 1" = 10' (A) — SHOWN ON MULTIPLE SHEETS

GENERAL NOTES

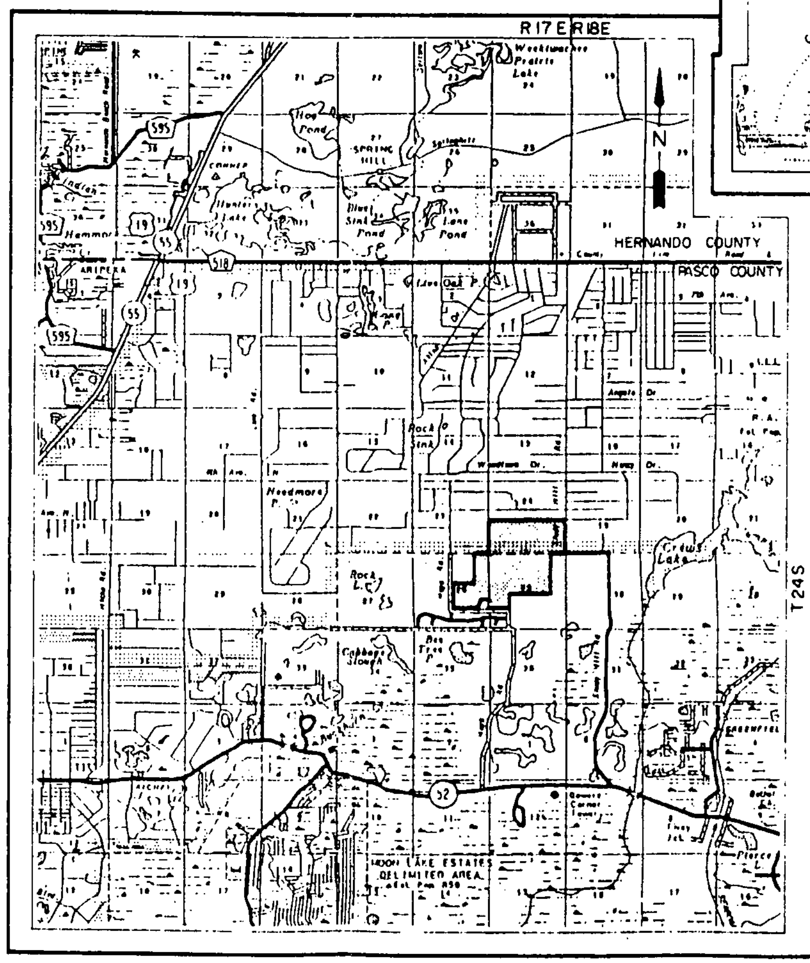
1. ALL ELEVATIONS REFER TO MEAN SEA LEVEL(MSL) BASED ON USGS DATUM.
2. LOCATION OF NEW ROADS AND STRUCTURES ARE APPROXIMATE.
3. THESE PLANS ARE FOR PERMIT PURPOSES ONLY AND ARE NOT BIDDABLE PLANS.



PASCO COUNTY LOCATION
NTS



AREA LOCATION
NTS



SITE LOCATION
NTS

INDEX OF SHEETS

REMARKS | REV NO | DATE | DRAWN | CHKD

DESIGNED BY CJG
DRAWN BY SRB
CHECKED BY DM
APPROVED BY RAH
DATE FEB 1987

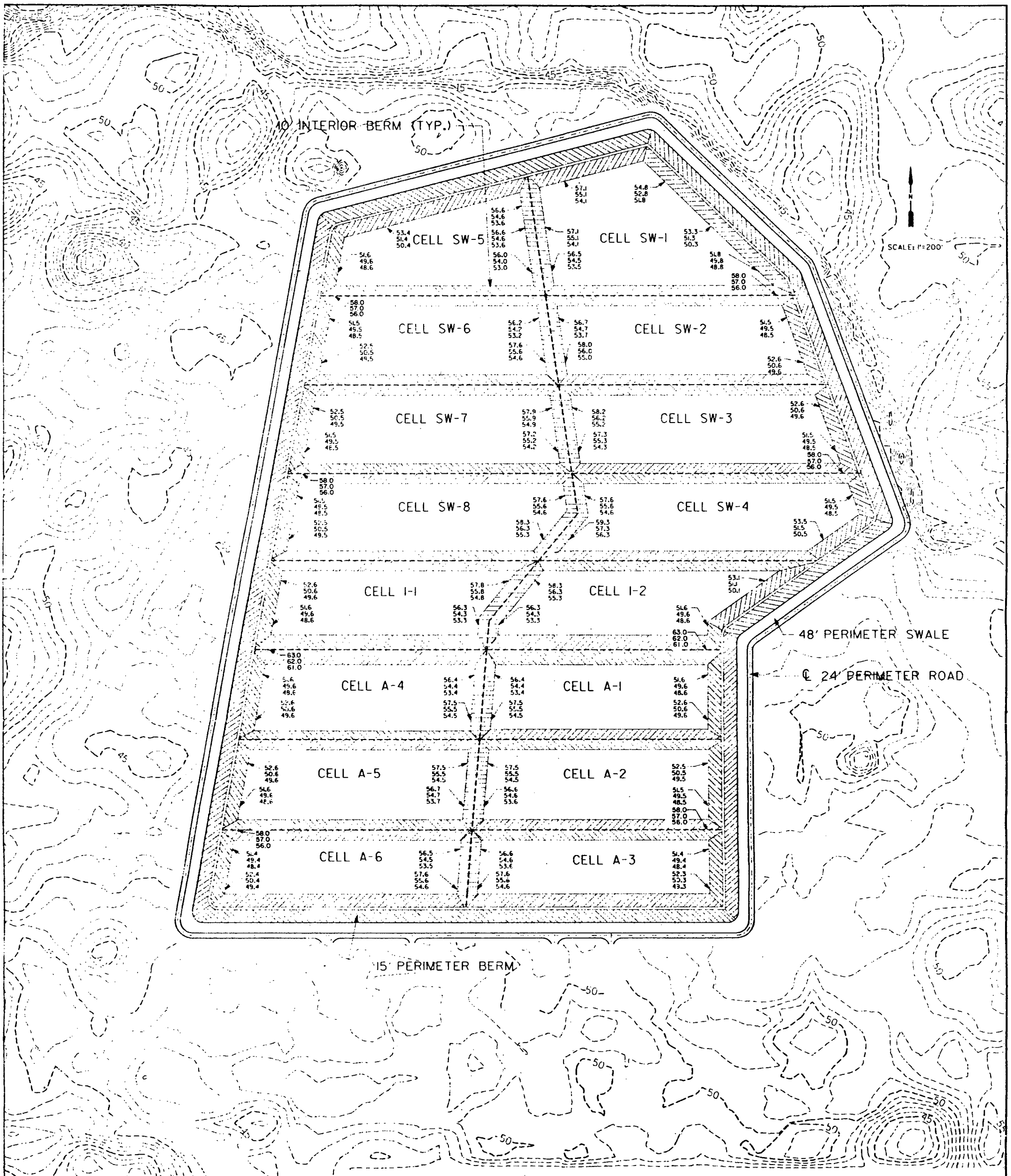
CAMP DRESSER & McKEE INC.
CDM

PASCO COUNTY-HAYS ROAD SOLID WASTE DISPOSAL FACILITY PERMIT DRAWINGS

GENERAL NOTES, LOCATION MAPS AND INDEX OF SHEETS
PASCO COUNTY, FLORIDA

6034-03 LF

1



LEGEND

55.8 ——— BOTTOM OF WASTE
52.8 ——— PRIMARY LINER
51.8 ——— SECONDARY LINER
------ CELL BOUNDARY

SHEET NO. 60

PROJECT NO. 6104-03

PASCO COUNTY-HAYS ROAD SOLID WASTE DISPOSAL FACILITY PERMIT DRAWINGS

BASE GRADE AND CELL BOUNDARIES

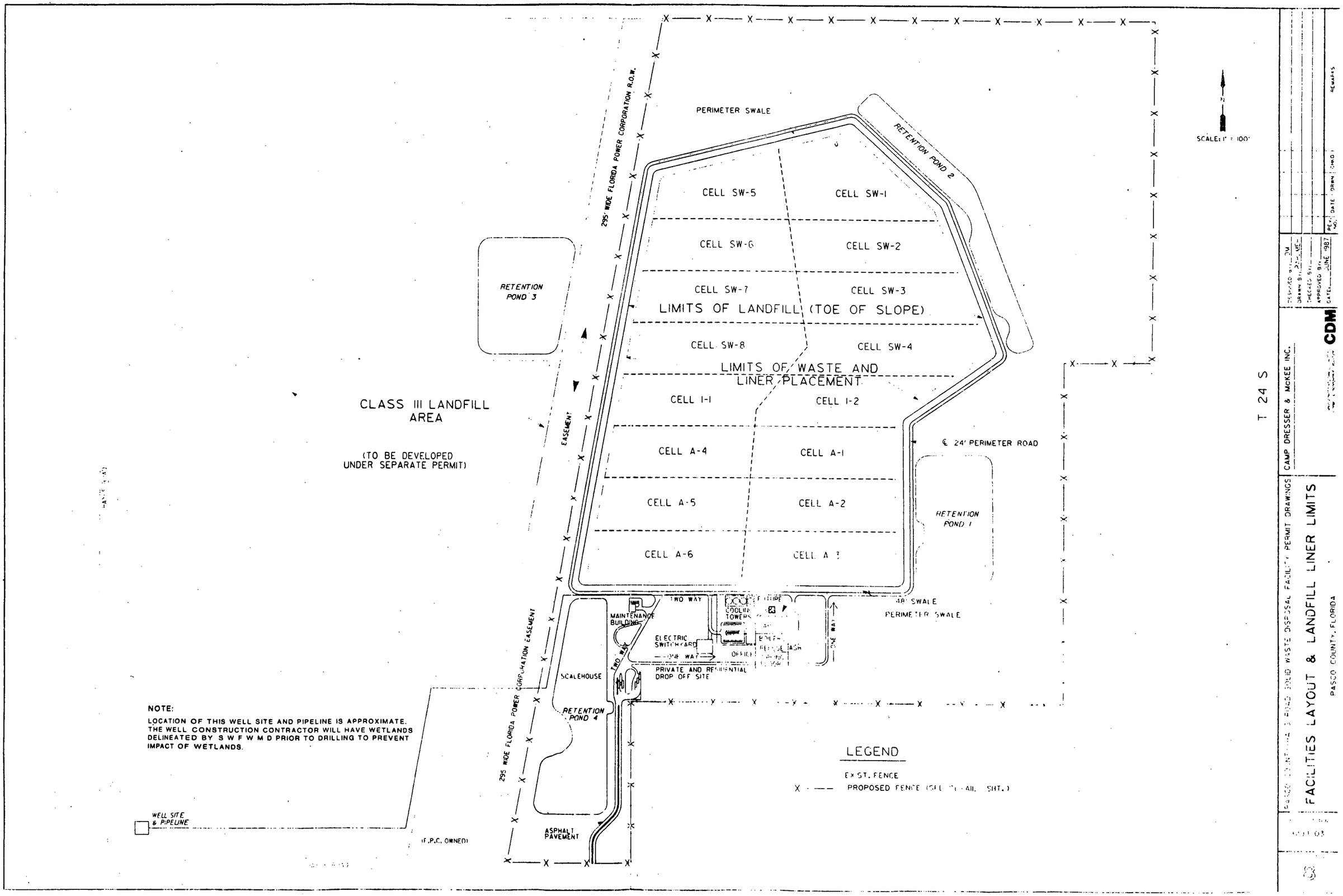
PASCO COUNTY, FLORIDA

CAMP DRESSER & McKEE INC.

environmental engineers, scientists, planners & management consultants CDM

DESIGNED BY: CJG
DRAWN BY: SRB
CHECKED BY: RH
APPROVED BY: RAH
DATE: SEPT. 1987

REV. NO.	DATE	DRWN	CHKD	REMARKS



CDM

CAMP DRESSER & MCKEE INC.

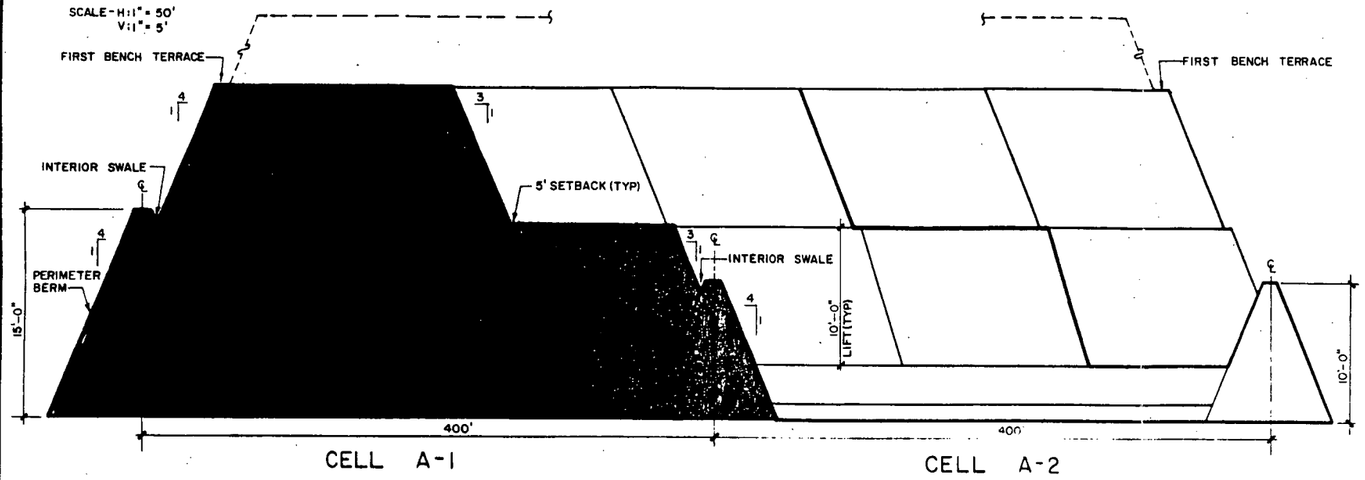
PASCO COUNTY CLASS I & III SOLID WASTE DISPOSAL FACILITY PERMIT DRAWINGS

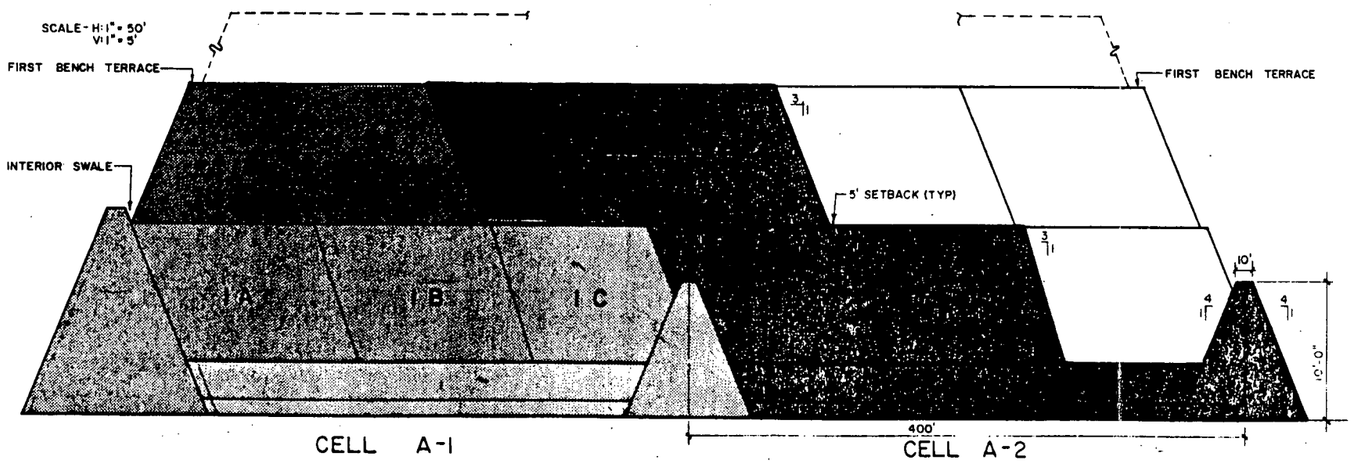
FACILITIES LAYOUT & LANDFILL LINER LIMITS

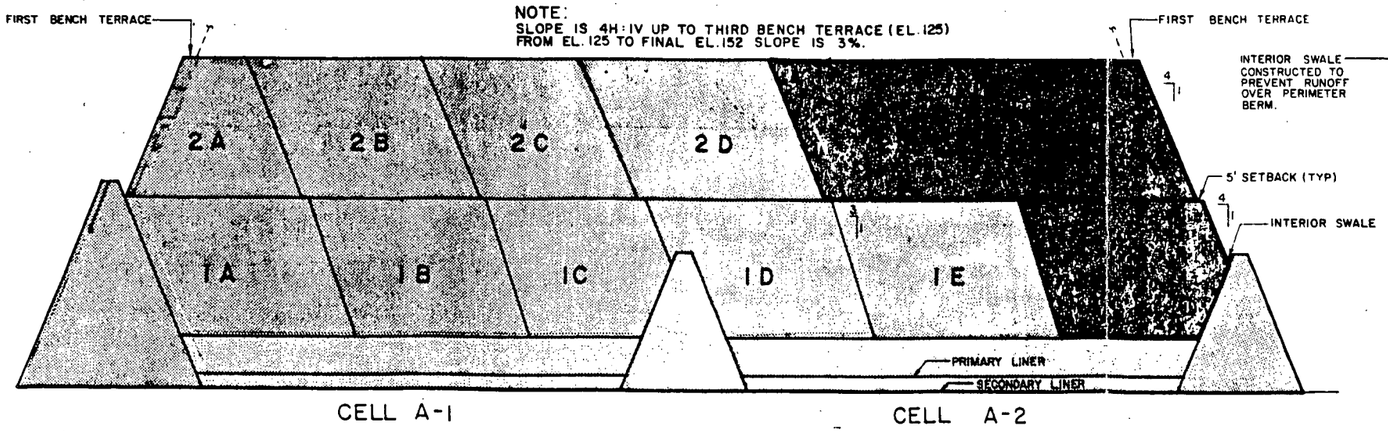
PASCO COUNTY, FLORIDA

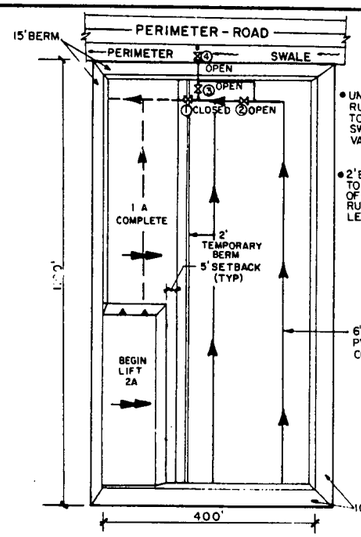
8

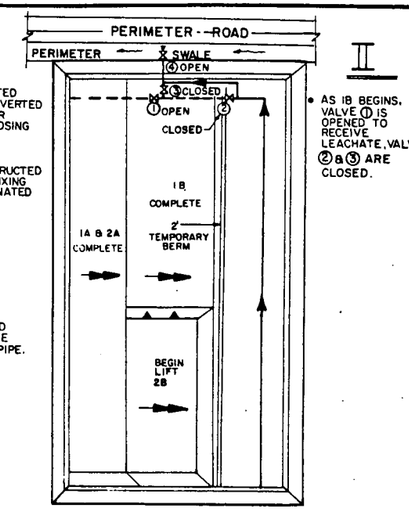
LIFT SEQUENCE





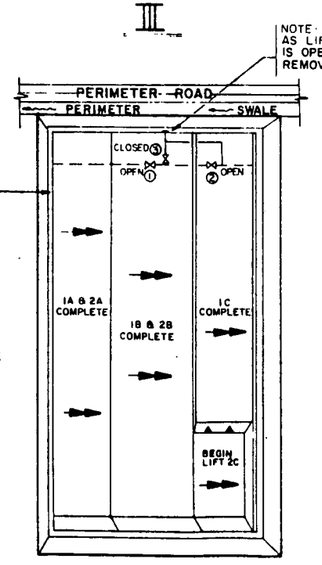


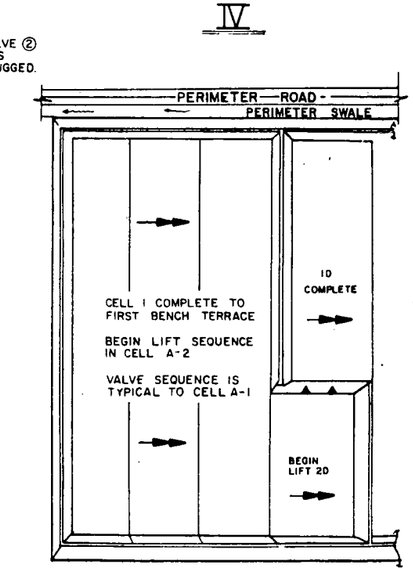




LEGEND

SYMBOL	DESCRIPTION
→	LEACHATE COLLECTION PIPE
⇒	SURFACE WATER DRAINAGE DIRECTION
▲▲	WORKING FACE
①	LIFT SEQUENCE





REV NO	DATE	DRWN	CHKD	REMARKS

DESIGNED BY C/G
DRAWN BY CHB
CHECKED BY RH
APPROVED BY RAH
DATE SEPT. 1987

CAMP DRESSER & McKEE INC.

CDM

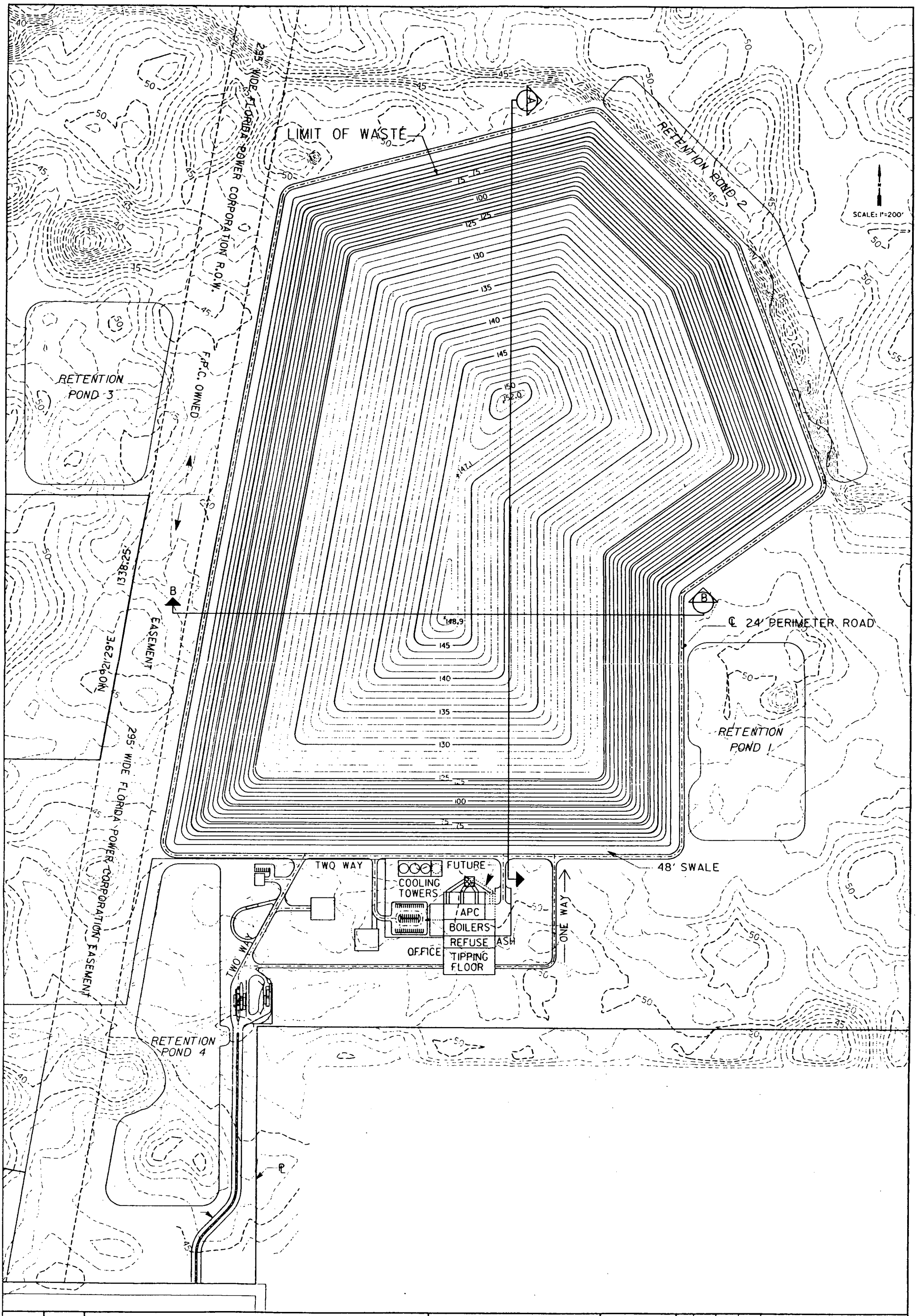
PASCO COUNTY-HAYS ROAD SOLID WASTE DISPOSAL FACILITY PERMIT DRAWINGS

PLAN OF OPERATION

PASCO COUNTY, FLORIDA

PROJECT NO
6104 - 03

SHEET NO
10



PASCO COUNTY-HAYS ROAD SOLID WASTE DISPOSAL FACILITY PERMIT DRAWINGS

FINAL CLOSEOUT CONTOURS

PASCO COUNTY, FLORIDA

SHEET NO. 1

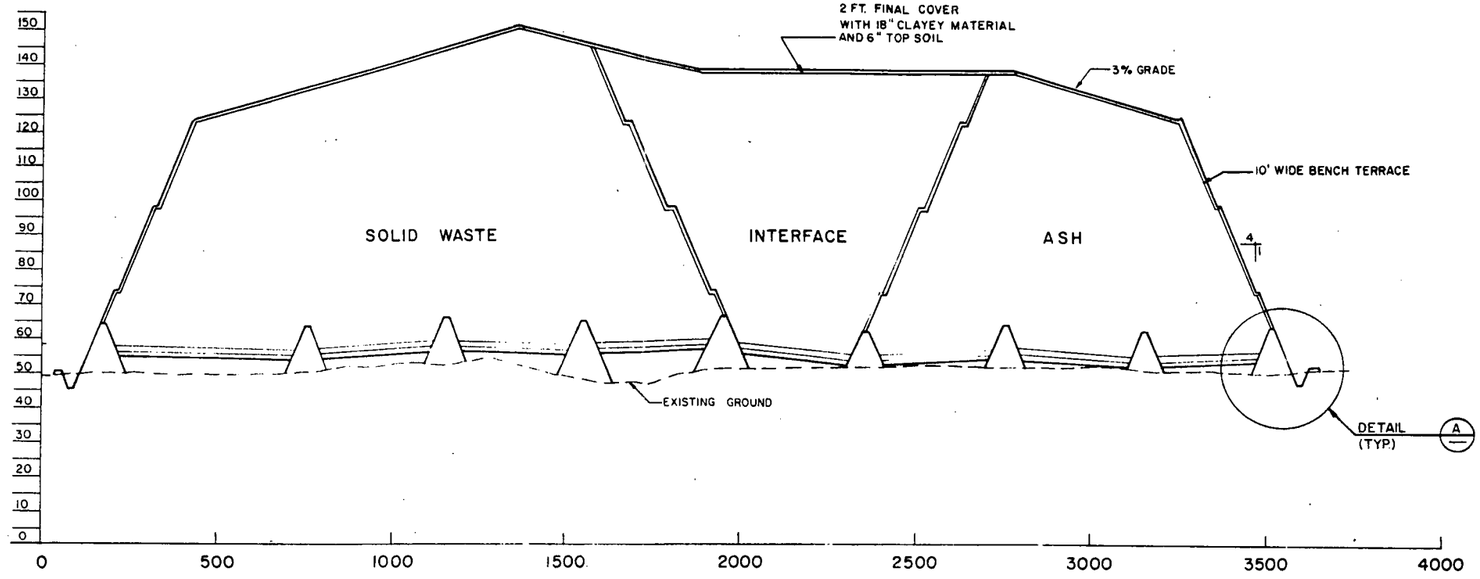
PROJECT NO. 6104-03

CAMP DRESSER & McKEE INC.

CDM

DESIGNED BY: JJ
DRAWN BY: SSB
CHECKED BY:
APPROVED BY:
DATE: 9/1987

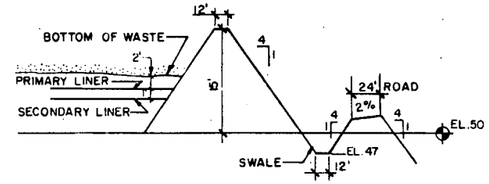
REV. NO.	DATE	DRWN	CHKD	REMARKS



NORTH SOUTH CROSS SECTION (A/11)

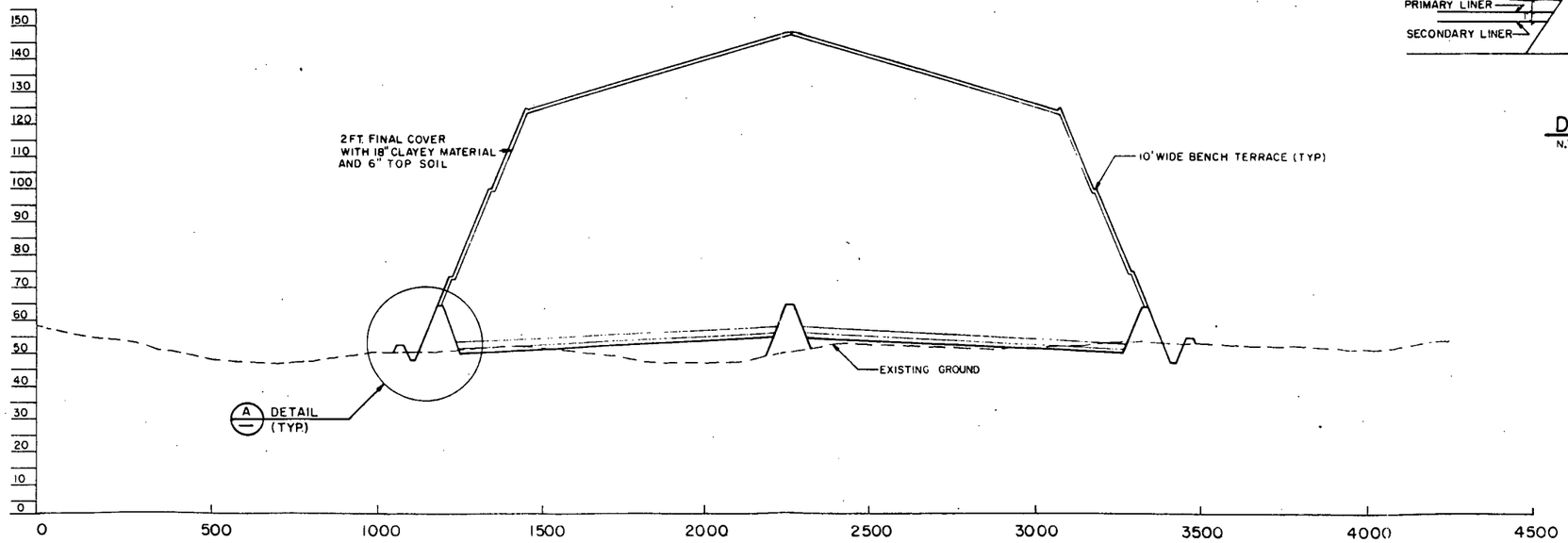
SCALE: 1"=200' HORZ.
1"=20' VERT.

NOTE:
DETERMINATION OF MATERIAL TYPE DISPOSED IN INTERFACE AREA IS DEPENDENT ON FUTURE NEED.



DETAIL (A/—)

N.T.S.



EAST WEST CROSS SECTION (B/11)

SCALE: 1"=200' HORZ.
1"=20' VERT.

REMARKS | REV NO | DATE | DRAWN | CHKD

DESIGNED BY: C.J.G.
DRAWN: S.R.B.
CHECKED: R.H.
APPROVED BY: R.A.H.
DATE: SEPT. 1987

CDM

CAMP DRESSER & McKEE INC.

PASCO COUNTY-HAYS ROAD SOLID WASTE DISPOSAL FACILITY PERMIT DRAWINGS

CROSS SECTIONS

PASCO COUNTY, FLORIDA

PROJECT NO.
6104-03

SHEET NO.
15

APPENDIX 5

LANDFILL CONSTRUCTION

DATA

APPENDIX 5

APPENDIX A5.1

LINER COMPACTIBILITY

DATA

APPENDIX A5.1

LINER COMPATIBILITY DATA

Gundle

LABORATORY REPORT #3601C

CHEMICAL RESISTANCE TESTING OF INCINERATOR ASH

DATE: 6/29/88

PROJECT:

Results of chemical compatibility (EPA Method 9090) testing of Gundline HD 60 mil. with incinerator ash sludge after 120 days immersion. The incinerator ash sludge was prepared by mixing incinerator ash with tap water in a 1:3 water:ash volume ratio.

TEST METHOD:

Die-cut ASTM test specimens were placed in the waste solution and kept at a temperature of 23°C and 50°C. Samples were removed at 15 day intervals and subjected to the following tests:

TENSILE PROPERTIES
ASTM D638 Type IV @ 2ipm

23°C Machine Direction Averages

	YIELD STRENGTH(PSI)	BREAK STRENGTH(PSI)	BREAK ELONGATION(%)
0 Days	3024	4477	718
15 Days	3023	4452	741
% Change	0	-.6	+3.2
30 Days	2688	4345	756
% Change	-11.1	-2.9	+5.3
45 Days	2950	4309	725
% Change	-2.4	-3.8	+1.0
60 Days	2861	*	614
% Change	-5.4	*	-14.5
90 Days	3011	4074	693
% Change	-.4	-9.0	-3.6
120 Days	3024	4050	705
% Change	0	-9.5	-1.8

Gundle

23°C Transverse Direction Averages

	YIELD STRENGTH(PSI)	BREAK STRENGTH(PSI)	BREAK ELONGATION(%)
0 Days	3160	4686	789
15 Days	3100	4027	703
% Change	-1.9	-14.1	-10.9
30 Days	2873	*	650
% Change	-9.8	*	-17.6
45 Days	3012	3832	678
% Change	-4.7	-18.2	-14.1
60 Days	2946	4115	741
% Change	-6.8	-12.2	-6.1
90 Days	3034	3776	662
% Change	-4.0	-19.4	-16.1
120 Days	2974	4410	773
% Change	-5.9	-5.9	-2.0

50°C Machine Direction Averages

	YIELD STRENGTH(PSI)	BREAK STRENGTH(PSI)	BREAK ELONGATION(%)
0 Days	3024	4477	718
15 Days	3131	4751	773
% Change	+3.5	+6.1	+7.7
30 Days	2966	*	*
% Change	-1.9	*	*
45 Days	3118	*	*
% Change	+3.1	*	*
60 Days	3007	4193	697
% Change	-.6	-6.3	-2.9
90 Days	2802	3792	679
% Change	-7.3	-15.3	-5.4
120 Days	3117	4610	752
% Change	+3.1	+3.0	+4.7

50°C Transverse Direction Averages

	YIELD STRENGTH(PSI)	BREAK STRENGTH(PSI)	BREAK ELONGATION(%)
0 Days	3160	4686	789
15 Days	3322	4413	826
% Change	+5.1	-5.8	+4.7
30 Days	3521	4525	686
% Change	+11.4	-3.4	-13.1
45 Days	3154	3861	662
% Change	-.1	-17.6	-16.1
60 Days	2999	4189	735
% Change	-5.1	-11.	-6.8
90 Days	3656	*	*
% Change	+15.7	*	*
120 Days	3024	3831	695
% Change	-4.3	-18.2	-11.9

Gundle®

TEAR RESISTANCE INITIATION (LBS)
ASTM D1004

	Machine Direction		Transverse Direction	
	23°C	50°C	23°C	50°C
0 Days	56	56	63	63
15 Days	58	58	71	62
% Change	+3.6	+3.6	+12.7	-1.6
30 Days	*	*	*	*
% Change	*	*	*	*
45 Days	52	52	61	63
% Change	-7.1	-7.1	-3.2	0
60 Days	54	54	54	61
% Change	-3.6	-3.6	-14.3	-3.2
90 Days	53	53	55	67
% Change	-5.4	-5.4	-12.7	+6.3
120 Days	55	56	54	66
% Change	-1.8	0	-14.3	+4.8

PUNCTURE RESISTANCE (LBS)
FTMS 101B Method 2065

	23°C	50°C
0 Days	103	103
15 Days	86	92
% Change	-16.5	-10.7
30 Days	84	87
% Change	-18.4	-15.5
45 Days	88	89
% Change	-14.6	-13.6
60 Days	91	80
% Change	-11.7	-22.3
90 Days	87	84
% Change	-15.5	-18.4
120 Days	99	88
% Change	-3.9	-14.6

THICKNESS (MIL) CHANGES AT 23°C
ASTM D1593

0 Days	65
15 Days	65
% Change	0
30 Days	65
% Change	0
45 Days	62
% Change	-4.6
60 Days	64
% Change	-1.6
90 Days	65
% Change	0
120 Days	65
% Change	0

Gundle

THICKNESS (MIL) CHANGES AT 50°C
ASTM D1592

0 Days	68
15 Days	66
% Change	-2.9
30 Days	67
% Change	-1.5
45 Days	64
% Change	-5.9
60 Days	66
% Change	-2.9
90 Days	67
% Change	-1.5
120 Days	68
% Change	0

WEIGHT CHANGE AT 23°C

0 Days	2.9234
15 Days	2.9253
% Change	0
30 Days	2.9265
% Change	+.1
45 Days	2.9258
% Change	+.1
60 Days	2.9262
% Change	+.1
90 Days	2.9274
% Change	+.1
120 Days	2.9268
% Change	+.1

WEIGHT CHANGE AT 50°C

0 Days	3.0366
15 Days	3.0378
% Change	0
30 Days	3.0405
% Change	+.1
45 Days	3.0403
% Change	+.1
60 Days	3.0414
% Change	+.2
90 Days	3.0433
% Change	+.2
120 Days	3.0400
% Change	+.1

Gundle®

HARDNESS AT 23°C
ASTM D2240

0 Days	61
15 Days	61
% Change	0
30 Days	62
% Change	+1.6
45 Days	61
% Change	0
60 Days	61
% Change	0
90 Days	63
% Change	+3.3
120 Days	62
% Change	+1.6

HARDNESS AT 50°C
ASTM D2240

0 Days	62
15 Days	61
% Change	-1.6
30 Days	62
% Change	0
45 Days	62
% Change	0
60 Days	62
% Change	0
90 Days	64
% Change	+3.2
120 Days	65
% Change	+4.8

ENVIRONMENTAL STRESS CRACK
ASTM D1693, INCINERATOR ASH SLUDGE

0% failures at 60 days of immersion (1440 hours)
0% failures at 90 days of immersion (2160 hours)
0% failures at 120 days of immersion (2880 hours)

* Note: These test specimens got stuck in the incinerator ash sludge because the sludge turned to cement. The specimens were too damaged for reliable testing.

Gundle

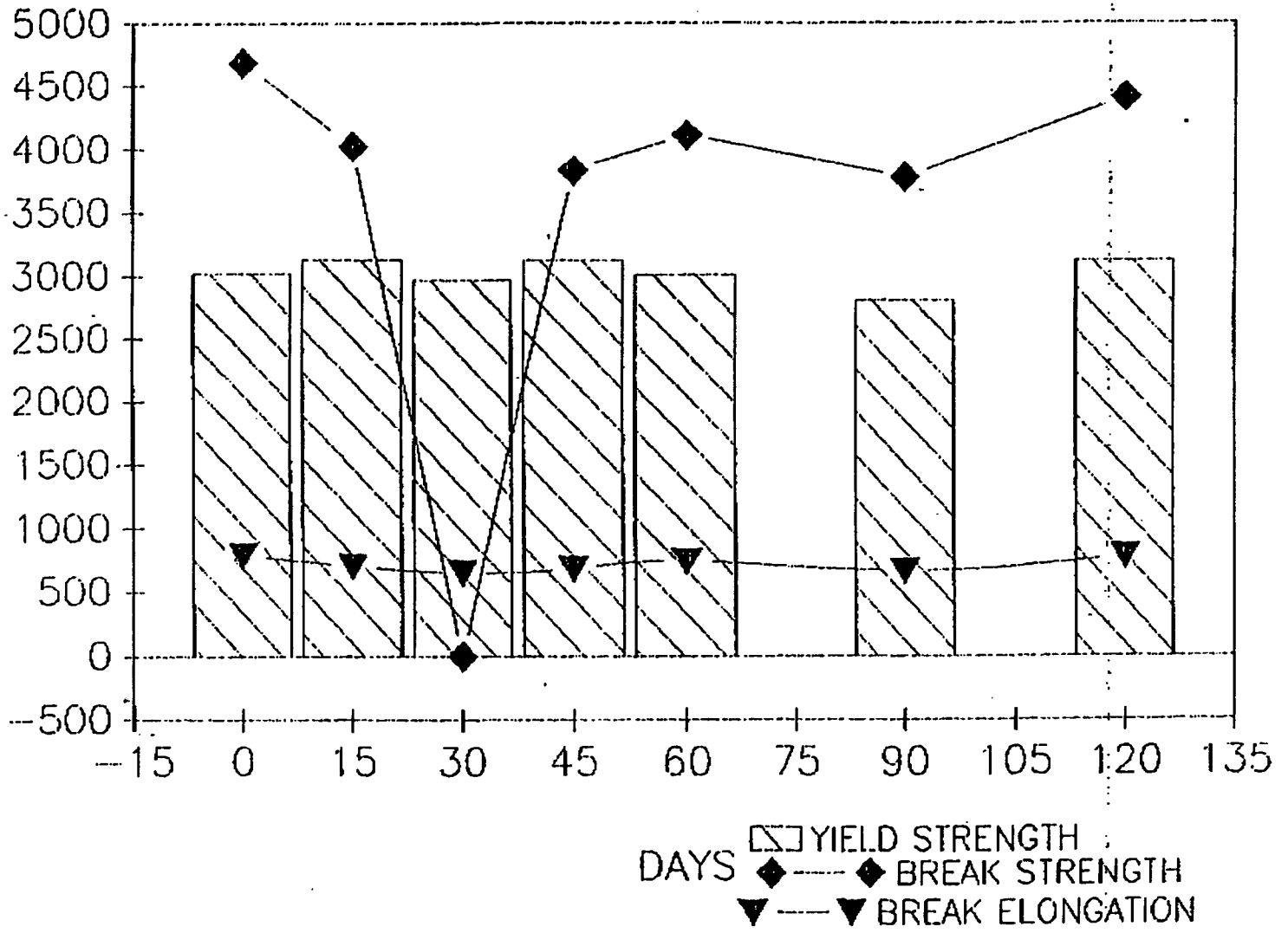
DISCUSSION:

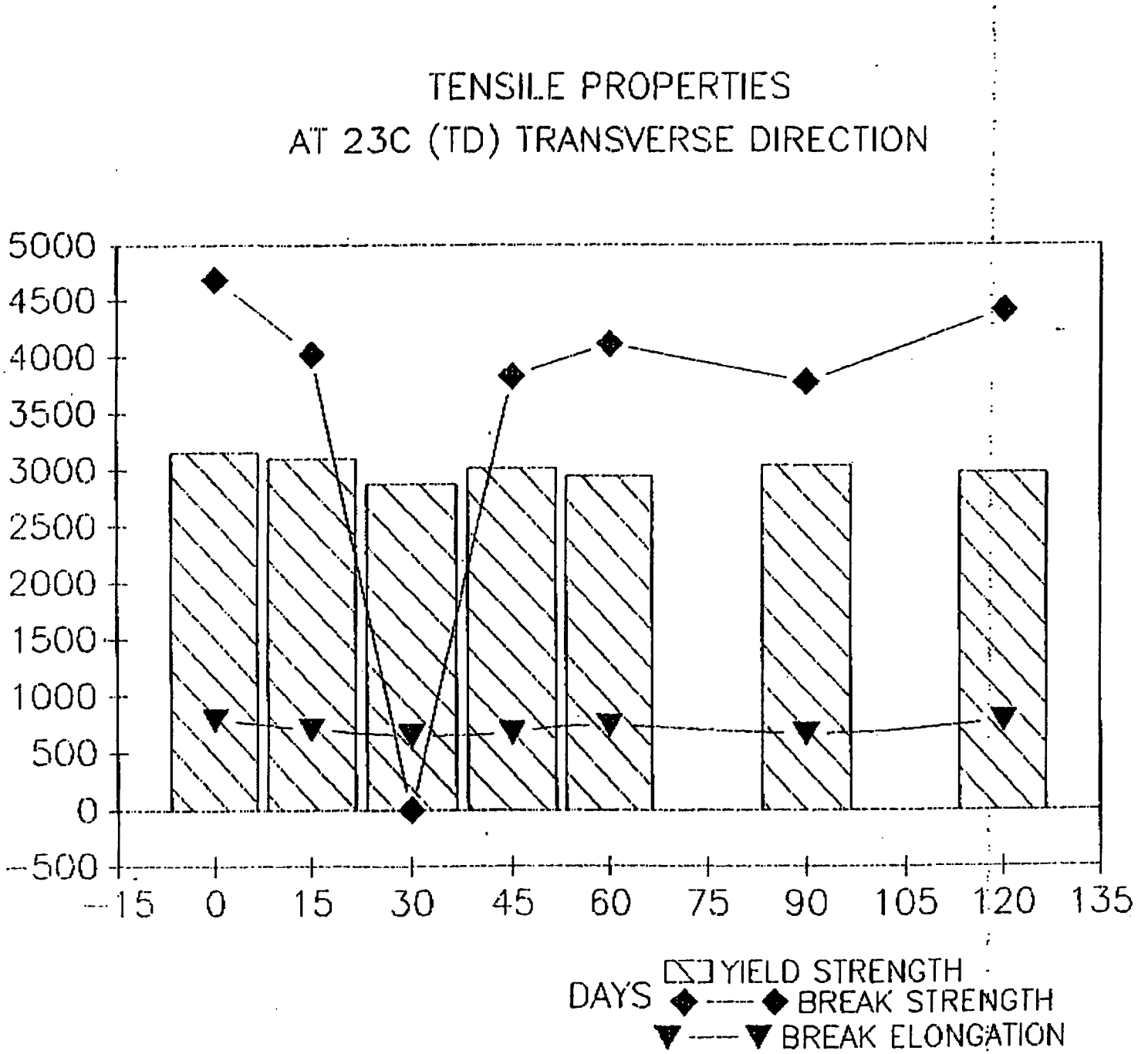
No significant changes after 120 days in either the destructive testing or the stress crack test.

Linda Ritchey
Lab Technician

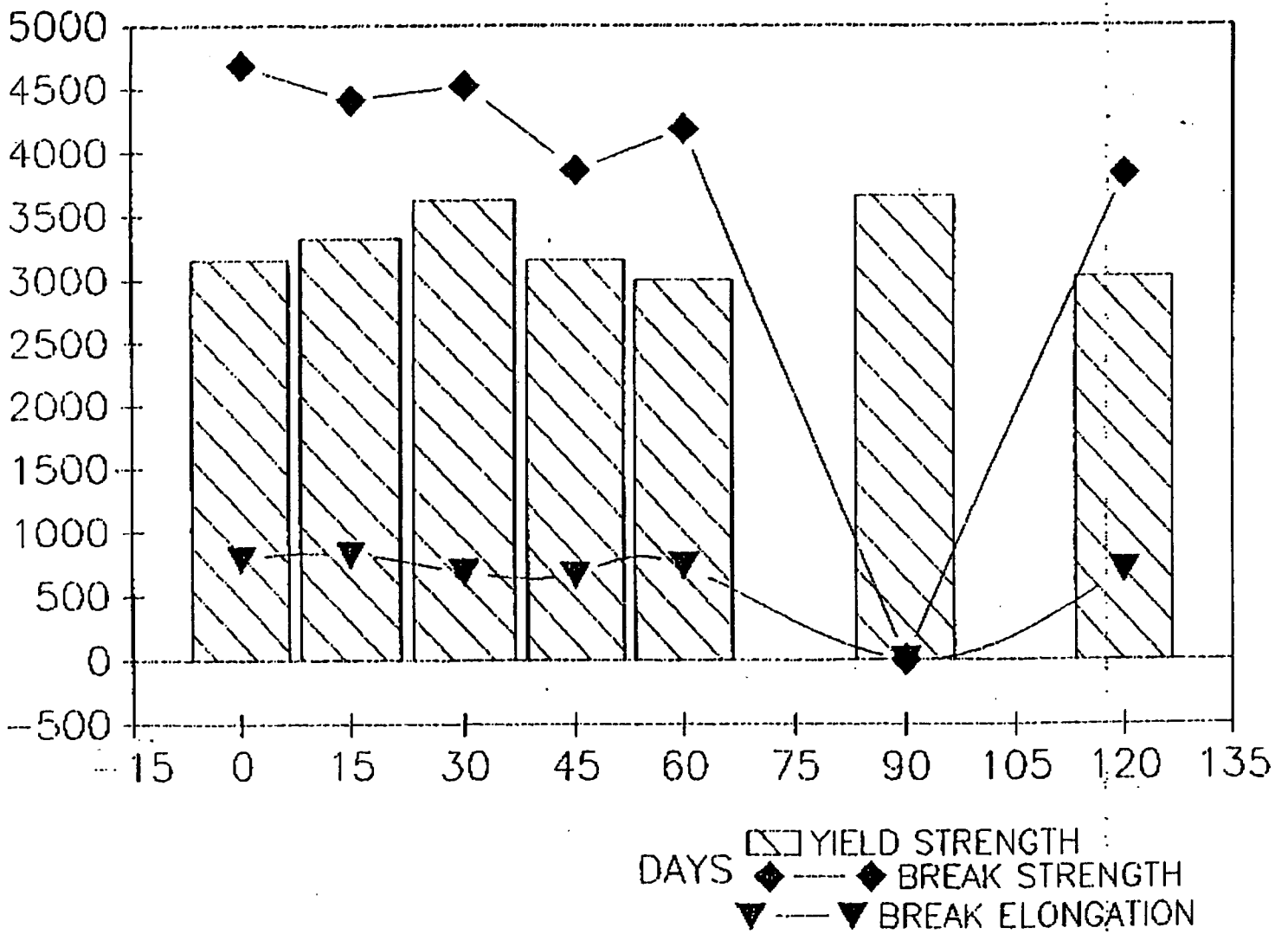
Mark Cadwallader
Director of Research
Technical Development

TENSILE PROPERTIES
AT 50C (MD) MACHINE DIRECTION

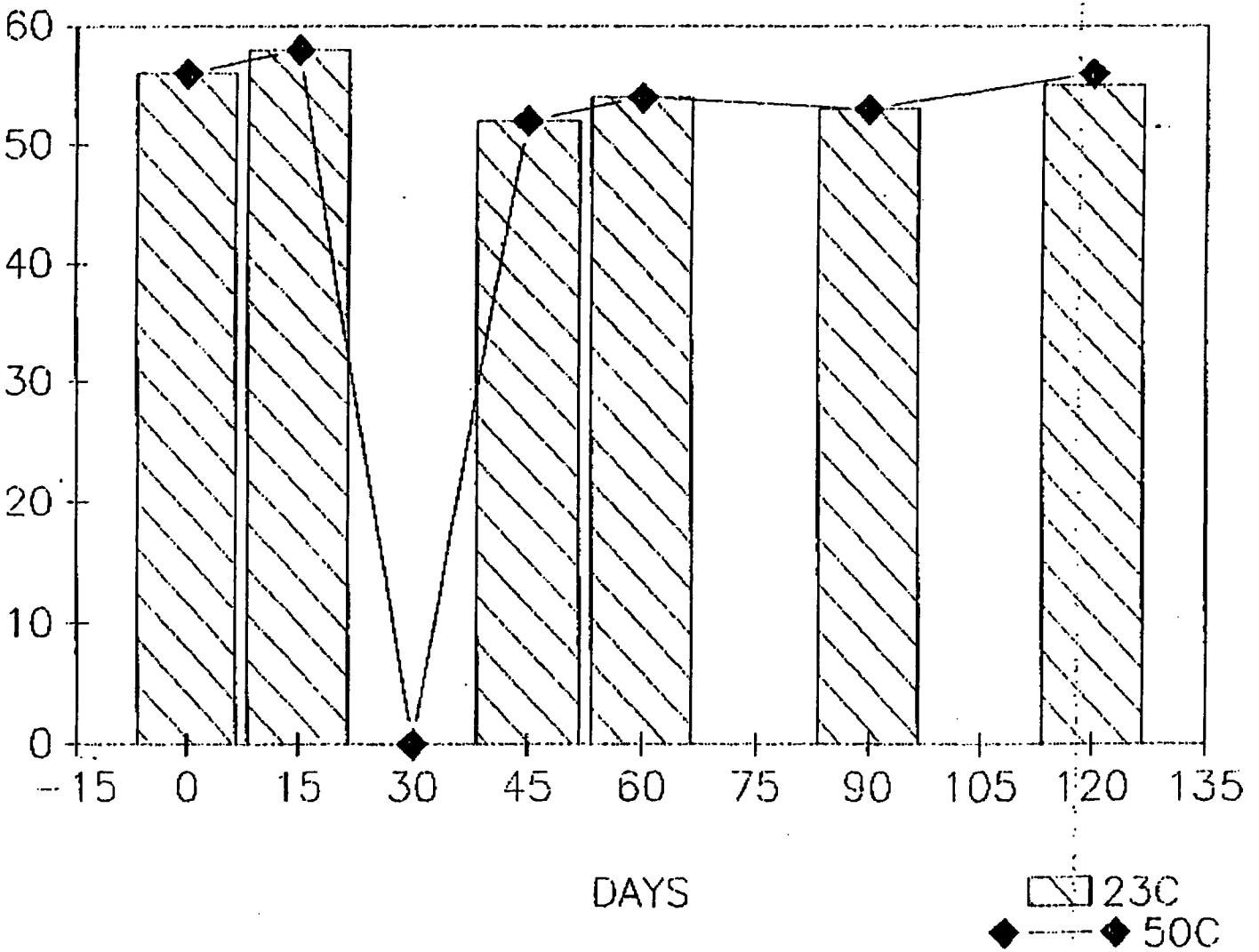


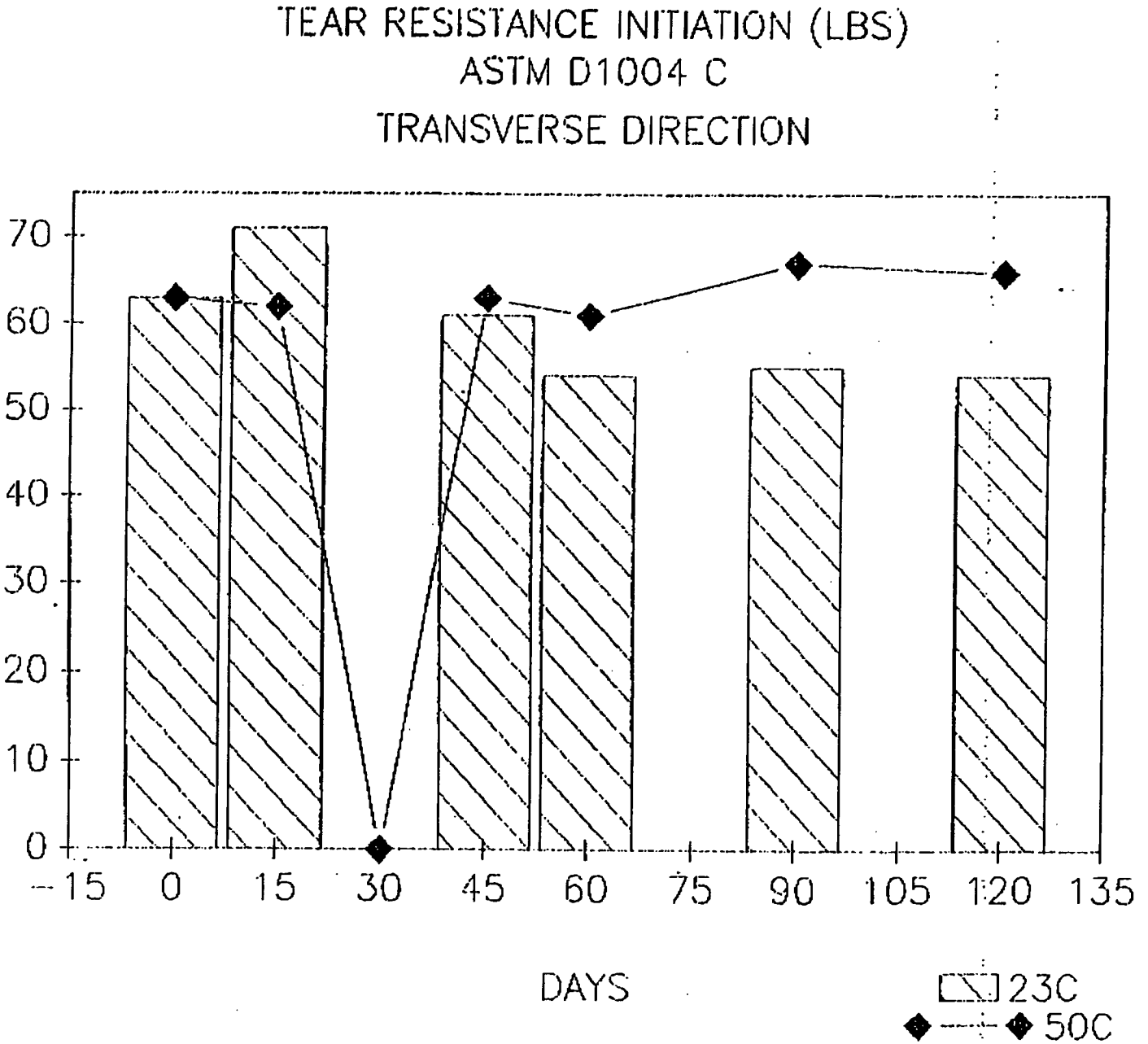

TENSILE PROPERTIES
AT 23C (TD) TRANSVERSE DIRECTION
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-15
0
15
30
45
60
75
90
105
120
135
DAYS
YIELD STRENGTH
BREAK STRENGTH
BREAK ELONGATION

TENSILE PROPERTIES
AT 50C (TD) TRANSVERSE DIRECTION

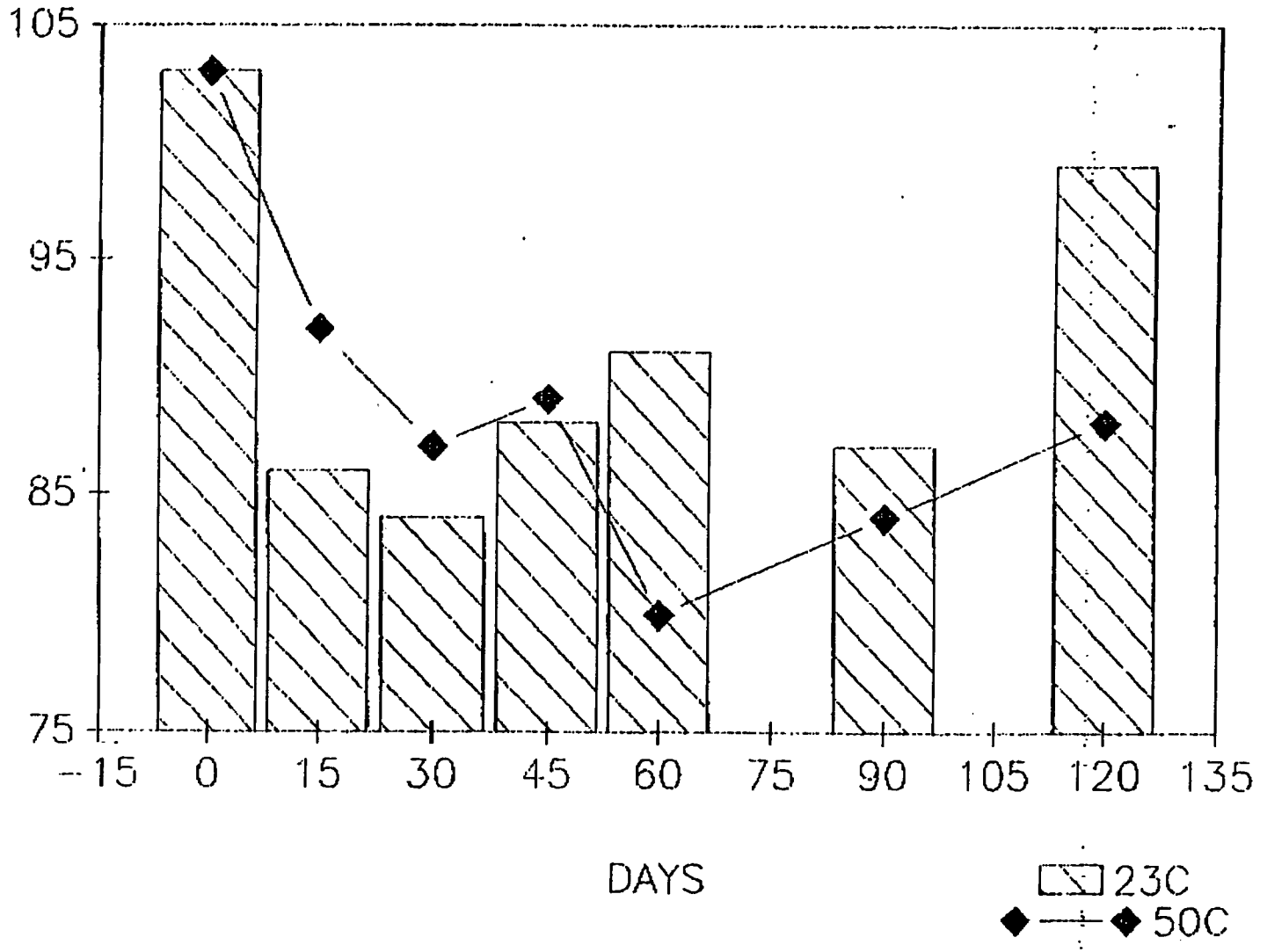


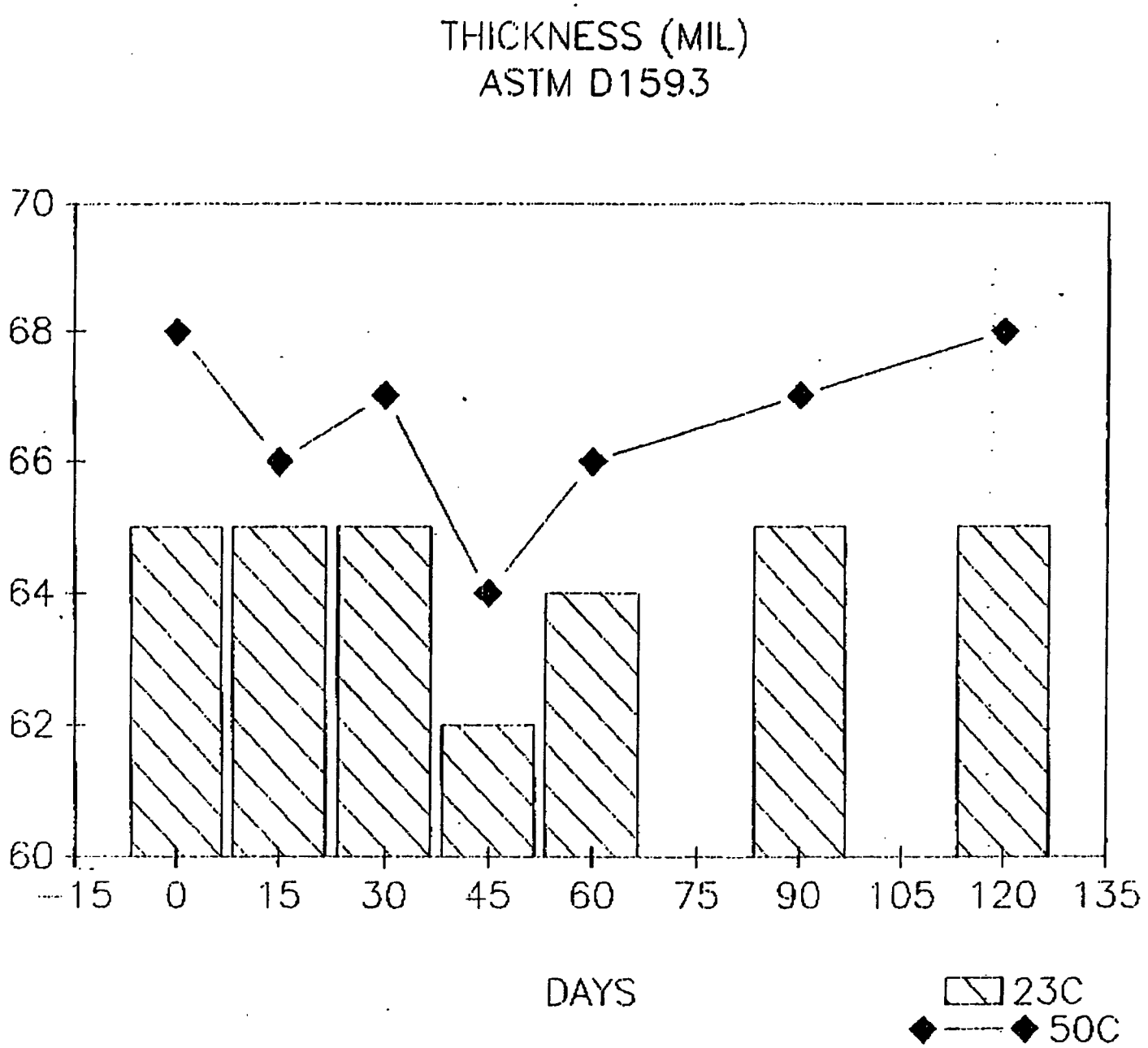
TEAR RESISTANCE INITIATION (LBS)
ASTM D1004 C
MACHINE DIRECTION



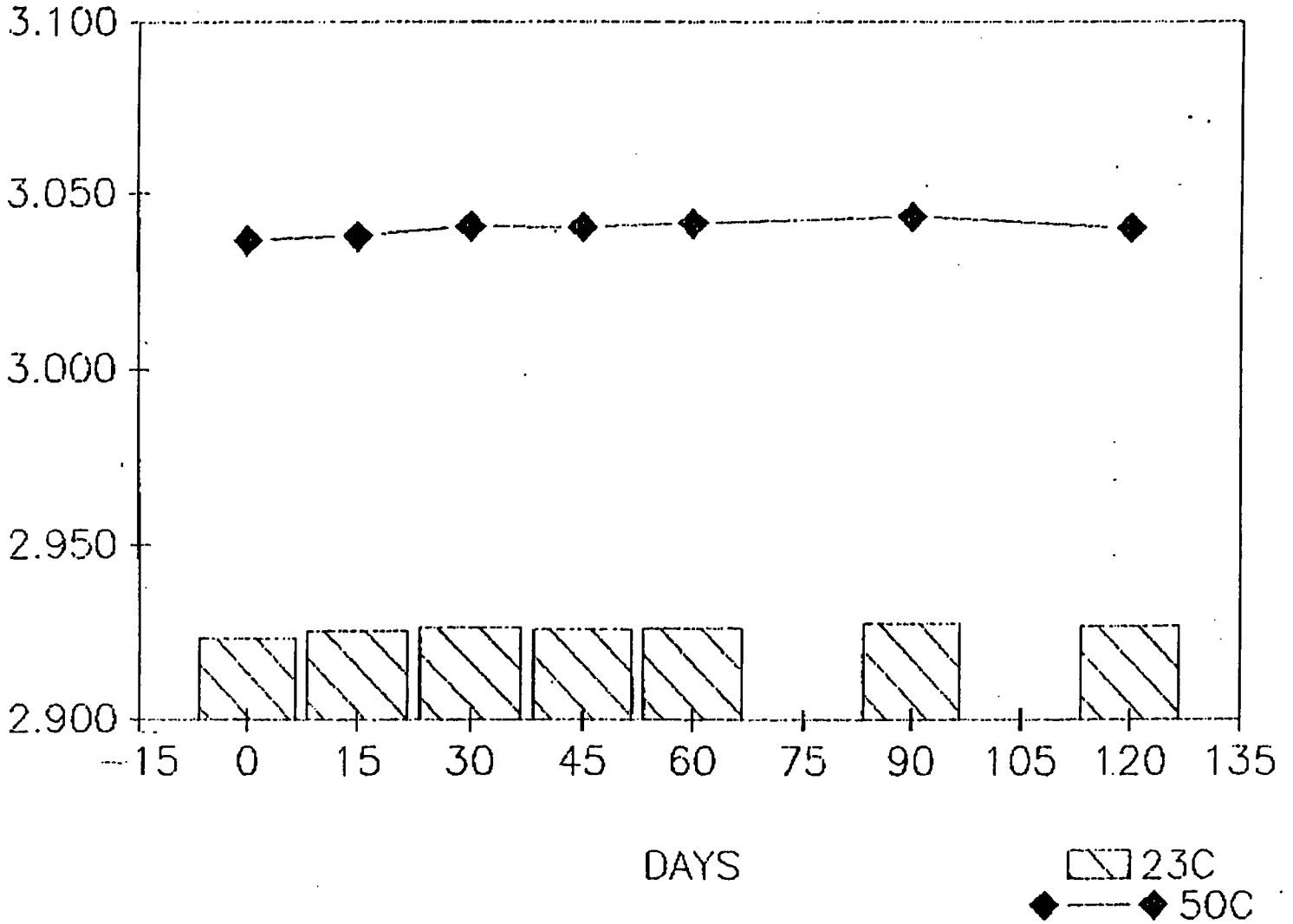

TEAR RESISTANCE INITIATION (LBS)
ASTM D1004 C
TRANSVERSE DIRECTION
70
60
50
40
30
20
10
0
-15
0
15
30
45
60
75
90
105
120
135
DAYS
23C
50C

PUNCTURE RESISTANCE (LBS)
FTMS 101B METHOD 2065



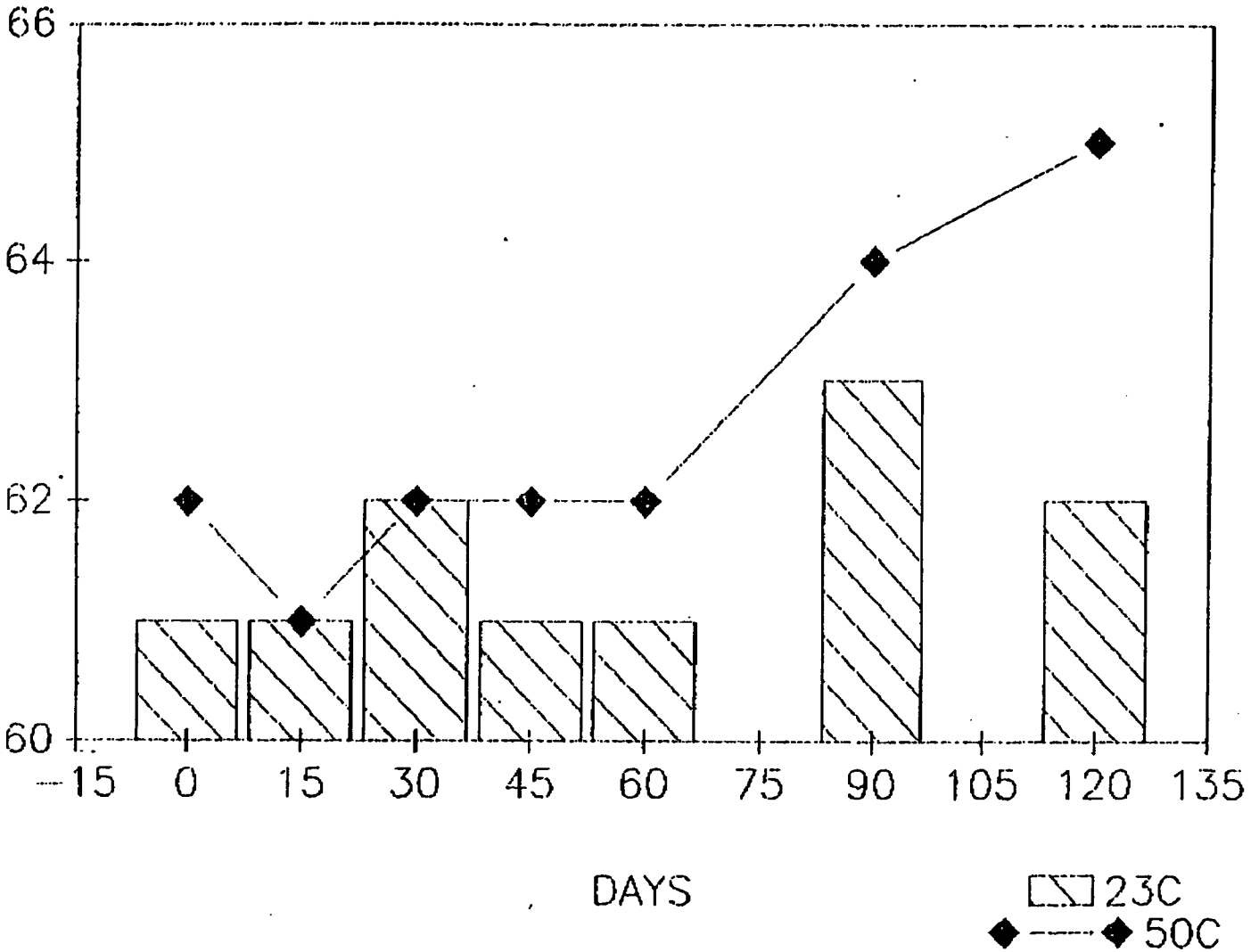

THICKNESS (MIL)
ASTM D1593
70
68
66
64
62
60
-15
0
15
30
45
60
75
90
105
120
135
DAYS
23C
50C

WEIGHT CHANGE



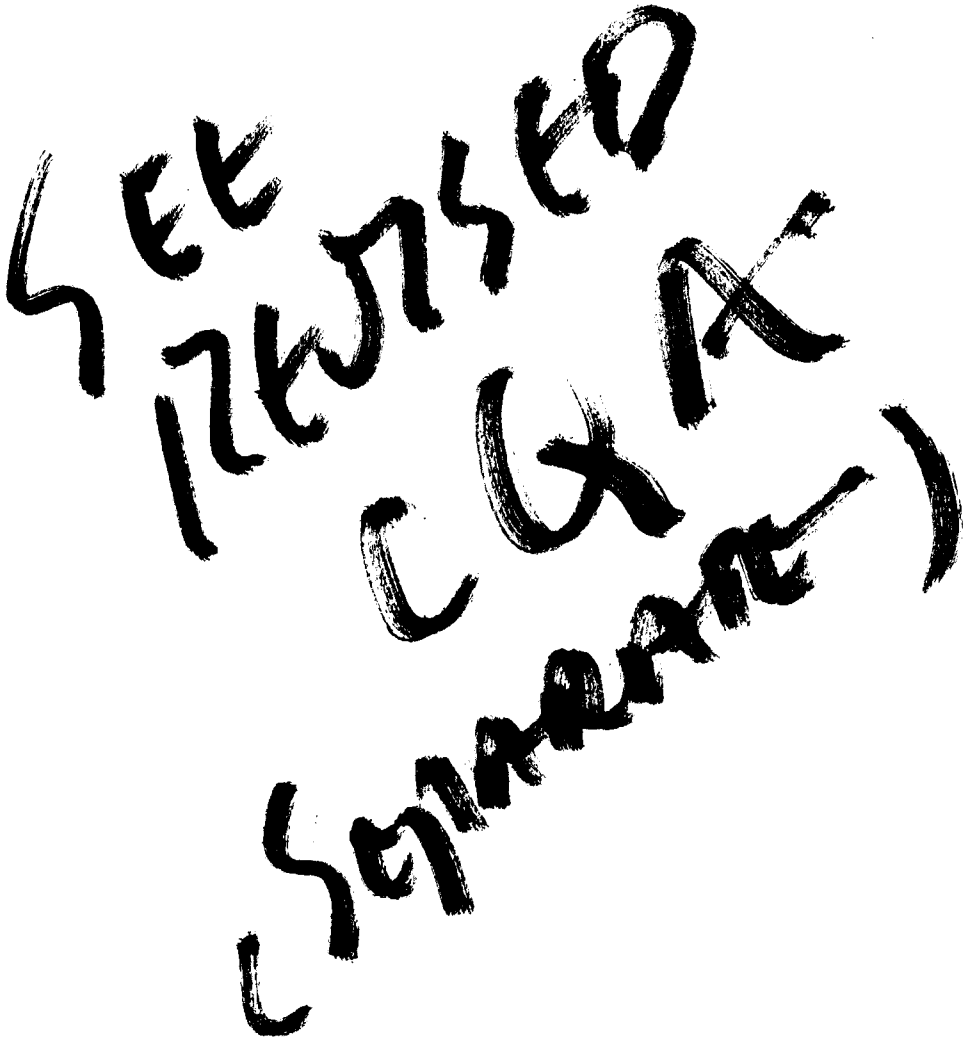
HARDNESS

ASTM D2240



APPENDIX A5.2

LINER QUALITY ASSURANCE PROGRAM



APPENDIX A5.2

LINER QUALITY ASSURANCE PROGRAM

APPENDIX A5.3

HELP MODEL

RESULTS

APPENDIX A5.3

HELP MODEL RESULTS

15

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PASCO
6/23/94

****
****

BARE GROUND

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00	INCHES
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.0831	VOL/VOL
WILTING POINT	=	0.0326	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0831	VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089	CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00	INCHES
POROSITY	=	0.4500	VOL/VOL
FIELD CAPACITY	=	0.1160	VOL/VOL
WILTING POINT	=	0.0487	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1160	VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.010000000708	CM/SEC

LAYER 3

LATERAL DRAINAGE LAYER

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.0620	VOL/VOL

WILTING POINT	=	0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0620 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.005799999926 CM/SEC
SLOPE	=	2.00 PERCENT
DRAINAGE LENGTH	=	50.0 FEET

LAYER 4

BARRIER SOIL LINER WITH FLEXIBLE MEMBRANE LINER

THICKNESS	=	12.06 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3509 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000154999900 CM/SEC
LINER LEAKAGE FRACTION	=	0.00010000

LAYER 5

LATERAL DRAINAGE LAYER

THICKNESS	=	0.23 INCHES
POROSITY	=	0.8500 VOL/VOL
FIELD CAPACITY	=	0.0250 VOL/VOL
WILTING POINT	=	0.0200 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0250 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	3.299999952316 CM/SEC
SLOPE	=	2.00 PERCENT
DRAINAGE LENGTH	=	50.0 FEET

LAYER 6

BARRIER SOIL LINER WITH FLEXIBLE MEMBRANE LINER

THICKNESS	=	6.06 INCHES
POROSITY	=	0.4224 VOL/VOL
FIELD CAPACITY	=	0.3495 VOL/VOL
WILTING POINT	=	0.2648 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4224 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000010000000 CM/SEC
LINER LEAKAGE FRACTION	=	0.00010000

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	80.26

TOTAL AREA OF COVER	=	300564. SQ FT
EVAPORATIVE ZONE DEPTH	=	10.00 INCHES
POTENTIAL RUNOFF FRACTION	=	0.000000
UPPER LIMIT VEG. STORAGE	=	4.5420 INCHES
INITIAL VEG. STORAGE	=	0.9626 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	22.7039 INCHES

SOIL WATER CONTENT INITIALIZED BY USER.

CLIMATOLOGICAL DATA

USER SPECIFIED RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND SOLAR RADIATION FOR TAMPA FLORIDA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	0
END OF GROWING SEASON (JULIAN DATE)	=	367

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
59.80	60.80	66.20	71.60	77.10	80.90
82.20	82.20	80.90	74.50	66.70	61.30

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.67	2.16	4.27	1.20	1.71	4.50
	8.12	7.15	5.48	2.17	0.69	3.52
STD. DEVIATIONS	1.00	0.60	4.41	1.41	1.50	3.39
	2.52	4.17	1.52	1.26	0.46	1.06
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						

TOTALS	1.468	1.501	2.292	1.079	1.570	3.146
	4.570	4.575	3.748	1.725	0.834	2.119
STD. DEVIATIONS	0.229	0.536	0.775	0.861	1.712	1.686
	0.890	1.280	0.409	0.937	0.661	0.778

LATERAL DRAINAGE FROM LAYER 3

TOTALS	0.7631	0.6073	0.6357	1.1299	0.8786	0.6296
	0.6648	1.1025	1.6441	1.7889	1.3448	1.0812
STD. DEVIATIONS	0.4502	0.3525	0.3609	1.3653	0.9419	0.5254
	0.4049	0.5750	0.9789	0.7979	0.3474	0.1947

PERCOLATION FROM LAYER 4

TOTALS	0.0208	0.0186	0.0203	0.0212	0.0210	0.0196
	0.0204	0.0224	0.0237	0.0250	0.0230	0.0225
STD. DEVIATIONS	0.0027	0.0022	0.0022	0.0050	0.0040	0.0027
	0.0023	0.0024	0.0033	0.0026	0.0013	0.0008

LATERAL DRAINAGE FROM LAYER 5

TOTALS	0.0199	0.0178	0.0194	0.0204	0.0201	0.0187
	0.0195	0.0215	0.0229	0.0241	0.0221	0.0217
STD. DEVIATIONS	0.0027	0.0022	0.0022	0.0050	0.0040	0.0027
	0.0023	0.0024	0.0033	0.0026	0.0013	0.0008

PERCOLATION FROM LAYER 6

TOTALS	0.0009	0.0008	0.0009	0.0009	0.0009	0.0009
	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	42.63	(4.707)	1067653.	100.00
RUNOFF	0.000	(0.000)	0.	0.00
EVAPOTRANSPIRATION	28.627	(2.204)	717023.	67.16
LATERAL DRAINAGE FROM LAYER 3	12.2705	(5.9354)	307339.	28.79
PERCOLATION FROM LAYER 4	0.2585	(0.0261)	6475.	0.61
LATERAL DRAINAGE FROM	0.2480	(0.0261)	6212.	0.58

LAYER 5

PERCOLATION FROM LAYER 6	0.0105	(0.0001)	263.	0.02
CHANGE IN WATER STORAGE	1.470	(3.196)	36816.	3.45

****

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	9.00	225423.0
RUNOFF	0.000	0.0
LATERAL DRAINAGE FROM LAYER 3	0.1288	3225.6
PERCOLATION FROM LAYER 4	0.0010	25.3
HEAD ON LAYER 4	11.0	
LATERAL DRAINAGE FROM LAYER 5	0.0010	24.5
PERCOLATION FROM LAYER 6	0.0000	0.7
HEAD ON LAYER 6	0.0	
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.3176
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0371

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FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	0.79	0.1323
2	19.42	0.1618
3	3.04	0.1268
4	4.23	0.3509

5	0.01	0.0254
6	2.56	0.4224
SNOW WATER	0.00	

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APPENDIX A5.4

CALULATIONS

APPENDIX A5.4

CALCULATIONS

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

JOB NO. 464-8356.01 SHEET 1 OF
JOB NAME Remedial Redesign
BY REM DATE 9/5/94
CHECKED BY RDG DATE 9/6/94

The double liner system includes a geonet sandwiched between two liners. This geonet must have a hydraulic conductivity of 10 cm/sec

A. The loading on the liner is 15,000 pounds/square foot from geotechnical report

B. USING Fluid Systems brand geonet + PN 3000 and catalogue data check flow. Data needed:

- flow area height - .2 inches
- hydraulic gradient
- loading - 15 KSF

slope 2%

+ from graph transmissivity (hydraulic conductivity x thickness) = 3×10^{-3} m²/sec

FDEP - 10 cm/sec x .2 in x $\frac{2.54 \text{ cm}}{1 \text{ in}}$ = 5.08 cm²/sec = 5×10^{-4} m²/sec

Therefore one geonet is OK

FORM 17

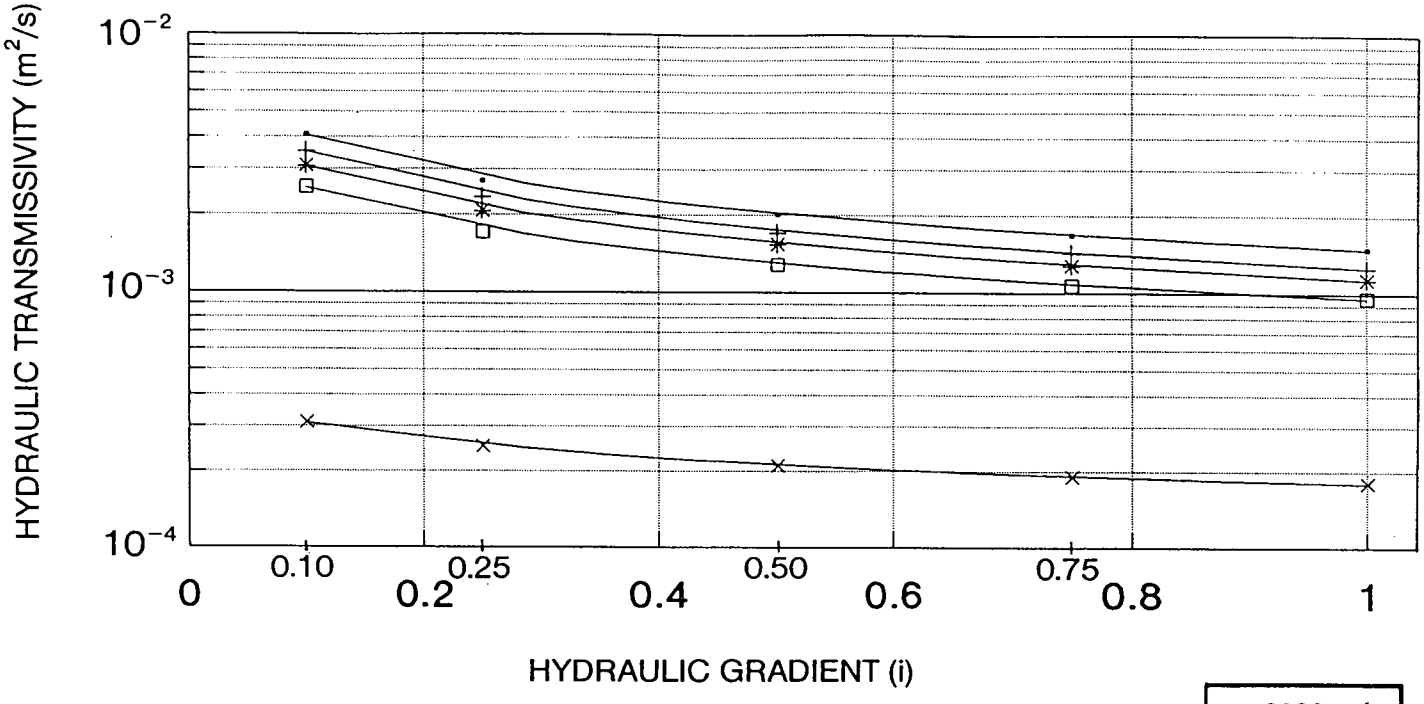
FLUID SYSTEMS

POLY-NET® TRANSMISSIVITY CHARTS

800-346-9107

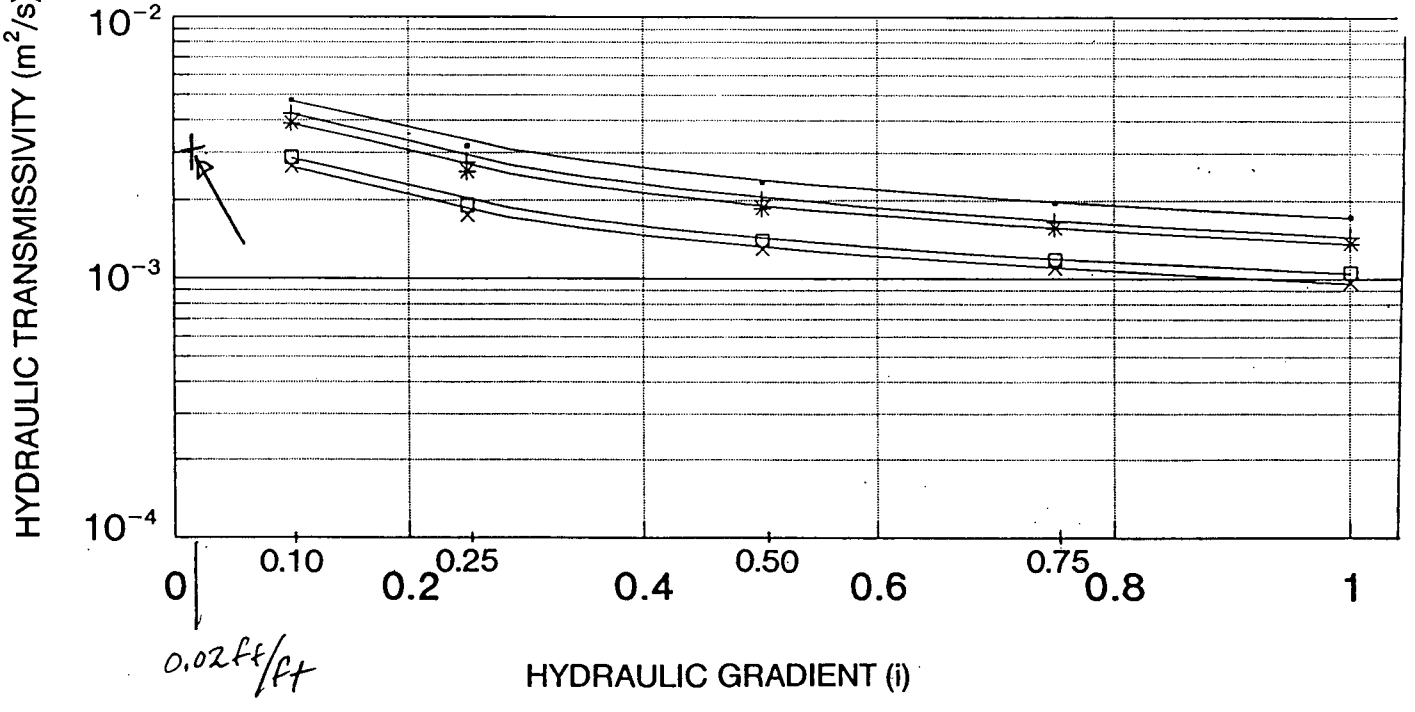
POLY-NET PN2000

HDPE/PN2000/HDPE



POLY-NET PN3000

HDPE/PN3000/HDPE



LAW COMPANIES

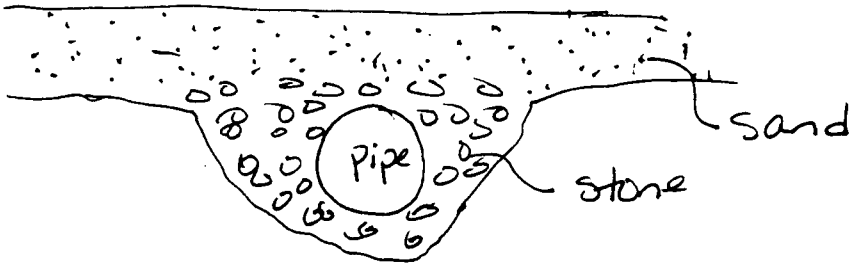
GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

JOB NO. _____ SHEET 1 OF 2

JOB NAME Pasco County Landfill

BY LAM DATE 7/7/94

CHECKED BY CJR DATE 7/7/94



stone ↙ sand ↙

D_{15} (filter) $\leq 5 D_{85}$ (soil) ✓

D_o (pipe) $\leq$ D_{85} (soil) ✓

↖ stone

D_{85} of silica sand (FDOT Silica Sand section 902-2)

$\simeq$ 0.9mm to 2.36 mm

$5 D_{85}$ = 4.5mm to 11.8 mm

D_{15} stone (No 89) — FDOT

$\simeq$ 1.2 mm to 4 mm

D_{15} (filter) $\leq$ $5 D_{85}$ (soil) YES

1.2 mm to 4mm $\leq$ 4.5mm to 11.8 mm

D_{85} stone (No 89) — FDOT ✓

$\simeq$ 7mm to 9mm

$D_o \leq D_{85}$ (soil)

$\therefore$ pipe openings must be less than 7mm ✓

LAW COMPANIES

GEOTECHNICAL, ENVIRONMENTAL
& CONSTRUCTION MATERIALS
CONSULTANTS

JOB NO. _____ SHEET 2 OF 2

JOB NAME Pasco County Landfill

BY LAM DATE 7/7/94

CHECKED BY CJL DATE 7/7/94

7mm = 0.7cm

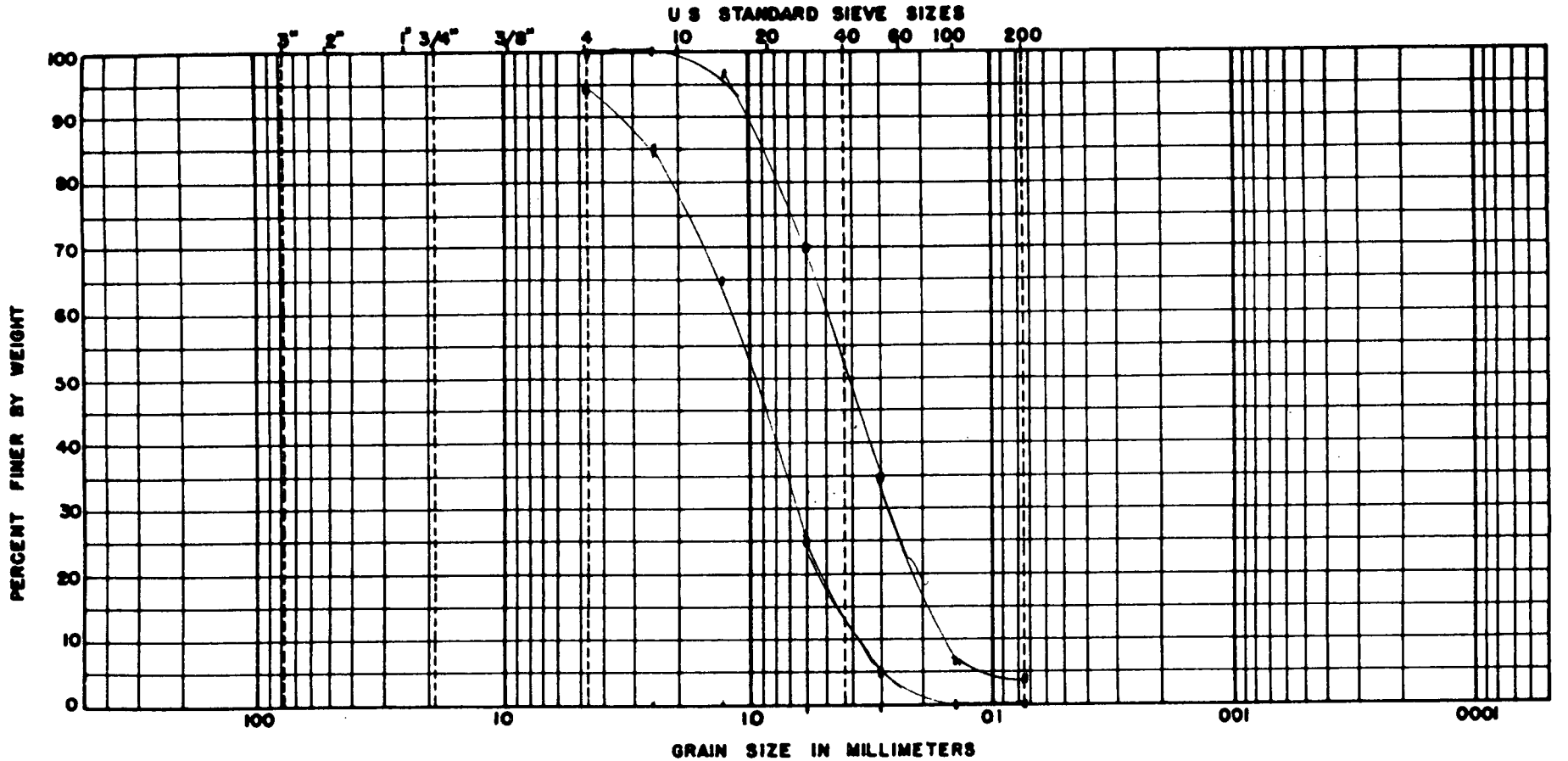
1 inch = 2.54cm

∴ 7mm = 0.276 inches

pipe openings must be
less than 0.276 inches

use 0.25 inches or less ✓

Silica Sa 1



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

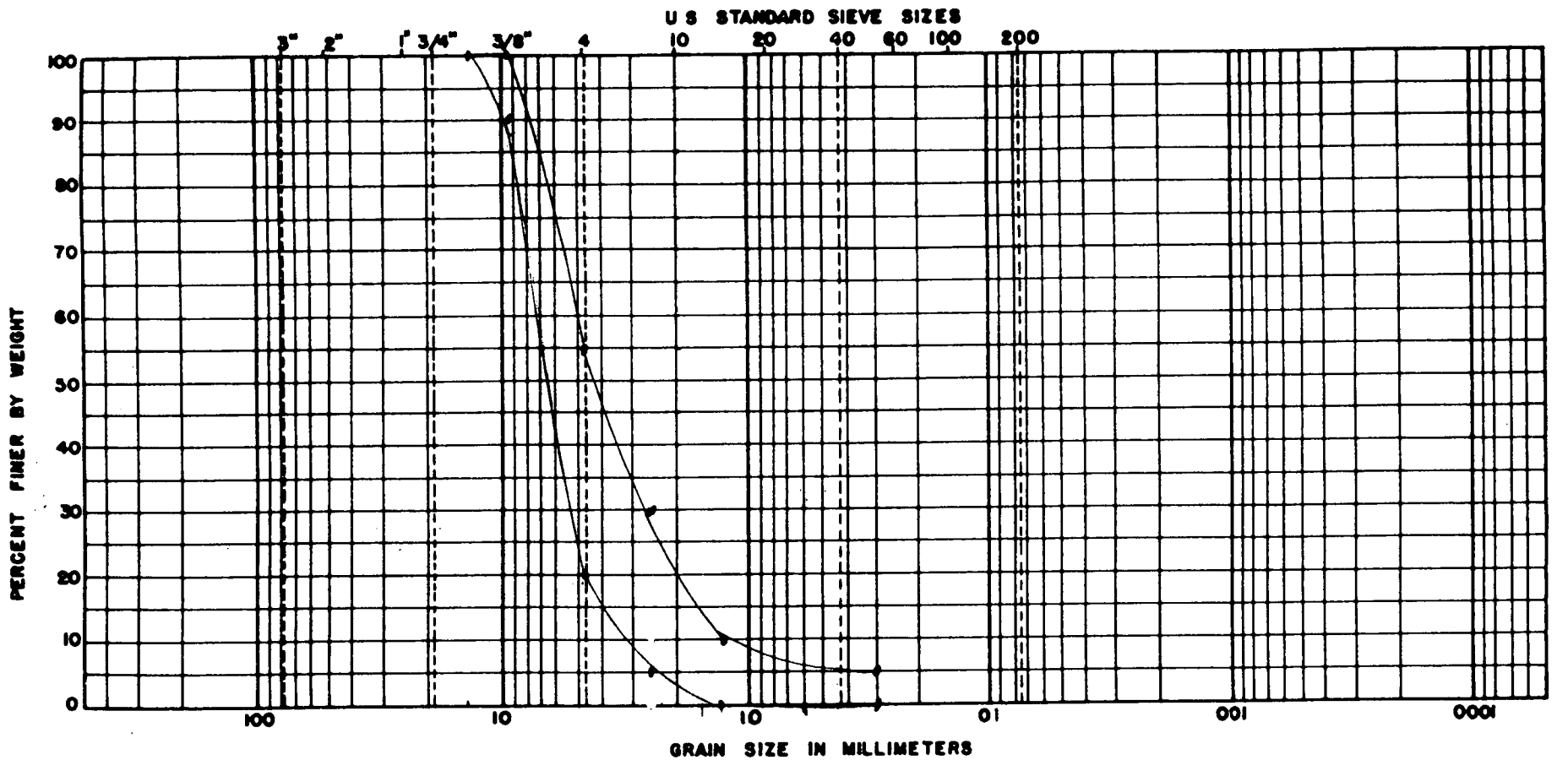
BORING NO	ELEV OR DEPTH	NAT WC	L L	P L	P I	DESCRIPTION OR CLASSIFICATION

GRAIN SIZE DISTRIBUTION

JOB NO. _____

LAW ENGINEERING

No 89 stone



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION

GRAIN SIZE DISTRIBUTION

JOB NO. _____

LAW ENGINEERING

egates to be used in asphaltic concrete may cont
percent free shell. Free shell is defined as th
the coarse aggregate retained on the No. 4 si
of loose, whole, or broken shell, or the exte
mains of other marine life, having a ratio of
length of the particle to the shell wall thickn
ive to one. Coral, molds, or casts of other shells,
m and oyster shell indigenous to the formation
sidered as free shell.

requirement for maximum percent of mater
No. 200 sieve for a lot or stockpile of any coa
component shall be as follows:

any samples obtained by the Department
purposes or assurances purposes at the sourc
the average percent of material passing the N
f two composite samples shall not exceed
individual test shall exceed 2.0 percent.
assurance samples or acceptance samples
by the Department. Obtained at the point of
percent of material passing the No. 200 sieve
ite samples shall not exceed 3.75 percent.
est shall exceed 4.0 percent.

limitation applies only to coarse aggregates
appears as an impurity. It is not applicable
which are predominantly chert.

hysical Properties:

aggregates shall meet the following physic
uirements, except as noted herein:

eles Abrasion (FM 1-T 096).....Maximu
nt

ss .um Sulphate) (FM 1-T 104).....
ss 12 percent*

longated pieces..... Maximum 10 percent

ce approval—Aggregates exceeding soundn
ns will be rejected unless performance histo
ie material will not be detrimental for Portla
crete or other intended usages.

or elongated particle is defined as one having
the maximum and the minimum dimensions
ing prism exceeding five to one.

adation:

aggregates shall conform to the gradati
of Table 1, when the stone size is specifie
le 1 is waived for those aggregates intented fo
uminous mixtures, provided the material
ieves specified in the Standard Operatin
id meets uniformity and bituminous desi

TABLE 1 Standard Sizes of Coarse Aggregate
Amounts Finer than Each Laboratory Sieve (Square Openings), weight percent

Size Number	Nominal Size, Square Openings	4-in. (100-mm)	3½-in. (90-mm)	3-in. (75-mm)	2½-in. (63-mm)	2-in. (50-mm)	1½-in (37.5-mm)	1-in. (25.0-mm)	¾-in. (19.0-mm)	½-in. (12.5-mm)	⅜-in. (9.5-mm)	No. 4 (4.75-mm)	No. 8 (2.36-mm)	No. 16 (1.18-mm)	No. 50 (0.300-mm)
1	3½ to 1½-in. (90 to 37.5-mm)	100	90 to 100	.....	25 to 60	.....	0 to 15	.....	0 to 5	.....	.....	.....	.....	.....	.....
2	2½ to 1½-in. (63 to 37.5-mm)	.....	.....	100	90 to 100	35 to 70	0 to 15	.....	0 to 5	.....	.....	.....	.....	.....	.....
24	2½ to ¾-in. (63 to 19.0-mm)	.....	.....	100	90 to 100	.....	25 to 60	.....	0 to 10	0 to 5	.....	.....	.....	.....	.....
3	2 to 1-in. (50 to 25.0-mm)	.....	.....	.....	100	90 to 100	35 to 70	0 to 15	.....	0 to 5	.....	.....	.....	.....	.....
357	2-in. to No. 4 (50 to 4.75-mm)	.....	.....	.....	100	95 to 100	.....	35 to 70	.....	10 to 30	.....	0 to 5	.....	.....	.....
4	1½ to ¾-in. (37.5 to 19.0-mm)	.....	.....	.....	.....	100	90 to 100	20 to 55	0 to 15	.....	0 to 5	.....	.....	.....	.....
467	1½ to No. 4 (37.5 to 4.75-mm)	.....	.....	.....	.....	100	95 to 100	.....	35 to 70	.....	10 to 30	0 to 5	.....	.....	.....
5	1 to ½-in. (25.0 to 12.5-mm)	.....	.....	.....	.....	.....	100	90 to 100	20 to 55	0 to 10	0 to 5	.....	.....	.....	.....
56	1 to ⅜-in. (25.0 to 9.5-mm)	.....	.....	.....	.....	.....	100	90 to 100	40 to 85	10 to 40	0 to 15	0 to 5	.....	.....	.....
57	1-in. to No. 4 (25.0 to 4.75-mm)	.....	.....	.....	.....	.....	100	95 to 100	.....	25 to 60	.....	0 to 10	0 to 5	.....	.....
6	¾ to ⅜-in. (19.0 to 9.5-mm)	.....	.....	.....	.....	.....	.....	100	90 to 100	20 to 55	0 to 15	0 to 5	.....	.....	.....
67	¾-in to No. 4 (19.0 to 4.75-mm)	.....	.....	.....	.....	.....	.....	100	90 to 100	.....	20 to 55	0 to 10	0 to 5	.....	.....
68	¾-in. to No. 8 (19.0 to 2.36-mm)	.....	.....	.....	.....	.....	.....	100	90 to 100	.....	30 to 65	5 to 25	0 to 10	0 to 5	.....
7	½ in. to No. 4 (12.5 to 4.75-mm)	.....	.....	.....	.....	.....	.....	.....	100	90 to 100	40 to 70	0 to 15	0 to 5	.....	.....
78	½-in. to No. 8 (12.5 to 2.36-mm)	.....	.....	.....	.....	.....	.....	.....	100	90 to 100	40 to 75	5 to 25	0 to 10	0 to 5	.....
8	⅜-in. to No. 8 (9.5 to 2.36-mm)	.....	.....	.....	.....	.....	.....	.....	.....	100	85 to 100	10 to 30	0 to 10	0 to 5	.....
89	⅜-in. to No. 16 (9.5 to 1.18-mm)	.....	.....	.....	.....	.....	.....	.....	.....	100	90 to 100	20 to 55	5 to 30	0 to 10	0 to 5
9	No. 4 to No. 16 (4.75 to 1.18-mm)	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	85 to 100	10 to 40	0 to 10	0 to 5
10	No. 4 to 0 (4.75-mm)	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	85 to 100	.....	.....	.....

NOTE: The above gradations represent the extreme limits for the various sizes indicated, which will be used in determining the suitability for use of coarse aggregate from all sources of supply. For any grade from any one source, the gradation shall be held reasonably uniform and not subject to the extreme percentages of gradation specified above.

given opening, or it establishes the largest opening that can be used with a given soil. Frequently, a soil is employed as a filter. This means that the effective diameter of its voids must be less than D_{85} of the soil being filtered. Since the effective pore diameter is about $\frac{1}{5}D_{15}$, then

$$D_0 \leq D_{85(\text{soil})} \tag{3:19a}$$

$$D_{15(\text{filter})} \leq 5D_{85(\text{soil})} \tag{3:19b}$$

If the filter is to provide free drainage, it must be much more pervious than the soil. Since the permeability coefficient varies as the square of the grain size, then a ratio of permeabilities of over 25 to 1 can be secured by

$$D_{15(\text{filter})} \geq 5D_{15(\text{soil})} \tag{3:19c}$$

These criteria (Fig. 3.19) are the basis for filter design.[3:11] In general, the filter soil should be well within these limits, and its grain size curve should be smooth and parallel to or flatter than the soil. If the soil being filtered is very fine grained, more than one filter layer will be required. The final filter layer is designed to fit between the openings in the conduit and the next finer filter. For many silty and clayey soils a well-graded concrete sand makes a satisfactory filter. A coarser pea-gravel second filter—usually described as ASTM No. 78 crushed stone— is then needed for the first.

If the soil being filtered is gap-graded, its grain size curve is redrawn, considering only the portion of the soil finer than the gap to be the total soil being filtered, and disregarding the part of the soil coarser than the gap. The filter is designed to fit the redrawn curve.

There have been many attempts to devise a "universal filter" that is small enough to filter the finest soil and yet having a D_{85} large enough so that it will not pass through the 80-mm or $\frac{5}{16}$-in. perforations of commercial drainpipe. However, such filter materials have such a wide range of sizes (high C_u) that the particles segregate during handling and construction. Therefore, they should not be used unless care is taken to maintain their gradation.

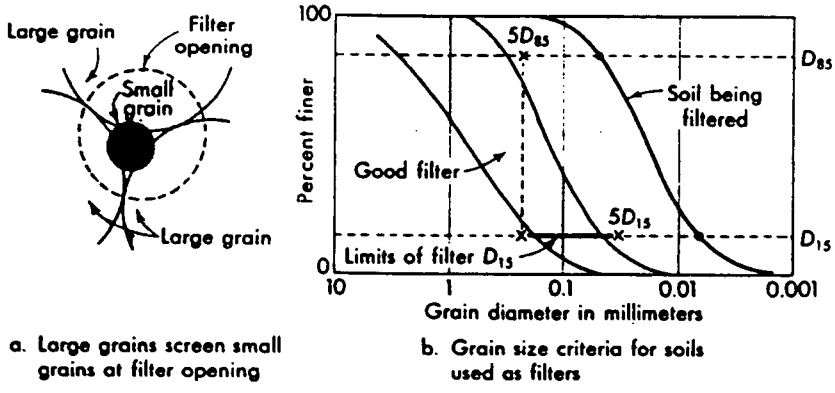
The thickness of a sand or gravel filter layer is controlled by the ability of the layer to undergo distortion without rupture and by construction ease. Around drainpipes, filter layers from 0.1 to 0.2 m (4 to 8 in.) are sufficient. In dams horizontal layers should be 0.2 to 1 m (1 to 3 ft) thick and trench or chimney filters 2 to 3 m (6 to 10 ft) wide.

Fabric filters of woven metal, woven plastic, and nonwoven fiber sheets are easy to install in restricted spaces. Their cost is offset by saving labor. Reliable data on their filtering performance must be obtained from tests utilizing the same soils and gradients anticipated in the installation. Under gradients of up to 10, the nonwoven filters appear to have an effective opening of about 0.25 mm. In woven fabric, the openings are somewhat larger; they can be measured with a microscope-comparator.

free advice of the piling salesman and against the warning of his engineer. The dam failed by shear in the downstream face that was already weakened by the increased neutral stress. The cutoff should be placed where the increased pore pressure is not harmful, at the center of the structure or upstream from the center and under the heaviest part of the structure, if possible. Incomplete cutoffs can increase seepage erosion by concentrating gradients.

Excessive water pressure can be controlled by drainage that short-circuits the flow and bleeds off the excess neutral stress at a point where it can do no harm. The *trench drain*, *blanket drain*, and *toe drain* (Fig. 3.18c) are used separately or in combination in earth dams to reduce neutral stresses in the downstream part of the embankment. Relief holes (Fig. 3.18d) reduce uplift on masonry dams. Relief wells (Fig. 3.18e) are used to reduce pressures in confined seams or pockets. Drainage has the disadvantage of shortening the seepage path and increasing the flow, but this can be corrected as previously described. It is essential that the drainage system be properly designed to avoid seepage erosion, as will be described in the section on filters.

FILTER DESIGN / A *filter* or *protective filter* is *any* porous material whose openings are small enough to prevent movement of the soil into a drain and which is sufficiently pervious to offer little resistance to seepage. Extensive experiments have shown that it is not necessary for a filter to screen out all the particles in the soil. Instead the filter openings need restrain only the coarsest 15%, or the D_{85}, of the soil. These coarser particles, D_{85} and larger, will collect over the filter opening as shown in Fig. 3.19a. Their voids will create smaller openings to trap even smaller particles of soil. Therefore, the diameter of the openings in the filter must be less than D_{85} of the soil. If the filter is a metal screen, filter fabric or holes in a perforated pipe, this limit fixes the finest soil that can be filtered by any



a. Large grains screen small grains at filter opening

b. Grain size criteria for soils used as filters

Figure 3.19 Protective filters.

Control of Mineral Aggregate Sources (Silica Sand and Screenings), except as noted herein.

902-1.2 Deleterious Substances:

All fine aggregate shall be reasonably free of lumps of clay, soft or flaky particles, salt, alkali, organic matter, loam or other extraneous substances. The weight of deleterious substances shall not exceed the following percentages:

Shale	1.0
Coal and lignite	1.0
Cinders and clinkers	0.5
Clay Lumps	1.0

902-2 Silica Sand. 902-2.1 Composition:

Silica sand shall be composed only of naturally occurring hard, strong, durable, uncoated grains of quartz, reasonably graded from coarse to fine, meeting the following requirements, in percent total weight.

Sieve	Percent Retained	Percent Passing
No. 4	0 to 5	95 - 100
No. 8	0 to 15	85 - 100
No. 16	3 to 35	65 - 97
No. 30	30 to 75	25 - 70
No. 50	65 to 95	5 - 35
No. 100	93 to 100	0 - 7
No. 200	Minimum 96	Maximum 4

Silica sand from any one source, having a variation in Fineness Modulus greater than 0.20 either way from the Fineness Modulus of target gradations established by the producer, may be rejected.

902-2.2 Organic Impurities:

Silica sand shall be subject to the colorimetric test for organic impurities. If the color produced is darker than the standard solution, the aggregate shall be rejected unless it can be shown by appropriate tests that the impurities causing the color are not of a type that would be detrimental to Portland Cement Concrete. Such tests shall be in accordance with Florida Methods FM 1-T-21 and T-71. When tested for the effect of organic impurities on strength of mortar, the strength ratio at 7 and 28 days, calculated in accordance with Section of FM-1-T-71, shall not be less than 95 percent.

902-3 Sands for Miscellaneous Uses.

902-3.1 Anchor Bolts and Pipe Joints:

Sand for setting anchor bolts, pipe joints or other similar uses shall meet the quality requirements of 902-2 except the gradation requirements are waived.

NSC

POLYNET PN-3000

PRODUCT DESCRIPTION

PN-3000 is a profiled geonet manufactured by extruding two sets of polyethylene strands to form a diamond shape. The resulting net provides superior planar water flow, is inert to biological and naturally encountered chemicals, alkalies, and acids and is resistant to UV light exposure. Polynet PN-3000 conforms to the property values listed below.

PROPERTY	METHOD	UNITS	QUALIFIER	VALUE
Roll Length	-	ft	Normal	300
Roll Width	-	ft	Normal	7.54
Thickness	ASTM D1777	inches	Range	0.220 ± 0.022
Area per Roll	-	ft^2	Normal	2262
Weight per Roll	-	lbs	Normal	407
Weight per Square Foot	ASTM D3776 (option C)	lbs/ft^2	Range	0.180 ± 0.018
Carbon Black Content	ASTM D1603	percent	Range	2.5 ± 0.5
Polymer Density	ASTM D1505	g/cm^3	Range	0.937 ± 0.002
Melt Flow Index	ASTM D1238 (condition E)	g/10 min.	Maximum	1.0
Tensile Strength (Machine Direction)	ASTM D1682 (modified)	ppi	Range	50 ± 10
Transmissivity[1] (gradient = 1.0 at 15,000 psf)	ASTM D4716	M^2/sec	Minimum	1×10^{-3}

1 Measured between two steel plates one hour after application of the confining pressure. Values may vary based on transmissivity specimen dimensions and specific laboratory.

9/27/88

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JOB NO. 464-3565.01 SHEET 1 OF

JOB NAME Resource Recovery Class I

BY REM DATE 7/6/94

CHECKED BY RB DATE 7/7/94

Pipe Strength / Loading

NON-pressure

Pipes - Collection & header - Burial elevation 125'
- 47
78'

- Sides Slope Riser 30'

pressure

- Force main 4" winde & 5" containment
may use 6" if spacers are
required

Preliminary design for permit based on Driscopipe Eng Manual - a copy of some pages is attached.

1st Buried collection / header pipes using Chart 14 Soil Type II slight to moderate Compaction Soil modulus - 1500
Then for max Buried 78' - use SDR17

2ND Riser - use a stiffer pipe check chart
SDR 13.5 OK

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CONSULTANTS

JOB NO. 464-3565.01 SHEET 2 OF ____

JOB NAME Reservoir Recovery Class I

BY REM DATE 7/6/94

CHECKED BY ____ DATE ____

FINALLY for Pressure pipe force main

SDR - 17 - 100 psi, which is much than adequate.

For a given SDR the ratio of the O.D. to the minimum wall thickness remains constant. An SDR 11 means the O.D. of the pipe is eleven times the thickness of the wall. This remains true regardless of diameter. For example, a 14" diameter pipe with a wall of 1.273" is an SDR 11 pipe. An 18" diameter pipe with a wall of 1.637 is also an SDR 11 pipe. Common SDR ratios are SDR 9.3, SDR 11, SDR 13.5, SDR 15.5, SDR 17, SDR 19, SDR 21, SDR 26 and SDR 32.5. For high SDR ratios, the pipe wall is thin in comparison to the pipe O.D. For low SDR ratios, the wall is thick in comparison to the pipe O.D. Given two pipes of the same O.D., the pipe with the thicker wall will be stronger than the one with the thinner wall. Thus, high SDRs have low pressure ratings and low SDRs correspond to high pressure ratings because of the relative wall thickness.

The pressure rating of thermoplastic pipe is mathematically calculated from the SDR and an allowable hoop-stress. The allowable hoop-stress is commonly known as the long term hydrostatic design stress. It is the stress level (that has been laboratory tested and field proven) that can exist in the pipe wall continuously with a high degree of confidence that the pipe will operate under pressure for at least 50 years with safety. The formula relating SDR and hydrostatic design stress has been adopted by ISO (International Standards Organization), ASTM (American Society For Testing and Materials) and the PPI (Plastics Pipe Institute) as the standard for the industry.

The formula is:

$$P = \frac{2\,St}{D-t} \text{ or } P = \frac{2\,S}{SDR-1}$$

Where: P = Pressure rating (psi)
D = Pipe OD (inches)
t = Minimum wall thickness (inches)
S = Hydrostatic Design Stress
SDR = D ÷ t

From the formula it can be shown that *all pipes of the same SDR (regardless of diameter) will have the same pressure rating for a given design stress.* Thus, 36" dia. SDR 32.5 has the same pressure rating as 14" SDR 32.5. For the design engineer's reference, the standard SDRs and their corresponding standard pressure ratings for water at 73.4°F, using a hydrostatic design stress of 800 psi, are shown in Charts 12 and 13.

Chart 12

Pipe Pressure Rating

Driscopipe 1000 (at 73.4°F)

	SDR 32.5	SDR 26	SDR 21	SDR 19	SDR 17	SDR 15.5	SDR 13.5	SDR 11	SDR 9	SDR 7
Long Term Strength (psi)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Safety Factor	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hydrostatic Design Stress	800	800	800	800	800	800	800	800	800	800
Design Life (min. years)	50	50	50	50	50	50	50	50	50	50
Pressure Rating (psi)	51	64	80	90	100	110	128	160	200	267

Chart 13

Pipe Pressure Rating

Driscopipe 8600 (at 73.4°F)

	SDR 32.5	SDR 25.3	SDR 15.5	SDR 11	SDR 9.3	SDR 8.3
Long Term Strength (psi)	1600	1600	1600	1600	1600	1600
Safety Factor	2.0	2.0	2.0	2.0	2.0	2.0
Hydrostatic Design Stress	800	800	800	800	800	800
Design Life (min. years)	50	50	50	50	50	50
Pressure Rating (psi)	51	65	110	160	190	220

Simplified Burial Design: A conservative estimate of the ability of Driscopipe pipelines to perform in a buried environment is found in Chart 24. It is based on a minimum 2:1 safety factor and 50 year design service life. A detailed burial design starts on page 37. The detailed design should be used for critical or marginal applications or whenever a more precise solution is desired.

Detailed Burial Design:
Design by Wall Crushing: Wall crushing would theoretically occur when the stress in a pipe wall, due to the external vertical pressure, exceeded the long-term compressive strength of the pipe material. To ensure that the Driscopipe wall is strong enough to endure the external pressure the following check should be made:

$$S_A = \frac{(SDR - 1)}{2} P_T$$

Values of E'

Based on Soil Type (ASTM D2321) and Degree of Compaction

Soil Type of Initial Backfill Embedment Material	Description	E' (psi) for Degree of Compaction (Proctor Density, %)			
		Loose	Slight (70-85%)	Moderate (85-95%)	High (95%)
I	Manufactured angular, granular materials (crushed stone or rock, broken coral, cinders, etc.)	1,000	3,000	3,000	3,000
II	Coarse grained soils with little or no fines	N.R.	1,000	2,000	3,000
III	Coarse grained soils with fines	N.R.	N.R.	1,000	2,000
IV	Fine-grained soils	N.R.	N.R.	N.R.	N.R.
V	Organic soils (peat, muck, clay, etc.)	N.R.	N.R.	N.R.	N.R.

N.R. = Not Recommended for use by ASTM D2321 for pipe wall support

Chart 24

SDR	Maximum Burial Depth, ft. in dry soil of 100 lbs/cu. ft.			Maximum External Pressure psi			Maximum Deflection, % after installation		
	Soil Modulus, psi*			Soil Modulus, psi*			Soil Modulus, psi*		
	1000	2000	3000	1000	2000	3000	1000	2000	3000
32.5	25	32	37	17	22	26	1.7	0.9	0.6
26	33	45	52	23	31	36	2.3	1.2	0.8
21	46	61	71	32	42	49	3.2	1.6	1.1
19	52	69	81	36	48	56	3.6	1.8	1.2
17	61	121	181	42	84	126	4.2	2.1	1.4
15.5	56	112	168	39	78	117	3.9	2.0	1.3
13.5	49	98	147	34	68	102	3.4	1.7	1.1
11	39	78	117	27	54	81	2.7	1.4	0.9
9.3	33	68	101	23	47	70	2.3	1.2	0.8
8.3	30	61	89	21	42	62	2.1	1.1	0.7
7.3	26	52	79	18	36	55	1.8	0.9	0.6

*assumes no external loads

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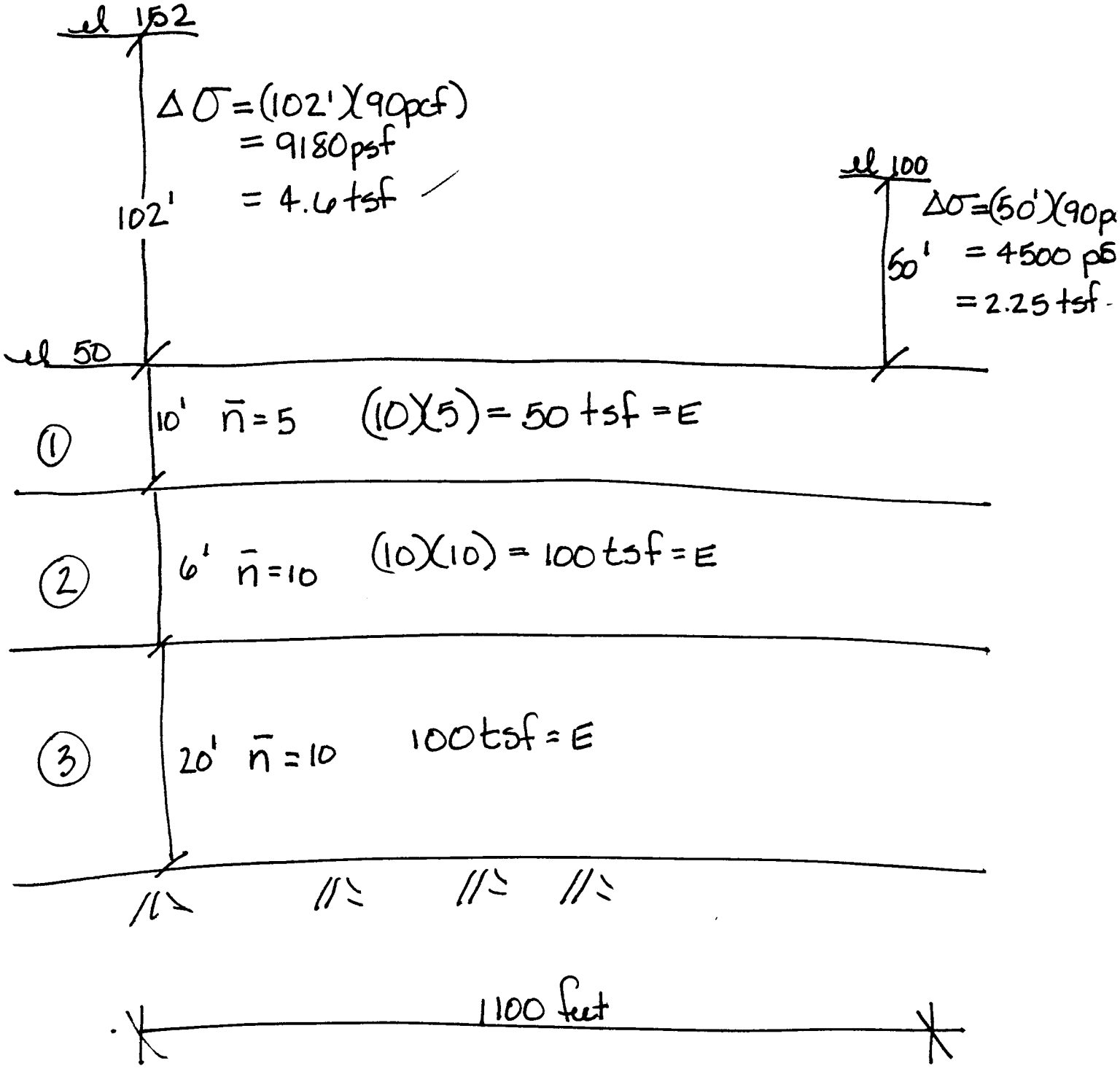
JOB NO 4648356502 SHEET 1 OF 4

JOB NAME W. Pasco Class I Landfill

BY LAH DATE 6/22/94

CHECKED BY CJL DATE 7-7-94

Settlement Calculations



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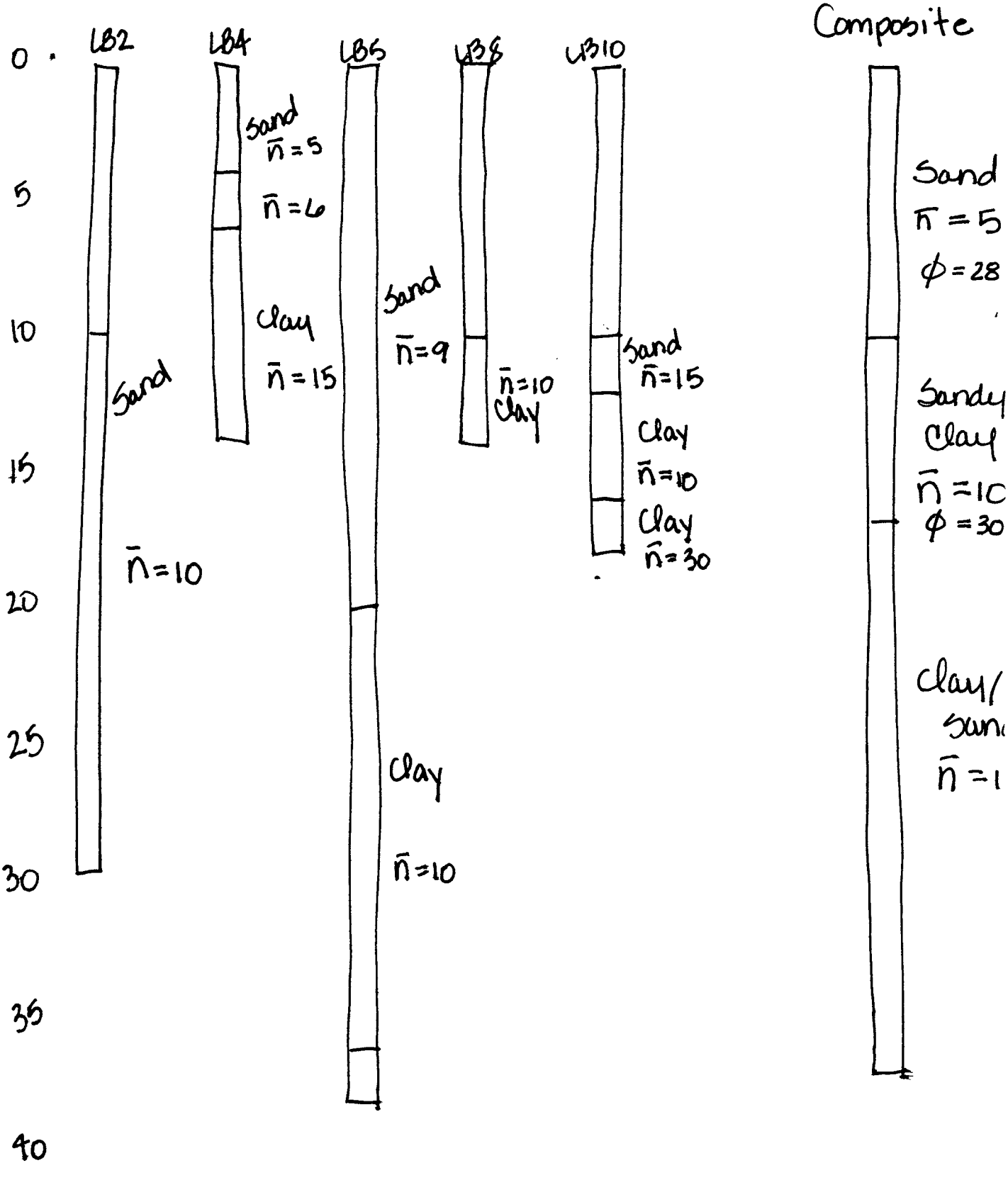
CONSULTANTS

JOB NO. _____ SHEET 2 OF 4

JOB NAME W. Pasco Class I Landfill

BY L Hall DATE 6/22/94

CHECKED BY CJR DATE 7-7-94



$S = \frac{\Delta \sigma H}{E}$

at el 152

layer 1: $S = \frac{(4.6\ tsf)(10')}{50\ tsf} = 0.92$ ft or 11 inches

layer 2: $S = \frac{(4.6\ tsf)(6')}{100\ tsf} = 0.28$ ft or 3.3 inches

layer 3: $S = \frac{(4.6\ tsf)(20')}{100\ tsf} = 0.92$ ft or 11 inches

$\Sigma S = 25.3$ inches or 2 feet

at el 100

layer 1: $S = \frac{(2.25\ tsf)(10')}{50\ tsf} = 0.45$ ft or 5.4 inches

layer 2: $S = \frac{(2.25\ tsf)(6')}{100\ tsf} = 0.14$ ft or 1.6 inches

layer 3: $S = \frac{(2.25\ tsf)(20')}{100\ tsf} = 0.45$ ft or 5.4 inches

$\Sigma S = 12.4$ inches or ~~1.5~~ 1.0 feet

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JOB NO. _____ SHEET 4 OF 4

JOB NAME W. Pasco Class I Landfill

BY LHall DATE 6/22/94

CHECKED BY _____ DATE _____

Differential Settlement over 1100 feet = ~~0.5~~ 1 feet

S = 5%

of 55 feet in 1100 ft

∴ Adding 1/2 foot of settlement to the high side will not make a detrimental difference to the slope in the pipe.

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JOB NO. 46483565.02 SHEET 1 OF 1

JOB NAME W. Pasco Class I Landfill

BY LAH DATE 6/22/94

CHECKED BY CJK DATE 7-7-94

Pipe Loading

Pipe ϕ = 6 inches

Wt of soil alone w/ no reduction for differences in settlement over pipe was assumed.

elev of pipe ~+47'

elev of top of embankment ~ +125'

Wt of soil (ash) over pipe = (+125' − +47') γ_{ash}

= (78 ft)(90 pcf)

= 7020 psf ✓

OR 7 Ksf

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GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

JOB NO. 4643565.01 SHEET 1 OF ____

JOB NAME Leesburg Rec. Class I

BY REM DATE 7/6/94

CHECKED BY RDG DATE 7/7/94

Pump AND Forced main size

1. peak daily flow rates from HELP MODEL =

primary - 32250 ft^3/day × 7.48 gal/ft^3 = 24,127 gal/day - 6.9 Acres

secondary - 24.5 ft^3/day × 7.48 gal/ft^3 = 183 gal/day - 6.9 acres

∴ primary - $\frac{24,127\ gal/day}{6.9\ Acres} \cong 3500\ gal/Ac.day$

Secondary $\frac{183\ gal/day}{6.9\ Acres} = 26\ gal/Ac.day$

From A Camp Dresser & McKee INC report to PASCO county "WEST PASCO LANDFILL SYSTEM LINER Performance CDM Project NO. 6104-17-CG3-LBR"

The Average monthly flow (high) 3.79 gal/hr
(low) 2.53 gal/hr.

Based on a review of data the high peak daily value was 10 gal/hr → 240 gal/10 Acre cell
or 24 gal/Ac.day

∴ The estimate for secondary leachate production is acceptable

flow data from primary was not available

2. Head and flow rates

Primary

φ - 3500 gal/ac-day

@ 10 acres - 35,000 gal/day $\times \frac{\text{day}}{24\text{hr}} \times \frac{1\text{hr}}{60\text{min}} = 24\text{gpm}$

USE EPG model side slope riser Pump

TSP8 - mid range flow rate is 25gpm

Head - static 47'- 63' or 16'

Dynamic ADD 10' + conservative

26'

TSP-8-1 will work

For secondary use smaller size pump

24 gal/ac-day

$24 \times 10 \text{ Acre} \times \frac{\text{day}}{24 \text{ hr}} \times \frac{1 \text{ hr}}{60 \text{ m.}} = 0.2 \text{ gpm}$

Use TSP 1-3

3. Force main

Use min pipe – 4 inch w/ 5 inch containment pipe

4. TANK sizes

Existing holding tanks are performing satisfactorily

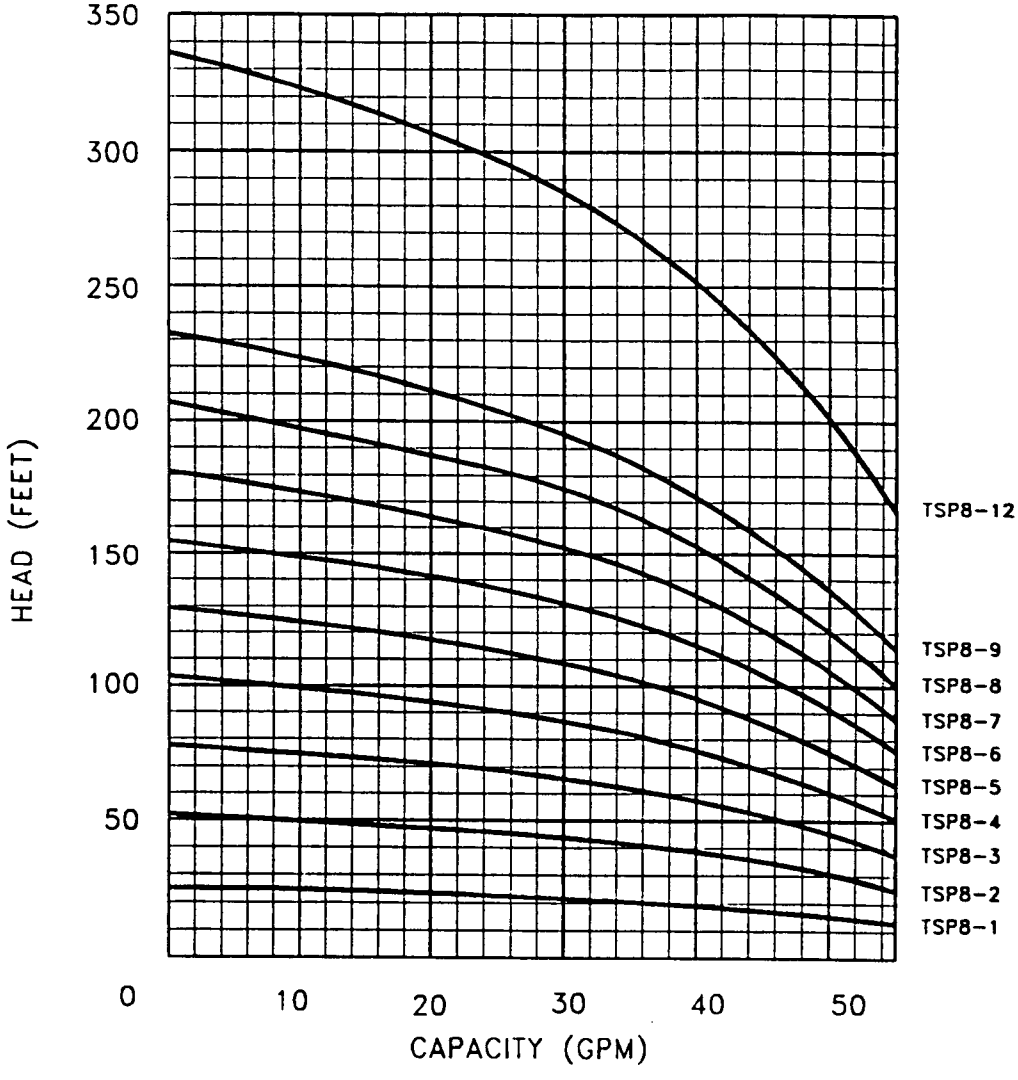
Primary – 8,000 gallons ±

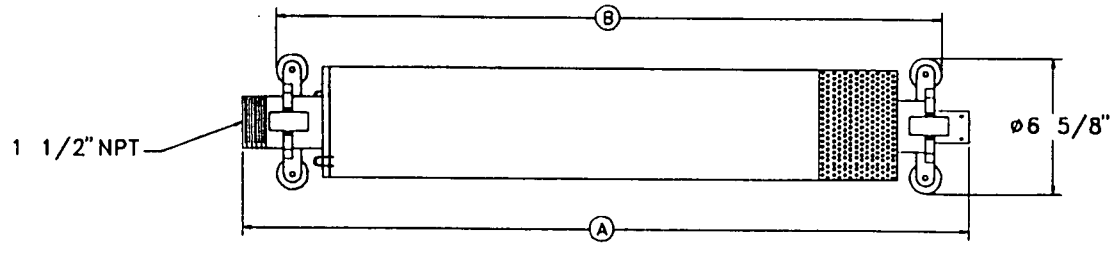
Secondary 6,000 gallons ±

Flows will be metered at pump so use two lines to pump to one 10,000 gallon Tank above ground in a containment Area.

TSP8 SurePump™

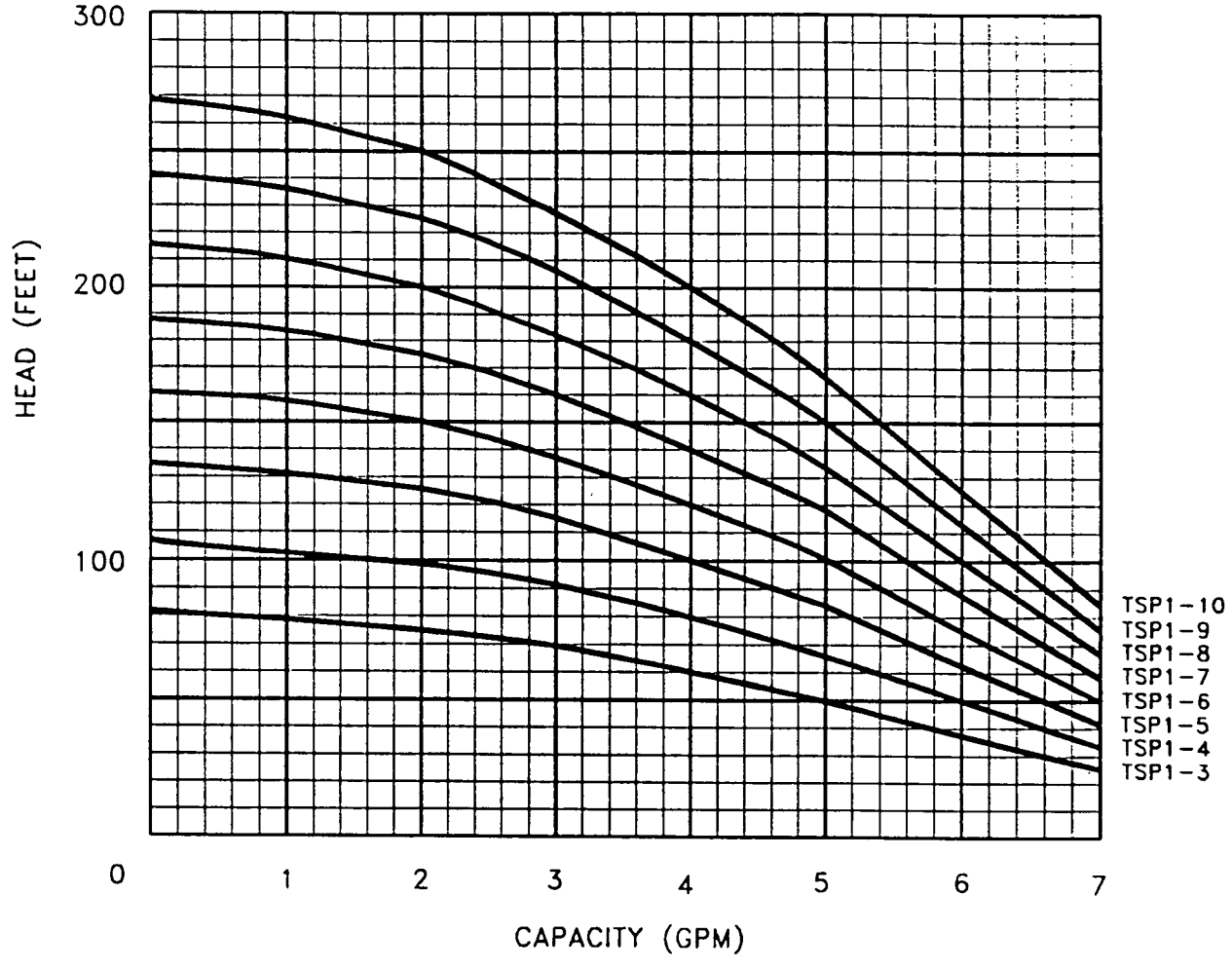
SIDE SLOPE RISER

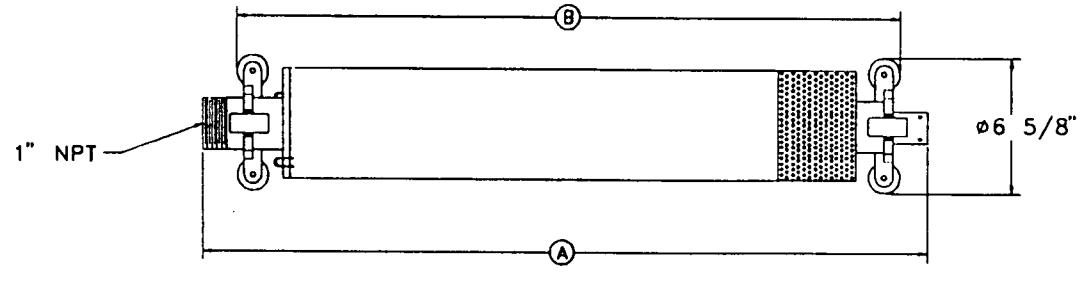




PUMP MODEL	SINGLE PHASE			THREE PHASE			SHIPPING WEIGHT (LBS)	
	MOTOR HP	A (in)	B (in)	MOTOR HP	A (in)	B (in)	1ø	3ø
TSP8-1	0.50	31.50	29.50	0.50	31.50	29.50	41.0	41.0
TSP8-2	0.75	34.50	32.50	0.75	34.50	32.50	44.7	44.7
TSP8-3	1.00	37.00	35.00	1.00	37.00	35.00	49.6	49.6
TSP8-4	1.00	38.75	36.75	1.00	38.75	36.75	51.0	51.0
TSP8-5	1.50	42.25	40.25	1.50	41.25	39.25	59.1	54.7
TSP8-6	1.50	44.00	42.00	1.50	42.75	40.75	60.6	56.2
TSP8-7	2.00	47.00	45.00	2.00	45.75	43.75	65.5	61.0
TSP8-8	2.00	48.75	46.75	2.00	47.25	45.25	67.5	63.0
TSP8-9	3.00	58.75	56.75	3.00	56.00	54.00	91.9	82.1
TSP8-12	5.00	69.75	67.75	5.00	63.75	61.75	115.1	97.4

TSP1 SurePump™
SIDE SLOPE RISER





PUMP MODEL	SINGLE PHASE			THREE PHASE			SHIPPING WEIGHT (LBS)	
	MOTOR HP	A (in)	B (In)	MOTOR HP	A (in)	B (In)	1ø	3ø
TSP 1-3	0.33	30.00	28.00	0.50	30.75	28.75	39.0	41.2
TSP 1-4	0.33	31.00	29.00	0.50	31.50	29.50	40.0	42.2
TSP 1-5	0.33	31.75	29.75	0.50	32.25	30.25	41.0	43.2
TSP 1-6	0.33	32.50	30.50	0.50	33.25	31.25	42.1	44.3
TSP 1-7	0.33	33.50	31.50	0.50	34.00	32.00	43.2	45.3
TSP 1-8	0.33	34.25	32.25	0.50	34.75	32.75	44.2	46.4
TSP 1-9	0.33	35.00	33.00	0.50	35.75	33.75	45.2	47.4
TSP 1-10	0.50	36.50	34.50	0.50	36.50	34.50	48.5	48.5

LAW COMPANIES

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

JOB NO. 464.3565.01 SHEET _____ OF _____

JOB NAME Resource Recovery Class 1

BY RLM DATE 7/7/94

CHECKED BY RDV DATE 7/7/94

Above ground
TANK INSTALLATION.

10,000 gallon tank

Approximately a 12' Diameter tank

Containment area volume

10,000 gallons + 1,000 = 11,000 gallons
1,470 ft³

use 3' high walls

area of containment = 1470/3 = 490

22' square

$$Wt = 11{,}000 \text{ gallon} \times \frac{8.33\ \#}{\text{gallon}} = 91{,}630\ \#$$

Tank 2,000 #

Concrete $[22 \times 22 \times (6''/12) + (6''/12) \times 3 \times 88] \frac{150\ \#}{ft^3} = 56{,}100\ \#$

149,730 #

$149{,}730 / (22 \times 22 \times 144) = 2.1 KSi$

Typical sand will meet this

APPENDIX 6

HYDROGEOLOGICAL INVESTIGATION

REPORT

APPENDIX 6

HYDROGEOLOGICAL INVESTIGATION REPORT

HYDROGEOLOGICAL INVESTIGATION

AND

SITE REPORT

CELL A-2 AT PASCO COUNTY RESOURCE RECOVERY FACILITY CLASS I LANDFILL

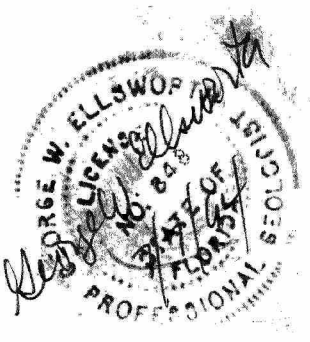
Prepared For:

PASCO COUNTY BOARD OF COUNTY COMMISSIONERS
Pasco County, Florida

Prepared By:

LAW ENVIRONMENTAL, INC.
Tampa, Florida

JUNE 8, 1994



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HYDROGEOLOGICAL INVESTIGATION AND SITE REPORT FOR CELL A-2 AT PASCO COUNTY RESOURCE RECOVERY FACILITY CLASS I LANDFILL

1.0 Regional and Site Specific Geology and Hydrogeology

1.1 Regional Geology and Hydrogeology

In Pasco County, undifferentiated surficial deposits of Pliocene to recent age sands of variable thickness overlie Cretaceous and Tertiary carbonates and clays. The Tertiary carbonates (primarily limestones) deposited during the Oligocene and Eocene periods, are called the Suwannee, Ocala, and Avon Park Formations in descending order. Separating the surficial sands from the underlying carbonates are clayey sands, sandy clays, and clays which are remnants of or a residual from the Hawthorn and Tampa Formations of upper and lower Miocene age. Both the Hawthorn and the Tampa Formation are thicker further to the south and east.

The importance of the residual clay of the Hawthorn and Tampa Formations, where present, is that the unit comprises the confining layer separating the underlying Floridan aquifer system from the overlying surficial aquifer. Regionally, the Floridan aquifer is known to be only semi-confined, which is attributed to the presence of karst features (sinkholes) and the thinning or absence of the confining layer. See Table 1 for the regional stratigraphic and hydrogeologic nomenclature.

1.2 Site Specific Geology and Hydrogeology

In addition to the extensive site investigation conducted prior to and during the Resource Recovery Facility Power Plant Site certification in 1989, a more localized hydrogeological investigation was made in the immediate vicinity of the next landfill disposal unit to be constructed, Cell A-2. The purpose of the additional site work was to define further the characteristics of the surficial aquifer, the presence of the confining layer, and the attitude of underlying limestone.

Sixteen soil borings were conducted to achieve this goal; six piezometers also were installed locally in the surficial aquifer. A confining layer of clay was encountered in all soil borings except LB-2 which was not augured deep enough to penetrate the clay or underlying limestone.The piezometers were installed with ten foot screened intervals at the base of the surficial sands to detect even minimal water levels in the surficial aquifer. The piezometers were checked periodically during the hydrologic investigation and were found to be dry even in the deepest screened interval (22.6 to 32.6 feet N.G.V.D. in piezometer LB-3).

Generally, the confining layer clay was found to be gradational with the overlying surficial sands, coarsening upward from a clay to sandy clay to a clayey sand, enough so that the actual base of the surficial aquifer unit was very high and dry. Soil boring lithologic descriptions are provided in the Appendix. Geologic cross-section depicting the site stratigraphy is shown in Figure 1.

2.0 Direction and Rate of Ground-Water and Surface-Water Flow Including Seasonal Variations

Water level data from the existing ground-water monitoring system which has been in place since the start up of the Resource Recovery Facility and landfill operations in 1990,were evaluated. Additional ground-water monitoring data was available from an adjacent Class III Landfill Site (see Table 2).

Two Floridan aquifer potentiometric surface maps for September 1992 and March 1993 were drawn. Both maps show a northwest direction for ground-water flow for the Floridan aquifer towards Weeki Wachi Springs (see Figures 2 and 3). Two surficial aquifer water table maps also were drawn for September 1991 and March 1992. The flow direction in the surficial aquifer is less definitive, but appears to be to the northwest or north, probably deflecting around the existing high that the landfill is sited on (see Figures 4 and 5).

The hydraulic gradient for the surficial aquifer based on the September 1991 water table map is approximately 0.001. The hydraulic gradient for the Floridan aquifer appears to be higher at the end of the wet period (based on the September 1992 potentiometric surface map) than it is near the end of the dry season (based on the March 1993 map). The hydraulic gradients ranged from approximately 0.002 in September 1992 to 0.0015 in March 1993.

3.0 Background Quality of Ground-Water and Surface Water

Ground-water monitoring wells, 2MW-1 through 2MW-4 and 4MW-1 through 4MW-4 were installed and sampled in 1987 prior to construction of the landfill. Analytical results from the 1987 sampling event are provided in the Appendix.

Ground-water monitoring wells, 2MW-5, 2MW-6, 4MW-5, and 4MW-6, were installed in 1991 after construction of cells A-1 and SW-1. Analytical results from the 1991 sampling event are provided in the Appendix.

Monitoring wells designated 2MW are surficial aquifer monitoring wells and the monitoring wells designated 4MW are Floridan Aquifer monitoring wells. Well locations are shown on Figures 2 through 5. No surface water bodies exist on the landfill site consequently no surface water samples have been taken.

REVISED
June 8, 1994

4.0 Any On-Site Hydraulic Connections Between Aquifers

There does not appear to be any hydraulic connections between the aquifers within the footprint of the landfill site. All soil borings advanced deep enough during this investigation encountered clay before limestone which is an indication of the continuity of the confining layer. Soil boring LB-2 was terminated at 23.8 feet N.G.V.D., before reaching the confining layer clay above the Floridan aquifer limestones. Outside the landfill area to the southwest are known sinkholes which provide a connection between the aquifers.

Soil boring LB-5 encountered water 12.5 feet into the clay layer after penetrating 21.5 feet of surficial sands. The estimated elevation is 18.1 feet, N.G.V.D., which is well below any water level reported for the surficial aquifer or the Floridan aquifer in the routine groundwater monitoring. No water was encountered above the top of the clay unit at 30.6 feet, N.G.V.D.. It is concluded that the surficial aquifer was dry and that their was not a hydraulic connection between aquifers at this location.

Soil boring LB-2 was also reported to have encountered water at 18 feet below ground level or at an elevation of 31.8 feet, N.G.V.D. The boring was terminated short of penetrating clay or limestone at a total depth of 26 feet below ground level or at an elevation of 23.8 feet, N.G.V.D. The next soil boring LB-3, located less than 150 feet from LB-2, was continued deeper until it penetrated clay at 23.6 feet, N.G.V.D. A piezometer was installed with a screened interval from 22.6 to 32.6 feet, N.G.V.D., which was deep enough to have intercept the water reported in soil boring LB-2 at 31.8 feet, N.G.V.D. No water was encountered in LB-3. It was concluded that the aquifer was dry and that no hydraulic connection between aquifers exists in the vicinity of soil boring LB-3. It was also concluded that if water was actually encountered in soil boring LB-2 that it should have been encountered in LB-3.

In locations where ground-water monitoring wells for the surficial aquifer and the Floridan aquifer are close or clustered and the surficial is partially saturated, the hydraulic level of the surficial aquifer is generally slightly higher than in the underlying Floridan aquifer and the differential between them is greater as the distance away from the sinkholes increases (see Table 2).

5.0 Site Stratigraphy and Aquifer Characteristics for Confining Layers, Semi-Confining Layers, and All Aquifers Below the Landfill Site That May Be Affected by the Landfill.

The site stratigraphy is illustrated on Figure 1. The stratigraphy at the site differs only slightly from the regional stratigraphy. The undifferentiated surficial deposits are present, but slightly

thinner. The Hawthorn and Tampa Formations are either absent or not distinguishable and probably represented by the residual clay, which grades upward into the surficial sands. The residual clay lies unconformable on the underlying Suwannee Formation. Limestones of the Suwannee Formation have only been partially penetrated by some of the soil borings and by the installation of the Floridan Aquifer Monitoring Wells. Thicknesses of these units are given in Table 3 along with other pertinent characteristics.

Hydraulic conductivities were determined for three undisturbed samples taken from the confining layer clay penetrated in soil borings LB-4, LB-5, and LB-8. The values ranged from $2.2x10^6$ feet per day to $6.9x10^6$ feet per day.

The confining layer below the landfill site is assumed to be continuous. No soil borings penetrated the Floridan aquifer limestone without first penetrating the confining layer clay. Hydrogeologically, the Floridan aquifer is considered to be only semi-confined in West Pasco due to the regional thinning of its confining unit from the southeast to the northwest out of Hillsborough County, and due to the presence of karst features.

Water levels in both the surficial aquifer and Floridan aquifer have remained below 40 feet NGVD at the site during the period from 1991 to 1993 (see Figure 6). The surficial aquifer has been generally dry. Only in Monitoring Well MW-2 has water been consistently present.

6.0 Site Topography and Soil Characteristics

The West Pasco Class I Landfill is located in a relatively flat section of the Pamlico Terrace of the Gulf Coastal Lowlands physiographic province along the west coast of Florida. Topographic relief across the site ranges from about 20 to 30 feet in the southwestern portion and about 10 feet throughout the remainder of the site and within the footprint of the landfill.

Numerous lakes and ponds exist to the south of the permitted landfill area, but none occur within the landfill area itself. The area is drained primarily by Buckhorn Creek and the Pithachascotee River. The major surface water feature in the vicinity of the landfill is Crews Lake located approximately 1.5 miles to the east. Crews Lake, a lenticular body and headwaters of the Pithachascotee River, forms a northeast-trending lineament with the river.

The soil characteristics for the landfill area are given as Candler and Tavares sands, which are described as nearly level to sloping, excessively drained soils that are sandy throughout with occasional thin lamellae of loamy sand below a depth of 50 inches in the soil survey of Pasco County, Florida. This is consistent with the lithologic description and grain-size analysis performed on samples taken from the surficial sands in the soil borings. The sands appear to

be fine-grained, well sorted sands until they begin to grade into the underlying clay confining unit.

7.0 Inventory of All Public and Private Water Wells within a One-Mile Radius of the Landfill including Top of Well Casing and Bottom Elevations, Name of Owner, Age and Usage of Each Well, Stratigraphic Unit Screened, Well Construction Technique and Static Water Level.

A listing of all public and private water wells within a one-mile radius of the landfill was obtained from the Southwest Florida Water Management District for Sections 13, 14, 23, 24, 25, 26, 35 & 36, Township 24 South, Range 17 East, and Sections 18, 19, 30 & 31, Township 24 South, Range 18 East. Each section comprises one square mile and the required one--mile radius of the landfill falls within these twelve (12) sections. The listing is provided in the Appendix.

8.0 Existing Contaminated Areas on Landfill Site

There are no known existing contaminated areas on the landfill site.

The hydrogeological investigation and site report for the West Pasco Class I Landfill is signed, sealed and dated by George W. Ellsworth, a licensed Professional Geologist (No. 0000848) in the State of Florida.

Table 4
Piezometer Construction Details

Piezometer ID	LB-1	LB-3	LB-5	LB-7	LB-8	LB-11
Top of Casing	49.6	52.6	54.1	51.9	53.8	53.4
Surface Elevation	47.6	50.6	52.1	49.9	51.8	51.4
Top of Screen	44.6	32.6	40.1	45.9	50.8	49.4
Bottom of Screen	34.6	22.6	30.1	35.9	40.8	39.4
Bottom of Casing	34.6	22.6	30.1	35.9	40.8	39.4
Total Depth of Boring	34.6	22.6	14.1	35.9	35.8	39.4
Top of Clay	35.6	23.6	30.6	36.9	41.8	41.4

Casing: Schedule 40 Pipe, 2 inch diameter

Screen: Schedule 40 Pipe, 0.01 inch slotted

Elevations: feet, NGVD

TABLES

Table 1: Regional Stratigraphic and Hydrogeologic Nomenclature

AGE	STRATIGRAPHIC UNIT	HYDROGEOLOGIC UNIT	THICKNESS (FEET)	LITHOLOGY	WATER-PRODUCING CHARACTERISTICS
Recent to Pleistocene	Undifferentiated Surficial Deposits	Surficial Aquifer System	0 - 50	Soil, sand, and clay of marine and estuarine terraces, alluvial, lake and windborne deposits.	Wells generally yield less than 20 gallons/minute.
Early to Late Miocene	Hawthorne Formation	Intermediate Confining Unit	0 - 50	Predominantly clay, some grayish-green, waxy, some interbedded sand and limestone, phosphatic clay, marl, calcareous sandstone limestone residuum.	Generally not a source of water due to extremely low hydraulic conductivity.
	Tampa Formation	Florida Aquifer System	0 - 30	Limestone, sandy, fossiliferous, sand and clay residuum in upper part in some areas.	Many domestic and irrigation wells produce water from the lower part.
Oligocene	Suwannee Formation		0 -250	Limestone, cream to tan, fine-grained, fossiliferous, thin-bedded to massive, porous.	
Eocene	Ocala Group		70 -250	Limestone, white to tan, fossiliferous, massive, soft, to hard, porous.	Yield large quantities of water from wells completed above evaporites.
	Avon Park Formation	Sub-Floridan Confining Unit	200-800	Limestone and dolomite. Limestone is light-to dark-brown, highly fossiliferous; porosity is variable in lower part. Dolomite is gray to dark-brown, very fine-to micro-crystalline and contains porous fossil molds, thin beds of carbon-aceous material, and peat fragments. Formation generally contains evaporates near base.	

Modified after Fretwell (1988).
b:\REGIONAL

Table 2: Water Level Data, West Pasco Class I and III Landfills

Mo/Yr	PARAMETER	2MW-1	4MW-1	2MW-2	4MW-2	2MW-3	4MW-3 4MW-3A**	2MW-4	4MW-4	2MW-5	4MW-5	2MW-6	4MW-6
	Top of Casing (ft.NGVD) *	49.47	49.61	56.26	55.76	49.94	52.84	54.31	50.52	48.13	48.26	55.64	55.03
FEB 91	Depth to Water (ft.)	DRY	DAMAGE	23.00	23.30	DRY	24.00	DRY	24.90				
	Water Elevation (ft.NGVD)			33.26	32.46		28.84		25.62				
JUN 91	Depth to Water (ft.)	15.80	16.30	23.85	24.00	DRY	25.50	DRY	25.40	DRY	22.80	DRY	26.80
	Water Elevation (ft.NGVD)	33.67	33.31	32.41	31.76		27.34		25.12		25.46		28.23
SEP 91	Depth to Water (ft.)	9.85	10.55	17.00	16.75	DRY	22.85	DRY	14.80	DRY	12.00	19.00	18.35
	Water Elevation (ft.NGVD)	39.62	39.06	39.26	39.01		29.99		35.72		36.26	36.64	36.68
DEC 91	Depth to Water (ft.)	13.70	14.00	19.15	19.30	DRY	18.25	DRY	20.00	DRY	17.60	DRY	21.10
	Water Elevation (ft.NGVD)	35.77	35.61	37.11	36.46		34.59		30.52		30.66		33.93
MAR 92	Depth to Water (ft.)	14.75	14.95	21.15	21.30	DRY	DESTROYE	DRY	22.75	DRY	20.15	DRY	23.60
	Water Elevation (ft.NGVD)	34.72	34.66	35.11	34.46				27.77		28.11		31.43
JUN 92	Depth to Water (ft.)	DRY	17.50	23.20	23.50	DRY	DESTROYE	DRY	25.00	DRY	22.65	DRY	26.00
	Water Elevation (ft.NGVD)		32.11	33.06	32.26				0.00		25.61		29.03
SEP 92	Depth to Water (ft.)	DRY	14.20	19.40	19.60	DRY	25.30	DRY	21.20	DRY	18.50	DRY	22.00
	Water Elevation (ft.NGVD)		35.41	36.86	36.16		27.54		29.32		29.76		33.03
DEC 92	Depth to Water (ft.)	15.45	15.65	20.65	20.90	DRY	22.00	DRY	22.50	DRY	19.95	DRY	23.15
	Water Elevation (ft.NGVD)	34.02	33.96	35.61	34.86		30.84		28.02		28.31		31.88
MAR 93	Depth to Water (ft.)	DRY	17.00	22.95	23.05	DRY	24.35	DRY	24.75	DRY	22.15	DRY	25.55
	Water Elevation (ft.NGVD)		32.61	33.31	32.71		28.49		25.77		26.11		29.48
JUN 93	Depth to Water (ft.)	DRY	17.45	22.85	23.10	DRY	24.45	DRY	24.70	DRY	22.10	DRY	25.55
	Water Elevation (ft.NGVD)		32.16	33.41	32.66		28.39		25.82		26.16		29.48
AUG 93	Depth to Water (ft.)	DRY	31.99	24.15	24.55	DRY	26.20	DRY	26.35	DRY	25.31	DRY	28.93
	Water Elevation (ft.NGVD)		17.62	32.11	31.21		26.64		24.17		22.95		26.10
	Depth to Water (ft.)												
	Water Elevation (ft.NGVD)												

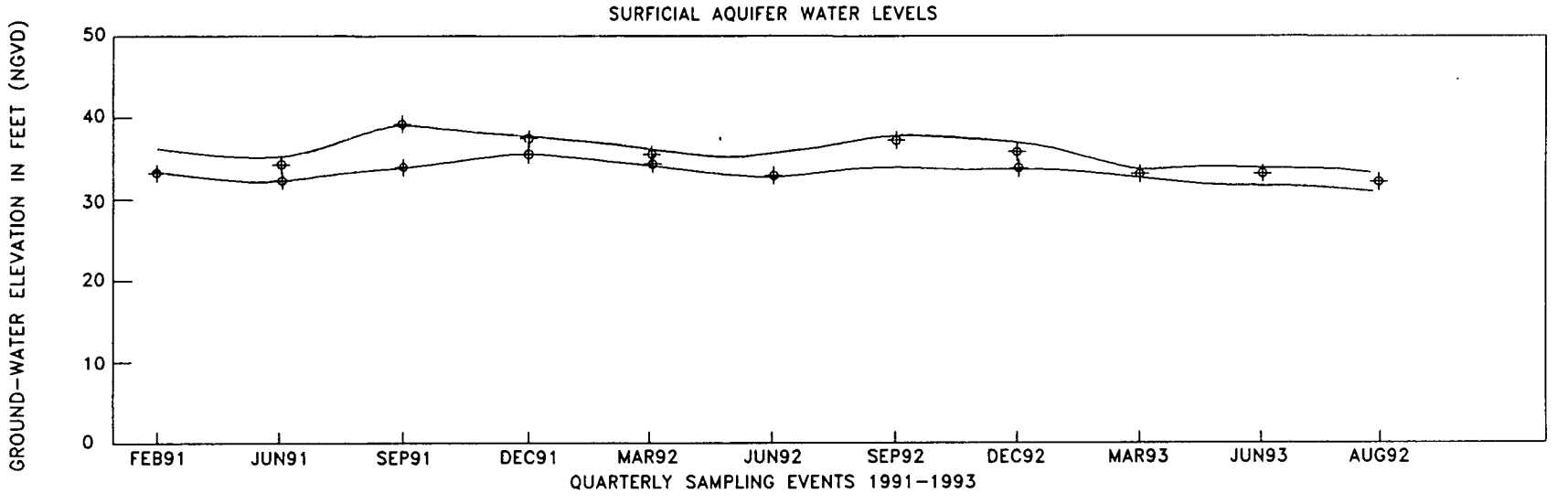
* Top of Casing Elevation is the surveyed elevation of top of steel case minus the distance between top of stell case and top of PVC casing. Raw data provide by Pasco Co.
** 4MW-3A installed in 1992.
B:\WATERLEV

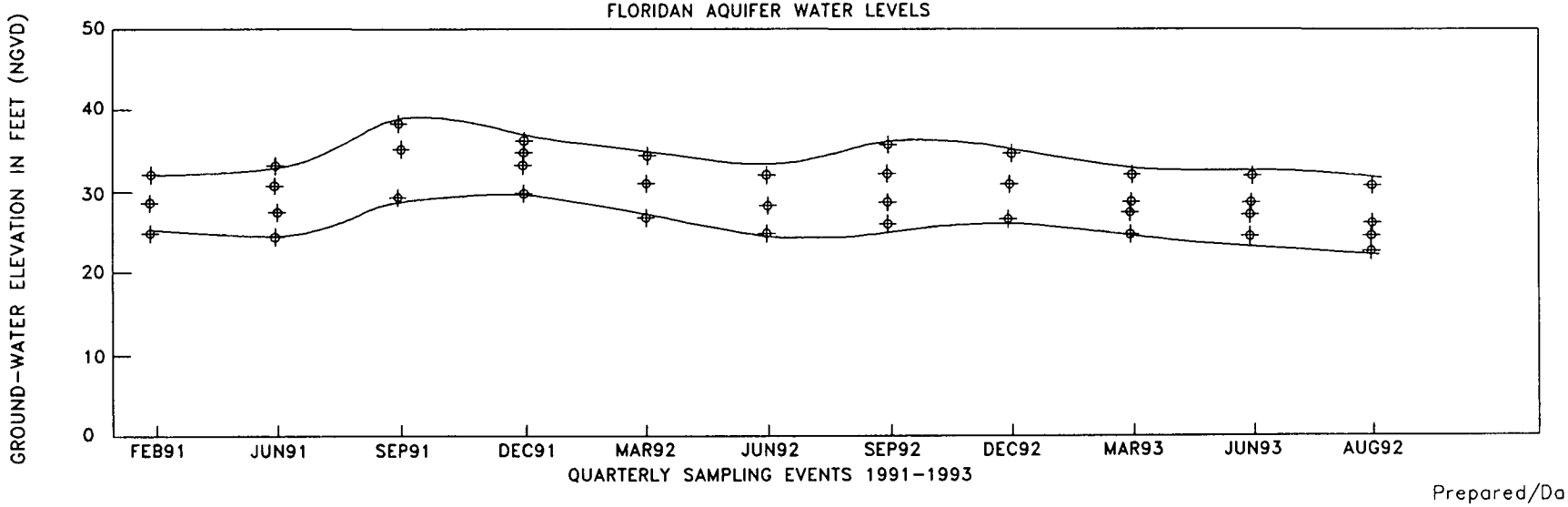
Table 3: Characteristics of the Hydrogeologic Units Beneath the West Pasco Class I Landfill

HYDROGEOLOGIC UNIT	LITHOLOGIC DESCRIPTION	THICKNESS (Feet)	POROSITY	HYDRAULIC CONDUCTIVITY
SURFICIAL AQUIFER	Sand, fine-grained, well-sorted, unconsolidated, becomes finer grained near base.	6-36	20-40%	10-20 feet/day
CONFINING LAYER	Clay, greenish to bluish gray, in part silty and sandy, firm to plastic.	4-12		7.2 x 10E-05 cm/sec * 1.5 x 10E-09 cm/sec **
FLORIDAN AQUIFER	Limestone, thin-bedded to massive, fossiliferous, porous; dolomite in lower section.	800+	variable av.effective porosity 5%	50-150 feet/day ***

* From CDM,1987, average of testing results reported in original permit application.
**From Law Engineering, 1994, average of testing results on selected clay samples.
***Based on a transmissivity range of 40,000-115,000 sq.ft./day (Hutchinson, 19 n).
B:\CHARACT.WK3

FIGURES





Prepared/Date:
Checked/Date:

ACAD=3565166

Pasco County
Board of County Commissioners
Utility Services Branchs
Pasco County, Florida

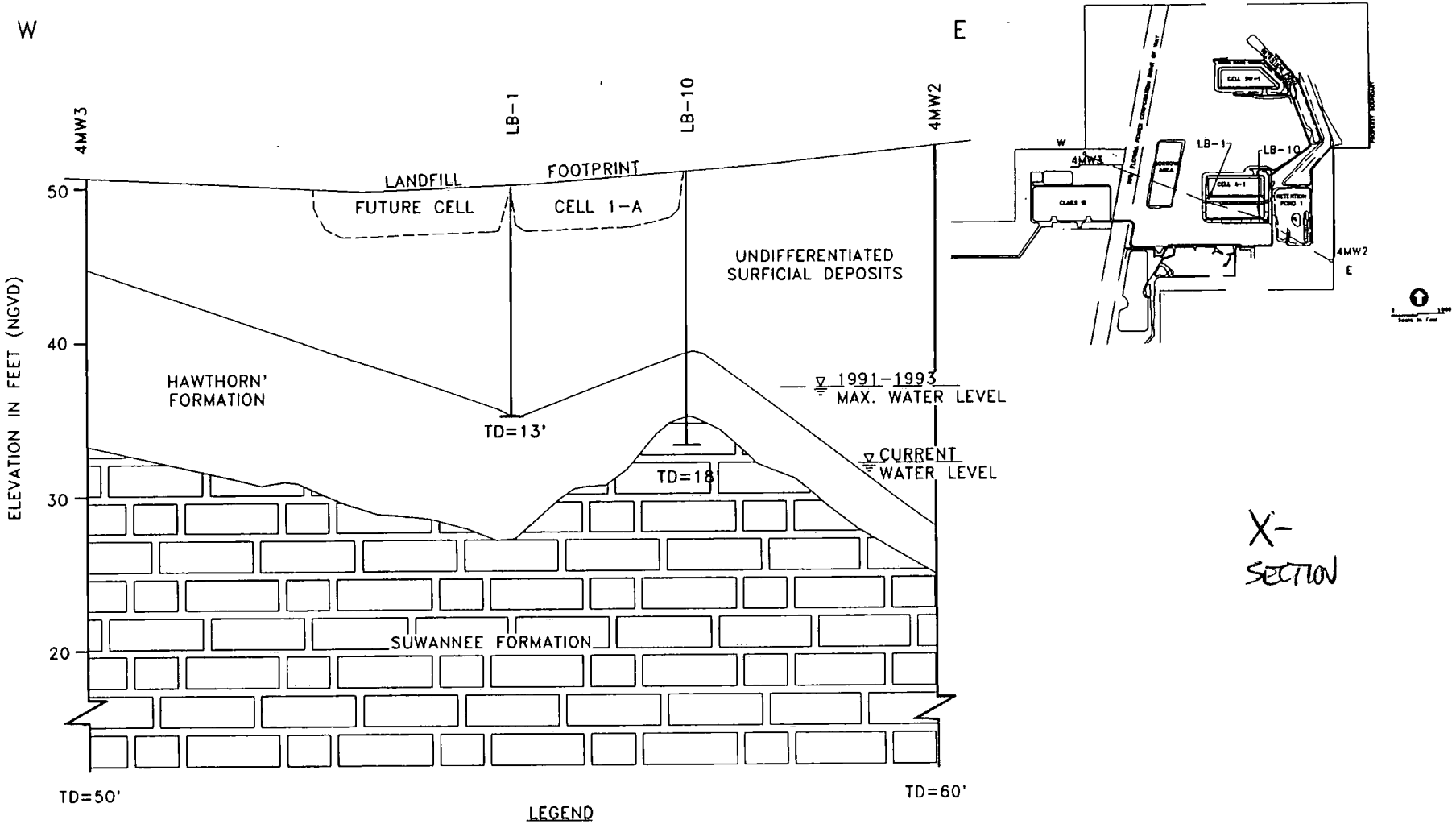
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

Resource Recovery Facility
Pasco County, Florida

Groundwater Levels in Aquifers
Beneath West Pasco Class I Landfill

Project 573565

Figure 6



X-SECTION

LEGEND

4MW3-FLORIDAN AQUIFER MONITORING WELL
LB-1-LAW ENGINEERING BORING

HORIZ. SCALE: 1"=1000'

Prepared/Date:
Checked/Date:

ACAD=3565f61

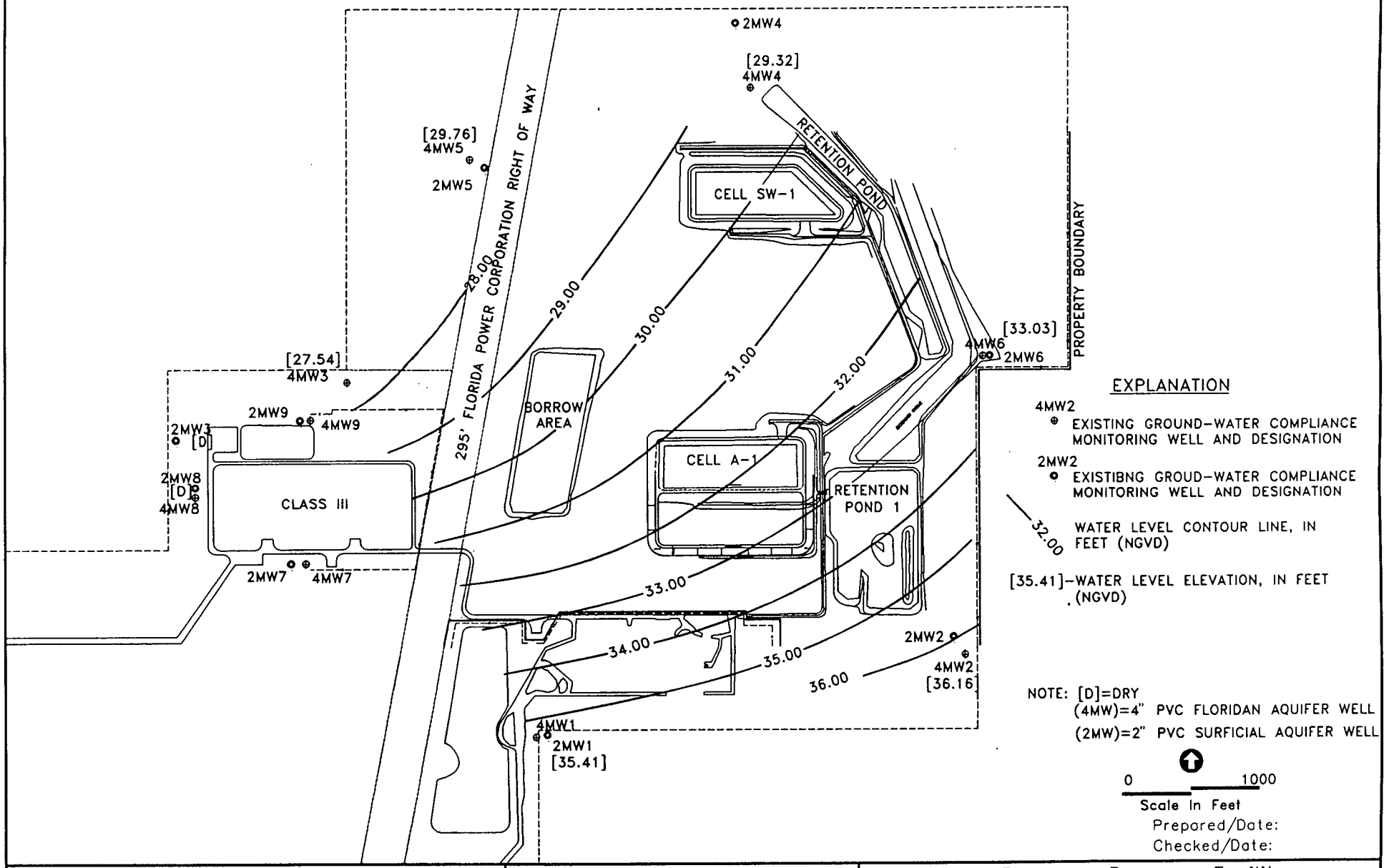
Pasco County
Board of County Commissioners
Utility Services Branchs
Pasco County, Florida

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

Resource Recovery Facility
Pasco County, Florida

Geologic Cross-Section,
West Pasco Class I Landfill

Project 573565 Figure 1



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Pasco County
Board of County Commissioners
Utility Services Branch
Pasco County, Florida

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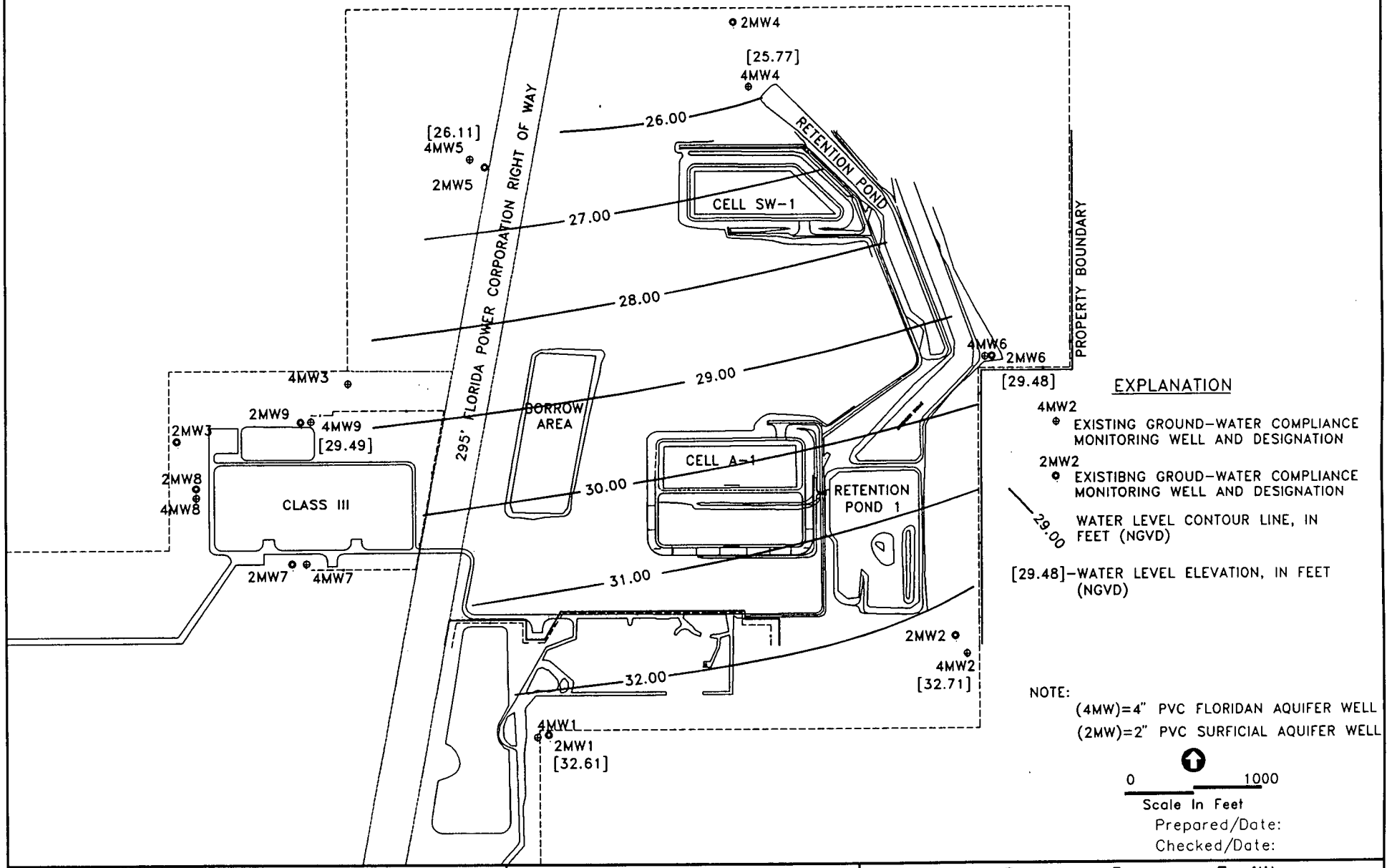
ENGINEERING AND ENVIRONMENTAL SERVICES

Resource Recovery Facility
Pasco County, Florida
Floridan Aquifer Potentiometric Surface Map,
West Pasco Class I Landfill
September 1992

Project 573565 Figure 2



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Pasco County, Florida

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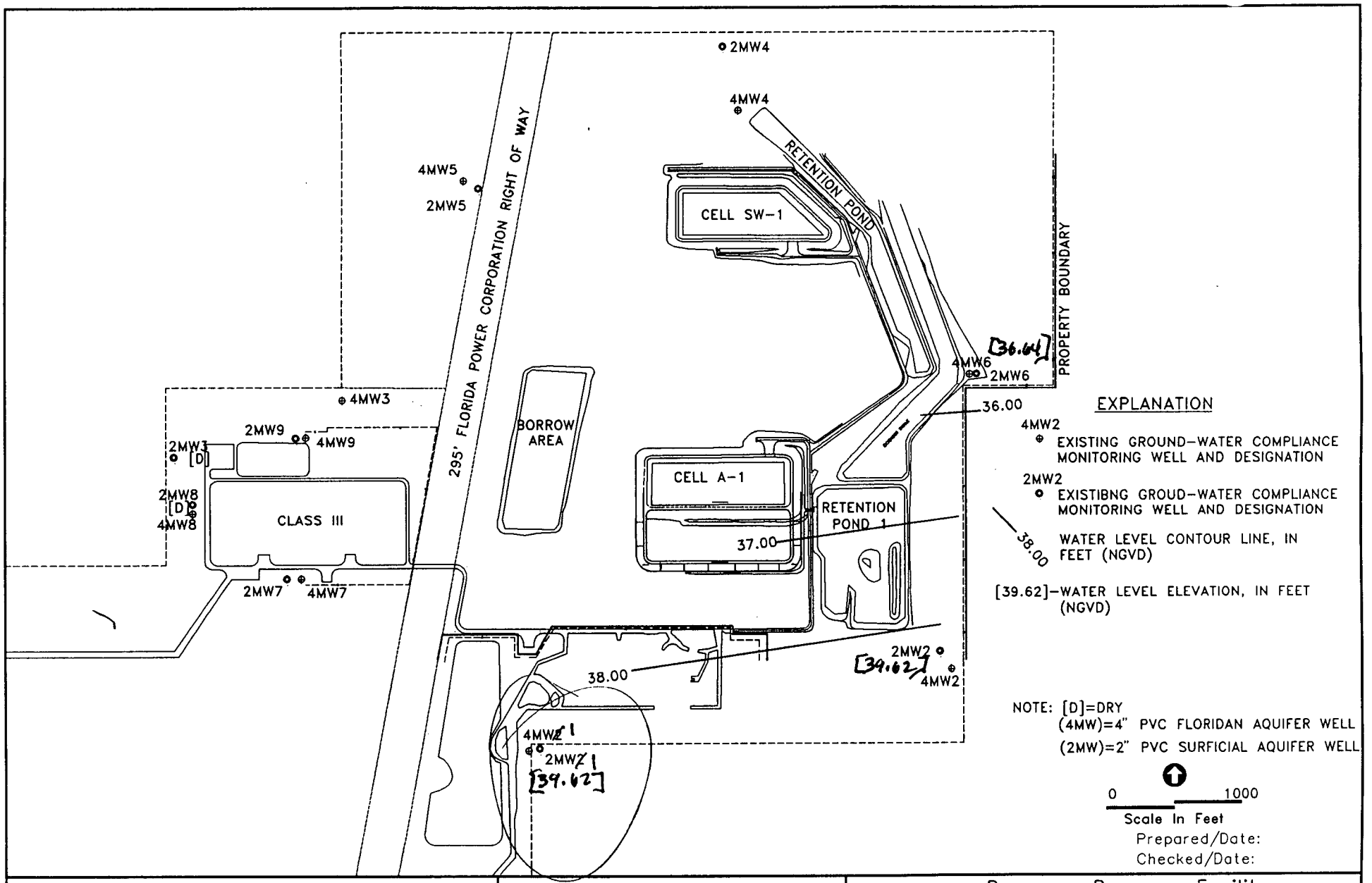
Resource Recovery Facility
Pasco County, Florida
Floridan Aquifer Potentiometric Surface Map,
West Pasco Class I Landfill
March 1993

Project 573565 Figure 3



ACAD=3565F64

Pasco County
Board of County Commissioners
Utility Services Branch
Pasco County, Florida

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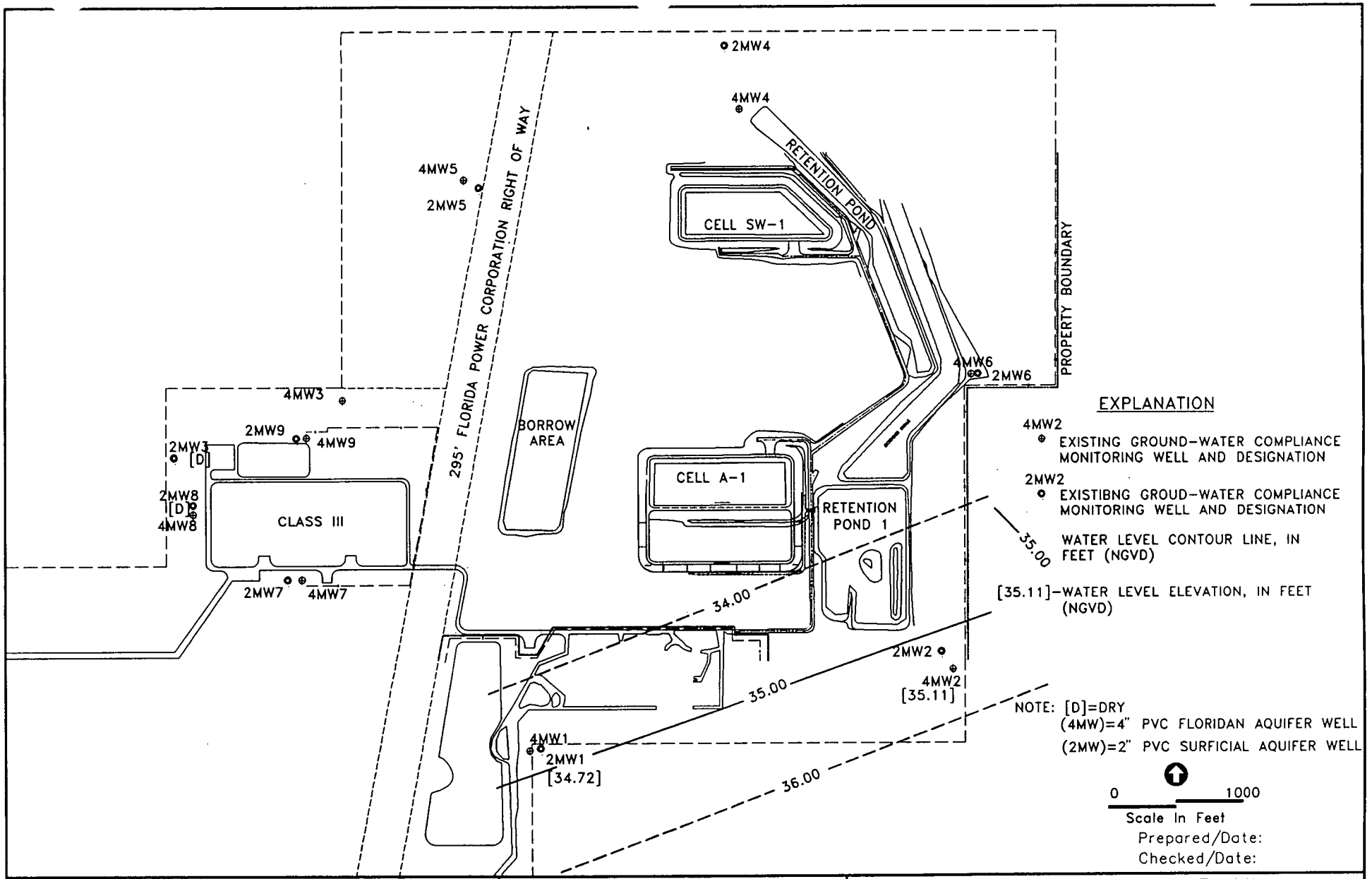
Resource Recovery Facility
Pasco County, Florida

Surficial Aquifer Water Table Map,
West Pasco Class I Landfill
September 1991

Project 573565

Figure 4



ACAD=3565F65

Pasco County
Board of County Commissioners
Utility Services Branch
Pasco County, Florida

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Resource Recovery Facility
Pasco County, Florida

Surficial Aquifer Water Table Map,
West Pasco Class I Landfill
March 1992

Project 573565 Figure 5

APPENDICES

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-1
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	8.0'	SAND: Light brown, fine-grained, well sorted.							
	11.0'	SAND: White, fine-grained, well sorted.							
	12.0'	SAND: Tan, fine-grained, well sorted.							
	13.0'	CLAY: Pale blue-green and red, firm, sandy.							

NOTES:

Total Depth: 14.0'
Grout Amount/Time: N/A
Time Boring Began: 1300
Time Boring Completed: 1345
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: Piezometer (2" PVC) installed to 14' below land surface
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 2

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-2
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	9.0'	SAND: Light gray-brown, fine-grained, well sorted.							
	10.0'	SAND: Gray (10YR6/2), fine- to medium-grained, rounded to subrounded, moderately sorted.	1	10.0-12.0'	18"	6	3	5	4
	12.0'	SAND: Same as above, with occasional accessory grains (black, fine-grained, rounded to well rounded).	2	12.0-14.0'	18"	11	27	WOR	3
	14.0'	SAND: Brown (10YR6/2), fine- to medium-grained, rounded to subrounded, well sorted.	3	14.0-16.0'	18"	4	3	4	4
	16.0'	SAND: Gray (10YR6/2), fine-grained, round to subrounded, very well sorted.	4	16.0-18.0'	18"	10	WOR	4	5
	18.0'	SAND: Gray (10YR6/2), fine- to medium-grained, rounded to subrounded, moderately sorted.	5	18.0-20.0'	18"	4	5	6	7
	20.0'	SAND: White (N9), fine-grained, rounded to subrounded, very well sorted.	6	20.0-22.0'	24"	4	5	8	10

NOTES: WOR = Weight of Rod

Total Depth: 26.0'
Grout Amount/Time: N/A
Time Boring Began: 1045
Time Boring Completed: 1130
Water Levels: Approximately 18' below land surface
Circulation Loss(es): N/A
Casing Installed/Removed: N/A
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: Split Spoon 10-26'
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-2
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	22.0'	SAND: Same as above., with occasional accessory grains (black, fine-grained, rounded).	7	22.0-24.0'	12"	2	2	4	6
	24.0'	SAND: Alternately red (10R4/2), very fine- to fine-grained, rounded to subrounded, moderately sorted; and brown (10YR7/4), very fine- to medium-grained, rounded to subrounded, poorly sorted, silty to slightly clayey.	8	24.0-26.0'	24"	4	6	10	13

NOTES:

Total Depth:
Grout Amount/Time:
Time Boring Began:
Time Boring Completed:
Water Levels:
Circulation Loss(es):
Casing Installed/Removed:
Water Used:
Project No.: 573565.01
Drilling Mud Used:
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube:
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-3
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	9.0'	SAND: Brown, fine-grained, well sorted.							
	20.0'	SAND: Brown, fine-grained, well sorted, clayey.							
	28.0'	CLAY: Pale green, soft, sandy.							

NOTES:

Total Depth: 29.0'
Grout Amount/Time: N/A
Time Boring Began: 1300
Time Boring Completed: 1345
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: Piezometer (2" PVC) installed to 29' below land surface
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 2

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-4
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE NO.	SAMPLE DEPTH	SAMPLE LENGTH	STP BLOWS/6" 1st	2nd	3rd	4th
	0.0'	Grass and topsoil.	1	0.0-2.0'	18"	WOH	WOH	1	1
	0.5'	SAND: Gray (5Y7/2), fine- to medium-grained, rounded to subrounded, moderately sorted, with black organic material.				12"	12"		
	2.0'	SAND: Gray (5Y8/2), fine- to medium-grained, rounded to subrounded, moderately sorted, with fine black organic material and occasional accessory grains (black, fine-grained, well rounded, pitted).	2	2.0-4.0'	18"	1	2	3	3
	4.0'	SAND: Same as above.	3	4.0-6.0'	18"	4	2	2	2
	5.5'	CLAY: Pale green (5G8/2), very sandy (fine- to medium-grained, rounded to subrounded), firm.							
	6.0'	CLAY: Shelby tube.	4	6.0-8.0'	24"				
	8.0'	CLAY: Pale green (5G8/2), slightly sandy (very fine-grained), very firm.	5	8.0-10.0'	18"	3	4	6	8
	10.0'	CLAY: Same as above.	6	10.0-12.0'	18"	4	3	4	6
	12.0'	CLAY: Same as above.	7	12.0-14.0'	12"	8	11	16	—

NOTES: WOH = Weight of Hammer

Total Depth: 13.5'
Grout Amount/Time: N/A
Time Boring Began: 1400
Time Boring Completed: 1445
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: N/A
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: Split spoon; shelby 6-8'
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 2 of 2

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-4
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	13.0'	CLAY: Pale green (5G8/2), soft with abundant weathered limestone.							
	13.5'	LIMESTONE: White (N9), hard.							

NOTES:

Total Depth:
Grout Amount/Time:
Time Boring Began:
Time Boring Completed:
Water Levels:
Circulation Loss(es):
Casing Installed/Removed:
Water Used:
Project No.: 573565.01
Drilling Mud Used:
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube:
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-5
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.	1	0.0-2.0'	6"	WOH	1	1	2
	0.5'	SAND: Tan (10YR7/4), fine- to medium-grained, rounded to subrounded, moderately sorted, with organic material.							
	2.0'	SAND: Same as above.	2	2.0-4.0'	6"	1	2	2	3
	4.0'	SAND: Brown (10YR6/2), fine- to medium-grained, rounded to subrounded, moderately sorted, with abundant organic material.	3	4.0-6.0'	12"	3	4	3	3
	6.0'	SAND: Tan (10YR7/4), fine- to medium-grained, rounded to subrounded, moderately sorted.	4	6.0-8.0'	18"	4	3	3	7
	8.0'	SAND: Brown (5YR3/4), very fine- to medium-grained, rounded to subrounded, moderately sorted, silty.	5	8.0-10.0'	12"	5	2	3	4
	10.0'	SAND: Brown (5YR3/4), fine- to coarse-grained, rounded to subrounded, moderately sorted, slightly silty.	6	10.0-12.0'	12"	2	1	2	2
	12.0'	SAND: Brown (5YR3/4), fine- to medium-grained, rounded to subrounded, well sorted.	7	12.0-14.0'	24"	2	2	4	26
	14.0'	SAND: Alternately white (N9), fine- to medium-grained, rounded to subrounded, well sorted; and brown (10YR5/4), fine-grained, rounded to subrounded, well sorted.	8	14.0-16.0'	18"	2	3	8	8

NOTES: WOH = Weight of Hammer WOR = Weight of Rod

Total Depth: 38.0'
Grout Amount/Time: N/A
Time Boring Began: 1345
Time Boring Completed: 1600
Water Levels: Approximately 34' below land surface
Circulation Loss(es): N/A
Casing Installed/Removed: Piezometer (2" PVC) Installed to 22' below land surface
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: Split spoon/Shelby 22-24'
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-5
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE NO.	SAMPLE DEPTH	SAMPLE LENGTH	STP BLOWS/6" 1st	2nd	3rd	4th
	16.0'	SAND: Brown (5YR2/2), very fine- to fine-grained, rounded to subrounded, well sorted, silty.	9	16.0-17.5'	9"	4	8	8	
	16.5'	SAND: White (N9), fine-grained, rounded to subrounded, well sorted.							
	18.0'	SAND: White (N9), very fine- to medium-grained, rounded to subrounded, moderately sorted.	10	18.0-20.0'	18"	4	8	14	27
	20.0'	SAND: Same as above.	11	20.0-22.0'	12"	6	10	9	9
	21.5'	CLAY: Pale green (5G8/2), sandy (very fine- to fine-grained, rounded to subrounded), firm.							
	22.0'	CLAY: Shelby tube.	12	22.0-24.0'	24"				
	24.0'	CLAY: Pale green (5G8/2), sandy (very fine- to fine-grained, rounded to subrounded), very firm.	13	24.0-26.0'	12"	3	3	5	5
	26.0'	CLAY: Pale green (5G8/2) and rust (10YR6/6), slightly sandy (very fine- to fine-grained, rounded to subrounded), firm.	14	26.0-28.0'	18"	3	5	8	11
	26.5'	SAND: Tan (10YR8/2), fine- to medium-grained, rounded to subrounded, well sorted, clayey.							

NOTES:

Total Depth:
Grout Amount/Time:
Time Boring Began:
Time Boring Completed:
Water Levels:
Circulation Loss(es):
Casing Installed/Removed:
Water Used:
Project No.: 573565.01
Drilling Mud Used:
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube:
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-5
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE NO.	SAMPLE DEPTH	SAMPLE LENGTH	STP BLOWS/6" 1st	2nd	3rd	4th
	27.5'	CLAY: Pale green (5G8/2) and rust (10YR6/6), slightly sandy (very fine- to fine-grained, rounded to subrounded), firm.							
	28.0'	CLAY: Pale green (5G8/2) to rust (10R4/6), very firm.	15	28.0-30.0'	24"	9	9	12	10
	30.0'	CLAY: Pale green (5G8/2) and rust (10YR6/6), slightly sandy (very fine-grained, rounded to subrounded), very firm.	16	30.0-32.0'	24"	5	5	9	9
	32.0'	CLAY: Pale green (5G8/2), slightly sandy (very fine- to fine-grained, rounded to subrounded), very firm.	17	32.0-34.0'	24"	11	9	12	12
	34.0'	CLAY: Pale green (5G8/2), slightly sandy (very fine- to fine-grained, rounded to subrounded), soft.	18	34.0-36.0'	24"	WOR 12"		6	7
	36.0'	SAND: White (5YR8/2), fine- to medium-grained, rounded to subrounded, moderately sorted, slightly clayey.	19	36.0-38.0'	18"	7	4	5	9

NOTES:

Total Depth:
Grout Amount/Time:
Time Boring Began:
Time Boring Completed:
Water Levels:
Circulation Loss(es):
Casing Installed/Removed:
Water Used:
Project No.: 573565.01
Drilling Mud Used:
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube:
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-6
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	12.0'	SAND: Brown, fine-grained, well sorted.							
	15.0'	SAND: Light brown, fine-grained, well sorted.							
	17.0'	SAND: Light brown, fine-grained, well sorted, clayey.							
	20.0'	CLAY: Pale green, soft.							

NOTES:

Total Depth: 21.0'
Grout Amount/Time: N/A
Time Boring Began: 1020
Time Boring Completed: 1045
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: N/A
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-7
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	8.0'	SAND: Light brown, fine-grained, well sorted.							
	11.0'	SAND: White, fine-grained, well sorted.							
	12.0'	SAND: Light tan, fine-grained, well sorted.							
	13.0'	CLAY: Pale green, sandy, firm.							

NOTES:

Total Depth: 14.0'
Grout Amount/Time: N/A
Time Boring Began: 1100
Time Boring Completed: 1130
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: Piezometer (2" PVC) installed to 14.0' below land surface
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-8
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	7.0'	SAND: Gray-white, fine-grained, well sorted.							
	8.0'	SAND: Gray-brown, fine-grained, well sorted.							
	10.0'	CLAY: Pale green (5G8/2) and rust (10yr6/6), firm.	1	10.0-12.0'	18"	3	4	7	8
	12.0'	No recovery.	2	12.0-14.0'	0"				
	14.0'	CLAY: Shelby tube.	3	14.0-16.0'	24"				

NOTES:

Total Depth: 16.0'
Grout Amount/Time: N/A
Time Boring Began: 1530
Time Boring Completed: 1600
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: Piezometer (2" PVC) installed to 11.0' below land surface
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: Split spoon/Shelby 12-16'
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-9
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	9.0'	SAND: Brown, fine-grained, well sorted.							
	12.0'	SAND: Light brown, fine-grained, well sorted.							
	22.0'	CLAY: Pale green, firm.							

NOTES:

Total Depth: 23.0'
Grout Amount/Time: N/A
Time Boring Began: 1445
Time Boring Completed: 1530
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: N/A
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-10
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	10.0'	SAND: White (10YR8/2), fine- to medium-grained, rounded to subrounded, well sorted.	1	10.0-12.0'	12"	5	8	12	13
	12.0'	CLAY: Pale green (5G8/2) and rust (10YR6/6), sandy to very sandy (fine- to medium-grained, rounded to subrounded), soft to firm, with some organic material.	2	12.0-14.0'	12"	4	6	8	6
	14.0'	CLAY: Pale green (5G8/2) and rust (10YR6/6), firm to very firm.	3	14.0-16.0'	18"	2	4	6	6
	16.0'	LIMESTONE: White (N9), slightly clayey, friable.	4	16.0-18.0'	18"	9	12	17	16
	18.0'	LIMESTONE: White (N9), hard.	5	18.0-18.3'	4"	31/4"			

NOTES:

Total Depth: 18.3'
Grout Amount/Time: N/A
Time Boring Began: 0945
Time Boring Completed: 1040
Water Levels: N/A
Circulation Loss(es): 100% at 18'
Casing Installed/Removed: N/A
Water Used: N/A
Project No.: 573565.01
Drilling Mud Used: Bentonite gel, wash boring to 10'
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: Split spoon
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-11
Date: 11/22/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light tan, fine-grained, well sorted.							
	10.0'	CLAY: Pale green, sandy.							

NOTES:

Total Depth: 12.0'
Grout Amount/Time: N/A
Time Boring Began: 1040
Time Boring Completed: 1100
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: Piezometer (2" PVC) installed to 12' below land surface
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

LAW ENVIRONMENTAL, INC.
Log of Boring

Sheet 1 of 1

Project: Resource Recovery, Class I Landfill
Client: Pasco County
Boring: LB-12
Date: 11/23/93
Geologist: O. Thornberry
Location:
Land Surf. Elev.:

ELEV.	DEPTH	LITHOLOGIC DESCRIPTION	SAMPLE			STP BLOWS/6"			
			NO.	DEPTH	LENGTH	1st	2nd	3rd	4th
	0.0'	Grass and topsoil.							
	0.5'	SAND: Light gray, fine-grained, well sorted.							
	6.0'	CLAY: Pale green, firm.							

NOTES:

Total Depth: 7.0'
Grout Amount/Time: N/A
Time Boring Began: 1345
Time Boring Completed: 1400
Water Levels: N/A
Circulation Loss(es): N/A
Casing Installed/Removed: N/A
Water Used: N/A - Hollow Stem Auger
Project No.: 573565.01
Drilling Mud Used: N/A
Date: 12/7/93
Sampling Method, Split Spoon/Shelby Tube: N/A
Checked By: TCH

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TPT FROM	SCOPE TO	LINER FROM	WELL TO DEPTH
437129.01	113376	MAHARAJ, MICHAEL	2.00	26-24-17	DOMESTIC		001904	70				70
	ADDRESS: 14222 CHESTERFIELD		CITY/STATE: HUDSON, FL					ZIP: 34669-		PHONE: (000) 000-0000		
438911.01	114259	MADDELL, THOMAS	4.00	26-24-17	DOMESTIC		002233	29				45
	ADDRESS: LOT 1001 HAYS RD		CITY/STATE: PORT RICHEY, FL					ZIP: 34654-		PHONE: (000) 000-0000		
448286.01	119570	JAMES, ROBERT	2.00	26-24-17	DOMESTIC		001151	42				48
	ADDRESS: 10416 CHESTERFIELD TR		CITY/STATE: HUDSON, FL					ZIP: 34669-		PHONE: (000) 000-0000		
481025.01	009609	PASCO COUNTY	10.00	26-24-17	PUBLIC SUPPLY		002805	103				352
	ADDRESS: P O BOX 5478		CITY/STATE: HUDSON, FL					ZIP: 34674-		PHONE: (000) 000-0000		
495272.01	143821	PASCO RESOURCE RECOVERY	4.00	26-24-17	PUBLIC SUPPLY		001351	60				60
	ADDRESS: 1225 HAYES RD		CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 000-0000		
507038.01	154157	KRUSE, H.J.	2.00	26-24-17	DOMESTIC		002800	63				70
	ADDRESS: 14702 HAYES ROAD		CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 000-0000		
548990.01	205257	MICHAEL R SPAULDING	4.00	26-24-17	DOMESTIC		001151					
	ADDRESS: 14607 HAYS ROAD		CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 856-1970		
549100.01	205387	DOUGLAS CAVONIS	2.00	26-24-17	DOMESTIC		001151					
	ADDRESS: 15233 HAYS ROAD		CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (813) 856-4032		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
314129.01	080006	E SCARBOROU	3.00	35-24-17	DOMESTIC		999998	30				91
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
444958.01	116907	CORLEY, ED	4.00	35-24-17	DOMESTIC		002405	94				140
		ADDRESS: 1040 HARPER RD.	CITY/STATE: SPRINGHILL, FL				ZIP: -		PHONE: (000) 000-0000			
474734.01	136814	ROSTEL, P	4.00	35-24-17	DOMESTIC		002057	40				52
		ADDRESS: 14235 DELBEL DR	CITY/STATE: HUDSON, FL				ZIP: 34669-		PHONE: (000) 000-0000			
488609.01	113377	FORBES DEVELOPMENT	2.00	35-24-17	DOMESTIC		001036	42				50
		ADDRESS: 14312 CARNABY LANE	CITY/STATE: HUDSON, FL				ZIP: 34669-		PHONE: (000) 000-0000			
488610.01	113377	FORBES DEVELOPMENT	2.00	35-24-17	DOMESTIC		001036	21				32
		ADDRESS: 14312 CARNABY LANE	CITY/STATE: HUDSON, FL				ZIP: 34669-		PHONE: (000) 000-0000			
537108.01	164194	LIGHTHOUSE BUILD	4.00	35-24-17	DOMESTIC		002871	80				120
		ADDRESS: 6125 MARINER BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 34609-		PHONE: (000) 000-0000			
543486.01	033535	STEWART MOBILE HOMES	4.00	35-24-17	DOMESTIC		002871	75				120
		ADDRESS: 10404 N NEBRASKA AVE	CITY/STATE: TAMPA, FL				ZIP: 33612-		PHONE: (000) 000-0000			
548702.01	205036	BARBARA CARDILLO	4.00	35-24-17	DOMESTIC		001151					
		ADDRESS: LOT 998 HARMON ROAD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (813) 580-1971			
320877.01	077928	J POWELL	3.00	36-24-17	DOMESTIC		999998	60				90
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
343170.01	108821	DUNCAN,M	4.00	36-24-17	DOMESTIC		001056	52				110
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
354758.01	016232	SPANGLER, PAUL	4.00	36-24-17	DOMESTIC		001436	53				125
		ADDRESS: RT1 BOX 292	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
358678.01	019232	ZINK, JIM	4.00	36-24-17	DOMESTIC		002071	105				130
		ADDRESS: TRACT 2287 ROYAL OAK LANE	CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
360518.01	020615	CAVONIS, D.	4.00	36-24-17	DOMESTIC		001841	82				90
		ADDRESS: 108 EAST IVANHOE DR	CITY/STATE: PORT RICHEY, FL				ZIP: 33568-		PHONE: (000) 000-0000			
366128.01	025065	SINGLETON, C. B.	4.00	36-24-17	DOMESTIC		001056	60				130
		ADDRESS: HAYES RD	CITY/STATE: LAND O'LAKES, FL				ZIP: 33539-		PHONE: (000) 000-0000			

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
305295.01	047597	NOETHEN, ROBERT W ADDRESS: GENERAL DELIVERY	3.00	18-24-18 CITY/STATE: HUDSON, FL	DOMESTIC		001056 ZIP: 33568-	52 PHONE: (000) 000-0000					95
305656.01	048100	WHITE, EARL M ADDRESS: RT 5	3.00	18-24-18 CITY/STATE: BROOKSVILLE, FL	DOMESTIC		001436 ZIP: 33512-	53 PHONE: (000) 000-0000					83
306547.01	072435	R L AYRES ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	100 - PHONE: (000) 000-0000					145
306549.01	072437	D M STEINRU ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	91 - PHONE: (000) 000-0000					110
306634.01	072521	D BANKS ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	81 - PHONE: (000) 000-0000					97
306844.01	072727	J P HILLYER ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	50 - PHONE: (000) 000-0000					102
306927.01	072810	R BRADY ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	41 - PHONE: (000) 000-0000					88
307157.01	073039	D CARTER ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	61 - PHONE: (000) 000-0000					110
308635.01	074516	P JEFFERSON ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	42 - PHONE: (000) 000-0000					62
309081.01	074961	C GILLEY ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	50 - PHONE: (000) 000-0000					111
310808.01	073099	R HALL ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	60 - PHONE: (000) 000-0000					90
310913.01	076791	R MADDELL ADDRESS: NO ADDRESS	4.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	52 - PHONE: (000) 000-0000					140
310967.01	076845	J DONOVON ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	70 - PHONE: (000) 000-0000					103
311100.01	076978	T CANNELLA ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	125 - PHONE: (000) 000-0000					145
311128.01	077006	C M GARTON ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	125 - PHONE: (000) 000-0000					130
311305.01	077183	M LINDSAY ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	40 - PHONE: (000) 000-0000					80
311734.01	077612	DAVID SAYLO ADDRESS: NO ADDRESS	3.00	18-24-18 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	68 - PHONE: (000) 000-0000					100

WELL PERMITS ISSUED REPORT

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WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO FROM	LINER TO DEPTH	WELL
311757.01	077635	A J LAMPEL	3.00	18-24-18	DOMESTIC		999998	42				80
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
312186.01	078064	RAMSEY	3.00	18-24-18	DOMESTIC		999998	40				92
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
312237.01	078115	B ONEAL	3.00	18-24-18	DOMESTIC		999998	50				98
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
314511.01	080388	B CASTLEBER	3.00	18-24-18	DOMESTIC		999998	40				105
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
317265.01	083141	A BRANNEN	3.00	18-24-18	DOMESTIC		999998	90				142
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
317315.01	083191	T THOMAS	3.00	18-24-18	DOMESTIC		999998	110				164
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
318460.01	084333	J RAINES	3.00	18-24-18	DOMESTIC		999998	60				128
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
319349.01	085222	E KRAFT	3.00	18-24-18	DOMESTIC		999998	84				105
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
319936.01	085809	R STRINRICK	3.00	18-24-18	DOMESTIC		999998	71				125
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
320837.01	086710	SHADY H B C	3.00	18-24-18	DOMESTIC		001037	40				65
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
323971.01	089839	S F KENNEDY	3.00	18-24-18	DOMESTIC		001121	74				95
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
324313.01	090181	T THOMPSON	3.00	18-24-18	DOMESTIC		999998	73				86
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
324398.01	090266	T MCDANIELS	3.00	18-24-18	DOMESTIC		001436	42				90
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
324570.01	090438	G LEATHERS	3.00	18-24-18	DOMESTIC		999998	42				55
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
324972.01	090838	HARRY RIEGE	3.00	18-24-18	DOMESTIC		001121	47				65
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
326071.01	091937	S SORIA	3.00	18-24-18	DOMESTIC		999998	41				60
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
326072.01	091938	N WELLS	3.00	18-24-18	DOMESTIC		999998	63				82
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
326213.01	092079	M HOWARD	3.00	18-24-18	DOMESTIC		001121	87					87
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
327113.01	092979	WASILOWSKI	3.00	18-24-18	DOMESTIC		999998	63					80
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
329132.01	094995	L E AASENG	3.00	18-24-18	DOMESTIC		999998	42					66
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
342700.01	108369	GILLETTE,B	4.00	18-24-18	DOMESTIC		001699						
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
343137.01	108789	TRUNDLE,F	4.00	18-24-18	DOMESTIC		001841	41					85
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
348262.01	011268	JOHN P. HILLYER	4.00	18-24-18	DOMESTIC		001056						
		ADDRESS: 138 SHIRLA RAE	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
349580.01	012289	DAVID E. DAVIS	4.00	18-24-18	DOMESTIC		001040						
		ADDRESS: 70 NANCY DR	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
353529.01	012289	DAVID E. DAVIS	4.00	18-24-18	DOMESTIC		001696						
		ADDRESS: 70 NANCY DR	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
369866.01	027617	ROYCE, KEVIN	4.00	18-24-18	DOMESTIC		002160	110					130
		ADDRESS: LOT 164 SHIRLA RAE	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
372311.01	029402	AIRAL	4.00	18-24-18	DOMESTIC		002132	63					110
		ADDRESS: 215 ROYAL OAK	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
375524.01	032458	PETTY, PAULINE	4.00	18-24-18	DOMESTIC		001056	55					120
		ADDRESS: 177 NANCY DR	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
390451.01	043685	HRUSKA, MARK	4.00	18-24-18	DOMESTIC		001056						130
		ADDRESS: HELEN K DRIVE	CITY/STATE: BROOKSVILLE, FL				ZIP: 33692-		PHONE: (000) 000-0000				
390660.01	043704	FERANDES, MIRIAM	4.00	18-24-18	DOMESTIC		002169	122					122
		ADDRESS: 6974 ANGELA DRIVE	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
390858.01	043874	BLAZEVIE, ANTHONY R	4.00	18-24-18	DOMESTIC		002074						
		ADDRESS: 250 HELEN K	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
391717.01	044435	CHANDLER, DURAND	4.00	18-24-18	DOMESTIC		002263	84					120
		ADDRESS: 345 SHIRLEY RAE DR	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
391718.01	044435	CHANDLER, DURAND	4.00	18-24-18	DOMESTIC		002263	84					118
		ADDRESS: 345 SHIRLEY RAE DR	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
392973.01	045409	JOHNSON, RICHARD	4.00	18-24-18	DOMESTIC		001056	63					140
		ADDRESS: 171 HELEN K DRIVE	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				

WELL PERMITS ISSUED REPORT

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WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
396807.01	048481	LARSEN, RONALD	4.00	18-24-18	DOMESTIC		001841	95					140
		ADDRESS: LOT 163 SHIRLA RAE	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
397353.01	049282	NEASE, MARY	4.00	18-24-18	DOMESTIC		002092	58					70
		ADDRESS: 1837 MOCKING BIRD LANE	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
405619.01	054722	HELTON, MADILENE	4.00	18-24-18	DOMESTIC		001533	70					90
		ADDRESS: 117 LAURA LEE DRIVE	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
407082.01	055789	HOUSE, DUANE	2.00	18-24-18	DOMESTIC		002501	104					130
		ADDRESS: LOT 28 MOCKINGBIRD LANE	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
407107.01	055808	TRAMMELL, CALVIN	2.00	18-24-18	DOMESTIC		002802	99					99
		ADDRESS: LOT 19 CHRISTOPHER RD	CITY/STATE: HUDSON, FL				ZIP: 33526-		PHONE: (000) 000-0000				
411678.01	058752	GREER, JOSEPH	4.00	18-24-18	DOMESTIC		001056	77					165
		ADDRESS: 50 EAST HELEN K DRIVE	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
411779.01	058762	KLINE, D	4.00	18-24-18	DOMESTIC		001533	105					125
		ADDRESS: 608 HIGHLAND	CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000				
412263.01	059031	TEAGUE, KEVIN P	4.00	18-24-18	DOMESTIC		002800	60					80
		ADDRESS: PO BOX 11154	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
414483.01	060340	CREATIVE DESIGN	4.00	18-24-18	PUBLIC SUPPLY		002392	68					80
		ADDRESS: 2941 OLIVE OAK STREET	CITY/STATE: HUDSON, FL				ZIP: 33567-		PHONE: (000) 000-0000				
415227.01	061140	GOBLE, DALE	4.00	18-24-18	DOMESTIC		002405	74					175
		ADDRESS: 47 HELEN K DRIVE	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
419375.01	062916	ASTORE, RON	4.00	18-24-18	DOMESTIC		001841	52					135
		ADDRESS: LOT 16 HIGHLAND BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
420335.01	052085	SCHMITT ENTERPRISES	4.00	18-24-18	DOMESTIC		002120	81					90
		ADDRESS: 9276 CHILTON STREET	CITY/STATE: SPRING HILL, FL				ZIP: 33512-		PHONE: (000) 000-0000				
426516.01	065776	ARIOLA, CHARLES	4.00	18-24-18	DOMESTIC		002451	53					60
		ADDRESS: 216 SHADY HILLS ROAD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33526-		PHONE: (000) 000-0000				
428984.01	066812	SANDERS, JOHN	4.00	18-24-18	DOMESTIC		002092	92					114
		ADDRESS: 125 SUNCOAST BLVD.	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000				
432713.01	068557	ANDERSON MOBILE HOME	4.00	18-24-18	DOMESTIC		002836	47					61
		ADDRESS: 12155 CORTEZ BLVD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33573-		PHONE: (000) 000-0000				
442659.01	115959	CLINE, DEBBRA LYNN	2.00	18-24-18	DOMESTIC		003800	160					180
		ADDRESS: 28 HIGHLAND BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
447989.01	119303	KRYSHER, MALT	3.00	18-24-18	DOMESTIC		001436	52					85
		ADDRESS: 1478 AUBRY	CITY/STATE: SPRING HILL, FL				ZIP: 34609-		PHONE: (000) 000-0000				

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
464562.01	131614	HARMON, HARRY	4.00	18-24-18	DOMESTIC		002871	80					100
		ADDRESS: 32 HIGHLAND BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
464565.01	131614	HARMON, HARRY	4.00	18-24-18	DOMESTIC		002871	63					100
		ADDRESS: 32 HIGHLAND BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
464566.01	131614	HARMON, HARRY	4.00	18-24-18	DOMESTIC		002871	70					100
		ADDRESS: 32 HIGHLAND BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
466087.01	132306	TAYLOR,PATRICK R	2.00	18-24-18	DOMESTIC		002501	57					70
		ADDRESS: LOT 36 CARDINAL LANE	CITY/STATE: SPRING HILL, FL				ZIP: 34606-		PHONE: (000) 000-0000				
489322.01	144985	MCDANIEL/TOLER	4.00	18-24-18	DOMESTIC		001315	105					130
		ADDRESS: 267 HELEN K DR	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
496766.01	148741	MEDLEN GARRY	2.00	18-24-18	DOMESTIC		002800	54					75
		ADDRESS: 135 NANCY	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
497398.01	149084	HINCHER, JOE	4.00	18-24-18	DOMESTIC		001699	84					200
		ADDRESS: 69 NANCY DRIVE	CITY/STATE: SHADY HILLS, FL				ZIP: -	-	PHONE: (000) 000-0000				
506200.01	153763	SANDERSON,STEVE	4.00	18-24-18	DOMESTIC		002810	63					100
		ADDRESS: 193 LORA LEE	CITY/STATE: HUDSON, FL				ZIP: 34667-		PHONE: (000) 000-0000				
507515.01	154437	BURNEY, LOIS	2.00	18-24-18	DOMESTIC		001151	121					135
		ADDRESS: 15691 PEACE ROAD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
517765.01	148509	RANDY CHANDLER	4.00	18-24-18	DOMESTIC		002263	59					90
		ADDRESS: 229 SHIRLEY RAE	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
522608.01	170723	JOSE MARTY	4.00	18-24-18	DOMESTIC		002092	66					85
		ADDRESS: 181 PLATNUM ST.	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
523907.01	172475	CHARLES JENSEN	4.00	18-24-18	DOMESTIC		009048	84					100
		ADDRESS: 16308 BOSLEY	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (813) 856-6781				
524880.01	173432	ROBERT ROM	4.00	18-24-18	DOMESTIC		002800	97					110
		ADDRESS: 16204 PLATINUM	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
531532.01	178495	DAVID DAVIS	4.00	18-24-18	DOMESTIC		002364	84					101
		ADDRESS: LOT 238 NANCY DR	CITY/STATE: SHADY HILLS, FL				ZIP: 34610-		PHONE: (813) 856-0355				
535360.01	188510	MARGRET STEFANSKI	2.00	18-24-18	DOMESTIC		002807	42					65
		ADDRESS: 15606 HELEN K DR	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000				
547856.01	204421	SANDRA PAULSON	4.00	18-24-18	DOMESTIC		002805	144					250
		ADDRESS: 16916 PLATINUM DRIVE	CITY/STATE: HUDSON, FL				ZIP: 34667-		PHONE: (000) 000-0000				
551006.01	206863	ALFRED W SCHIAVONE	4.00	18-24-18	DOMESTIC		001232						
		ADDRESS: 16824 LAURA LEE DRIVE	CITY/STATE: SPRING HILL, FL				ZIP: 23610-		PHONE: (813) 856-3342				

WELL PERMITS ISSUED REPORT

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WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
305611.01	048124	CARTER, ROY	3.00	19-24-18	DOMESTIC		001232	40				86
ADDRESS: GENERAL DELIVERY			CITY/STATE: SPRING HILL, FL				ZIP: 33526-			PHONE: (000) 000-0000		
305845.01	048465	GIVEN, RUTH	3.00	19-24-18	DOMESTIC		001436	51				88
ADDRESS: RT 5			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-			PHONE: (000) 000-0000		
307439.01	073320	W G CHANDL	3.00	19-24-18	DOMESTIC		999998	48				86
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
307440.01	073321	E K CHANDL	3.00	19-24-18	DOMESTIC		999998	71				96
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
307902.01	073783	A L STEWART	3.00	19-24-18	DOMESTIC		999998	100				147
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
307971.01	073852	E M PAYCER	3.00	19-24-18	DOMESTIC		999998	43				102
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
308008.01	073889	L E RYALS	3.00	19-24-18	DOMESTIC		999998	60				85
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
308438.01	071286	NO NAME	4.00	19-24-18	DOMESTIC		999998	64				121
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
308439.01	074320	HELEN MADDO	3.00	19-24-18	DOMESTIC		999998	60				111
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
308550.01	074431	L C HOUSELL	3.00	19-24-18	DOMESTIC		999998	50				110
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
309080.01	074960	P C WITT	3.00	19-24-18	DOMESTIC		999998	50				100
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
310342.01	076221	D WOODRUFF	4.00	19-24-18	DOMESTIC		999998	49				96
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
311605.01	076393	C STRICKLAN	3.00	19-24-18	DOMESTIC		999998	61				80
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
311606.01	077484	M CHILES	3.00	19-24-18	DOMESTIC		999998	72				90
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
311607.01	077485	H L VANCE	3.00	19-24-18	DOMESTIC		999998	24				65
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
312729.01	078607	J D ALDERMA	3.00	19-24-18	DOMESTIC		999998	81				105
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
313262.01	079140	J C BEAVER	3.00	19-24-18	DOMESTIC		999998	60				85
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
313580.01	079458	L DAVIS	4.00	19-24-18	DOMESTIC		999998	51				72
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
314688.01	080565	J POST	4.00	19-24-18	DOMESTIC		999998	120				167
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
314786.01	080663	E REMON	3.00	19-24-18	DOMESTIC		999998	53				87
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
314920.01	080797	T HENDERSON	6.00	19-24-18	DOMESTIC		999998	40				81
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
316530.01	082406	E USHERWOOD	4.00	19-24-18	DOMESTIC		999998	50				102
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
316685.01	082561	M HOSEY	3.00	19-24-18	DOMESTIC		999998	42				85
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
318117.01	083991	D LONES	3.00	19-24-18	DOMESTIC		999998	60				90
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
318118.01	083992	M RESNINDO	3.00	19-24-18	DOMESTIC		999998	40				90
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
318435.01	084308	P E WHISLER	4.00	19-24-18	DOMESTIC		999998	100				120
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
320321.01	086194	J L HUGHES	3.00	19-24-18	DOMESTIC		999998	41				110
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
322693.01	088563	E MYERS	4.00	19-24-18	DOMESTIC		999998	72				72
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
326963.01	092829	M HOULE	3.00	19-24-18	DOMESTIC		999998	42				50
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
328655.01	094419	W C CONNER	3.00	19-24-18	DOMESTIC		999998	60				80
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
330661.01	096518	R HINKLE	4.00	19-24-18	DOMESTIC		001388	133				200
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
334240.01	100077	VERLIN E	4.00	19-24-18	DOMESTIC		001696	49				105
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
339283.01	100120	KIEGEL D	4.00	19-24-18	DOMESTIC		001696	61				115
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			
337484.01	103314	MCNUTT	4.00	19-24-18	DOMESTIC		001696	63				105
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000			

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338354.01	104176	CERJES,R ADDRESS: NO ADDRESS	4.00	19-24-18	DOMESTIC	CITY/STATE: NO CITY, FL	001498	66 ZIP: -				95 PHONE: (000) 000-0000
340346.01	106144	EADY,R V ADDRESS: NO ADDRESS	4.00	19-24-18	DOMESTIC	CITY/STATE: NO CITY, FL	001056	107 ZIP: -				170 PHONE: (000) 000-0000
350731.01	013224	WILLIAM C. HAYES ADDRESS: RT 2	4.00	19-24-18	DOMESTIC	CITY/STATE: EDWARDS, MO	001696	105 ZIP: 65326-				150 PHONE: (000) 000-0000
353630.01	015414	ROACH, TIM ADDRESS: 2307 PARK DRIVE	4.00	19-24-18	DOMESTIC	CITY/STATE: NEW PORT RICHEY, FL	001696	71 ZIP: 33552-				110 PHONE: (000) 000-0000
354835.01	016311	SPAULDING, G. ADDRESS: 1218 SUNCOAST BLVD	4.00	19-24-18	DOMESTIC	CITY/STATE: NEW PORT RICHEY, FL	001533	63 ZIP: 33553-				90 PHONE: (000) 000-0000
359063.01	019516	DRAIN, JOHN M. ADDRESS: 3902 LEILA AVE	4.00	19-24-18	DOMESTIC	CITY/STATE: TAMPA, FL	001699	79 ZIP: 33616-				110 PHONE: (000) 000-0000
362955.01	022442	HINKLE, CHARLES ADDRESS: RT 5, BOX 1731	4.00	19-24-18	DOMESTIC	CITY/STATE: BROOKSVILLE, FL	001056	50 ZIP: 33512-				125 PHONE: (000) 000-0000
365840.01	024643	ALLEN, ROBERT ADDRESS: 685 PAT ST	2.00	19-24-18	DOMESTIC	CITY/STATE: NEW PORT RICHEY, FL	002177	88 ZIP: 33553-				91 PHONE: (000) 000-0000
367750.01	025997	WAHLE, WARREN ADDRESS: LOT 30 BLUEBIRD LANE	4.00	19-24-18	DOMESTIC	CITY/STATE: BROOKSVILLE, FL	002159	67 ZIP: 33512-				100 PHONE: (000) 000-0000
369860.01	027611	COLSTON, BRANT S. ADDRESS: CARDINAL LANE SHADY HILLS	4.00	19-24-18	DOMESTIC	CITY/STATE: BROOKSVILLE, FL	001817	80 ZIP: 33512-				126 PHONE: (000) 000-0000
379193.01	036013	KELLEHAN, SAM ADDRESS: LOT A CARDINAL LANE	2.00	19-24-18	DOMESTIC	CITY/STATE: HUDSON, FL	002177	ZIP: 33567-				PHONE: (000) 000-0000
384752.01	040038	KELLY, ROBERT ADDRESS: PO BOX 11043 ROBIN LANE	4.00	19-24-18	DOMESTIC	CITY/STATE: BROOKSVILLE, FL	001056	102 ZIP: 33512-				145 PHONE: (000) 000-0000
387451.01	041573	SCOTT, JIM ADDRESS: CARDINAL LANE	4.00	19-24-18	DOMESTIC	CITY/STATE: SHADY HILLS, FL	001056	44 ZIP: 33526-				115 PHONE: (000) 000-0000
390531.01	043644	NICHOLS, WILLIAM ADDRESS: 1760 BLUEBIRD LANE	4.00	19-24-18	DOMESTIC	CITY/STATE: SPRING HILL, FL	002263	105 ZIP: 33526-				150 PHONE: (000) 000-0000
395304.01	047366	CARTER, ROY ADDRESS: GENERAL DELIVERY	3.00	19-24-18	DOMESTIC	CITY/STATE: HUDSON, FL	001056	ZIP: 33568-				PHONE: (000) 000-0000
395682.01	047289	BARRETT, JOHN A ADDRESS: GENERAL DELIVERY	3.00	19-24-18	DOMESTIC	CITY/STATE: SPRINGHILL, FL	000012	ZIP: 33526-				PHONE: (000) 000-0000
399298.01	050631	MULLIN, PAUL A ADDRESS: 1717 CARDINAL LANE	2.00	19-24-18	DOMESTIC	CITY/STATE: SPRING HILL, FL	002800	42 ZIP: 33526-				68 PHONE: (000) 000-0000

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404523.01	054013	HOUSE, WILLARD D ADDRESS: 28 MOCKINGBIRD LANE CITY/STATE: HUDSON, FL	2.00	19-24-18	DOMESTIC		999999 ZIP: 33568-				PHONE: (000) 000-0000	
405621.01	054724	PEAL, HEBERT ADDRESS: 148 SECOND STREET CITY/STATE: SPRING HILL, FL	4.00	19-24-18	DOMESTIC		001533 ZIP: 33526-	84			PHONE: (000) 000-0000	93
406154.01	055058	MORIN, CAROL ADDRESS: LOT 20 JAY CITY/STATE: BROOKSVILLE, FL	4.00	19-24-18	DOMESTIC		002092 ZIP: 33512-	96			PHONE: (000) 000-0000	118
419621.01	063029	SIZEMORE, GARY ADDRESS: 396 AMY LANE CITY/STATE: HUDSON, FL	2.00	19-24-18	DOMESTIC		001036 ZIP: 33562-	61			PHONE: (000) 000-0000	60
433971.01	069080	STRENG, CYNTHIA ADDRESS: CREMS LAKE CITY/STATE: SHADY HILLS, FL	4.00	19-24-18	DOMESTIC		002364 ZIP: 33610-	63			PHONE: (000) 000-0000	100
436684.01	113169	BILLINGS, JOHNNIE L ADDRESS: 15330 DENNIS DRIVE CITY/STATE: HUDSON, FL	2.00	19-24-18	DOMESTIC		002800 ZIP: 34669-	62			PHONE: (000) 000-0000	74
439775.01	114668	BARRET, JOHN ADDRESS: RT.5 BOX 1752 CARDNELL LN. CITY/STATE: LAND-O-LAKES, FL	4.00	19-24-18	DOMESTIC		002405 ZIP:	53	-		PHONE: (000) 000-0000	138
440257.01	114906	GULFWEST HOMES ADDRESS: 15955 US HWY 19 CITY/STATE: HUDSON, FL	2.00	19-24-18	DOMESTIC		002287 ZIP: 33467-	84			PHONE: (000) 000-0000	120
449688.01	120671	JOERGENS, LAWRENCE ADDRESS: LOT 84 SPARROW TRAIL CITY/STATE: SPRING HILL, FL	2.00	19-24-18	DOMESTIC		002800 ZIP: 34610-	63			PHONE: (000) 000-0000	80
456681.01	126225	PERKINS, JOHN ADDRESS: 1709 BLUEBIRD LANE CITY/STATE: SPRING HILL, FL	2.00	19-24-18	DOMESTIC		999999 ZIP: 34610-				PHONE: (000) 000-0000	
464295.01	131489	PERKINS,, JOHN ADDRESS: 1709 BLUEBIRD LANE CITY/STATE: SPRING HILL, FL	4.00	19-24-18	DOMESTIC		002364 ZIP: 34610-	73			PHONE: (000) 000-0000	85
467450.01	132950	CASTLEBERRY, BILLY ADDRESS: 123 RAVEN ST CITY/STATE: SPRING HILL, FL	2.00	19-24-18	DOMESTIC		002800 ZIP: 34610-	55			PHONE: (000) 000-0000	60
486586.01	143615	PASCO COUNTY PARKS & REC ADDRESS: 16735 CREMS LAKE DRIVE CITY/STATE: HUDSON, FL	4.00	19-24-18	PUBLIC SUPPLY		002808 ZIP: 34667-	103			PHONE: (000) 000-0000	255
490160.01	145370	LORENSTEN, RICHARD ADDRESS: 1729-D BLUE BIRD LANE CITY/STATE: SHADY HILLS, FL	4.00	19-24-18	DOMESTIC		002364 ZIP: 34610-	44			PHONE: (000) 000-0000	80
507127.01	164212	BARTON, MIKE ADDRESS: LOT 31 CARDINAL LANE CITY/STATE: SPRING HILL, FL	2.00	19-24-18	DOMESTIC		002800 ZIP: 34610-	76			PHONE: (000) 000-0000	85
507257.01	164290	TIMMONS, JAMES ADDRESS: 1784A ROBIN LANE CITY/STATE: SPRING HILL, FL	2.00	19-24-18	DOMESTIC		002800 ZIP: 34610-	84			PHONE: (000) 000-0000	94

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307105.01	071286	NO NAME	4.00	30-24-18	DOMESTIC		000065	102				160
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
307106.01	071286	NO NAME	4.00	30-24-18	DOMESTIC		000065	63				160
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
308067.01	073948	D E LAMOTTE	3.00	30-24-18	DOMESTIC		000065	40				137
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
308094.01	073975	C B CRONAN	3.00	30-24-18	DOMESTIC		000065	40				113
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
308154.01	074035	C A HINES	3.00	30-24-18	DOMESTIC		000065	90				95
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
314989.01	080866	R L VELEZ	4.00	30-24-18	DOMESTIC		999998	50				136
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
331262.01	097118	S STOKES	3.00	30-24-18	DOMESTIC		001328	63				85
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
358711.01	019199	FELICIANO, ALBERTO	2.00	30-24-18	DOMESTIC		999999					
ADDRESS: 1045 RIGGINS RD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
359346.01	019777	HEAVILIAN, WALTER A.	2.00	30-24-18	DOMESTIC		999999					
ADDRESS: RT 5, 1044 P-4 MCBRIDE ST			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
377911.01	034983	FIRST WESLEYAN CHURCH	2.00	30-24-18	DOMESTIC		001525	140				143
ADDRESS: SHADY HILLS RD			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
483033.01	141637	WIPPER, RON	4.00	30-24-18	DOMESTIC		001286	148				191
ADDRESS: 7809 BLUE BIRD			CITY/STATE: BROOKSVILLE, FL				ZIP:	-	PHONE: (000) 000-0000			
310719.01	076597	H D JONES	3.00	31-24-18	DOMESTIC		999998	30				38
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
310911.01	076789	EDGAR COLLI	4.00	31-24-18	DOMESTIC		000065	50				147
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
312718.01	078596	J STALTER	3.00	31-24-18	DOMESTIC		999998	60				150
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
313654.01	079531	M CADLE	3.00	31-24-18	DOMESTIC		999998	120				180
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
313698.01	079575	E BRATTEN	3.00	31-24-18	DOMESTIC		999998	40				93
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			
314454.01	080331	DR WHITEHUR	3.00	31-24-18	DOMESTIC		999998	60				108
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000			

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO FROM	LINER TO DEPTH	WELL DEPTH
314529.01	080406	M C JACOBSE	4.00	31-24-18	DOMESTIC		999998	62	-			120
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:			PHONE: (000) 000-0000		
322762.01	088631	T HOLMAN	3.00	31-24-18	DOMESTIC		999998	68	-			68
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:			PHONE: (000) 000-0000		
323532.01	089400	S HILL GARA	3.00	31-24-18	DOMESTIC		001056	70				105
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
325097.01	090963	S HILL GARA	3.00	31-24-18	DOMESTIC		001056	70				105
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-	PHONE: (000) 000-0000		
337935.01	103763	MARRERO,L	4.00	31-24-18	DOMESTIC		001056	52	-			100
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:			PHONE: (000) 000-0000		
383620.01	039152	JENNINGS, CURTIS & CHARLISS	4.00	31-24-18	DOMESTIC		001817	63				120
ADDRESS: WOODBINE RD			CITY/STATE: LAND O'LAKES, FL				ZIP: 33539-			PHONE: (000) 000-0000		
484691.01	142631	PRICE, GARY	4.00	31-24-18	DOMESTIC		002871	83	-			180
ADDRESS: LOT 28 MOCKINGBIRD RD			CITY/STATE: HUDSON, FL				ZIP:			PHONE: (000) 000-0000		
541521.01	199124	TERRI DARWICK	4.00	31-24-18	DOMESTIC		002267	147	-			260
ADDRESS: 17444 CALDWELL DR			CITY/STATE: SPRINGHILL, FL				ZIP: 34610-			PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
304913.01	046297	SAMON, JERRY EDWARD	4.00	13-24-17	DOMESTIC		001232	31					97
		ADDRESS: PO BOX 187	CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33553-		PHONE: (000) 000-0000				
305402.01	047831	LOWRY, JERRY M	3.00	13-24-17	DOMESTIC		001056	44					100
		ADDRESS: RT 1 SHADY HILLS RD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
305645.01	048089	COLE, THOMAS	3.00	13-24-17	DOMESTIC		001076	127					132
		ADDRESS: GENERAL DELIVERY	CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000				
306367.01	072266	G PETERSON	3.00	13-24-17	DOMESTIC		999998	42					115
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
306981.01	071286	NO NAME	4.00	13-24-17	DOMESTIC		999998	73					124
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
307943.01	073824	C E MICKLES	3.00	13-24-17	DOMESTIC		999998	81					107
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
311208.01	077086	S ACERRA	3.00	13-24-17	DOMESTIC		999998	50					85
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
311771.01	077649	A STRICKLIN	4.00	13-24-17	DOMESTIC		999998	63					106
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
312567.01	078445	M E JAMESON	4.00	13-24-17	DOMESTIC		999998	60					90
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
313934.01	079811	LARRY ELAND	4.00	13-24-17	DOMESTIC		999998	81					121
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
316086.01	081963	P BOWLES	3.00	13-24-17	DOMESTIC		999998	84					104
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
316100.01	081977	V HIERS	3.00	13-24-17	DOMESTIC		999998	94					110
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
317274.01	083150	R BURKE	3.00	13-24-17	DOMESTIC		999998	92					130
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
320135.01	074516	P JEFFERSON	4.00	13-24-17	DOMESTIC		999998	63					90
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
320474.01	086347	L MCGUIRE	3.00	13-24-17	DOMESTIC		999998	84					110
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
321200.01	086347	L MCGUIRE	3.00	13-24-17	DOMESTIC		999998						
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
321908.01	087778	C BOHON	3.00	13-24-17	DOMESTIC		001037	42					90
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER TO DEPTH	WELL DEPTH
366935.01	025460	GONZALEZ	2.00	13-24-17	DOMESTIC		001525	52				74
ADDRESS: 2-A SHADEY HILLS RD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
368740.01	026734	HUMBERTSON, HARVIN	4.00	13-24-17	DOMESTIC		002159	42				80
ADDRESS: 183 WOODLAWN			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
370655.01	028163	MORAGUES, CAROLYN	3.00	13-24-17	DOMESTIC		001436	63				110
ADDRESS: 529 MEMORY LANE			CITY/STATE: BROOKSVILLE, FL				ZIP: 33526-		PHONE: (000) 000-0000			
371623.01	028873	DEWITT, KEITH	2.00	13-24-17	DOMESTIC		001605	36				39
ADDRESS: LOT 9 UNIT 1 HOLIDAY DR			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
378558.01	035631	LENNON, CHUCK	4.00	13-24-17	DOMESTIC		002092	100				105
ADDRESS: LOT 1087 WOODS AVE			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
384539.01	019149	HOOBLER, PAUL	4.00	13-24-17	DOMESTIC		001841	115				145
ADDRESS: 5932 MEADOW DR			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
390501.01	043627	KEPPEL, L E	4.00	13-24-17	DOMESTIC		002364	63				85
ADDRESS: 116 NICKS DRIVE			CITY/STATE: BROOKSVILLE, FL				ZIP: 33526-		PHONE: (000) 000-0000			
392084.01	045236	KERR, KENNETH	4.00	13-24-17	DOMESTIC		001533	33				36
ADDRESS: 940 WOODLAWN			CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
410944.01	058215	BARADLAY, TIBOR	4.00	13-24-17	DOMESTIC		002364	84				110
ADDRESS: 295 LITTLE RANCH ROAD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33526-		PHONE: (000) 000-0000			
431239.01	067900	C. ALFONSO-J. RODRIGUE	4.00	13-24-17	DOMESTIC		002405	21				155
ADDRESS: 45 LITTLE RANCH ROAD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33573-		PHONE: (000) 000-0000			
432054.01	068240	JACKSON, BELINDA M.	4.00	13-24-17	DOMESTIC		002887	63				140
ADDRESS: 1709 NORTH CLUB			CITY/STATE: TAMPA, FL				ZIP: 33617-		PHONE: (000) 000-0000			
435256.01	039055	RISSER OIL COMPANY	4.00	13-24-17	PUBLIC SUPPLY		001351	86				140
ADDRESS: 16021 WALSHINGHAM RD			CITY/STATE: INDIAN ROCKS BEACH, FL				ZIP: 33535-		PHONE: (000) 000-0000			
439772.01	114656	FORTNER, RICHARD	4.00	13-24-17	DOMESTIC		002800	63				83
ADDRESS: 1815 SHADY HILLS RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
440329.01	114940	HILDITCH, DEAN	4.00	13-24-17	DOMESTIC		002800	46				67
ADDRESS: 41 LITTLE RANCH RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
441058.01	115325	STONE, CHARLES	2.00	13-24-17	DOMESTIC		001151	63				76
ADDRESS: 108 GARY RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
451016.01	007770	VENICE GARDENS UTILITY CORPORATION	4.00	13-24-17	DOMESTIC		002887	77				126
ADDRESS: P.O. DRAWER 908			CITY/STATE: VENICE, FL				ZIP: 34284-		PHONE: (813) 485-4851			

WELL PERMITS ISSUED REPORT

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MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
322380.01	088250	ACCENT BLDS	4.00	13-24-17	DOMESTIC		001056	50					120
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
323280.01	089149	M DAVIDSON	3.00	13-24-17	DOMESTIC		001094	57					100
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
329989.01	095851	J SANDIFER	4.00	13-24-17	DOMESTIC		001696	44					110
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
330259.01	096120	D E LOCKE	3.00	13-24-17	DOMESTIC		001121	45					68
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
331444.01	097300	RUIY	3.00	13-24-17	DOMESTIC		001251	45					100
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
335157.01	100993	MCTEAGUE E	4.00	13-24-17	DOMESTIC		001696	105					135
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
336473.01	102306	HUGHES	4.00	13-24-17	DOMESTIC		001696	70					100
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
336474.01	102307	SNOWDEN L	4.00	13-24-17	DOMESTIC		001696	63					100
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
338033.01	103861	LANDIG, ROGER	4.00	13-24-17	DOMESTIC		001699	65					120
		ADDRESS: 44 OAKDALE RD.	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
339355.01	131429	HUTCHINSON	4.00	13-24-17	DOMESTIC		001696	52					95
		ADDRESS: 5316 9TH AVE DRIVE WEST	CITY/STATE: BRADENTON, FL				ZIP: 34209-		PHONE: (000) 000-0000				
340205.01	106007	GARAREK,N	4.00	13-24-17	DOMESTIC		001056	41					112
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
344283.01	109822	GRABIL,J	4.00	13-24-17	DOMESTIC		001696	63					100
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
345002.01	110482	DEHOFF,M A	4.00	13-24-17	DOMESTIC		001696	63					99
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
345008.01	110488	MENCHEY,MRS	4.00	13-24-17	DOMESTIC		001696						
		ADDRESS: NO ADDRESS	CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000				
348176.01	011202	ROBERT HINK	4.00	13-24-17	DOMESTIC		001690	50					65
		ADDRESS: 1335 MAGGIE LN	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
364093.01	016779	LASKER, GENE	4.00	13-24-17	DOMESTIC		001037	62					107
		ADDRESS: 33 LITTLE RANCH SHADY HILLS	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				
364313.01	023459	ANTHONY P. AGLIANO	4.00	13-24-17	DOMESTIC		001817	42					108
		ADDRESS: SHADY HILLS-LOT 224	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000				

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
452803.01	123197	RODRIGUEZ, JOSEPH	4.00	13-24-17	DOMESTIC		002357	42					75
		ADDRESS: 45 LITTLE RANCH RD		CITY/STATE: BROOKSVILLE, FL				ZIP: 34610-		PHONE: (000) 000-0000			
457047.01	054864	CHRISTOPHER HOMES	2.00	13-24-17	DOMESTIC		001036	53					70
		ADDRESS: 10392 SPRING HILL DRIVE		CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
470903.01	134915	POWERS, JAMES	4.00	13-24-17	DOMESTIC		002800	63					78
		ADDRESS: LOT 40 HELEN K		CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
475813.01	137421	CORRIVEAU, RAY	4.00	13-24-17	DOMESTIC		002800	63					75
		ADDRESS: LOT 38 HELEN K		CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
478376.01	138888	LARSH, ERNIE	4.00	13-24-17	DOMESTIC		002800	84					96
		ADDRESS: LOT 37 HELENK		CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
484730.01	142657	AKINS, WAYNE	4.00	13-24-17	PUBLIC SUPPLY		001699	220					265
		ADDRESS: 233 SHADEYHILLS ROAD		CITY/STATE: SPRING HILL, FL				ZIP: 34609-		PHONE: (000) 000-0000			
500431.01	150785	BOOTH, JANE	2.00	13-24-17	DOMESTIC		002207	42					55
		ADDRESS: LOT 5 PEACE BLVD		CITY/STATE: SPRING HILL, FL				ZIP: -		PHONE: (000) 000-0000			
508087.01	154741	ASSOCIATION OF RETARDED CITIZEN	4.00	13-24-17	PUBLIC SUPPLY		002207	42	37	42			65
		ADDRESS: 39 LITTLE RANCH ROAD		CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
518736.01	167019	ROBERT KAZER	2.00	13-24-17	DOMESTIC		009090	47					73
		ADDRESS: 10421 TIGER TRAIL		CITY/STATE: SHADY HILLS, FL				ZIP: 34610-		PHONE: (000) 000-0000			
539789.01	197674	STEVE LONG	4.00	13-24-17	DOMESTIC		002800	42					65
		ADDRESS: LOT D6 SHADY HILLS RD		CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
547056.01	203771	STEVE LEVINE	4.00	13-24-17	DOMESTIC		002263	105					155
		ADDRESS: 15100 HELEN K DRIVE		CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
308413.01	074294	M RAULERSON	3.00	14-24-17	DOMESTIC		000012	84					120
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
309300.01	075180	R E LANE SR	4.00	14-24-17	DOMESTIC		999998	60					108
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
311289.01	077167	A STATLER	3.00	14-24-17	DOMESTIC		999998	94					108
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
312239.01	078117	A FABRIZI	3.00	14-24-17	DOMESTIC		999998	60					95
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
313696.01	079573	D E ESTOCAD	3.00	14-24-17	DOMESTIC		999998	70					108
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			
314687.01	080564	R JANOZINIS	3.00	14-24-17	DOMESTIC		999998	30					103
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL				ZIP: -		PHONE: (000) 000-0000			

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316169.01	076201	R MOORE	4.00	14-24-17	DOMESTIC		999998	40					100
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
317355.01	083231	H HUTCHINSO	3.00	14-24-17	DOMESTIC		999998	62					90
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
320513.01	086386	R WILLIAMS	3.00	14-24-17	DOMESTIC		999998	51					120
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
321387.01	087260	J WATTS	3.00	14-24-17	DOMESTIC		001037	40					65
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
321532.01	087404	M M TRACER	3.00	14-24-17	DOMESTIC		001037	44					80
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
322285.01	088155	J GANT	4.00	14-24-17	DOMESTIC		001436	56					56
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
324070.01	089938	JAMES JONES	3.00	14-24-17	DOMESTIC		001037	42					97
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
325144.01	091010	O BURROUGH	4.00	14-24-17	DOMESTIC		001056	61					170
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
325469.01	091335	C NIX	3.00	14-24-17	DOMESTIC		001037	45					50
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
326933.01	092799	C SIKES	3.00	14-24-17	DOMESTIC		001271	76					115
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
328938.01	094802	J S RUSSELL	4.00	14-24-17	DOMESTIC		001056	46					120
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
337946.01	103774	AYLOR,D	4.00	14-24-17	DOMESTIC		001696	84					90
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
341890.01	107606	RILEY,D	4.00	14-24-17	DOMESTIC		001696	66					105
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
343113.01	108765	BRITTS,L	2.00	14-24-17	DOMESTIC		001986						
		ADDRESS: NO ADDRESS		CITY/STATE: NO CITY, FL			ZIP:	-	PHONE: (000) 000-0000				
347171.01	010368	CLIFFORD ALLEY	4.00	14-24-17	DOMESTIC		001817	40					130
		ADDRESS: 1905 WEST BURKE STREET		CITY/STATE: TAMPA, FL			ZIP:	33604-	PHONE: (000) 000-0000				
348688.01	011637	MICHAEL TOOHEY	4.00	14-24-17	DOMESTIC		001696	50					73
		ADDRESS: PEACE BLVD		CITY/STATE: BROOKSVILLE, FL			ZIP:	33512-	PHONE: (000) 000-0000				
350314.01	012879	MICKLE	4.00	14-24-17	DOMESTIC		001696	63					105
		ADDRESS: LITTLE RANCH RD		CITY/STATE: BROOKSVILLE, FL			ZIP:	33512-	PHONE: (000) 000-0000				

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
WELL CONSTRUCTION PERMITTING

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
357440.01	018338	JORDAN, ROBERT	2.00	14-24-17	DOMESTIC		001533	53					68
		ADDRESS: 546 N PEACE BLVD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-				PHONE: (000) 000-0000		
363007.01	022425	MORLEY, ARNOLD	4.00	14-24-17	DOMESTIC		002159						
		ADDRESS: BOX 24 SOUTH GARY ROAD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-				PHONE: (000) 000-0000		
368018.01	026158	COYGREAVE, WALTER	2.00	14-24-17	DOMESTIC		002177						
		ADDRESS: 300 TIGER TRAIL	CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-				PHONE: (000) 000-0000		
368577.01	026587	HANSON, MRS.	4.00	14-24-17	DOMESTIC		002159	52					115
		ADDRESS: PO BOX 164	CITY/STATE: ARIPEKA, FL				ZIP: 33502-				PHONE: (000) 000-0000		
370019.01	027761	BONCZKIEWIZ, STAN	4.00	14-24-17	DOMESTIC		001533	64					71
		ADDRESS: JAMES RD NORTH	CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-				PHONE: (000) 000-0000		
375414.01	032447	GELTCH, KEN	4.00	14-24-17	DOMESTIC		001056	76					140
		ADDRESS: TIGER TRAIL	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-				PHONE: (000) 000-0000		
377364.01	034272	HENLEY, EDWARD	4.00	14-24-17	DOMESTIC		002177	100					110
		ADDRESS: 518 TIGER TRAIL	CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-				PHONE: (000) 000-0000		
377365.01	034273	REDDING, HELEN	4.00	14-24-17	DOMESTIC		002177	55					65
		ADDRESS: LOT 1281 PENNY LANE	CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-				PHONE: (000) 000-0000		
377470.01	034650	TOOLE, DAYLON	4.00	14-24-17	DOMESTIC		001056	52					140
		ADDRESS: LOT 452 AKINS RD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-				PHONE: (000) 000-0000		
379684.01	036347	KRAUS, NORMAN	4.00	14-24-17	DOMESTIC		002075	84					115
		ADDRESS: GARY RD	CITY/STATE: HUDSON, FL				ZIP: 33567-				PHONE: (000) 000-0000		
379685.01	036348	MCCOY, EDNA	4.00	14-24-17	DOMESTIC		002075	45					100
		ADDRESS: 421 SOUTH PEACE	CITY/STATE: SHADY HILLS, FL				ZIP: 33526-				PHONE: (000) 000-0000		
381395.01	037590	DEVINCENT, WILLIAM	4.00	14-24-17	DOMESTIC		001525	46					55
		ADDRESS: LOT 481 LITTLE RANCH RD	CITY/STATE: HUDSON, FL				ZIP: 33567-				PHONE: (000) 000-0000		
381396.01	037590	DEVINCENT, WILLIAM	4.00	14-24-17	DOMESTIC		001525	40					60
		ADDRESS: LOT 481 LITTLE RANCH RD	CITY/STATE: HUDSON, FL				ZIP: 33567-				PHONE: (000) 000-0000		
381696.01	037789	MICKLE, JAMES & NORMA	4.00	14-24-17	DOMESTIC		002075	45					140
		ADDRESS: 246 LITTLE RANCH RD	CITY/STATE: SPRING HILL, FL				ZIP: 33526-				PHONE: (000) 000-0000		
388208.01	042116	TIBERII, JOSEPH	4.00	14-24-17	DOMESTIC		002075	45					100
		ADDRESS: 414 SO PEACE BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 33526-				PHONE: (000) 000-0000		
400227.01	051236	KYTE, RUTH	4.00	14-24-17	DOMESTIC		001841	122					198
		ADDRESS: LOT 38 MOULTEN ROAD	CITY/STATE: HUDSON, FL				ZIP: 33567-				PHONE: (000) 000-0000		
405421.01	054589	TAYLOR, BETTY	4.00	14-24-17	DOMESTIC		001040	98					135
		ADDRESS: PO BOX 434	CITY/STATE: LAND O' LAKES, FL				ZIP: 33539-				PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO FROM	LINER TO DEPTH	WELL
406248.01	055333	ANGELSON, JOE	2.00	14-24-17	DOMESTIC		002092	37				44
		ADDRESS: LOT 24 S GARY ROAD	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
407275.01	136461	ALLSTATE HOMES	4.00	14-24-17	DOMESTIC		001056	63				138
		ADDRESS: POST OFFICE BOX 280158	CITY/STATE: TAMPA, FL				ZIP: 33682-0158		PHONE: (000) 000-0000			
409345.01	057220	VIRGILIO, VICTOR E	4.00	14-24-17	DOMESTIC		002801	46				65
		ADDRESS: LOT 4860 PEACE BLVD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
414674.01	060903	THOMAS, E	4.00	14-24-17	DOMESTIC		002092					
		ADDRESS: LOT 238 GARDY ROAD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
415856.01	055333	ANGELSON, JOE	2.00	14-24-17	DOMESTIC		002800	42				60
		ADDRESS: LOT 24 S GARY ROAD	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
420578.01	063403	CAMBPELL, PATTY	2.00	14-24-17	DOMESTIC		001151	47				82
		ADDRESS: LOT 488 JAMES STREET	CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
422949.01	064569	HAWKINS, G	4.00	14-24-17	DOMESTIC		002836	67				84
		ADDRESS: 150 JAMES ST	CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
427947.01	066331	JABLONSKI, ZIGGY	4.00	14-24-17	DOMESTIC		002392	52				60
		ADDRESS: 422 AKINS DRIVE	CITY/STATE: SPRINGHILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
435354.01	069706	VIRGILIO, VICTOR	2.00	14-24-17	DOMESTIC		002814	71				81
		ADDRESS: 538 PEACE BLVD NORTH	CITY/STATE: SPRINGHILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
438310.01	113950	HAWKINS, NORMAN	4.00	14-24-17	DOMESTIC		002836	45				90
		ADDRESS: 158 JAMES ST	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
442623.01	115942	MCCOY, DENNIS	4.00	14-24-17	DOMESTIC		002871	78				115
		ADDRESS: 421 S PEACE BLVD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
473178.01	135976	ARMSTRONG, EARL	4.00	14-24-17	DOMESTIC		002364	42				50
		ADDRESS: 31 GARY RD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
480867.01	140386	PARRISH, JOE	4.00	14-24-17	DOMESTIC		002263	63				145
		ADDRESS: 619 NORTH PEACE	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
486815.01	143743	MOORES, DON	4.00	14-24-17	DOMESTIC		002800	51				75
		ADDRESS: 150 N GARY RD	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
491048.01	058216	BARADLAY, TIBOR	2.00	14-24-17	DOMESTIC		002800	42				60
		ADDRESS: 295 LITTLE RANCH ROAD	CITY/STATE: BROOKSVILLE, FL				ZIP: 33526-		PHONE: (000) 000-0000			
502500.01	151853	HUBBELL, HENRY	4.00	14-24-17	DOMESTIC		002002	60				86
		ADDRESS: LOT 31 TIGER TRAIL	CITY/STATE: SPRING HILL, FL				ZIP:	-	PHONE: (000) 000-0000			
503121.01	152191	BOWDEN, KAREN	4.00	14-24-17	DOMESTIC		002800	63				80
		ADDRESS: 515 BRADY AVE	CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY TELESCOPE DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
509882.01	155674	FLEET FINANCE	4.00	14-24-17	DOMESTIC		002364	42				55
ADDRESS: 14529 PEACE BLVD			CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 000-0000		
510127.01	155785	BROWN, GAYLYN	4.00	14-24-17	DOMESTIC		001436	84				125
ADDRESS: 641 TOD TRAIL			CITY/STATE: BROOKSVILLE, FL					ZIP: 34610-		PHONE: (000) 000-0000		
521075.01	169419	FRANCIS PRUNOSKE JR	4.00	14-24-17	DOMESTIC		002800	42				60
ADDRESS: 14910 GARSON LP			CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 000-0000		
521520.01	169660	DANILO BENITEZ	2.00	14-24-17	DOMESTIC		009068	91				100
ADDRESS: LOT 595 JAMES ST			CITY/STATE: HUDSON, FL					ZIP: 34669-		PHONE: (000) 000-0000		
526824.01	174984	MARIA MARKELKA	2.00	14-24-17	DOMESTIC		002207	21				60
ADDRESS: 14510 GLODDNER LANE			CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 000-0000		
528625.01	176077	MR LONGO	4.00	14-24-17	DOMESTIC		001817	80				222
ADDRESS: 14730 GARSON LOOP MRD.			CITY/STATE: SHADY HILLS, FL					ZIP: 34610-		PHONE: (000) 000-0000		
534770.01	188009	DANIEL LITTLE SR	2.00	14-24-17	DOMESTIC		002800	42				50
ADDRESS: 14831 LITTLE RANCH RD			CITY/STATE: SPRING HILL, FL					ZIP: 34610-		PHONE: (000) 000-0000		
536440.01	194781	ROY HARRIS	4.00	14-24-17	DOMESTIC		009090	43				49
ADDRESS: 9207 GROUSE WAY			CITY/STATE: HUDSON, FL					ZIP: 34668-		PHONE: (000) 000-0000		
546269.01	203194	JACK SANDIFER	4.00	14-24-17	DOMESTIC		002392	42				50
ADDRESS: LOT #245 LITTLE RANCH ROAD			CITY/STATE: HUDSON, FL					ZIP: 34667-		PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
308989.01	071286	NO NAME ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	61	-			112 PHONE: (000) 000-0000
310354.01	076233	E POTTER ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	31	-			51 PHONE: (000) 000-0000
312338.01	078216	J C FARMER ADDRESS: NO ADDRESS	3.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	40	-			98 PHONE: (000) 000-0000
312468.01	078346	R A LONG ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	60	-			113 PHONE: (000) 000-0000
312598.01	078476	R HARRIS ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	94	-			133 PHONE: (000) 000-0000
313579.01	079457	M J EDWARDS ADDRESS: NO ADDRESS	3.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	61	-			97 PHONE: (000) 000-0000
314619.01	080496	D D CANALE ADDRESS: NO ADDRESS	3.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	60	-			112 PHONE: (000) 000-0000
315245.01	081122	NILEY KING ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	205	-			210 PHONE: (000) 000-0000
315290.01	081167	OHELAHI ADDRESS: NO ADDRESS	3.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	40	-			74 PHONE: (000) 000-0000
315971.01	081848	M HOPPER ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	90	-			90 PHONE: (000) 000-0000
317052.01	082928	M G BROCK ADDRESS: NO ADDRESS	3.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	42	-			44 PHONE: (000) 000-0000
317431.01	083306	C FREEMAN ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	000002 ZIP:	31	-			86 PHONE: (000) 000-0000
318583.01	084456	M J VESTUTO ADDRESS: NO ADDRESS	3.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	28	-			36 PHONE: (000) 000-0000
318909.01	084782	J T BICKEL ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	60	-			105 PHONE: (000) 000-0000
321075.01	086948	F COLONGE ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	81	-			150 PHONE: (000) 000-0000
321076.01	086949	J GRANBERRY ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	999998 ZIP:	81	-			140 PHONE: (000) 000-0000
321483.01	087356	RAYMON WITT ADDRESS: NO ADDRESS	4.00	23-24-17	DOMESTIC	CITY/STATE: NO CITY, FL	001037 ZIP:	52	-			84 PHONE: (000) 000-0000

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
322070.01	087940	J SEUFERT	4.00	23-24-17	DOMESTIC		001056	65					115
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
322187.01	075833	J HEWITT	3.00	23-24-17	DOMESTIC		999998	81					142
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
323152.01	089021	D HILL	3.00	23-24-17	DOMESTIC		001056	40					110
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
323534.01	089402	T DIMASCO	4.00	23-24-17	DOMESTIC		001024	88					115
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
324297.01	090165	R M KNEES	4.00	23-24-17	DOMESTIC		001056	92					140
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
324843.01	090710	L C KENNEDY	3.00	23-24-17	DOMESTIC		001121	100					100
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
324944.01	090811	W TAYLOR	3.00	23-24-17	DOMESTIC		001037	63					96
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
327906.01	093770	K R FRENCH	3.00	23-24-17	DOMESTIC		001121	63					70
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
329437.01	095299	C SINGLETON	4.00	23-24-17	DOMESTIC		001696	46					101
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
330316.01	096177	R STAFFORD	3.00	23-24-17	DOMESTIC		001056	52					118
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
330611.01	096468	C VANCUYK	3.00	23-24-17	DOMESTIC		001056	88					105
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
338982.01	104792	PHILLIPS,J	4.00	23-24-17	DOMESTIC		001056	40					107
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:		-		PHONE: (000) 000-0000		
343330.01	030069	LOGAN, R. L.	4.00	23-24-17	DOMESTIC		001841	63					92
ADDRESS: 11 OAKWOOD DR			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33553-				PHONE: (000) 000-0000		
349301.01	012083	HARRY HOUSE	2.00	23-24-17	DOMESTIC		001904						75
ADDRESS: LOT #33 CHARLES STREET			CITY/STATE: NEWPORT RICHEY, FL				ZIP: 33552-				PHONE: (000) 000-0000		
351067.01	013428	BILL D. STANLEY	2.00	23-24-17	DOMESTIC		001094	139					302
ADDRESS: 158 PARKWOOD ST			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-				PHONE: (000) 000-0000		
351371.01	013660	WRIGHT, WAYNE D.	2.00	23-24-17	DOMESTIC		001904						110
ADDRESS: LOT 1661 LARRY RD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-				PHONE: (000) 000-0000		
355099.01	016572	CASSER, KEN	2.00	23-24-17	DOMESTIC		001533	46					49
ADDRESS: PO BOX 10176			CITY/STATE: TAMPA, FL				ZIP: 33679-				PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
361535.01	021338	HENDERSON, JERRY A.	2.00	23-24-17	DOMESTIC		001904	50				55
		ADDRESS: 89 WOODLAWN DR		CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000		
361571.01	021357	GOLANDS, NICK	2.00	23-24-17	DOMESTIC		001587					
		ADDRESS: 511 E MONTANA		CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-		PHONE: (000) 000-0000		
362645.01	022143	WOOLIMES, TOM	4.00	23-24-17	DOMESTIC		002100	40				50
		ADDRESS: LOT 12 NELSON RD		CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000		
363463.01	022766	CASSUL, KEN	4.00	23-24-17	DOMESTIC		001587					
		ADDRESS: 521 HAYS RD & 3RD AVE		CITY/STATE: PORT RICHEY, FL				ZIP: 33552-		PHONE: (000) 000-0000		
368152.01	026268	DRANKWALTER, M.	4.00	23-24-17	DOMESTIC		001841	44				102
		ADDRESS: 4TH AVE		CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-		PHONE: (000) 000-0000		
369677.01	027478	KEMMIS, TIMOTHY L.	2.00	23-24-17	DOMESTIC		002100	40				45
		ADDRESS: 21 G DENNIS DR		CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-		PHONE: (000) 000-0000		
369678.01	027479	BAUER, GENE	2.00	23-24-17	DOMESTIC		002100					80
		ADDRESS: LOT 6 DENNIS DR		CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000		
372217.01	029347	MEL ACTTERHAUF	4.00	23-24-17	DOMESTIC		002092					114
		ADDRESS: 813 TERESA BOULEVARD SOUTH		CITY/STATE: HUDSON, FL				ZIP: 33562-		PHONE: (000) 000-0000		
378212.01	035474	SPARKS, DAVID C.	4.00	23-24-17	DOMESTIC		001C56	70				130
		ADDRESS: 520 HAYS RD		CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000		
380674.01	036935	WOODS, BILLIE D.	4.00	23-24-17	DOMESTIC		002035	94				145
		ADDRESS: 649 PIECE BLVD		CITY/STATE: SHADY HILLS, FL				ZIP: 33512-		PHONE: (000) 000-0000		
390021.01	043470	GLOVER, MILDRED	4.00	23-24-17	DOMESTIC		001056	113				150
		ADDRESS: 949 JACKIE DRIVE		CITY/STATE: HUDSON, FL				ZIP: 33562-		PHONE: (000) 000-0000		
394533.01	046313	MCDANIELS, THOMAS	3.00	23-24-17	DOMESTIC		001179					
		ADDRESS: GENERAL DELIVERY		CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33553-		PHONE: (000) 000-0000		
395092.01	047121	LITTLE, JAMES E	3.00	23-24-17	DOMESTIC		001649					99999
		ADDRESS: GENERAL DELIVERY		CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000		
402449.01	052595	MICHAEL PAYNE	4.00	23-24-17	DOMESTIC		002364	72				81
		ADDRESS: LOT 944 PETER MAY BOULEVARD		CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000		
403666.01	053205	DOLCE, ANTHONY	4.00	23-24-17	DOMESTIC		002800	73				88
		ADDRESS: 611 HAYS ROAD		CITY/STATE: SPRING HILL, FL				ZIP: 33512-		PHONE: (000) 000-0000		
407482.01	056001	CILIENTO, MARIO	4.00	23-24-17	DOMESTIC		002800	42				63
		ADDRESS: 628 HAYS ROAD		CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000		
407483.01	056001	CILIENTO, MARIO	4.00	23-24-17	DOMESTIC		002800	84				100
		ADDRESS: 628 HAYS ROAD		CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000		

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO FROM	LINER TO DEPTH	WELL
431069.01	067714	JOHNSTON, GAY L.	4.00	23-24-17	DOMESTIC		002836	70				95
ADDRESS: PETERMAX ROAD			CITY/STATE: HUDSON, FL				ZIP: 33567-		PHONE: (000) 000-0000			
434109.01	069151	L C KENNEDY	2.00	23-24-17	DOMESTIC		001151	52				64
ADDRESS: 14310 TIMOTHY LANE			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33652-		PHONE: (000) 000-0000			
438328.01	113957	CILIENTO, MARIO	2.00	23-24-17	DOMESTIC		002800	63				68
ADDRESS: 512 HAYS RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
438574.01	114087	CALDWELL, IRIS	4.00	23-24-17	DOMESTIC		001699	59				130
ADDRESS: BOX 620 HAYES RD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33526-		PHONE: (000) 000-0000			
439300.01	114439	BUBENZER, DONNA	2.00	23-24-17	DOMESTIC		001986	81				86
ADDRESS: LOT 24 3RD AVE			CITY/STATE: HUDSON, FL				ZIP: 33552-		PHONE: (000) 000-0000			
467803.01	133078	BARNETT,EVERETT	2.00	23-24-17	DOMESTIC		002800	46				49
ADDRESS: 654 N HAYES RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
470105.01	134575	BIEGANOWSKI,RICHARD	2.00	23-24-17	DOMESTIC		001151	62				71
ADDRESS: 444 HAYS RD			CITY/STATE: BROOKSVILLE, FL				ZIP: 34626-		PHONE: (000) 000-0000			
478010.01	138712	UTTER,BERNARD N	4.00	23-24-17	DOMESTIC		009061	63				80
ADDRESS: 523 HAYS RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
478011.01	138712	UTTER,BERNARD N	4.00	23-24-17	DOMESTIC		009061	56				85
ADDRESS: 523 HAYS RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
480835.01	140369	LORENTSEN, K	4.00	23-24-17	DOMESTIC		002800	42				55
ADDRESS: TRACT 48 HAYES RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
486583.01	143614	FLYNN,ED	4.00	23-24-17	DOMESTIC		002263	63				105
ADDRESS: 15723 JACKIE DR			CITY/STATE: HUDSON, FL				ZIP: 34667-		PHONE: (000) 000-0000			
490613.01	145605	ARIOTTI,MINA	2.00	23-24-17	DOMESTIC		002800	84				90
ADDRESS: 502 HAYS RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
503110.01	152182	ELSTON,DOUG	2.00	23-24-17	DOMESTIC		002800	105				108
ADDRESS: 512 HAYES RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
511608.01	160644	PARISI, PASQUALE	2.00	23-24-17	DOMESTIC		001151	115				120
ADDRESS: 3341 SEAWAY DR			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 34652-		PHONE: (000) 000-0000			
511609.01	160644	PARISI, PASQUALE	2.00	23-24-17	DOMESTIC		001151	60				65
ADDRESS: 3341 SEAWAY DR			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 34652-		PHONE: (000) 000-0000			
512048.01	113957	CILIENTO, MARIO	2.00	23-24-17	PUBLIC SUPPLY		002800	30				84
ADDRESS: 512 HAYS RD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			
514515.01	163332	FLORIDA GOLDEN YEARS	4.00	23-24-17	PUBLIC SUPPLY		002800	20			63	63
ADDRESS: 15404 HAYS ROAD			CITY/STATE: SPRINGHILL, FL				ZIP: 34610-		PHONE: (000) 000-0000			

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

WCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	LINER TO	WELL DEPTH
523317.01	171648	KEVIN PEET	2.00	23-24-17	DOMESTIC		002207	42					50
ADDRESS: 14701 LOMA AVE			CITY/STATE: SPRING HILL, FL				ZIP: 34610-			PHONE: (000) 000-0000			
523460.01	171840	ARTHUR JOHNSON	4.00	23-24-17	DOMESTIC		009048	118					133
ADDRESS: LOT 34 BATTENWOOD			CITY/STATE: HUDSON, FL				ZIP: 34667-			PHONE: (000) 000-0000			
531097.01	178099	EVERETT BARNETT	4.00	23-24-17	DOMESTIC		002071	84					117
ADDRESS: 14745 FRISKEY LANE			CITY/STATE: LAND O LAKES, FL				ZIP: 34639-			PHONE: (000) 000-0000			
532467.01	010657	MCDANIELS MOBILE HOME	4.00	23-24-17	DOMESTIC		001150	99					115
ADDRESS: HIGHWAY 41			CITY/STATE: INVERNESS, FL				ZIP: 32650-			PHONE: (000) 000-0000			
543974.01	196523	JARRYD BUILDERS	4.00	23-24-17	DOMESTIC		001817	157					185
ADDRESS: PO BOX 488			CITY/STATE: LUTZ, FL				ZIP: 33549-			PHONE: (000) 000-0000			
548124.01	204528	ALPHONSE J. DUBOIS	4.00	23-24-17	DOMESTIC		002392	44					47
ADDRESS: 15206 ELMONT			CITY/STATE: SPRING HILL, FL				ZIP: 34608-			PHONE: (000) 000-0000			
319033.01	084906	M.A. MILLIAN	4.00	24-24-17	DOMESTIC		999998	163					176
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
319034.01	084907	M MILLIAMSO	3.00	24-24-17	DOMESTIC		999998	165					165
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
324615.01	090483	C SELETOS	4.00	24-24-17	DOMESTIC		001056	246					270
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
325322.01	091188	K GILLETTE	4.00	24-24-17	DOMESTIC		001056	60					122
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
327653.01	085683	L ANDERSON	4.00	24-24-17	DOMESTIC		999998	42					90
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
329333.01	095195	F DUNCAN	3.00	24-24-17	DOMESTIC		999998	85					101
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
332395.01	080601	L S CLARK	3.00	24-24-17	DOMESTIC		999998	42					60
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-		PHONE: (000) 000-0000			
361995.01	021651	PERKS, E.	2.00	24-24-17	DOMESTIC		002057	90					90
ADDRESS: 245 HELEN K DR			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33568-			PHONE: (000) 000-0000			
363365.01	022709	MIX, CLYDE E.	2.00	24-24-17	DOMESTIC		002092	56					61
ADDRESS: JAMES ST			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33652-			PHONE: (000) 000-0000			
367733.01	025983	MASTELLER, J.	4.00	24-24-17	DOMESTIC		001533	42					51
ADDRESS: TRACT 232 TIGER TRAIL			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-			PHONE: (000) 000-0000			
368921.01	026873	FISHER, DEBORAH L.	2.00	24-24-17	DOMESTIC		001040	84					94
ADDRESS: 4TH AVE OFF HAYES RD			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-			PHONE: (000) 000-0000			

WELL PERMITS ISSUED REPORT

COUNTY: PASCO ISSUE DATE RANGE: 01/01/70 THRU 04/22/94

MCP NUMBER	OWNER ID	OWNER INFORMATION	WELL DIAMETER	LOCATION S-T-R	USE CD	DESCRIPTION	CONTRACTOR ID	PRIMARY DEPTH	TELESCOPE FROM	TELESCOPE TO	LINER FROM	WELL TO DEPTH
370707.01	028218	BUTLER, JIM	4.00	24-24-17	DOMESTIC		001841	67				115
ADDRESS: 213 HELEN K			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
371431.01	028721	STONE, DAVID M. & GEORGETTE	2.00	24-24-17	DOMESTIC		001094	109				272
ADDRESS: 12 BLUEBIRD LANE			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
373488.01	026158	COTGREAVE, WALTER	2.00	24-24-17	DOMESTIC		002177	42				50
ADDRESS: 300 TIGER TRAIL			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33552-		PHONE: (000) 000-0000			
374817.01	136461	ALLSTATE HOMES	4.00	24-24-17	DOMESTIC		001056					125
ADDRESS: POST OFFICE BOX 280158			CITY/STATE: TAMPA, FL				ZIP: 33682-0158		PHONE: (000) 000-0000			
375282.01	031996	WHITEHEAD, JOHN F.	4.00	24-24-17	DOMESTIC		001843	60				110
ADDRESS: 3RD AVE			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
383950.01	039389	SAYLOR, BONNIE	4.00	24-24-17	PUBLIC SUPPLY		001056	65				125
ADDRESS: 508 NELSON RD			CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
388643.01	010964	FLANAGAN HOMES	4.00	24-24-17	DOMESTIC		001841	63				108
ADDRESS: P.O. BOX 5126			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
392806.01	045197	SEML, DANIEL M	2.00	24-24-17	DOMESTIC		001040	90				110
ADDRESS: LOT 242 TIGER TRAIL			CITY/STATE: HUDSON, FL				ZIP: 33567-		PHONE: (000) 000-0000			
392976.01	045282	PANTALLERESCO, MARIO J	2.00	24-24-17	DOMESTIC		001040	120				140
ADDRESS: LOT 480-A LITTLE RANCH ROAD			CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
399727.01	050870	DIMRIO, JOHN	2.00	24-24-17	DOMESTIC		001904	145				165
ADDRESS: 4TH AVE			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000			
400152.01	050970	HAMILTON, THEODORE	4.00	24-24-17	DOMESTIC		001533	87				106
ADDRESS: 15223 TERESA			CITY/STATE: NEW PORT RICHEY, FL				ZIP: 33553-		PHONE: (000) 000-0000			
411339.01	058494	PETERS, RAY E	4.00	24-24-17	DOMESTIC		002364	42				47
ADDRESS: 640 HAYES ROAD			CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000			
437594.01	113635	WRIGHT, LES	4.00	24-24-17	DOMESTIC		001533	67				70
ADDRESS: 1603 3RD AVE			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000			
446029.01	117698	SHADY HILLS METHODIST CHURCH	4.00	24-24-17	PUBLIC SUPPLY		002075	51				120
ADDRESS: P O BOX 5177			CITY/STATE: SPRING HILL, FL				ZIP: 34606-		PHONE: (000) 000-0000			
502030.01	136502	DEEP SOUTH HOMES	4.00	24-24-17	DOMESTIC		001841	60				90
ADDRESS: 1331 NOAH AVE			CITY/STATE: SPRING HILL, FL				ZIP: 34608-		PHONE: (000) 000-0000			
518922.01	167107	DON MUISENER	4.00	24-24-17	DOMESTIC		002092	74				88
ADDRESS: 16225 WHIPPOORWILL			CITY/STATE: BROOKSVILLE, FL				ZIP: 34610-		PHONE: (000) 000-0000			
523257.01	171599	JULIE ANTOINETTE	4.00	24-24-17	DOMESTIC		001150	70				78
ADDRESS: 15224 NAVA ST			CITY/STATE: HUDSON, FL									

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306110.01	048779	DORMANY, JIM	4.00	25-24-17	DOMESTIC		001094	78			110
ADDRESS: GENERAL DELIVERY			CITY/STATE: HUDSON, FL				ZIP: 33568-		PHONE: (000) 000-0000		
373186.01	030093	GANDARA, JOSE L.	4.00	25-24-17	DOMESTIC		001037				
ADDRESS: LOT 3 HIGHLAND RD			CITY/STATE: SPRING HILL, FL				ZIP: 33526-		PHONE: (000) 000-0000		
379431.01	036221	VAN WERT, BRUCE	4.00	25-24-17	DOMESTIC		001056	110			185
ADDRESS: EAST COURT HIGHLANDS			CITY/STATE: BROOKSVILLE, FL				ZIP: 33512-		PHONE: (000) 000-0000		
439303.01	114442	AUTS INC	2.00	25-24-17	DOMESTIC		001036	32			35
ADDRESS: 14416 THORNWOOD DR			CITY/STATE: HUDSON, FL				ZIP: 34669-		PHONE: (000) 000-0000		
439304.01	114442	AUTS INC	2.00	25-24-17	DOMESTIC		001036	101			120
ADDRESS: 14416 THORNWOOD DR			CITY/STATE: HUDSON, FL				ZIP: 34669-		PHONE: (000) 000-0000		
505317.01	153310	HUMANE SOCIETY OF PASCO	4.00	25-24-17	DOMESTIC		009048	57			70
ADDRESS: 1360 HAYS ROAD			CITY/STATE: SPRING HILL, FL				ZIP: 34610-		PHONE: (000) 000-0000		
308235.01	074116	H H BROXSON	3.00	26-24-17	DOMESTIC		000065	30			45
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
308440.01	074321	R DUNCAS	3.00	26-24-17	DOMESTIC		000065	40			130
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
308551.01	074432	J RENEW	3.00	26-24-17	DOMESTIC		000065	76			102
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
308757.01	074638	W H HITCHUA	3.00	26-24-17	DOMESTIC		000065	50			63
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
308848.01	074729	D A TOOKEY	3.00	26-24-17	DOMESTIC		000065	34			43
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
309458.01	075338	H ROGERS	4.00	26-24-17	DOMESTIC		000065	60			130
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
309636.01	075516	L CHEEK	3.00	26-24-17	DOMESTIC		000065	56			86
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
312437.01	078315	D L VICKERS	4.00	26-24-17	DOMESTIC		999998	40			104
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
312513.01	078391	E CORLEY	4.00	26-24-17	DOMESTIC		999998	50			97
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
313829.01	079706	C LARISEY	3.00	26-24-17	DOMESTIC		999998	76			97
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:	-	PHONE: (000) 000-0000		
317580.01	083455	T BROWN	3.00	26-24-17	DOMESTIC		999998	80			95
ADDRESS: NO ADDRESS			CITY/STATE: NO CITY, FL				ZIP:				

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317681.01	083556	R THOMAS JR ADDRESS: NO ADDRESS	3.00	26-24-17 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	50	-				85 PHONE: (000) 000-0000
318332.01	084205	G JAMES ADDRESS: NO ADDRESS	3.00	26-24-17 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	63	-				97 PHONE: (000) 000-0000
318944.01	084817	C D WARD ADDRESS: NO ADDRESS	4.00	26-24-17 CITY/STATE: NO CITY, FL	DOMESTIC		999998 ZIP:	40	-				110 PHONE: (000) 000-0000
326383.01	092249	L WHIDDEN ADDRESS: NO ADDRESS	3.00	26-24-17 CITY/STATE: NO CITY, FL	DOMESTIC		001056 ZIP:	52	-				120 PHONE: (000) 000-0000
342508.01	108196	WHITE,T ADDRESS: NO ADDRESS	4.00	26-24-17 CITY/STATE: NO CITY, FL	DOMESTIC		001696 ZIP:	126	-				180 PHONE: (000) 000-0000
343601.01	136461	ALLSTATE HOMES ADDRESS: POST OFFICE BOX 280158	4.00	26-24-17 CITY/STATE: TAMPA, FL	DOMESTIC		001056 ZIP: 33682-0158						PHONE: (000) 000-0000
358281.01	018908	AUBIN, GEORGE ADDRESS: 868 RANCH HAYS ROAD	4.00	26-24-17 CITY/STATE: BROOKSVILLE, FL	DOMESTIC		001696 ZIP: 33512-	63					105 PHONE: (000) 000-0000
373078.01	030006	CARMAN JR., ROBERT ADDRESS: LOT 1 HAYS RD	4.00	26-24-17 CITY/STATE: BROOKSVILLE, FL	DOMESTIC		002092 ZIP: 33512-	56					88 PHONE: (000) 000-0000
377328.01	034247	CREED, DAVID A. ADDRESS: 998 HAYS RD	2.00	26-24-17 CITY/STATE: SPRING HILL, FL	DOMESTIC		002092 ZIP: 33526-	30					38 PHONE: (000) 000-0000
383754.01	039251	WESTFALL, EFFIE ADDRESS: 16 HAYS ROAD	2.00	26-24-17 CITY/STATE: NEW PORT RICHEY, FL	DOMESTIC		002177 ZIP: 33552-						PHONE: (000) 000-0000
391248.01	044114	LANDABL, GAYLORD ADDRESS: TRACK 68 HAYS ROAD	4.00	26-24-17 CITY/STATE: HUDSON, FL	DOMESTIC		002092 ZIP: 33562-	107					131 PHONE: (000) 000-0000
414259.01	060250	LANDAL, GAYLORD ADDRESS: LOT 57 CANTERBURY LANE	2.00	26-24-17 CITY/STATE: SPRING HILL, FL	DOMESTIC		001036 ZIP: 33526-						PHONE: (000) 000-0000
414260.01	060250	LANDAL, GAYLORD ADDRESS: LOT 57 CANTERBURY LANE	2.00	26-24-17 CITY/STATE: SPRING HILL, FL	DOMESTIC		001036 ZIP: 33526-						PHONE: (000) 000-0000
420704.01	056001	CILIENTO, MARIO ADDRESS: 628 HAYS ROAD	2.00	26-24-17 CITY/STATE: SPRING HILL, FL	DOMESTIC		002800 ZIP: 33526-	49					56 PHONE: (000) 000-0000
422028.01	064374	CANTERBERRY FARMS ADDRESS: CANTERBERRY FARMS	2.00	26-24-17 CITY/STATE: HUDSON, FL	DOMESTIC		001980 ZIP: 33562-	50					70 PHONE: (000) 000-0000
431527.01	067968	LAWSON, RICK M ADDRESS: 275 STEWART DRIVE	4.00	26-24-17 CITY/STATE: SPRING HILL, FL	DOMESTIC		002405 ZIP: 33526-	56					130 PHONE: (000) 000-0000
434063.01	069211	KRUSE, DON ADDRESS: 1035 HAYES RD	4.00	26-24-17 CITY/STATE: SPRINGHILL, FL	DOMESTIC		002405 ZIP:	63					112 PHONE: (000)

APPENDIX 7

GEOTECHNICAL INVESTIGATION

REPORT

APPENDIX 7

GEOTECHNICAL INVESTIGATION REPORT

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

March 30, 1994

Mr. Richard Mayer
Law Environmental, Inc.
1715 N. Westshore Blvd., Suite 875
Tampa, Florida 33607

Subject: **Results of Geotechnical Exploration**
Pasco County Resource Recovery
Pasco County, Florida
Law Engineering Project No. 461-06530.27

Dear Mr. Mayer:

Law Engineering is pleased to submit the results of our geotechnical exploration for the subject project. Our services were provided in accordance with the Intercompany Subconsulting Agreement which was signed by Mr. Richard Mayer of Law Environmental and Mr. John Phillips of Law Engineering.

The scope of work for this project was provided by Law Environmental and consisted of the following:

- Set 5 piezometers;
- Drill 5 soil test borings;
- Take 3 undisturbed samples;
- Perform 3 consolidation tests;
- Perform 5 grain size tests.

The geotechnical exploration was performed at the Pasco County Resource Recovery site immediately south of the existing cell A-1.

The borings performed encountered a relatively uniform subsurface profile consisting of 3 strata. Beneath the ground surface, the borings encountered clean fine sands to depths ranging from 6 feet to 20 feet below grade. In boring LB-2, the fine sand was encountered to the termination depth of 26 feet. The sandy soil encountered was very loose to firm with standard penetration resistance values (N-values) ranging from 1 to 22 blows per foot.

The borings then encountered a more cohesive clayey soil ranging in thickness from 2 to 16 feet in thickness. The clay layer was firm to very stiff with N-values ranging from 6 to 23 blows per foot. Three undisturbed samples were obtained from this clay layer and consolidation tests were performed.

In two of the five borings, the limestone formation was encountered at depths of 13.5 and 16 feet below existing grade. The formation consisted of calcareous silty clay with limestone fragments. The limestone encountered was very stiff to very hard with N-values ranging from 29 blows per foot to 50 blows for 3 inches of penetration.

The subsurface conditions encountered are shown on the Test Boring Records in the Appendix. These records represent our interpretation of the subsurface conditions based on the field logs, visual examination of field samples by an engineer, and tests of the field samples. The lines designating the interface between various strata on the Test Boring Records represent the approximate interface location. In addition, the transition between strata may be gradual.

In addition to the soil test borings performed, the following 5 piezometers were installed to the following depths:

Piezometer	Depth
LB-1	14 feet
LB-3	29 feet
LB-5	22 feet
LB-7	14 feet
LB-11	12 feet

At test locations LB-6, LB-9, and LB-12 an auger boring was drilled to 21, 21, and 6 feet, respectively, however, no piezometers were set at these locations.

The results of the three consolidation tests are presented in the Appendix. The samples tested were classified as slightly sandy clay soils. Also, five grain size tests were performed on samples obtained from each soil test boring. As requested, the grain size samples tested were from the surficial sandy stratum. The grain size curves are also presented in the Appendix.

We were informed that the landfill cell would likely be 75 to 100 feet in height. We were also informed that the landfill material weighs about 85 pcf. This corresponds to a stress in the range of 6.4 to 8.5 ksf. Using this stress range together with the soil conditions found in the soil test borings together with the results of our laboratory testing, we calculated that settlement should range from 1.5 to 2.0 feet. Ultimate bearing capacities over 15 ksf should be available at this site.

We wish to remind you that our exploration services include storing the samples collected and making them available for inspection for 60 days. The samples are then discarded unless you request otherwise.

We appreciate the opportunity to work on this project. If you have any questions, please give us a call.

Sincerely,

LAW ENGINEERING, INC.

John C. Phillips, P.E.
Senior Geotechnical Engineer
Registered Florida No. 47586

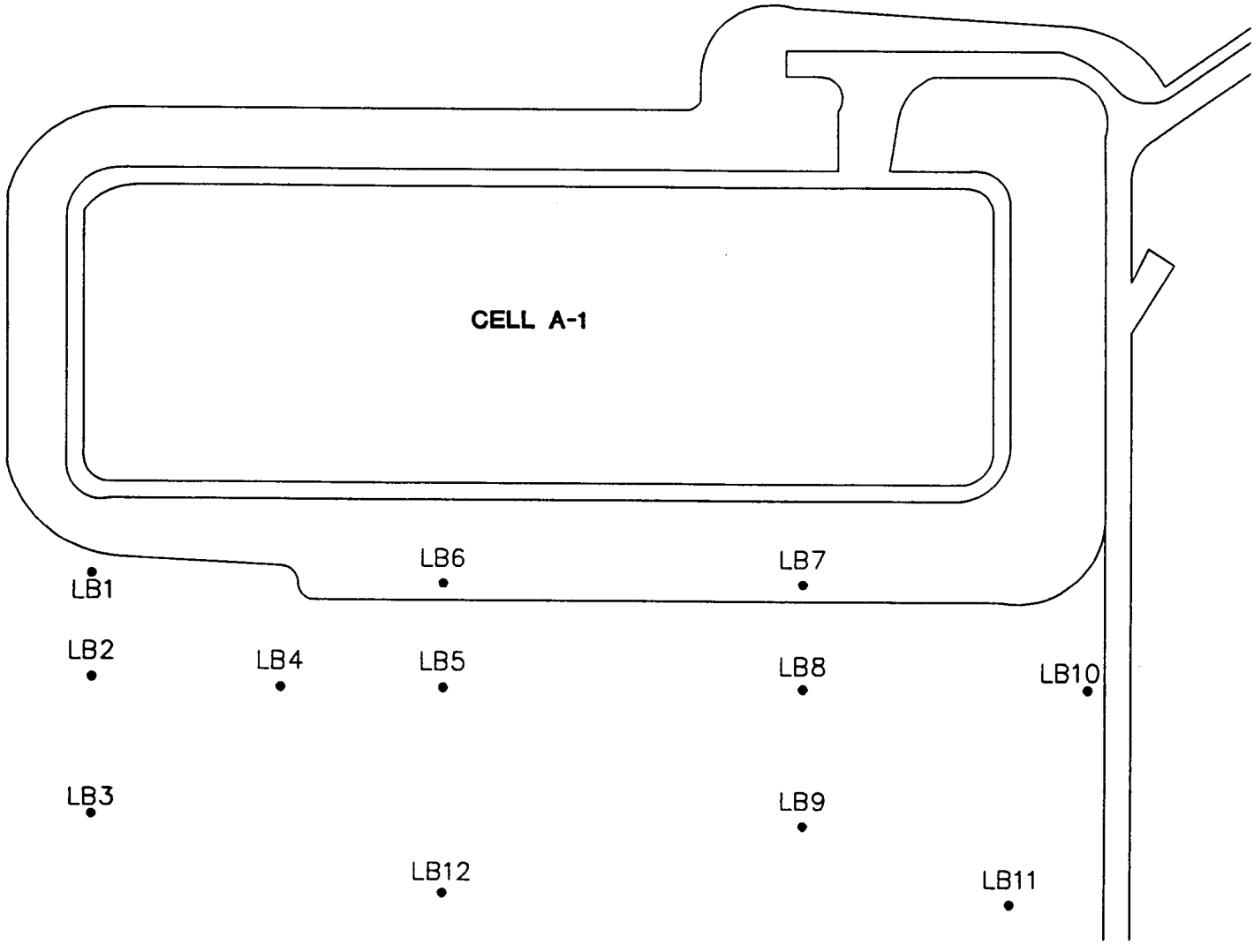
Curtis J. Roos, P.E.
Chief Engineer
Registered Florida No. 27570

JCP/CJR:sjm/1653027.RGE

Distribution: 2 - Addressee

Appendix:
- Field Exploration Plan
- Key to Classifications and Symbols
- Test Boring Records
- Grain Size Curves
- Consolidation Test Results
- Field Testing Procedures
- Laboratory Testing Procedures

APPENDIX



0 100 200 300

APPROXIMATE SCALE IN FEET

REFERENCE: Site Plan Provided By Law Environmental

Prepared/Date: JLD 3/4/94
Checked/Date: JCP 3/4/94

LAW ENVIRONMENTAL – TAMPA
PASCO COUNTY RESOURCE RECOVERY
PASCO COUNTY, FLORIDA

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

FIELD EXPLORATION PLAN

Project 461–06530.27 Figure

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	NO. OF BLOWS, N	RELATIVE DENSITY
SANDS:	0-4	Very Loose
	5-10	Loose
	11-30	Firm
	31-50	Dense
	OVER 50	Very Dense

		CONSISTENCY
SILTS & CLAYS:	0-2	Very Soft
	3-4	Soft
	5-8	Firm
	9-15	Stiff
	16-30	Very stiff
	31-50	Hard
	OVER 50	Very Hard

PARTICAL SIZE IDENTIFICATION

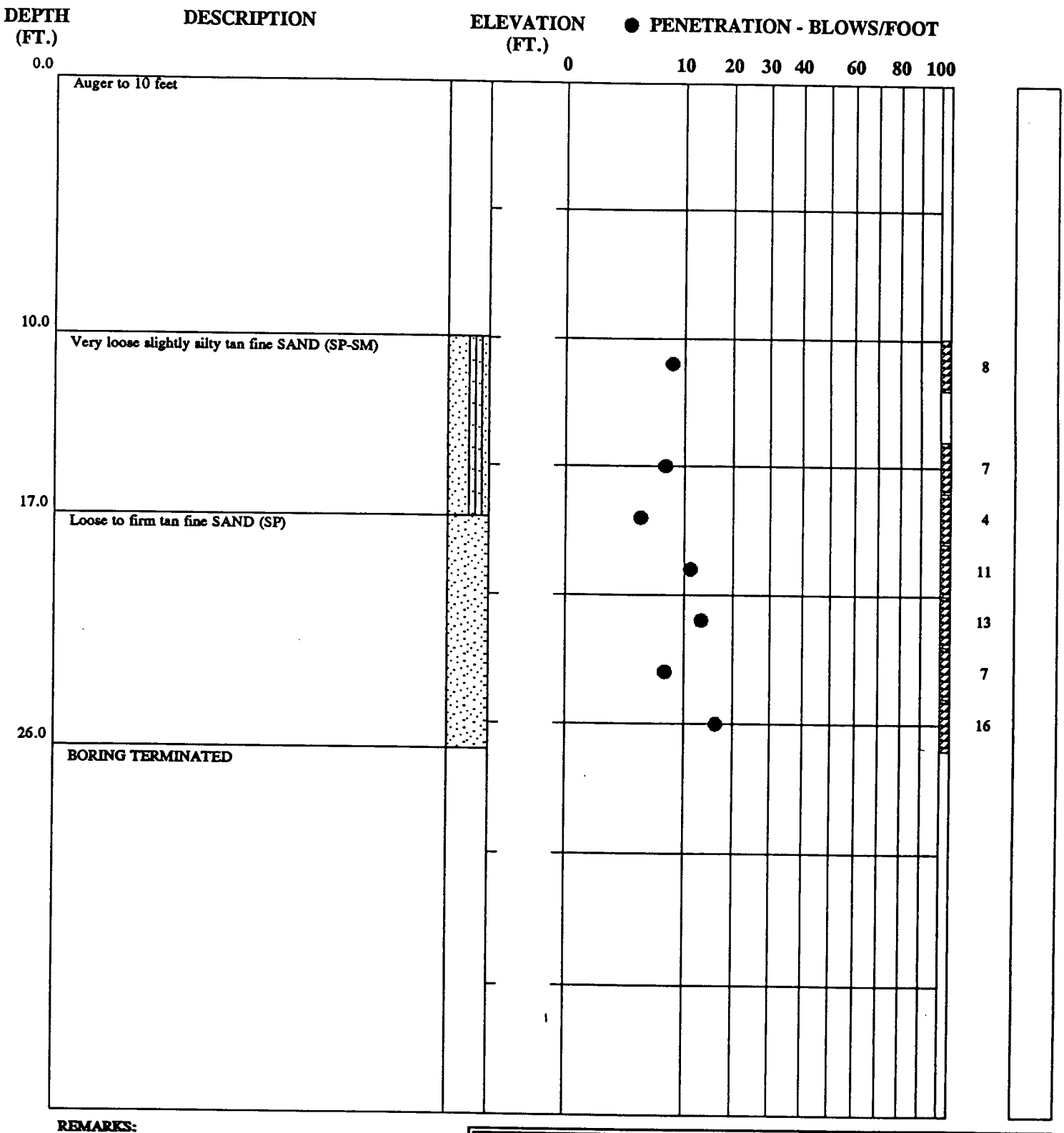
BOULDERS:		Greater than 300 mm
COBBLES:		75 mm to 300 mm
GRAVEL:	Coarse -	19.0 mm to 75 mm
	Fine -	4.75 mm to 19.0 mm
SANDS:	Coarse -	2.00 mm to 4.75 mm
	Medium -	0.425 mm to 2.00 mm
	Fine -	0.075 mm to 0.425 mm
SILTS & CLAYS:		Less than 0.075 mm

KEY TO DRILLING SYMBOLS

- Undisturbed Sample
- Split Spoon Sample
- Water Table 24 HR.
- Water Table at Time of Drilling
- M=82% Moisture Content
- Loss of Drilling Water

KEY TO SOIL CLASSIFICATIONS

- ASPHALT
- SP - Poorly graded sands
- SP-SM - Slightly silty sands
- SM - Silty sands
- SP-SC - Slightly clayey sands
- SC - Clayey sands
- SW - Well graded sands
- CL - Low plasticity inorganic clays
- CH - High plasticity inorganic clays
- MH - High plasticity inorganic silts
- ML - Low plasticity inorganic silts
- OH - High plasticity organic silts and clays
- OL - Low plasticity organic silts and clays
- LIMESTONE FORMATION - Weathered limestone
- LIMESTONE FORMATION - Limestone
- PEAT - Peat
- FILL - Sand fill



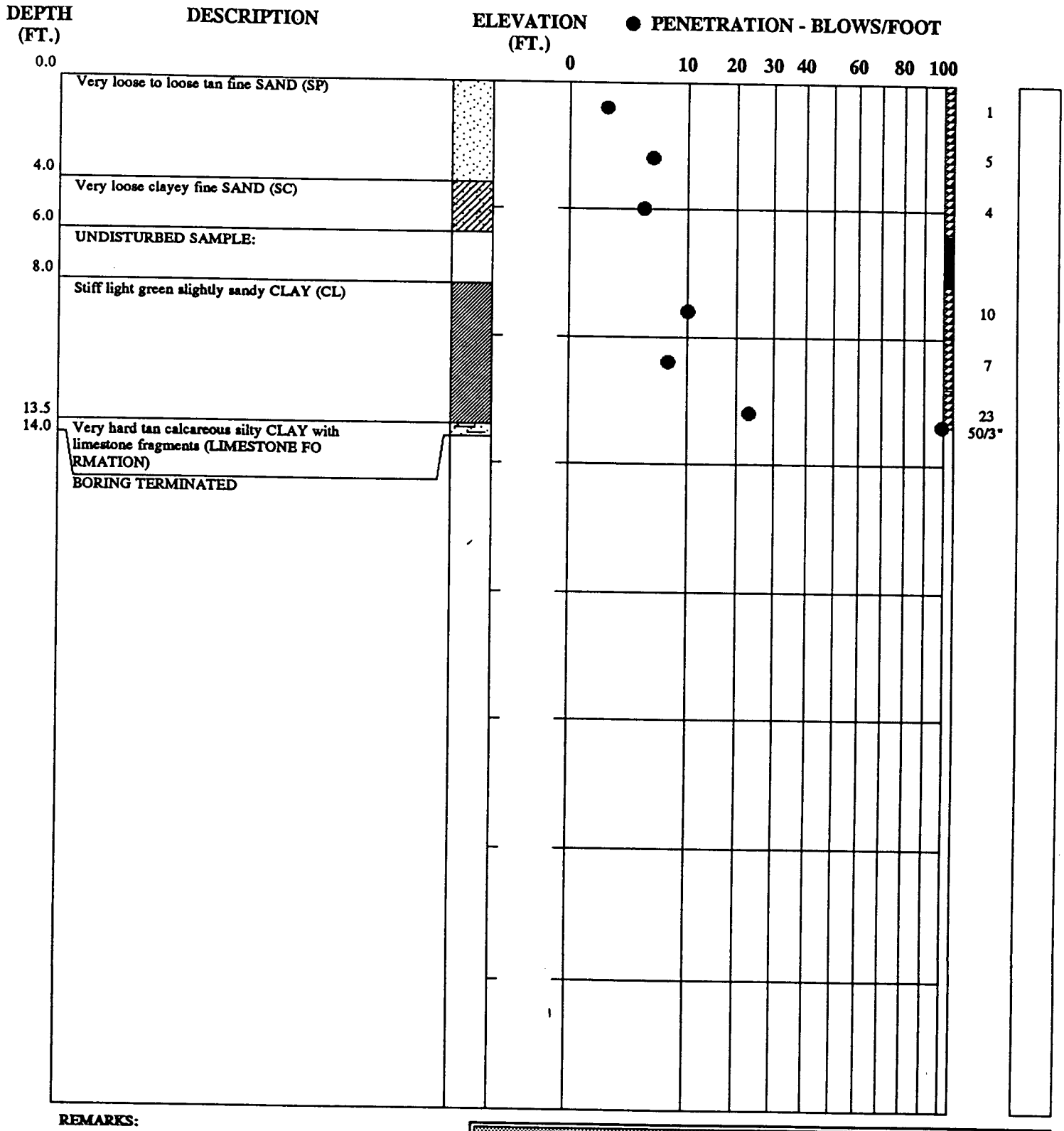
REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	LB-2
DATE DRILLED	November 23, 1993
PROJECT NUMBER	461-06530.27
PROJECT	PASCO COUNTY RESOURCE RECOV
PAGE 1 OF 1	

LAW ENGINEERING



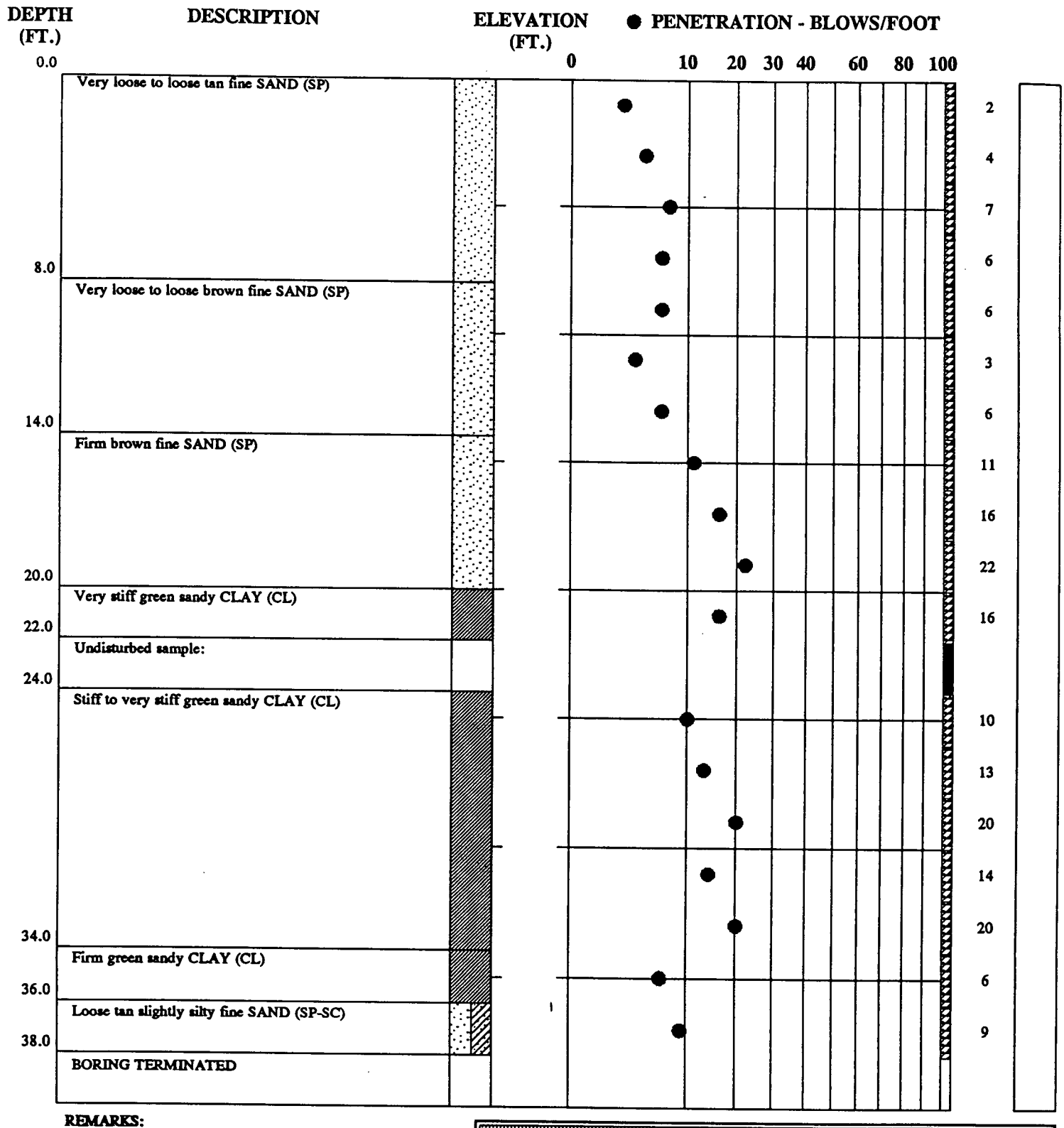
REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	LB-4
DATE DRILLED	November 23, 1993
PROJECT NUMBER	461-06530.27
PROJECT	PASCO COUNTY RESOURCE RECOV
PAGE 1 OF 1	

LAW ENGINEERING



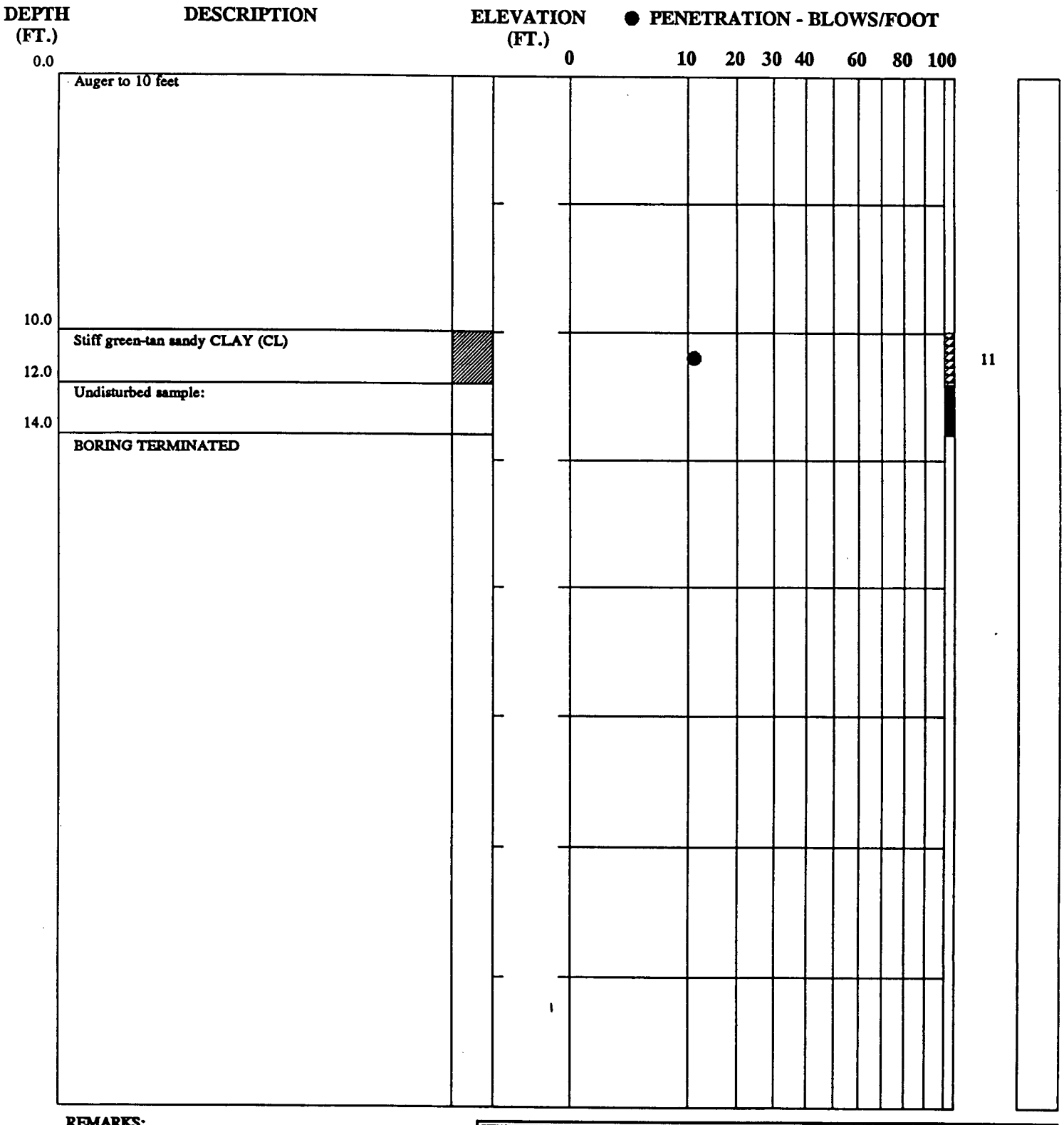
REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	LB-5
DATE DRILLED	November 22, 1993
PROJECT NUMBER	461-06530.27
PROJECT	PASCO COUNTY RESOURCE RECOV
PAGE 1 OF 1	

LAW ENGINEERING



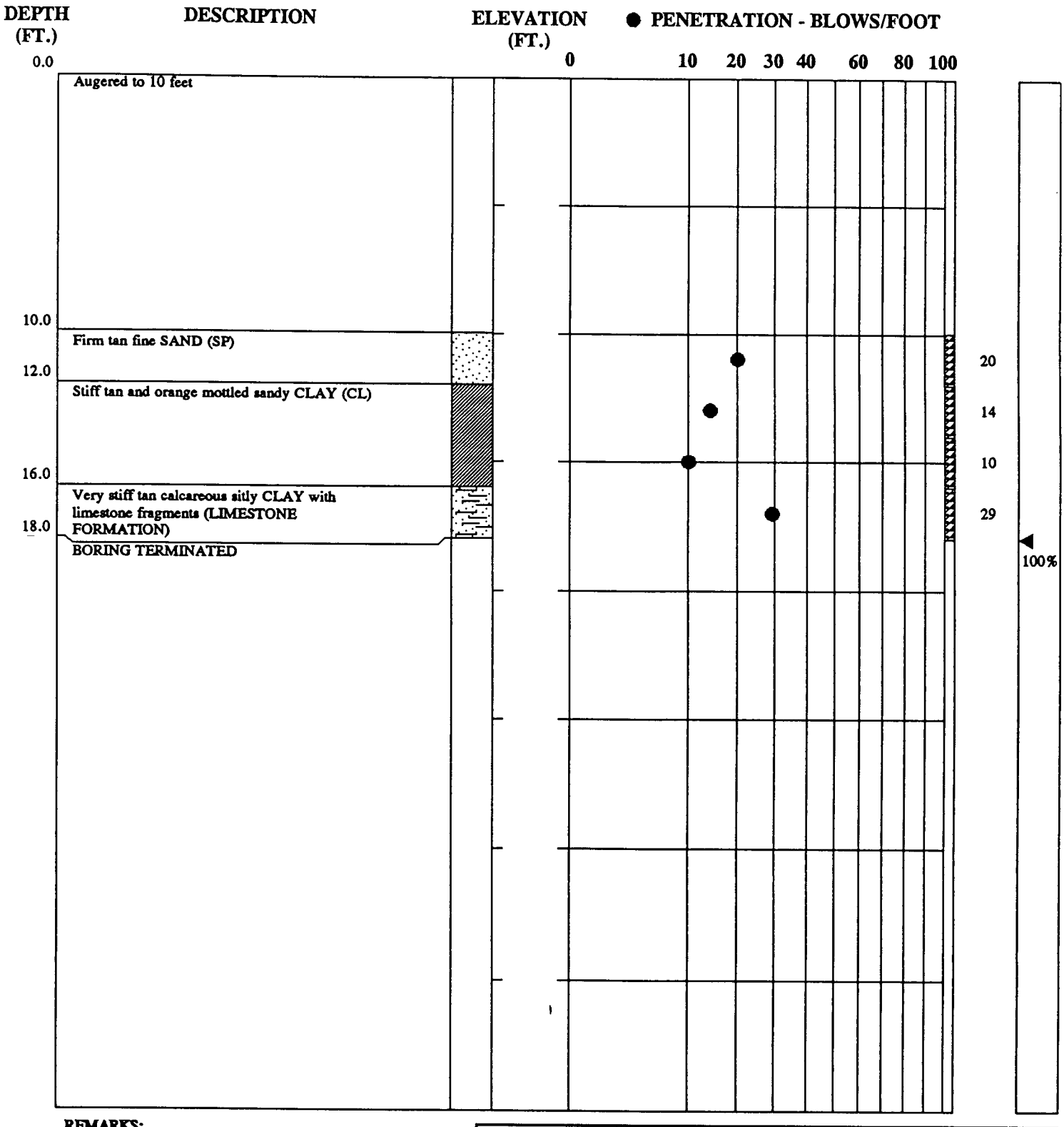
REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	LB-8
DATE DRILLED	November 23, 1993
PROJECT NUMBER	461-06530.27
PROJECT	PASCO COUNTY RESOURCE RECOV
PAGE 1 OF 1	

LAW ENGINEERING



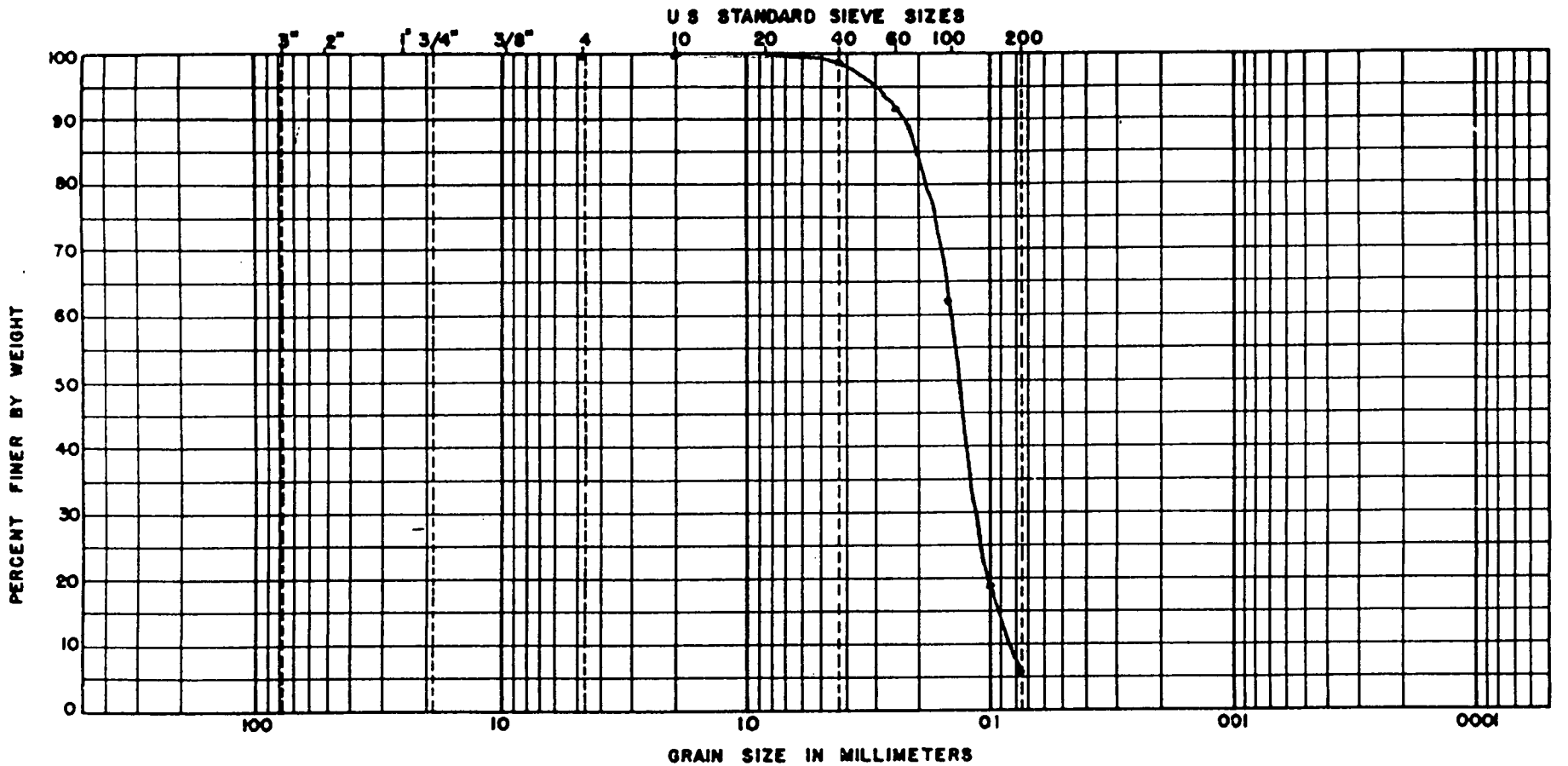
REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	LB-10
DATE DRILLED	November 22, 1993
PROJECT NUMBER	461-06530.27
PROJECT	PASCO COUNTY RESOURCE RECOV
PAGE 1 OF 1	

LAW ENGINEERING



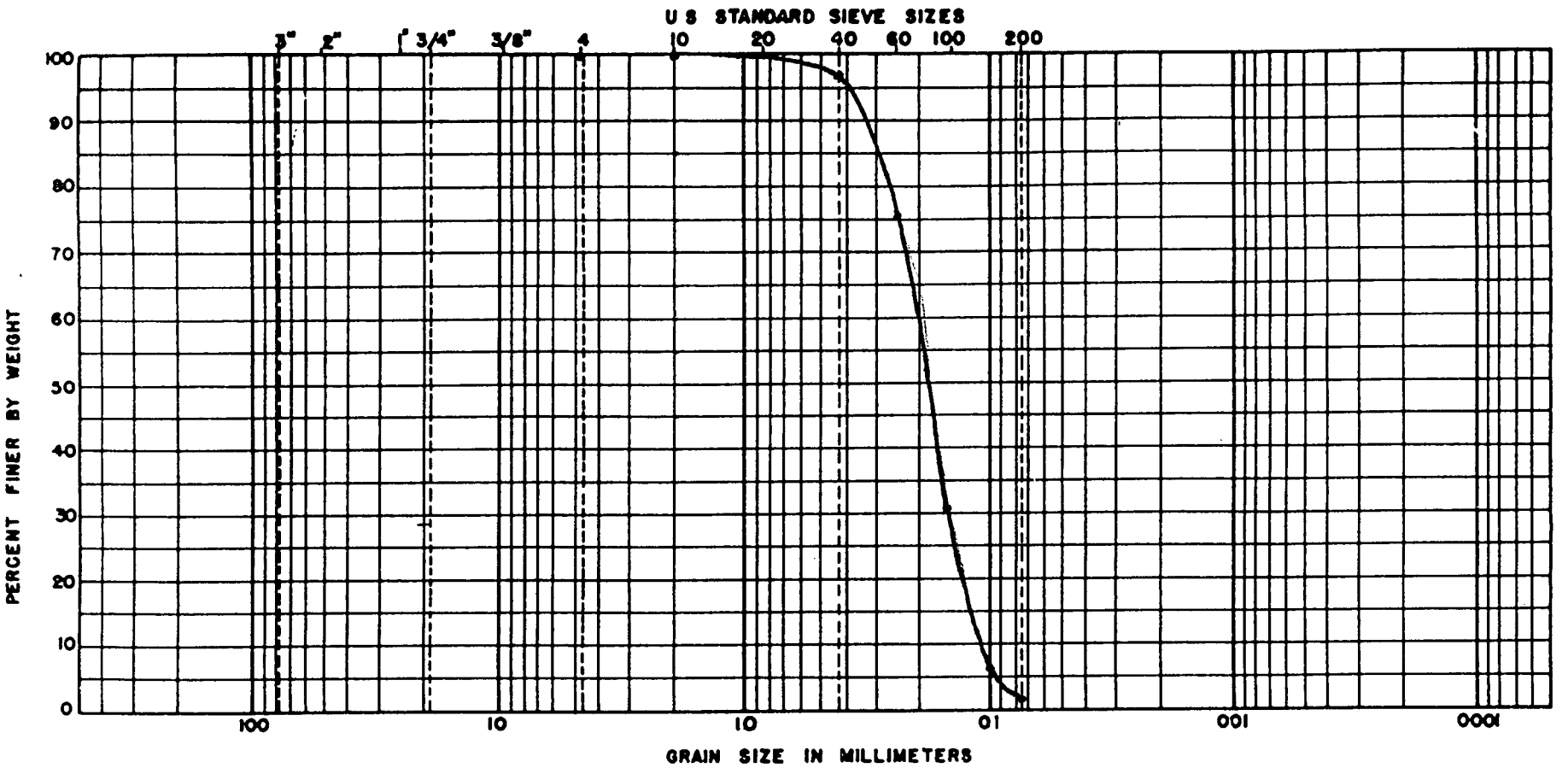
BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
LB-2	10'-12'					Tan slightly Silty Fine Sand

GRAIN SIZE DISTRIBUTION

JOB NO. 461-06530.27

LAW ENGINEERING



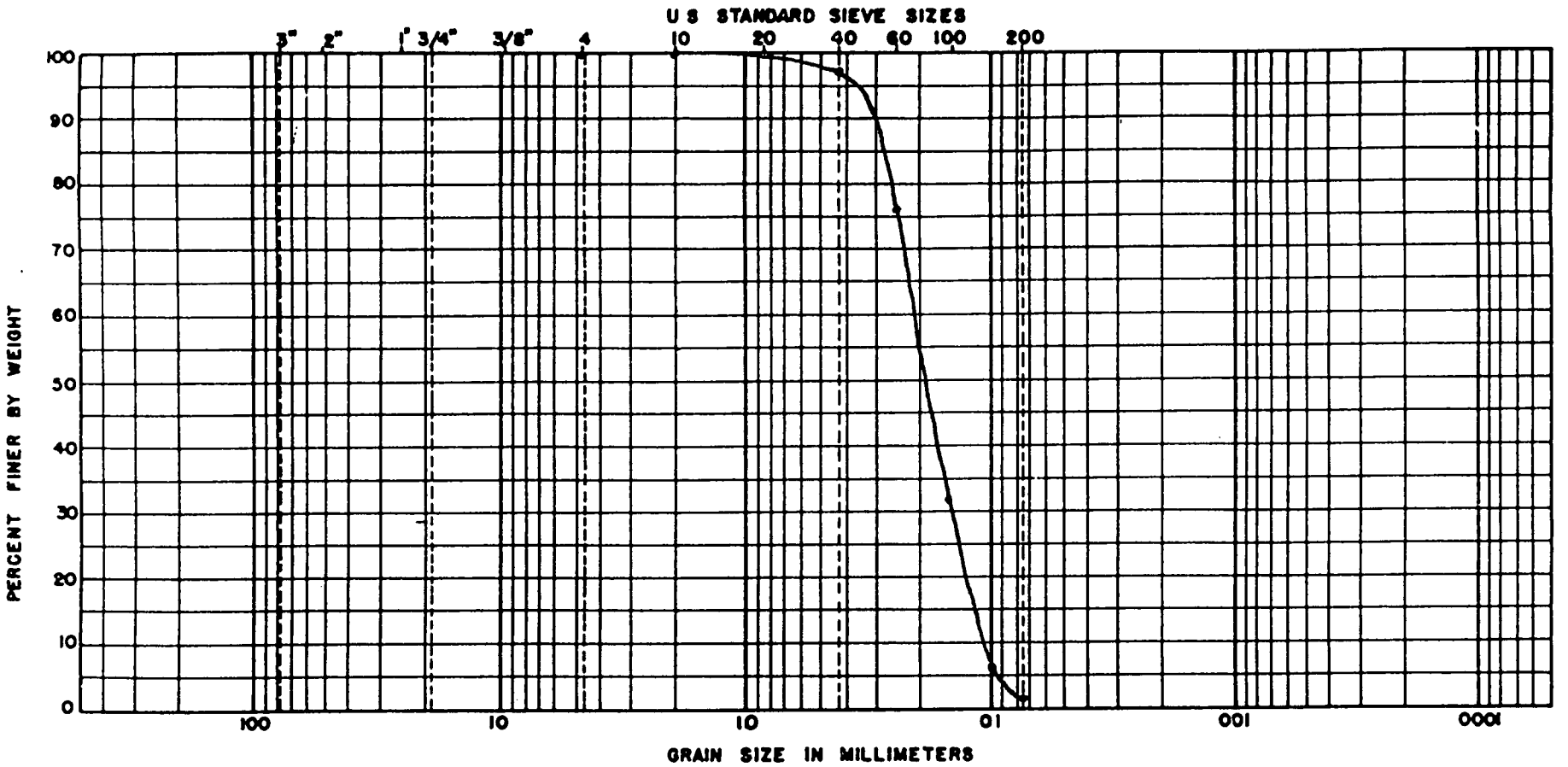
BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
LB-4	2'-4'					Tan Fine Sand

GRAIN SIZE DISTRIBUTION

JOB NO. 461-06530.27

LAW ENGINEERING



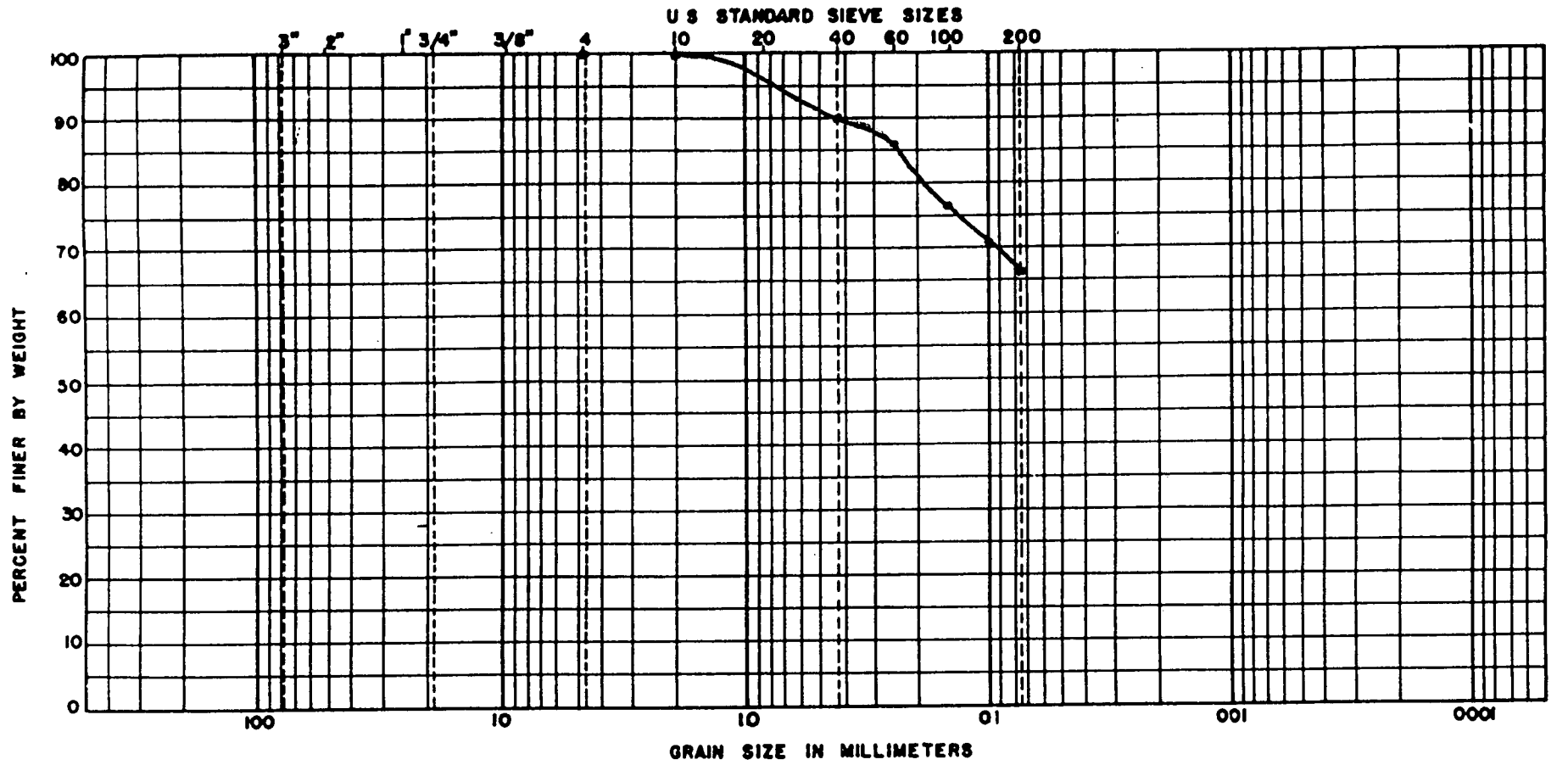
BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	NAT WC	LL	PL	PI	DESCRIPTION OR CLASSIFICATION
LB-5	2'-4'					Tan Fine Sand

GRAIN SIZE DISTRIBUTION

JOB NO. 461-06530.27

LAW ENGINEERING



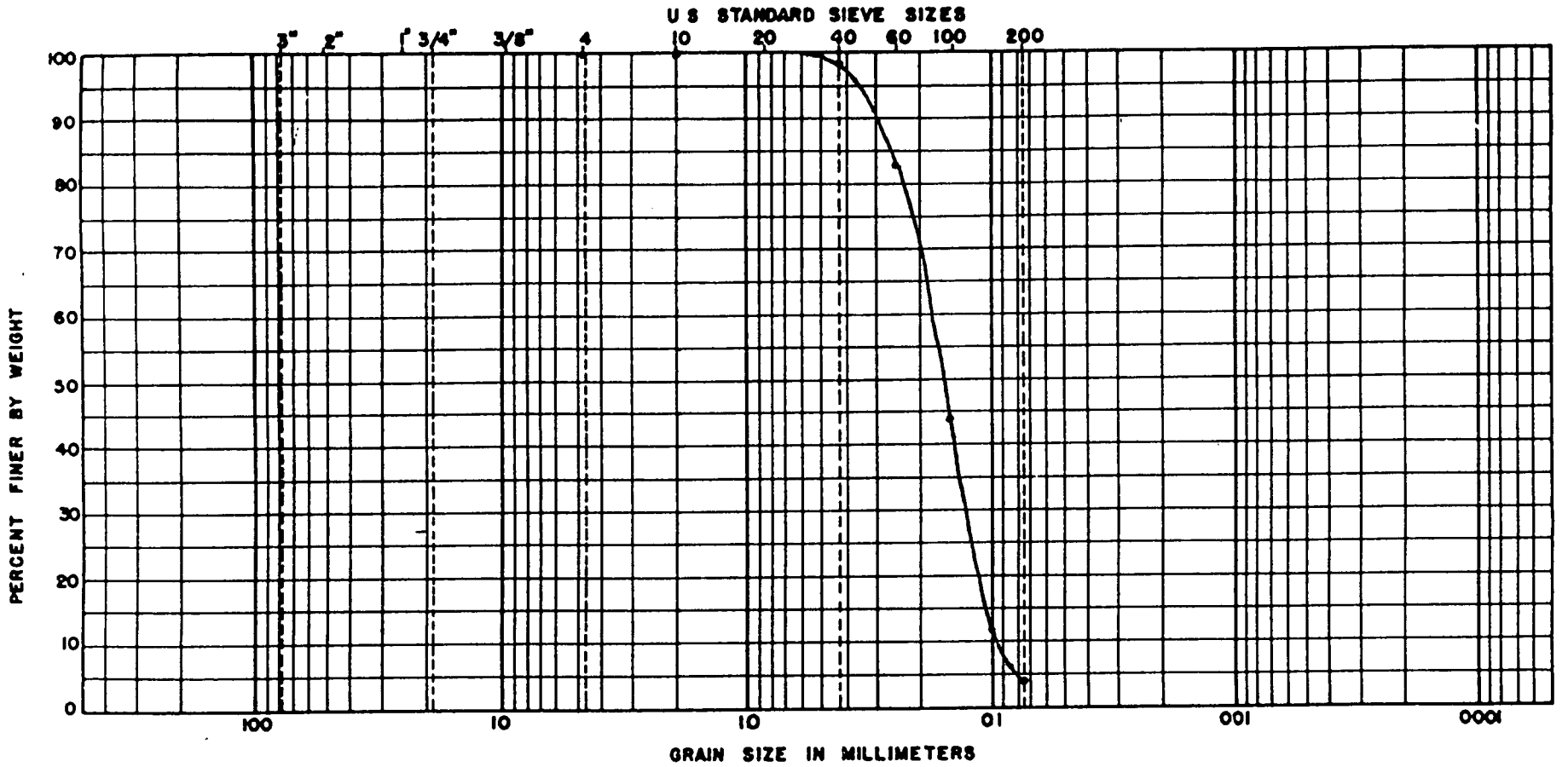
BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	NAT WC	L L	P L	P I	DESCRIPTION OR CLASSIFICATION
LB-8	10'-12'					Greenish-tan Sandy Clay

GRAIN SIZE DISTRIBUTION

JOB NO. 461-06530.27

LAW ENGINEERING



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	NAT WC	L L	P L	P I	DESCRIPTION OR CLASSIFICATION
LB-10	10'-12'					Tan Fine Sand

GRAIN SIZE DISTRIBUTION

JOB NO. 461-06530.27

LAW ENGINEERING

LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE Misc Testing Tampa Law Engineering
BORING NUMBER IS LB-4
SAMPLE IDENTIFICATION IS UD#1 6'- 8'

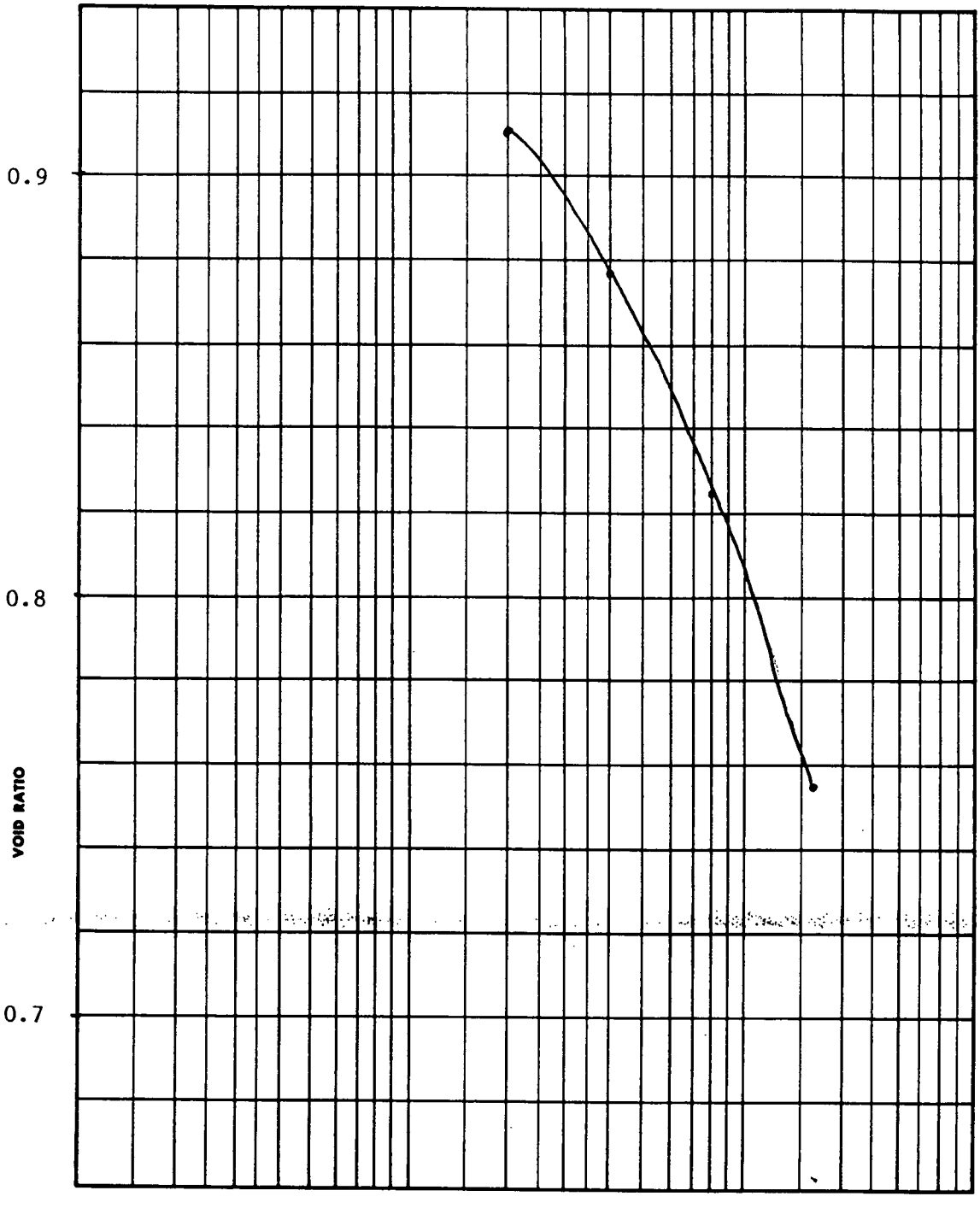
SPECIFIC GRAVITY	= 2.68	INITIAL WET UNIT WT (PCF)	= 113.4
WET SAMPLE WT (GM)	= 109.64	INITIAL WATER CONTENT (%)	= 30.5
VOL OF SAMPLE (CC)	= 60.33	INITIAL SATURATION (%)	= 88.4
DIA OF SAMPLE (IN)	= 2.50	INITIAL VOID RATIO	= .925
		SAMPLE THICKNESS (IN)	= .745

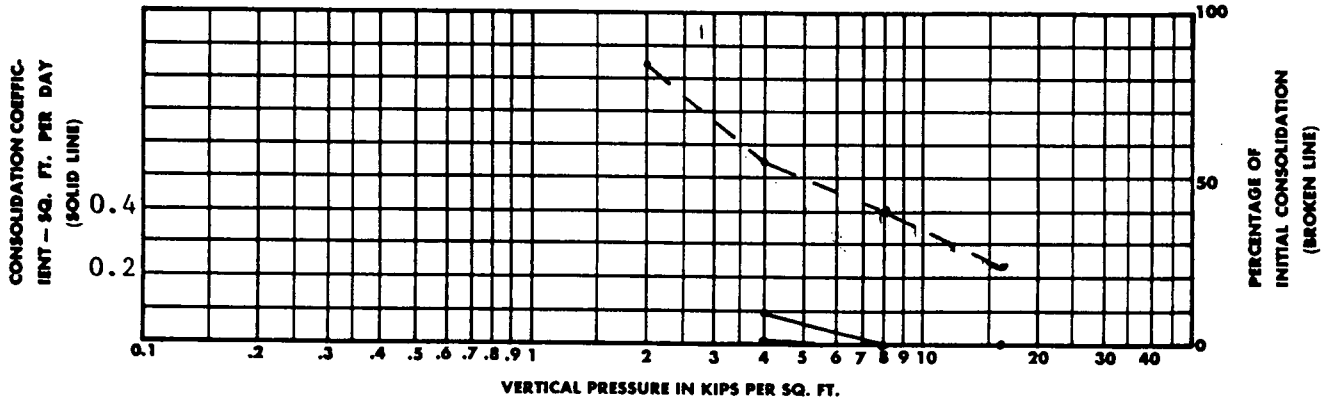
SAMPLE INUNDATED AT 1.0 KSF
LOG OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D100 (IN)	DEND (IN)	T50 MIN	SAMPLE HT AT DEND	% INT	% SEC
2.00	.0067	.0072	.0077	.21	.7448	84	13
4.00	.0147	.0202	.0207	3.00	.7318	55	3
8.00	.0281	.0388	.0415	8.00	.7110	40	12
16.00	.0468	.0652	.0680	32.00	.6845	22	10

STRESS KSF	STRAIN %	VOID RATIO	* AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
2.00	.00	.911	*				
4.00	1.75	.878	* 3.0	.1	4.98E-05	8.78E-03	.111
8.00	4.54	.824	* 6.0	.0	1.44E-05	7.04E-03	.177
16.00	8.10	.756	* 12.0	.0	2.20E-06	4.40E-03	.226





COMPRESSION INDEX 0.23

UNIT WEIGHT Total: 109.6 pcf

WATER CONTENT Initial: 30.5%

SATURATION Initial: 88%

CONSOLIDATION TEST

BORING NO. LB-4 SAMPLE NO. UD #1

ELEV. OR DEPTH 6'-8' JOB NO. 461-06530.27

LAW ENGINEERING TESTING COMPANY

LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

P[redacted] NAME & NO. ARE Misc Testing Tampa Law Engineering
BORING NUMBER IS LB-5
SAMPLE IDENTIFICATION IS UD#1 22'- 24'

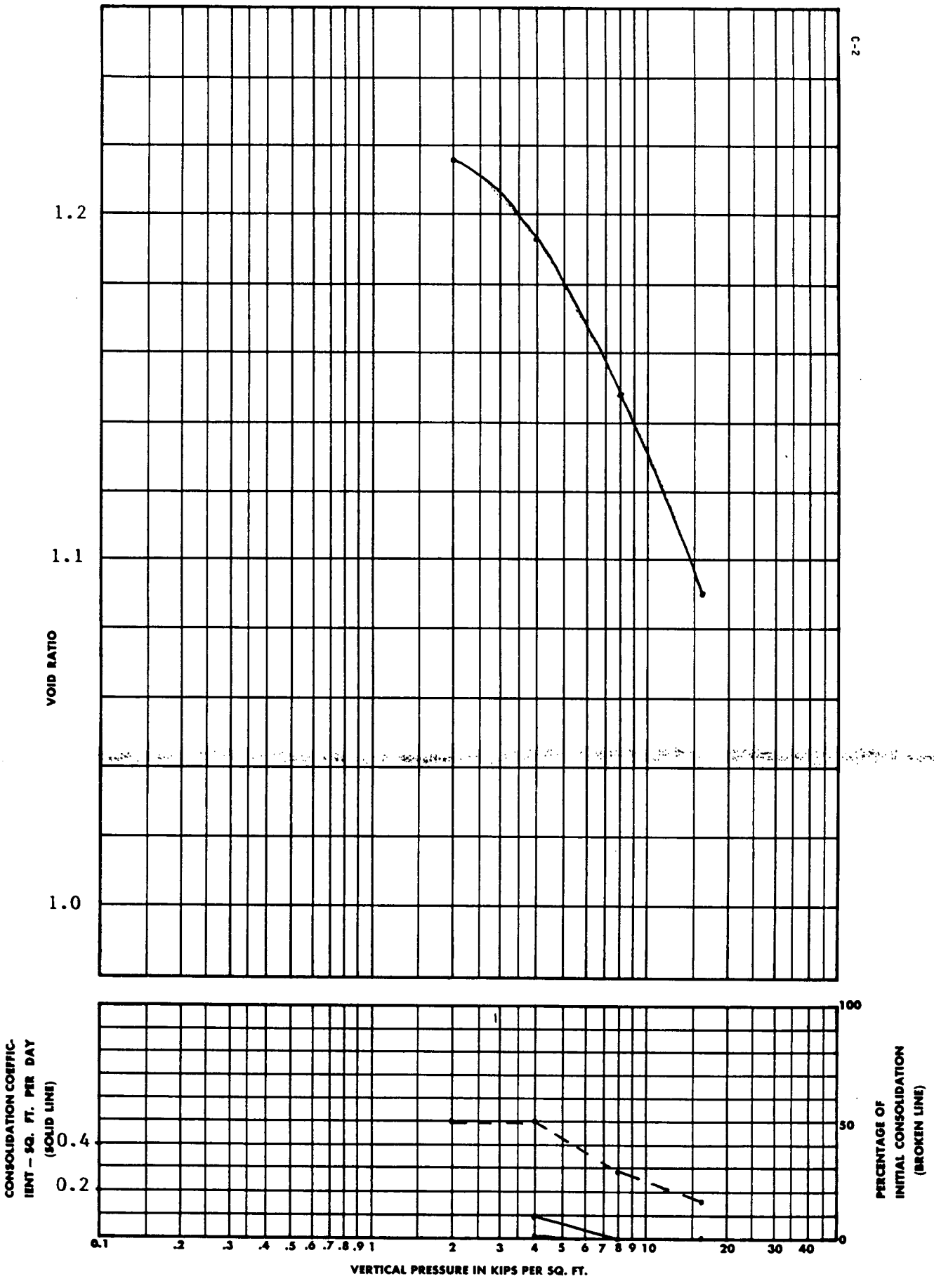
SPECIFIC GRAVITY	= 2.68	INITIAL WET UNIT WT (PCF)	= 106.0
WET SAMPLE WT (GM)	= 102.46	INITIAL WATER CONTENT (%)	= 41.0
VOL OF SAMPLE (CC)	= 60.33	INITIAL SATURATION (%)	= 89.7
DIA OF SAMPLE (IN)	= 2.50	INITIAL VOID RATIO	= 1.225
		SAMPLE THICKNESS (IN)	= .747

SAMPLE INUNDATED AT 1.0 KSF
LOG OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D100 (IN)	DEND (IN)	T50 MIN	SAMPLE HT AT DEND	% INT	% SEC
2.00	.0022	.0031	.0036	.60	.7474	50	21
4.00	.0077	.0118	.0122	5.00	.7388	50	4
8.00	.0161	.0256	.0269	8.00	.7241	29	8
16.00	.0299	.0450	.0467	16.00	.7043	16	8

STRESS KSF	STRAIN %	VOID RATIO	* AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
[illegible]	.00	1.217	*				
4.00	1.15	1.192	* 3.0	.1	2.09E-05	5.89E-03	.085
8.00	3.12	1.148	* 6.0	.0	1.04E-05	4.94E-03	.145
16.00	5.77	1.090	* 12.0	.0	3.40E-06	3.30E-03	.195



COMPRESSION INDEX 0.20

UNIT WEIGHT Total: 102.5 pcf

WATER CONTENT Initial: 41.0%

SATURATION Initial: 89.7%

CONSOLIDATION TEST

BORING NO. LB-5 SAMPLE NO. UD #1

ELEV. OR DEPTH 22'-24' JOB NO. 461-06530.27

LAW ENGINEERING TESTING COMPANY

LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE Misc Testing Tampa Law Engineering
BORING NUMBER IS LB-8
SAMPLE IDENTIFICATION IS UD#1 14'-16'

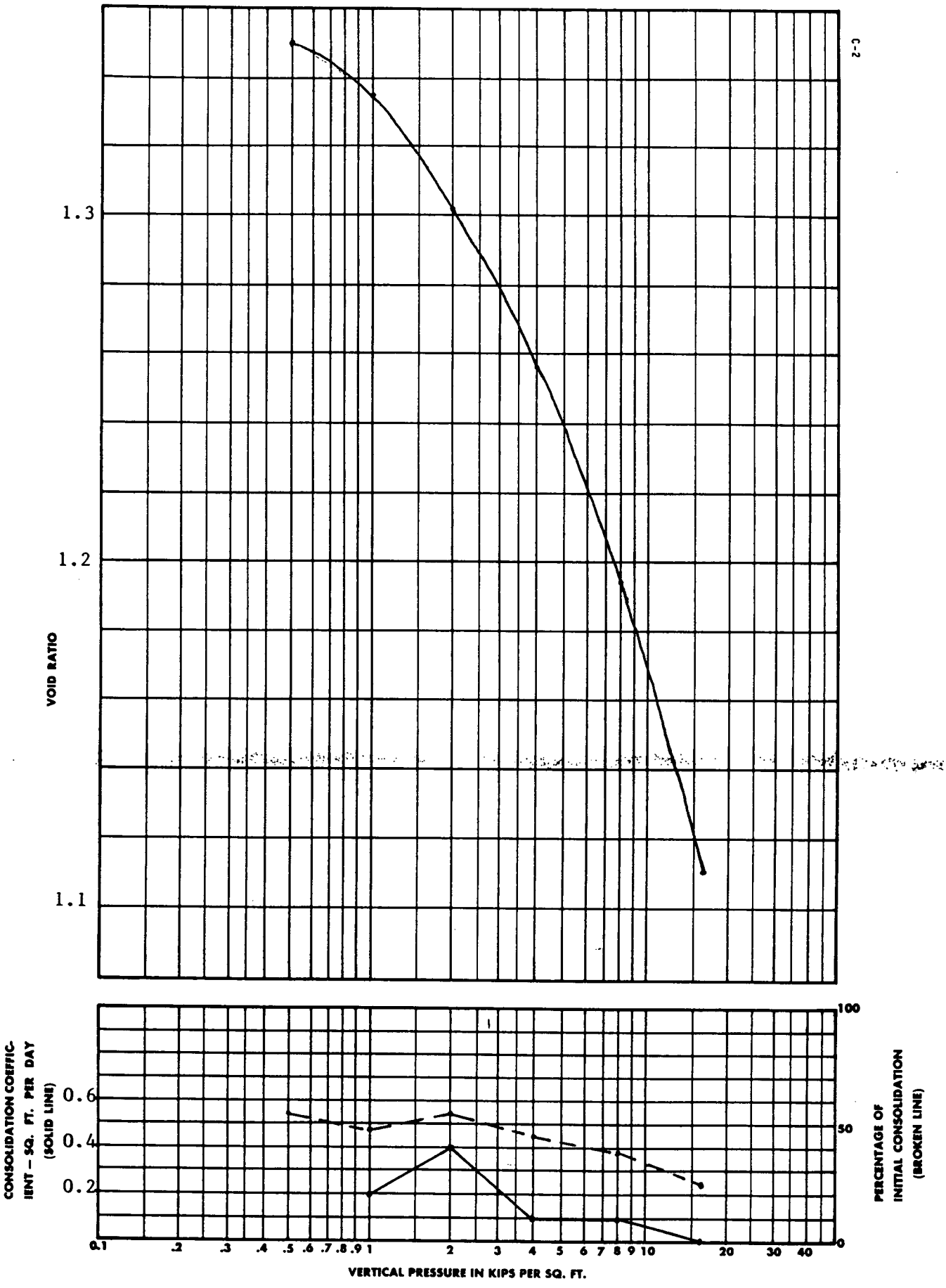
SPECIFIC GRAVITY	= 2.68	INITIAL WET UNIT WT (PCF)	= 103.6
WET SAMPLE WT (GM)	= 100.21	INITIAL WATER CONTENT (%)	= 46.0
VOL OF SAMPLE (CC)	= 60.33	INITIAL SATURATION (%)	= 90.9
DIA OF SAMPLE (IN)	= 2.50	INITIAL VOID RATIO	= 1.356
		SAMPLE THICKNESS (IN)	= .747

SAMPLE INUNDATED AT .3 KSF
LOG OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D100 (IN)	DEND (IN)	T50 MIN	SAMPLE HT AT DEND	% INT	% SEC
.50	.0022	.0036	.0038	.30	.7466	54	6
1.00	.0051	.0065	.0068	1.80	.7436	48	9
2.00	.0116	.0156	.0177	.70	.7327	54	19
4.00	.0237	.0308	.0318	1.80	.7186	45	7
8.00	.0391	.0510	.0520	4.00	.6984	38	4
16.00	.0576	.0762	.0782	10.00	.6722	23	7

STRESS KSF	STRAIN %	VOID RATIO	* AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.50	.00	1.345	*				
1.00	.40	1.336	* .8	.2	7.63E-05	8.03E-03	.031
2.00	1.86	1.301	* 1.5	.4	3.50E-04	1.50E-02	.114
4.00	3.75	1.257	* 3.0	.1	8.75E-05	9.45E-03	.147
8.00	6.46	1.194	* 6.0	.1	2.79E-05	6.89E-03	.211
16.00	9.97	1.111	* 12.0	.0	6.90E-06	4.40E-03	.273



COMPRESSION INDEX 0.27

UNIT WEIGHT Total: 103.6 pcf

WATER CONTENT Initial: 46.0%

SATURATION Initial: 90.9%

CONSOLIDATION TEST

BORING NO. LB-8 SAMPLE NO. UD #1

ELEV. OR DEPTH 14'-16' JOB NO. 461-06530.27

LAW ENGINEERING TESTING COMPANY

FIELD TESTING PROCEDURES

AUGER DRILLING - The soil test borings were made in general accordance with ASTM Designation D-1586, "Penetration Test and Split-Barrel Sampling of Soils". A hollow stem auger drilling process was used to advance the borings.

At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2.0-inch O.D., split-tube sampler. The sampler was first seated six inches and then driven an additional foot with blows of a 140 pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot is designated the "Penetration Resistance". The penetration resistance, when properly interpreted, is an index to the soil strength and density.

Representative portions of the soil samples, obtained from the sampler, were placed in glass jars and transported to our laboratory. The samples were then examined by an engineer in order to verify the field classifications.

LABORATORY TESTING PROCEDURES

GRAIN SIZE - The grain size tests were performed to determine the particle size and distribution of the sample tested. The sample was dried, weighed, and washed over a No. 200 mesh sieve. The dried sample was then passed through a standard set of nested sieves to determine the grain size distribution of the soil particles coarser than the No. 200 sieve. This test is similar to that described by ASTM Designation D-422.

CONSOLIDATION TEST - A section of the undisturbed sample was extruded from the sampling tube for consolidation testing. The section was trimmed into a disc 2.4 inches in diameter and 0.7 inches thick. The disc was confined in a stainless steel ring and placed between porous plates. It was then subjected to incrementally increasing vertical loads and resulting deformations measured with a micrometer dial gauge. The test results are presented in the form of a pressure versus void ratio curve on the accompanying Consolidation Test sheet.