SCS ENGINEERS

CITRUS COUNTY
CLASS I CENTRAL LANDFILL
OPERATIONS PERMIT RENEWAL
APPLICATION

Prepared for:

Citrus County

Board of County Commissioners

P.O. Box 340
Lecanto, Florida 34460

Presented by:

SCS ENGINEERS
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Tampa, Florida 33610
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February 1, 2010
File No. 09208040.03

Offices Nationwide
www.scsengineers.com

Dept. Of Environmental Protection
FEB 0 1 2010
Southwest District

Citrus County Class I Central Landfill
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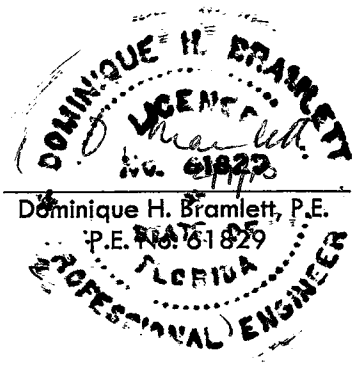

Dominique H. Bramlett, P.E.
P.E. No. 61829

February 1, 2010
File No. 09208040.03

Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

DEP Form # 62-701.900(1)
Form Title Solid Waste Management Facility Permit
Effective Date 05-27-01

DEP Application No. _____
(Filled by DEP)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

APPLICATION INSTRUCTIONS AND FORMS

Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-6100

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600

INSTRUCTIONS TO APPLY FOR A SOLID WASTE MANAGEMENT FACILITY PERMIT

I. General

Solid Waste Management Facilities shall be permitted pursuant to Section 403.707, Florida Statutes, (FS) and in accordance with Florida Administrative Code (FAC) Chapter 62-701. A minimum of four copies of the application shall be submitted to the Department's District Office having jurisdiction over the facility. The appropriate fee in accordance with Rule 62-701.315, FAC, shall be submitted with the application by check made payable to the Department of Environmental Protection (DEP).

Complete appropriate sections for the type of facility for which application is made. Entries shall be typed or printed in ink. All blanks shall be filled in or marked "not applicable" or "no substantial change". Information provided in support of the application shall be marked "submitted" and the location of this information in the application package indicated. The application shall include all information, drawings, and reports necessary to evaluate the facility. Information required to complete the application is listed on the attached pages of this form.

II. Application Parts Required for Construction and Operation Permits

A. Landfills and Ash Monofills - Submit parts A,B, D through T
B. Asbestos Monofills - Submit parts A,B,D,E,F,G,J,L,N, P through S, and T
C. Industrial Solid Waste Facilities - Submit parts A,B, D through T
D. Non-Disposal Facilities - Submit parts A,C,D,E,J,N,S and T

NOTE: Portions of some parts may not be applicable.

NOTE: For facilities that have been satisfactorily constructed in accordance with their construction permit, the information required for A,B,C and D type facilities does not have to be resubmitted for an operation permit if the information has not substantially changed during the construction period. The appropriate portion of the form should be marked "no substantial change".

III. Application Parts Required for Closure Permits

A. Landfills and Ash Monofills - Submit parts A,B,M, O through T
B. Asbestos Monofills - Submit parts A,B,N, P through T
C. Industrial Solid Waste Facilities - Submit parts A,B, M through T
D. Non-Disposal Facilities - Submit parts A,C,N,S and T

NOTE: Portions of some parts may not be applicable.

IV. Permit Renewals

The above information shall be submitted at time of permit renewal in support of the new permit. However, facility information that was submitted to the Department to support the expiring permit, and which is still valid, does not need to be re-submitted for permit renewal. Portions of the application not re-submitted shall be marked "no substantial change" on the application form.

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V. Application Codes

S	-	Submitted
LOCATION	-	Physical location of information in application
N/A	-	Not Applicable
N/C	-	No Substantial Change

VI. LISTING OF APPLICATION PARTS

PART A: GENERAL INFORMATION

PART B: DISPOSAL FACILITY GENERAL INFORMATION

PART C: NON-DISPOSAL FACILITY GENERAL INFORMATION

PART D: PROHIBITIONS

PART E: SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL

PART F: LANDFILL PERMIT REQUIREMENTS

PART G: GENERAL CRITERIA FOR LANDFILLS

PART H: LANDFILL CONSTRUCTION REQUIREMENTS

PART I: HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS

PART J: GEOTECHNICAL INVESTIGATION REQUIREMENTS

PART K: VERTICAL EXPANSION OF LANDFILLS

PART L: LANDFILL OPERATION REQUIREMENTS

PART M: WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

PART N: SPECIAL WASTE HANDLING REQUIREMENTS

PART O: GAS MANAGEMENT SYSTEM REQUIREMENTS

PART P: LANDFILL CLOSURE REQUIREMENTS

PART Q: CLOSURE PROCEDURES

PART R: LONG TERM CARE REQUIREMENTS

PART S: FINANCIAL RESPONSIBILITY REQUIREMENTS

PART T: CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
APPLICATION FOR A PERMIT TO CONSTRUCT, OPERATE, MODIFY OR CLOSE
A SOLID WASTE MANAGEMENT FACILITY

Please Type or Print

A. GENERAL INFORMATION

1. Type of facility (check all that apply):

[✓] Disposal
- [✓] Class I Landfill
- [ ] Class II Landfill
- [ ] Class III Landfill
- [✓] Other Describe: Yard Waste mulching and consumer goods recycling.
- [ ] Ash Monofill
- [ ] Asbestos Monofill
- [ ] Industrial Solid Waste

[ ] Non-Disposal
- [ ] Incinerator For Non-biomedical Waste
- [ ] Waste to Energy Without Power Plant Certification
- [ ] Other Describe: _____

NOTE: Waste Processing Facilities should apply on Form 62-701.900(4), FAC; Land Clearing Disposal Facilities should notify on Form 62-701.900(3), FAC; Compost Facilities should apply on Form 62-701.900(10), FAC; and C&D Disposal Facilities should apply on Form 62-701.900(6), FAC

2. Type of application:
- [ ] Construction
- [✓] Operation
- [ ] Construction/Operation
- [ ] Closure

3. Classification of application:
- [ ] New
- [✓] Renewal
- [ ] Substantial Modification
- [ ] Intermediate Modification
- [ ] Minor Modification

4. Facility name: Citrus County Central Landfill

5. DEP ID number: SWD/09/39859 County: Citrus

6. Facility location (main entrance): State Road 44 between Lecanto and Inverness, Florida

7. Location coordinates:

Section: 1 Township: 19S Range: 18E

Latitude: 28 ° 51 ' 07 " Longitude: 82 ° 26 ' 12 "

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

Mailing address: P.O. Box 340 (Street or P.O. Box) Lecanto (City) FL (State) 34460 (Zip)

Contact person: Mr. Casey Stephens Telephone: (352) 527-7670

Title: Solid Waste Management Division Director

casey.stephens@bocc.citrus.fl.us
E-Mail address (if available)

9. Authorized agent/Consultant: SCS Engineers

Mailing address: 4041 Park Oaks Blvd., Suite 100 (Street or P.O. Box) Tampa (City) FL (State) 33610 (Zip)

Contact person: Dominique H. Bramlett, P.E. Telephone: (813) 621-0080

Title: Senior Project Engineer

dbramlett@scsengineers.com
E-Mail address (if available)

10. Landowner(if different than applicant): Citrus County BOCC

Mailing address: 110 N. Apopka Avenue (Street or P.O. Box) Inverness (City) FL (State) 34450 (Zip)

Contact person: Casey Stephens Telephone: (352) 527-7670

E-Mail address (if available)

11. Cities, towns and areas to be served: Citrus County, including, but not limited to towns of Inverness, Lecanto & Crystal River.

12. Population to be served:

Current: 145,000 (BEBR - 2010) Five-Year Projection: 155,100 (BEBR - 2015)

13. Date site will be ready to be inspected for completion: _____

14. Expected life of the facility: 10 years

15. Estimated costs:

Total Construction: $ _____ Closing Costs: $ _____

16. Anticipated construction starting and completion dates:

From: _____ To: _____

17. Expected volume or weight of waste to be received:

_____ yds^3/day ~350 tons/day _____ gallons/day

B. DISPOSAL FACILITY GENERAL INFORMATION

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

The disposal facility consists of Phase 1/1A, Phase 2 and Phase 3. Continued Class I disposal operations in Phase 1/1A and Phase 2 and proposed Class I disposal operations within Phase 3. Phase 3 is the lateral expansion from Phase 2.

2. Facility site supervisor: Carmen Bruno

Title: Crew Leader Telephone: (352) 527-7670

carmen.bruno@bocc.citrus.fl.us
E-Mail address (if available)

3. Disposal area: Total 80* acres; Used 32** acres; Available 48 acres.

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

5. Security to prevent unauthorized use: [✓] Yes [ ] No

6. Charge for waste received: _____ $/yds³ 30 $/ton

7. Surrounding land use, zoning:

[ ] Residential
[ ] Agricultural
[✓] Commercial
[✓] Industrial
[ ] None
[✓] Other Describe: Conservation

8. Types of waste received:

[✓] Residential
[✓] Commercial
[ ] Incinerator/WTE ash
[ ] Treated biomedical
[ ] Water treatment sludge
[ ] Air treatment sludge
[ ] Agricultural
[✓] Asbestos
[ ] Other Describe: _____
[✓] C & D debris
[ ] Shredded/cut tires
[✓] Yard trash
[ ] Septic tank
[✓] Industrial
[ ] Industrial sludge
[✓] Domestic sludge

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

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

11. Spotters: Yes [✓] No [ ] Number of spotters used: minimum of one

12. Site located in: [ ] Floodplain [ ] Wetlands [✓] Other Upland

*Total Citrus County Central Landfill.

**Phase 1/1A - 19.8 acres, Phase 2 - 6 acres, Phase 3 - 6.2 acres.

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

14. Days of operation: Monday - Saturday

15. Hours of operation: Monday-Friday: 6:30 am - 5:00 pm Holidays and Saturdays: 6:30 am - 3:00 pm

16. Days Working Face covered: Monday-Saturday

17. Elevation of water table: 7 Ft. (NGVD 1929)

18. Number of monitoring wells: 14

19. Number of surface monitoring points: 0

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

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

21. Landfill unit liner type:

[ ] Natural soils
[ ] Single clay liner
[ ] Single geomembrane
[ ] Single composite
[ ] Slurry wall
[✓] Other Describe: Double geomembrane and geocomposite
[ ] Double geomembrane
[ ] Geomembrane & composite
[ ] Double composite
[ ] None

22. Leachate collection method:

[✓] Collection pipes
[✓] Geonets
[ ] Well points
[ ] Perimeter ditch
[ ] Other Describe:
[ ] Sand layer
[ ] Gravel layer
[ ] Interceptor trench
[ ] None

23. Leachate storage method:

[✓] Tanks
[ ] Surface impoundments
[ ] Other Describe:

24. Leachate treatment method:

[ ] Oxidation
[ ] Secondary
[✓] Advanced
[ ] None
[ ] Other
[✓] Chemical treatment
[ ] Settling

25. Leachate disposal method:

[ ] Recirculated
[ ] Transported to WWTP
[ ] Injection well
[ ] Evaporation
[✓] Other Dry Percolation Basin
[ ] Pumped to WWTP
[ ] Discharged to surface water
[ ] Percolation ponds

26. For leachate discharged to surface waters:

Name and Class of receiving water: _____

27. Storm Water:

Collected: [✓] Yes [ ] No

Type of treatment: Dry Retention/percolation

Name and Class of receiving water: None

28. Environmental Resources Permit (ERP) number or status:

ERP No. 09-0292195-001 (Closed Landfill Site), ERP No. 09-0291076-001 (Phase 3 Expansion)

NON-DISPOSAL FACILITY GENERAL INFORMATION

1. Provide brief description of the non-disposal facility design and operations planned under this application:

Part C is not applicable to this permit application.

2. Facility site supervisor: _____

Title: _____ Telephone: (___) _____

_____
E-Mail address (if available)

3. Site area: Facility _____ acres; Property _____ 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 [ ] No

11. Normal processing rate: _____ yd^3/day _____ tons/day _____ gal/day

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

13. Charge for waste received: _____

14. Storm Water Collected: [ ] Yes [ ] No

Type of treatment: _____

Name and Class of receiving water: _____

15. Environmental Resources Permit (ERP) number or status: _____

_____

16. Final residue produced:

_____ % of normal processing rate _____ % of maximum processing rate

_____ Tons/day _____ Tons/day

Disposed of at:

Facility name: _____ County: _____

17. Estimated operating costs: $ _____

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

18. Provide a site plan, at a scale not greater than 200 feet to the inch, which shows the facility location and identifies the proposed waste and final residue storage areas, total acreage of the site, and any other features which are relevant to the prohibitions or location restrictions in Rule 62-701.300, FAC, such as water bodies or wetlands on or within 200 feet of the site, and potable water wells on or within 500 feet of the site.

19. Provide a description of how the waste and final residue will be managed to not be expected to cause violations of the Department's ground water, surface water or air standards or criteria

20. Provide an estimate of the maximum amount of waste and final residue that will be store on-site.

21. Provide a detailed description of the technology use at the facility and the functions of all processing equipment that will be utilized. The descriptions shall explain the flow of waste and residue through all the proposed unit operations and shall include: (1) regular facility operations as they are expected to occur; (2) procedures for start up operations, and scheduled and unscheduled shut down operations; (3) potential safety hazards and control methods, including fire detection and control; (4) a description of any expected air emissions and wastewater discharges from the facility which may be potential pollution sources; (5) a description and usage rate of any chemical or biological additives that will be used in the process; and (6) process flow diagrams for the facility operations.

22. Provide a description of the loading, unloading and processing areas.

23. Provide a description of the leachate control system that will be used to prevent discharge of leachate to the environment and mixing of leachate with stormwater. Note: Ground water monitoring may be required for the facility depending on the method of leachate control used.

24. Provide an operation plan for the facility which includes: (1) a description of general facility operations, the number of personnel responsible for the operations including their respective job descriptions, and the types of equipment that will be used at the facility; (2) procedures to ensure any unauthorized wastes received at the site will be properly managed; (3) a contingency plan to cover operation interruptions and emergencies such as fires, explosions, or natural disasters; (4) procedures to ensure operational records needed for the facility will be adequately prepared and maintained; and (5) procedures to ensure that the wastes and final residue will be managed to not be expected to cause pollution.

25. Provide a closure plan that describes the procedures that will be implemented when the facility closes including: (1) estimated time to complete closure; (2) procedures for removing and properly managing or disposing of all wastes and final residues; (3) notification of the Department upon ceasing operations and completion of final closure.

Dept. Of Environmental Protection
FEB 01 2010
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D. PROHIBITIONS (62-701.300, FAC)

S	LOCATION	N/A	N/C		
—	_____	___	✓	1.	Provide documentation that each of the siting criteria will be satisfied for the facility; (62-701.300(2), FAC)
—	_____	___	✓	2.	If the facility qualifies for any of the exemptions contained in Rules 62-701.300(12) through (16), FAC, then document this qualification(s).
—	_____	___	✓	3.	Provide documentation that the facility will be in compliance with the burning restrictions; (62-701.300(3), FAC)
—	_____	___	✓	4.	Provide documentation that the facility will be in compliance with the hazardous waste restrictions; (62-701.300(4), FAC)
—	_____	___	✓	5.	Provide documentation that the facility will be in compliance with the PCB disposal restrictions; (62-701.300(5), FAC)
—	_____	___	✓	6.	Provide documentation that the facility will be in compliance with the biomedical waste restrictions; (62-701.300(6), FAC)
—	_____	___	✓	7.	Provide documentation that the facility will be in compliance with the Class I surface water restrictions; (62-701.300(7), FAC)
—	_____	___	✓	8.	Provide documentation that the facility will be in compliance with the special waste for landfills restrictions; (62-701.300(8), FAC)
—	_____	✓	___	9.	Provide documentation that the facility will be in compliance with the special waste for waste-to-energy facilities restrictions; (62-701.300(9), FAC)
—	_____	___	✓	10.	Provide documentation that the facility will be in compliance with the liquid restrictions; (62-701.300(10), FAC)
—	_____	___	✓	11.	Provide documentation that the facility will be in compliance with the used oil restrictions; (62-701.300(11), FAC)

E. SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL (62-701.320, FAC)

S	LOCATION	N/A	N/C		
✓	Section E.1			1.	Four copies, at minimum, of the completed application form, all supporting data and reports; (62-701.320(5)(a),FAC)
✓	Section E.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; (62-701.320(6),FAC)
✓	Section E.3			3.	A letter of transmittal to the Department; (62-701.320(7)(a),FAC)
✓	Section E.4			4.	A completed application form dated and signed by the applicant; (62-701.320(7)(b),FAC)
✓	Section E.5			5.	Permit fee specified in Rule 62-701.315, FAC in check or money order, payable to the Department; (62-701.320(7)(c),FAC)
✓	Section E.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; (62-701.320(7)(d),FAC)
✓	Section E.7			7.	Operation Plan and Closure Plan; (62-701.320(7)(e)1,FAC)
✓	Section E.8			8.	Contingency Plan; (62-701.320(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 1929) showing; (62-702.320(7)(f),FAC)
✓	Section E.9.a			a.	A regional map or plan with the project location;
✓	Section E.9.b			b.	A vicinity map or aerial photograph no more than 1 year old;
			✓	c.	A site plan showing all property boundaries certified by a registered Florida land surveyor;

	LOCATION	N/A	N/C		PART E CONTINUED
___	_____	✓	___		d. Other necessary details to support the engineering report.
___	_____	___	✓	10.	Documentation that the applicant either owns the property or has legal authority from the property owner to use the site; (62-701.320(7)(g),FAC)
___	_____	___	✓	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 the waste reduction and recycling goals contained in Section 403.706,FS; (62-701.320(7)(h),FAC)
___	_____	___	✓	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; (62-701.320(7)(i),FAC)
✓	Section E.13	___	___	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; (62-702.320(8),FAC)
___	_____	___	✓	14.	Provide a description of how the requirements for airport safety will be achieved including proof of required notices if applicable. If exempt, explain how the exemption applies; (62-701.320(13),FAC)
___	_____	___	✓	15.	Explain how the operator training requirements will be satisfied for the facility; (62-701.320(15), FAC)

F. LANDFILL PERMIT REQUIREMENTS (62-701.330, FAC)

S	LOCATION	N/A	N/C		
✓	Section F.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; (62-701.330(3)(a),FAC)
___	___	___	✓	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; (62-701.330(3)(b),FAC)
✓	Section F.3	___	___	3.	Plot plan with a scale not greater than 200 feet to the inch showing; (62-701.330(3)(c),FAC)
✓	Section F.3	___	___	a.	Dimensions;
✓	Section F.3	___	___	b.	Locations of proposed and existing water quality monitoring wells;
✓	Section F.3	___	___	c.	Locations of soil borings;
✓	Section F.3	___	___	d.	Proposed plan of trenching or disposal areas;
✓	Section F.3	___	___	e.	Cross sections showing original elevations and proposed final contours which shall be included either on the plot plan or on separate sheets;
✓	Section F.3	___	___	f.	Any previously filled waste disposal areas;
✓	Section F.3	___	___	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; (62-701.330(3)(d),FAC):
✓	Section F.4	___	___	a.	Proposed fill areas;
✓	Section F.4	___	___	b.	Borrow areas;
✓	Section F.4	___	___	c.	Access roads;
✓	Section F.4	___	___	d.	Grades required for proper drainage;
✓	Section F.4	___	___	e.	Cross sections of lifts;

LOCATION	N/A	N/C		PART F CONTINUED
✓ Section F.4				f. Special drainage devices if necessary;
✓ Section F.4				g. Fencing;
✓ Section F.4				h. Equipment facilities.
			5.	A report on the landfill describing the following; (62-701.330(3)(e),FAC)
✓ Section F.5.a				a. The current and projected population and area to be served by the proposed site;
		✓		b. The anticipated type, annual quantity, and source of solid waste, expressed in tons;
		✓		c. The anticipated facility life;
		✓		d. The source and type of cover material used for the landfill.
		✓	6.	Provide evidence that an approved laboratory shall conduct water quality monitoring for the facility in accordance with Chapter 62-160,FAC; (62-701.330(3)(h),FAC)
✓ Section F.7			7.	Provide a statement of how the applicant will demonstrate financial responsibility for the closing and long-term care of the landfill; (62-701.330(3)(i),FAC)

G. GENERAL CRITERIA FOR LANDFILLS (62-701.340,FAC)

		✓	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 in a washout of solid waste; (62-701.340(4)(b),FAC)
		✓	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; (62-701.340(4)(c),FAC)
		✓	3.	Describe what methods shall be taken to screen the landfill from public view where such screening can practically be provided; (62-701.340(4)(d),FAC)

H. LANDFILL CONSTRUCTION REQUIREMENTS (62-701.400,FAC)

S	LOCATION	N/A	N/C	
___	_____	✓	___	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; (62-701.400(2),FAC)
				2. Landfill liner requirements; (62-701.400(3),FAC)
				a. General construction requirements; (62-701.400(3)(a),FAC):
___	_____	✓	___	(1) Provide test information and documentation to ensure the liner will be constructed of materials that have appropriate physical, chemical, and mechanical properties to prevent failure;
___	_____	✓	___	(2) Document foundation is adequate to prevent liner failure;
___	_____	✓	___	(3) Constructed so bottom liner will not be adversely impacted by fluctuations of the ground water;
___	_____	✓	___	(4) Designed to resist hydrostatic uplift if bottom liner located below seasonal high ground water table;
___	_____	✓	___	(5) Installed to cover all surrounding earth which could come into contact with the waste or leachate.
				b. Composite liners; (62-701.400(3)(b),FAC)
___	_____	✓	___	(1) Upper geomembrane thickness and properties;
___	_____	✓	___	(2) Design leachate head for primary LCRS including leachate recirculation if appropriate;
___	_____	✓	___	(3) Design thickness in accordance with Table A and number of lifts planned for lower soil component.

S	LOCATION	N/A	N/C	
				PART H CONTINUED
				c. Double liners; (62-701.400(3)(c),FAC)
		✓		(1) Upper and lower geomembrane thicknesses and properties;
		✓		(2) Design leachate head for primary LCRS to limit the head to one foot above the liner;
		✓		(3) Lower geomembrane sub-base design;
		✓		(4) Leak detection and secondary leachate collection system minimum design criteria ($k \geq 10$ cm/sec, head on lower liner ≤ 1 inch, head not to exceed thickness of drainage layer);
				d. Standards for geosynthetic components; (62-701.400(3)(d),FAC)
		✓		(1) Field seam test methods to ensure all field seams are at least 90 percent of the yield strength for the lining material;
		✓		(2) Geomembranes to be used shall pass a continuous spark test by the manufacturer;
		✓		(3) Design of 24-inch-thick protective layer above upper geomembrane liner;
		✓		(4) Describe operational plans to protect the liner and leachate collection system when placing the first layer of waste above 24-inch-thick protective layer.
		✓		(5) HDPE geomembranes, if used, meet the specifications in GRI GM13;
		✓		(6) PVC geomembranes, if used, meet the specifications in PGI 1197;
		✓		(7) Interface shear strength testing results of the actual components which will be used in the liner system;
		✓		(8) Transmissivity testing results of geonets if they are used in the liner system;
		✓		(9) Hydraulic conductivity testing results of geosynthetic clay liners if they are used in the liner system;

S	LOCATION	N/A	N/C	PART H CONTINUED
				e. Geosynthetic specification requirements; (62-701.400(3)(e),FAC)
___	_____	✓	___	(1) Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program;
___	_____	✓	___	(2) Material specifications for geomembranes, geocomposites, geotextiles, geogrids, and geonets;
___	_____	✓	___	(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;
___	_____	✓	___	(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 lining system acceptance;
___	_____	✓	___	(5) Geotextile and geogrid specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;
___	_____	✓	___	(6) Geonet and geocomposite specifications including handling and placement, conformance testing, stacking and joining, repair, and placement of soil materials and any overlying materials;
	_____	✓	___	(7) Geosynthetic clay liner specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil material and any overlying materials;
				f. Standards for soil components (62-710.400(3)(f),FAC):
___	_____	✓	___	(1) Description of construction procedures including overexcavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil component in layers;

	LOCATION	N/A	N/C
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___

PART H CONTINUED

(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;

(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:

(a) Allowable particle size distribution, Atterberg limits, shrinkage limit;

(b) Placement moisture and dry density criteria;

(c) Maximum laboratory-determined saturated hydraulic conductivity using simulated leachate;

(d) Minimum thickness of soil liner;

(e) Lift thickness;

(f) Surface preparation (scarification);

(g) Type and percentage of clay mineral within the soil component;

(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); (62-701.400(4),FAC)

a. The primary and secondary LCRS requirements; (62-701.400(4)(a),FAC)

(1) Constructed of materials chemically resistant to the waste and leachate;

(2) Have sufficient mechanical properties to prevent collapse under pressure;

(3) Have granular material or synthetic geotextile to prevent clogging;

(4) Have method for testing and cleaning clogged pipes or contingent designs for rerouting leachate around failed areas;

S	LOCATION	N/A	N/C	
				PART H CONTINUED
				b. Primary LCRS requirements; (62-701.400(4)(b),FAC)
___	_____	✓	___	(1) Bottom 12 inches having hydraulic conductivity $\geq 1 \times 10^{-3}$ cm/sec;
___	_____	✓	___	(2) Total thickness of 24 inches of material chemically resistant to the waste and leachate;
___	_____	✓	___	(3) Bottom slope design to accomodate for predicted settlement;
___	_____	✓	___	(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; (62-701.400(5),FAC)
___	_____	✓	___	a. Describe general procedures for recirculating leachate;
___	_____	✓	___	b. Describe procedures for controlling leachate runoff and minimizing mixing of leachate runoff with storm water;
___	_____	✓	___	c. Describe procedures for preventing perched water conditions and gas buildup;
___	_____	✓	___	d. Describe alternate methods for leachate management when it cannot be recirculated due to weather or runoff conditions, surface seeps, wind-blown spray, or elevated levels of leachate head on the liner;
___	_____	✓	___	e. Describe methods of gas management in accordance with Rule 62-701.530, FAC;
___	_____	✓	___	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.

LOCATION		N/A	N/C	PART H CONTINUED
				5. Leachate storage tanks and leachate surface impoundments; (62-701.400(6),FAC)
				a. Surface impoundment requirements; (62-701.400(6)(b),FAC)
___	_____	✓	___	(1) Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water;
___	_____	✓	___	(2) Designed in segments to allow for inspection and repair as needed without interruption of service;
				(3) General design requirements;
___	_____	✓	___	(a) Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane;
___	_____	✓	___	(b) Leak detection and collection system with hydraulic conductivity $\geq$ 1 cm/sec;
___	_____	✓	___	(c) Lower geomembrane placed on subbase $\geq$ 6 inches thick with k $\leq$ $1x10^{-5}$ cm/sec or on an approved geosynthetic clay liner with k $\leq$ $1x10^{-7}$ cm/sec;
___	_____	✓	___	(d) Design calculation to predict potential leakage through the upper liner;
___	_____	✓	___	(e) Daily inspection requirements and notification and corrective action requirements if leakage rates exceed that predicted by design calculations;
___	_____	✓	___	(4) Description of procedures to prevent uplift, if applicable;
___	_____	✓	___	(5) Design calculations to demonstrate minimum two feet of freeboard will be maintained;
___	_____	✓	___	(6) Procedures for controlling disease vectors and off-site odors.

S	LOCATION	N/A	N/C	PART H CONTINUED
				b. Above-ground leachate storage tanks; (62-701.400(6)(c),FAC)
___	_____	✓	___	(1) Describe tank materials of construction and ensure foundation is sufficient to support tank;
___	_____	✓	___	(2) Describe procedures for cathodic protection if needed for the tank;
___	_____	✓	___	(3) Describe exterior painting and interior lining of the tank to protect it from the weather and the leachate stored;
___	_____	✓	___	(4) Describe secondary containment design to ensure adequate capacity will be provided and compatibility of materials of construction;
___	_____	✓	___	(5) Describe design to remove and dispose of stormwater from the secondary containment system;
___	_____	✓	___	(6) Describe an overfill prevention system such as level sensors, gauges, alarms and shutoff controls to prevent overfilling;
				(7) Inspections, corrective action and reporting requirements;
___	_____	✓	___	(a) Overfill prevention system weekly;
___	_____	✓	___	(b) Exposed tank exteriors weekly;
___	_____	✓	___	(c) Tank interiors when tank is drained or at least every three years;
___	_____	✓	___	(d) Procedures for immediate corrective action if failures detected;
___	_____	✓	___	(e) Inspection reports available for department review.
				c. Underground leachate storage tanks; (62-701.400(6)(d),FAC)
___	_____	✓	___	(1) Describe materials of construction;
___	_____	✓	___	(2) A double-walled tank design system to be used with the following requirements;

S	LOCATION	N/A	N/C
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___
___	_____	✓	___

PART H CONTINUED

(a) Interstitial space monitoring at least weekly;

(b) Corrosion protection provided for primary tank interior and external surface of outer shell;

(c) Interior tank coatings compatible with stored leachate;

(d) Cathodic protection inspected weekly and repaired as needed;

(3) Describe an overfill prevention system such as level sensors, gauges, alarms and shutoff controls to prevent overfilling and provide for weekly inspections;

(4) Inspection reports available for department review.

d. Schedule provided for routine maintenance of LCRS; (62-701.400(6)(e),FAC)

6. Liner systems construction quality assurance (CQA); (62-701.400(7),FAC)

a. Provide CQA Plan including:

(1) Specifications and construction requirements for liner system;

(2) Detailed description of quality control testing procedures and frequencies;

(3) Identification of supervising professional engineer;

(4) Identify responsibility and authority of all appropriate organizations and key personnel involved in the construction project;

(5) State qualifications of CQA professional engineer and support personnel;

(6) Description of CQA reporting forms and documents;

S	LOCATION	N/A	N/C	PART H CONTINUED
___	_____	✓	___	b. An independent laboratory experienced in the testing of geosynthetics to perform required testing;
				7. Soil Liner CQA (62-701.400(8)FAC)
___	_____	✓	___	a. Documentation that an adequate borrow source has been located with test results or description of the field exploration and laboratory testing program to define a suitable borrow source;
___	_____	✓	___	b. Description of field test section construction and test methods to be implemented prior to liner installation;
___	_____	✓	___	c. Description of field test methods including rejection criteria and corrective measures to insure proper liner installation.
				8. Surface water management systems; (62-701.400(9),FAC)
___	_____	✓	___	a. Provide a copy of a Department permit for stormwater control or documentation that no such permit is required;
___	_____	✓	___	b. Design of surface water management system to isolate surface water from waste filled areas and to control stormwater run-off;
___	_____	✓	___	c. Details of stormwater control design including retention ponds, detention ponds, and drainage ways;
				9. Gas control systems; (62-701.400(10),FAC)
___	_____	✓	___	a. Provide documentation that if the landfill is receiving degradable wastes, it will have a gas control system complying with the requirements of Rule 62-701.530, FAC;
___	_____	✓	___	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; (62-701.400(11),FAC)

I. HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS (62-701.410(1), FAC)

S	LOCATION	N/A	N/C		
				1.	Submit a hydrogeological investigation and site report including at least the following information:
___	_____	___	✓	a.	Regional and site specific geology and hydrogeology;
___	_____	___	✓	b.	Direction and rate of ground water and surface water flow including seasonal variations;
___	_____	___	✓	c.	Background quality of ground water and surface water;
___	_____	___	✓	d.	Any on-site hydraulic connections between aquifers;
___	_____	___	✓	e.	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;
___	_____	___	✓	f.	Description of topography, soil types and surface water drainage systems;
___	_____	___	✓	g.	Inventory of all public and private water wells within a one-mile radius of the landfill including, where available, 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;
___	_____	___	✓	h.	Identify and locate any existing contaminated areas on the site;
___	_____	___	✓	i.	Include a map showing the locations of all potable wells within 500 feet, and all community water suupply wells within 1000 feet, of the waste storage and disposal areas;
___	_____	___	✓	2.	Report signed, sealed and dated by PE or PG.

J. GEOTECHNICAL INVESTIGATION REQUIREMENTS (62-701.410(2),FAC)

S	LOCATION	N/A	N/C		
				1.	Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:
___	_____	___	✓		a. Description of subsurface conditions including soil stratigraphy and ground water table conditions;
___	_____	___	✓		b. Investigate for the presence of muck, previously filled areas, soft ground, lineaments and sink holes;
___	_____	___	✓		c. Estimates of average and maximum high water table across the site;
					d. Foundation analysis including:
___	_____	___	✓		(1) Foundation bearing capacity analysis;
✓	Section J.1.d.2	___	___		(2) Total and differential subgrade settlement analysis;
✓	Section J.1.d.3	___	___		(3) Slope stability analysis;
___	_____	___	✓		e. Description of methods used in the investigation and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations and conclusions;
___	_____	___	✓		f. An evaluation of fault areas, seismic impact zones, and unstable areas as described in 40 CFR 258.13, 40 CFR 258.14 and 40 CFR 258.15.
✓	Section J.2	___	___	2.	Report signed, sealed and dated by PE or PG.

K. VERTICAL EXPANSION OF LANDFILLS (62-701.430,FAC)

S	LOCATION	N/A	N/C		
✓	Section K.1	___	___	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;
✓	Section K.2	___	___	2.	Describe how the vertical expansion over unlined landfills will meet the requirements of Rule 62-701.400, FAC with the exceptions of Rule 62-701.430(1)(c),FAC;
✓	Section K.3	___	___	3.	Provide foundation and settlement analysis for the vertical expansion;
✓	Section K.4	___	___	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;
✓	Section K.5	___	___	5.	Minimum stability safety factor of 1.5 for the lining system component interface stability and deep stability;
✓	Section K.6	___	___	6.	Provide documentation to show the surface water management system will not be adversely affected by the vertical expansion;
✓	Section K.7	___	___	7.	Provide gas control designs to prevent accumulation of gas under the new liner for the vertical expansion.

L. LANDFILL OPERATION REQUIREMENTS (62-701.500,FAC)

___	_____	___	✓	1.	Provide documentation that landfill will have at least one trained operator during operation and at least one trained spotter at each working face; (62-701.500(1),FAC)
				2.	Provide a landfill operation plan including procedures for: (62-701.500(2), FAC)
___	_____	___	✓		a. Designating responsible operating and maintenance personnel;
✓	Section L.2.b	___	___		b. Contingency operations for emergencies;
___	_____	___	✓		c. Controlling types of waste received at the landfill;
___	_____	___	✓		d. Weighing incoming waste;
___	_____	___	✓		e. Vehicle traffic control and unloading;
✓	Section L.2.f	___	___		f. Method and sequence of filling waste;
___	_____	___	✓		g. Waste compaction and application of cover;
✓	Section L.2.h	___	___		h. Operations of gas, leachate, and stormwater controls;
___	_____	___	✓		i. Water quality monitoring.
___	_____	___	✓		j. Maintaining and cleaning the leachate collection system;
___	_____	___	✓	3.	Provide a description of the landfill operation record to be used at the landfill; details as to location of where various operational records will be kept (i.e. FDEP permit, engineering drawings, water quality records, etc.) (62-701.500(3),FAC)
___	_____	___	✓	4.	Describe the waste records that will be compiled monthly and provided to the Department quarterly; (62-701.500(4),FAC)
___	_____	___	✓	5.	Describe methods of access control; (62-701.500(5),FAC)
___	_____	___	✓	6.	Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized wastes at the landfill; (62-701.500(6),FAC)
				7.	Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7),FAC)
___	_____	___	✓		a. Waste layer thickness and compaction frequencies;

S	LOCATION	N/A	N/C	PART L CONTINUED
___	_____	___	✓	b. Special considerations for first layer of waste placed above liner and leachate collection system;
___	_____	___	✓	c. Slopes of cell working face and side grades above land surface, planned lift depths during operation;
___	_____	___	✓	d. Maximum width of working face;
				e. Description of type of initial cover to be used at the facility that controls:
___	_____	___	✓	(1) Disease vector breeding/animal attraction
___	_____	___	✓	(2) Fires
___	_____	___	✓	(3) Odors
___	_____	___	✓	(4) Blowing litter
___	_____	___	✓	(5) Moisture infiltration
___	_____	___	✓	f. Procedures for applying initial cover including minimum cover frequencies;
___	_____	___	✓	g. Procedures for applying intermediate cover;
___	_____	___	✓	h. Time frames for applying final cover;
___	_____	___	✓	i. Procedures for controlling scavenging and salvaging.
___	_____	___	✓	j. Description of litter policing methods;
___	_____	___	✓	k. Erosion control procedures.
				8. Describe operational procedures for leachate management including; (62-701.500(8),FAC)
✓	Section L.8.a	___	___	a. Leachate level monitoring, sampling, analysis and data results submitted to the Department;
___	_____	___	✓	b. Operation and maintenance of leachate collection and removal system, and treatment as required;
___	_____	___	✓	c. Procedures for managing leachate if it becomes regulated as a hazardous waste;
✓	Section L.8.d	___	___	d. Agreements for off-site discharge and treatment of leachate;
✓	Section L.8.e	___	___	e. Contingency plan for managing leachate during emergencies or equipment problems;

S	LOCATION	N/A	N/C		PART L CONTINUED
___	_____	___	✓		f. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record;
___	_____	___	✓		g. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;
___	_____	___	✓		h. Procedures for water pressure cleaning or video inspecting leachate collection systems.
___	_____	___	✓	9.	Describe how the landfill receiving degradable wastes shall implement a gas management system meeting the requirements of Rule 62-701.530, FAC; (62-701.500(9),FAC)
___	_____	___	✓	10.	Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-701.400(9); (62-701.500(10),FAC)
				11.	Equipment and operation feature requirements; (62-701.500(11),FAC)
___	_____	___	✓		a. Sufficient equipment for excavating, spreading, compacting and covering waste;
___	_____	___	✓		b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;
___	_____	___	✓		c. Communications equipment;
___	_____	___	✓		d. Dust control methods;
___	_____	___	✓		e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;
___	_____	___	✓		f. Litter control devices;
___	_____	___	✓		g. Signs indicating operating authority, traffic flow, hours of operation, disposal restrictions.
___	_____	___	✓	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; (62-701.500(12),FAC)
___	_____	___	✓	13.	Additional record keeping and reporting requirements; (62-701.500(13),FAC)

S	LOCATION	N/A	N/C	
___	_____	___	✓	a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;
___	_____	___	✓	b. Monitoring information, calibration and maintenance records, copies of reports required by permit maintained for at least 10 years;
___	_____	___	✓	c. 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;
___	_____	___	✓	d. Procedures for archiving and retrieving records which are more than five year old.

PART L CONTINUED

M. WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS (62-701.510, FAC)

S	LOCATION	N/A	N/C		
___	_____	___	✓	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;
___	_____	___	✓	a.	Based on the information obtained in the hydrogeological investigation and signed, dated and sealed by the PG or PE who prepared it; (62-701.510(2)(a),FAC)
___	_____	___	✓	b.	All sampling and analysis preformed in accordance with Chapter 62-160, FAC; (62-701.510(2)(b),FAC)
				c.	Ground water monitoring requirements; (62-701.510(3),FAC)
___	_____	___	✓	(1)	Detection wells located downgradient from and within 50 feet of disposal units;
___	_____	___	✓	(2)	Downgradient compliance wells as required;
___	_____	___	✓	(3)	Background wells screened in all aquifers below the landfill that may be affected by the landfill;
___	_____	___	✓	(4)	Location information for each monitoring well;
___	_____	___	✓	(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;
___	_____	___	✓	(6)	Well screen locations properly selected;
___	_____	___	✓	(7)	Procedures for properly abandoning monitoring wells;
___	_____	✓	___	(8)	Detailed description of detection sensors if proposed.

LOCATION	N/A	N/C	PART M CONTINUED
			d. Surface water monitoring requirements; (62-701.510(4),FAC)
		✓	(1) Location of and justification for all proposed surface water monitoring points;
		✓	(2) Each monitoring location to be marked and its position determined by a registered Florida land surveyor;
		✓	e. Leachate sampling locations proposed; (62-701.510(5),FAC)
			f. Initial and routine sampling frequency and requirements; (62-701.510(6),FAC)
		✓	(1) Initial background ground water and surface water sampling and analysis requirements;
		✓	(2) Routine leachate sampling and analysis requirements;
		✓	(3) Routine monitoring well sampling and analysis requirements;
		✓	(4) Routine surface water sampling and analysis requirements.
		✓	g. Describe procedures for implementing evaluation monitoring, prevention measures and corrective action as required; (62-701.510(7),FAC)
		✓	h. Water quality monitoring report requirements; (62-701.510(9),FAC)
		✓	(1) Semi-annual report requirements;
		✓	(2) Bi-annual report requirements signed, dated and sealed by PG or PE.

N. SPECIAL WASTE HANDLING REQUIREMENTS (62-701.520, FAC)

S	LOCATION	N/A	N/C		
___	_____	✓	___	1.	Describe procedures for managing motor vehicles; (62-701.520(1),FAC)
___	_____	✓	___	2.	Describe procedures for landfilling shredded waste; (62-701.520(2),FAC)
___	_____	___	✓	3.	Describe procedures for asbestos waste disposal; (62-701.520(3),FAC)
___	_____	___	✓	4.	Describe procedures for disposal or management of contaminated soil; (62-701.520(4), FAC)
___	_____	___	✓	5.	Describe procedures for disposal of biological wastes; (62-701.520(5), FAC)

O. GAS MANAGEMENT SYSTEM REQUIREMENTS (62-701.530,FAC)

				1.	Provide the design for a gas management systems that will (62-701.530(1), FAC):
✓	Section O.1.a	___	___	a.	Be designed to prevent concentrations of combustible gases from exceeding 25% the LEL in structures and 100% the LEL at the property boundary;
✓	Section O.1.b	___	___	b.	Be designed for site-specific conditions;
✓	Section O.1.c	___	___	c.	Be designed to reduce gas pressure in the interior of the landfill;
✓	Section O.1.d	___	___	d.	Be designed to not interfere with the liner, leachate control system or final cover.
✓	Section O.2	___	___	2.	Provide documentation that will describe locations, construction details and procedures for monitoring gas at ambient monitoring points and with soil monitoring probes; (62-701.530(2), FAC):
✓	Section O.3	___	___	3.	Provide documentation describing how the gas remediation plan and odor remediation plan will be implemented; (62-701.530(3), FAC):
				4.	Landfill gas recovery facilities; (62-701.530(5), FAC):
✓	Section O.4.a	___	___	a.	Information required in Rules 62-701.320(7) and 62-701.330(3), FAC supplied;
✓	Section O.4.b	___	___	b.	Information required in Rule 62-701.600(4), FAC supplied where relevant and practical;
✓	Section O.4.c	___	___	c.	Estimate of current and expected gas generation rates and description of condensate disposal methods provided;

PART O CONTINUED

S	LOCATION	N/A	N/C		
✓	Section O.4.d	___	___	d.	Description of procedures for condensate sampling, analyzing and data reporting provided;

✓ Section O.4.e ___ ___ e. Closure plan provided describing methods to control gas after recovery facility ceases operation and any other requirements contained in Rule 62-701.400(10), FAC;

✓ Section O.4.f ___ ___ f. Performance bond provided to cover closure costs if not already included in other landfill closure costs.

P. LANDFILL FINAL CLOSURE REQUIREMENTS (62-701.600,FAC)

1. Closure schedule requirements; (62-701.600(2),FAC)

✓ Section P.1.a ___ ___ 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;

✓ Section P.1.b ___ ___ b. Notice to user requirements within 120 days of final receipt of wastes;

✓ Section P.1.c ___ ___ c. Notice to public requirements within 10 days of final receipt of wastes.

2. Closure permit general requirements; (62-701.600(3),FAC)

✓ Section P.2.a ___ ___ a. Application submitted to Department at least 90 days prior to final receipt of wastes;

b. Closure plan shall include the following:

✓ Section P.2.b ___ ___ (1) Closure report;

✓ Section P.2.b ___ ___ (2) Closure design plan;

✓ Section P.2.b ___ ___ (3) Closure operation plan;

✓ Section P.2.b ___ ___ (4) Closure procedures;

✓ Section P.2.b ___ ___ (5) Plan for long term care;

✓ Section P.2.b ___ ___ (6) A demonstration that proof of financial responsibility for long term care will be provided.

3. Closure report requirements; (62-701.600(4),FAC)

a. General information requirements;

✓ Section P.3.a ___ ___ (1) Identification of landfill;

S	LOCATION	N/A	N/C	PART P CONTINUED
✓	Section P.3.a	___	___	(2) Location, description and vicinity map;
✓	Section P.3.a	___	___	(3) Total acres of disposal areas and landfill property;
✓	Section P.3.a	___	___	(4) Legal property description;
✓	Section P.3.a	___	___	(5) History of landfill;
✓	Section P.3.a	___	___	(6) Identification of types of waste disposed of at the landfill.
✓	Section P.3.b	___	___	b. Geotechnical investigation report and water quality monitoring plan required by Rule 62-701.330(3),FAC;
✓	Section P.3.c	___	___	c. Land use information report indicating: identification of adjacent landowners; zoning; present land uses; and roads, highways right-of-way, or easements.
✓	Section P.3.d	___	___	d. Report on actual or potential gas migration at landfills containing degradable wastes which would allow migration of gas off the landfill property;
✓	Section P.3.e	___	___	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: (62-701.600(5),FAC)
✓	Section P.4	___	___	a. Plan sheet showing phases of site closing;
✓	Section P.4	___	___	b. Drawings showing existing topography and proposed final grades;
✓	Section P.4	___	___	c. Provisions to close units when they reach approved design dimensions;
✓	Section P.4	___	___	d. Final elevations before settlement;
✓	Section P.4	___	___	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 P.4	___	___	(1) CQA plan for installing and testing final cover;

S	LOCATION	N/A	N/C
✓	Section P.4		
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✓	Section P.5		

PART P CONTINUED

(2) Schedule for installing final cover after final receipt of waste;

(3) Description of drought-resistant species to be used in the vegetative cover;

(4) Top gradient design to maximize runoff and minimize erosion;

(5) Provisions for cover material to be used for final cover maintenance.

g. Final cover design requirements:

(1) Protective soil layer design;

(2) Barrier soil layer design;

(3) Erosion control vegetation;

(4) Geomembrane barrier layer design;

(5) Geosynthetic clay liner design if used;

(6) Stability analysis of the cover system and the disposed waste.

h. Proposed method of stormwater control;

i. Proposed method of access control;

j. Description of proposed final use of the closed landfill, if any;

k. Description of the proposed or existing gas management system which complies with Rule 62-701.530, FAC.

5. Closure operation plan shall include: (62-701.600(6),FAC)

a. Detailed description of actions which will be taken to close the landfill;

b. Time schedule for completion of closing and long term care;

c. Describe proposed method for demonstrating financial responsibility;

d. Indicate any additional equipment and personnel needed to complete closure.

S	LOCATION	N/A	N/C		PART P CONTINUED
✓	Section P.5	___	___		e. Development and implementation of the water quality monitoring plan required in Rule 62-701.510, FAC.
✓	Section P.5	___	___		f. Development and implementation of gas management system required in Rule 62-701.530, FAC.
✓	Section P.6	___	___	6.	Justification for and detailed description of procedures to be followed for temporary closure of the landfill, if desired; (62-701.600(7),FAC)

Dept. Of Environmental Protection
FEB 01 2010
Southwest District

Q. CLOSURE PROCEDURES (62-701.610,FAC)

S	LOCATION	N/A	N/C		
✓	Section Q.1			1.	Survey monuments; (62-701.610(2),FAC)
✓	Section Q.2			2.	Final survey report; (62-701.610(3),FAC)
✓	Section Q.3			3.	Certification of closure construction completion; (62-701.610(4),FAC)
✓	Section Q.4			4.	Declaration to the public; (62-701.610(5),FAC)
✓	Section Q.5			5.	Official date of closing; (62-701.610(6),FAC)
✓	Section Q.6			6.	Use of closed landfill areas; (62-701.610(7),FAC)
✓	Section Q.7			7.	Relocation of wastes; (62-701.610(8), FAC)

R. LONG TERM CARE REQUIREMENTS (62-701.620,FAC)

✓	Section R.1			1.	Maintaining the gas collection and monitoring system; (62-701.620(5), FAC)
✓	Section R.2			2.	Right of property access requirements; (62-701.620(6),FAC)
✓	Section R.3			3.	Successors of interest requirements; (62-701.620(7),FAC)
✓	Section R.4			4.	Requirements for replacement of monitoring devices; (62-701.620(9),FAC)
✓	Section R.5			5.	Completion of long term care signed and sealed by professional engineer (62-701.620(10), FAC).

S. FINANCIAL RESPONSIBILITY REQUIREMENTS (62-701.630,FAC)

✓	Section S.1			1.	Provide cost estimates for closing, long term care, and corrective action costs estimated by a PE for a third party performing the work, on a per unit basis, with the source of estimates indicated; (62-701.630(3)&(7), FAC).
✓	Section S.2			2.	Describe procedures for providing annual cost adjustments to the Department based on inflation and changes in the closing, long-term care, and corrective action plans; (62-701.630(4)&(8), FAC).
✓	Section S.3			3.	Describe funding mechanisms for providing proof of financial assurance and include appropriate financial assurance forms; (62-701.630(5),(6),&(9), FAC).

T. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

1. Applicant:

The undersigned applicant or authorized representative of Citrus County Board of County Commissioners is aware that statements made in this form and attached information are an application for a Operations Renewal Permit from the Florida Department of Environmental Protection and certifies that the information in this application is true, correct and complete to the best of his/her 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.

T. Casey Stephens

Signature of Applicant or Agent

Casey Stephens, DSWM

Name and Title (please type)

casey.stephens@bocc.citrus.fl.us

E-Mail address (if available)

P.O. Box 340

Mailing Address

Lecanto, Florida 34460

City, State, Zip Code

(352) 527-7670

Telephone Number

Date: 1/22/10

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

2. Professional Engineer registered in Florida (or Public Officer if authorized under Sections 403.707 and 403.7075, 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 principles applicable to such facilities. In my professional judgment, this facility, when properly maintained and operated, will comply with all applicable statutes of the State of Florida and rules of the Department. It is agreed that the undersigned will provide the applicant with a set of instructions of proper maintenance and operation of the facility.

2/11/10

Signature

Dominique H. Bramlett, PE (Sr. Project Engr)

Name and Title (please type)

61829

Florida Registration Number
(please affix seal)

SCS Engineers

4041 Park Oaks Blvd, Suite 100

Mailing Address

Tampa, FL 33610

City, State, Zip Code

dbramlett@scsengineers.com

E-Mail address (if available)

(813) 621-0080

Telephone Number

Date:

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SECTION A

GENERAL INFORMATION

This operations permit renewal application was prepared by SCS Engineers (SCS) on behalf of the Citrus County Board of County Commissioners (County) for renewal of the existing Operations Permit (Operations Permit No. 21375-008-SO/01) for the Citrus County Central Landfill (Landfill). This report is divided into sections following the State of Florida Department of Environmental Protection (FDEP) permit application Form 62-701.900(1).

A.1 SITE LOCATION

The Citrus County Central Landfill is located on S.R. 44, 3 miles east of Lecanto, Citrus County, Florida. The site property lies within Section 1, Township 19 South, and Range 18 East in Citrus County, Florida. The main entrance of the Citrus County Central Landfill facility is located at latitude 28°51'07"N, longitude 82°26'12"W.

SECTION B

DISPOSAL FACILITY GENERAL INFORMATION

Section B – Disposal Facility General Information of the FDEP permit application Form 62-701.900(1) has been included on the Form which is attached at the beginning of this permit application report.

SECTION C

NON-DISPOSAL FACILITY GENERAL INFORMATION

This Section is not applicable to the Citrus County Central Landfill Operations Permit Renewal Application.

SECTION D

PROHIBITIONS

There has been no substantial change to this section since the Phase 3 construction permit application.

D.1 SITING CRITERIA

No substantial change is proposed. The Citrus County Central Landfill is an existing facility and is permitted to accept solid waste, therefore, the sitting criteria has been previously satisfied. Sitting criteria for Phase 3 disposal area have been discussed in the Phase 3 construction permit application, prepared by SCS Engineers (SCS), and submitted to the Florida Department of Environmental Protection (FDEP) in August 2008.

D.2 EXEMPTIONS

No substantial change is proposed. Phase 3 of this facility does not qualify for any exemptions contained in Rules 62-701.300 (12) through (16), F.A.C. Phase 1 was permitted prior to May 27, 2001, and remains subject to prohibitions that were in effect at the time the construction permit was issued.

D.3 BURING CRITERIA

No substantial change is proposed. No open burning will be permitted in accordance with Rule 62-701.300(3), F.A.C.

D.4 HAZARDOUS WASTE

No substantial change is proposed. No hazardous waste will be disposed of at this facility in accordance with Rule 62-701.300(4), F.A.C. Hazardous material will be identified through load inspections as indicated in the Operations Plan presented in Attachment L-1.

D.5 PCB DISPOSAL

No substantial change is proposed. No PCBs will be disposed of at this facility in accordance with Rule 62-701.300(4), F.A.C.

D.6 BIOMEDICAL WASTE

No substantial change is proposed. Biomedical waste is not accepted for disposal at this facility, except for waste that has been properly incinerated. Biomedical waste generated by

individuals performing self care at home is included in the household waste to be disposed at this facility.

D.7 SURFACE WATER

No substantial change is proposed. There are no Class I waters within 3,000 feet of the Landfill as shown in Attachment E-1, Drawings.

D.8 SPECIAL WASTE FOR LANDFILLS

No substantial change is proposed. No lead-acid batteries, used oil, yard waste, white goods, or whole waste tires will be knowingly disposed of in the proposed disposal area.

D.9 SPECIAL WASTE FOR WASTE-TO-ENERGY FACILITY

No substantial change is proposed. No waste-to-energy facility is located at the Landfill.

D.10 LIQUIDS

Bulk liquids and non-containerized liquids are not accepted for disposal at the Landfill.

D.11 USED OILS

No substantial change is proposed. Used oil will not be accepted at the Landfill, but is accepted for recycling in the Citizens Service Area.

SECTION E

GENERAL REQUIREMENTS

E.1 APPLICATION FORM AND SUPPORTING DOCUMENTS

Four copies of the completed application form, all supporting data and reports are submitted.

E.2 ENGINEERING CERTIFICATION

This permit application has been certified, signed, and sealed by Dominique H. Bramlett, P.E., a registered Professional Engineer in the State of Florida (License No. 61829).

E.3 TRANSMITTAL LETTER

A transmittal letter is included at the front of this application.

E.4 APPLICATION FORMS

FDEP Form 62-701.900(1) effective 05-27-01 is included with this submittal.

E.5 PERMIT FEE

In accordance with Rule 62-701.320(7)(c), F.A.C., a check in the amount of $10,000.00 for the permit application fee for the operations permit renewal, payable to FDEP, is submitted with this application.

E.6 ENGINEERING REPORT

This document with supporting Figures, Tables, and Attachments meets the requirements of an Engineering Report as required by Rule 62-701.320(7)(d), F.A.C.. In addition, this report will reproduce and reference applicable information previously submitted to the FDEP.

E.7 OPERATION PLAN AND CLOSURE PLAN

The Citrus County Central Landfill Operations Plan is presented in Section L (See Attachment L-1 for Operations Plan).

The Closure Plan is included in Section P of this Operations Permit Renewal Application.

E.8 CONTINGENCY PLAN

The Contingency Plan is provided as Appendix A of the Operations Plan located in Attachment L-1.

E.9 DRAWINGS

Attachment E-1 includes sequence drawings that include cross-sections of the proposed filling progression at the Landfill to be conducted through the next permit period.

E.9.a Regional Map

A regional map with the project location is shown on the drawings presented in Attachment E-1.

E.9.b Vicinity Map

The most recent aerial photograph is presented in Attachment E-1.

E.9.c Site Plan

There are no changes to the previously submitted Site Plan certified by a registered Florida Land Surveyor showing all property boundaries for the Citrus County Central Landfill.

E.10 PROOF OF OWNERSHIP

Citrus County Board of County Commissioners owns and operates the Landfill. There has been no change to this section.

E.11 RECYCLING GOALS

This landfill expansion does not influence the achievement of the County's recycling goals. Therefore, there is no change to the recycling program previously provided to FDEP.

E.12 ENFORCEMENT HISTORY

There has been no change to this section.

E.13 PROOF OF PUBLICATION

To comply with Rule 62-701.320(8)(a), FAC, the County will publish a notice of application as required by the FDEP.

E.14 AIRPORT SAFETY

No substantial change is proposed. The Citrus County Central Landfill is not located within five miles of any licensed airports. Therefore, the requirements of Rule 62-701.320(13)(c), notification of the Federal Aviation Administration, does not apply.

E.15 OPERATOR TRAINING

In accordance with Rule 62-701.320(15), F.A.C. key supervisory staff at the Citrus County Central Landfill has received Landfill Operator Certification Training. Operator training certificates and hours completed for the individuals are provided in Attachment E-2 within this application.

As required by Rule 62-701.320(15), F.A.C. a State-certified Landfill Operator will be onsite when waste is received for disposal at the Citrus County Central Landfill and a trained spotter will be onsite during all times when waste is deposited at the landfill working face to detect unauthorized wastes. In addition, the equipment operators have sufficient training and knowledge to move waste and soil, and to develop the site in accordance with the design and operational standards described in this application.

Operator training includes a 24-hour course and 16 hours of continuing education every three years. Spotter training includes an 8-hour course and 4 hours of continuing education every three years. Operator and spotter training courses will be attended as offered by the University of Florida Center for Training, Research and Education for Environmental Occupations (TREEO) and through other FDEP approved sources. A listing of TREEO training courses and schedules is available at www.treeo.ufl.edu.

ATTACHMENT E-1

LANDFILL DRAWINGS
(BOUND SEPARATELY)

SECTION F

LANDFILL PERMIT REQUIREMENTS

F.1 VICINITY MAP

There has been no substantial change to this section since the Phase 3 construction permit application submittal The aerial photograph was provided in Attachment F-1 of the Phase 3 construction permit application and indicated land use, significant structures, water bodies, roads, and zoning within one mile of the landfill as required per Rule 62-701.330(3)(a), F.A.C.

F.2 AIRPORT MAP

There has been no substantial change to this section since the Phase 3 construction permit application submittal. The landfill is not located within five miles of any licensed airports as verified by review of the FAA map.

F.3 PLOT PLAN

The plot plan showing the Landfill dimensions, and locations of existing water quality monitoring wells is provided in the Drawings located in Attachment E-1. The locations of the soil borings have not changed since the previous construction permit application submittal.

F.4 TOPOGRAPHIC MAP

A current topographic plan for the Landfill is included with the drawings shown in Attachment E-1. No substantial changes to the borrow area, access roads, drainage, lift cross sections or equipment facilities have occurred at the Landfill since the Phase 3 construction permit application submittal.

The current plot plans are provided in the Drawings, Attachment E-1.

F.5 LANDFILL REPORT

F.5.a Current and Projected Population

The estimated population of the landfill service area, as determined by the University of Florida Bureau of Business and Economic Research Bulletin 138 projections of Florida Population by County 2000-2035, is shown in the following table:

TABLE F-1. PROJECTED POPULATION CITRUS COUNTY CENTRAL LANDFILL

Year	Population*
2007**	**140,124**
2009	143,375
2010**	**145,000**
2011	147,020
2012	149,040
2013	151,060
2014	153,080
2015**	**155,100**
2016	157,480
2017	159,860
2018	162,240
2019	164,620
2020**	**167,000**
2021	170,000
2022	173,000
2023	176,000
2024	179,000
2025**	**182,000**
2026	184,180
2027	186,360
2028	188,540
2029	190,720
2030**	**192,900**
2031	194,920
2032	196,940
2033	198,960
2034	200,980
2035**	**203,000**

Source:

* University of Florida Bureau if Business and Economic Research bulletin 138, Projections of Florida Population by County 2000-2035.

** University of Florida Bureau if Business and Economic Research estimates population in five-year intervals that are highlighted in bold. A linear interpolation for increase in population was performed between two highlighted years.

F.5.b Waste Type, Quantity, and Source

There has been no substantial change to this subsection since the Phase 3 construction permit application submittal. Solid waste currently entering the Landfill is mainly Class I MSW including residential, commercial, industrial, and non-hazardous waste customers. Other waste, such as C&D debris and non-combustible materials are also accepted in mixed loads.

Waste projections were developed using recent waste generation and population projections. In developing the waste projections, several assumptions were made. It was assumed that the current per capita waste generation requiring disposal will remain constant and that total waste quantity will grow in proportion to population growth. The future increase in solid waste quantity is estimated to be 4% per year.

Furthermore, of the projected total annual waste estimated to be received at the landfill facility, approximately 15 percent will be recycled and 85 percent will require disposal in the landfill. Waste to be recycled includes yard waste, white goods and other scrap metal, tires, electronics, plus household commodities (paper, cardboard, cans and bottles). Changes in projected population growth, recycling, and economic growth within the county may influence waste projections. Table F-2 presents the waste projection data.

TABLE F-2. PROJECTED WASTE RECEIVED CITRUS COUNTY CENTRAL LANDFILL

Year	Solid Waste Received (tons)
2007-08	118,111
2008-09	122,835
2009-10	127,749
2010-11	132,858
2011-12	132,858
2012-13	143,700
2013-14	149,448
2014-15	155,426
2015-16	161,643

F.5.c Anticipated Facility Life

There has been no substantial change to this subsection since the Phase 3 construction permit application submittal. The remaining life through Phase 3 has an estimated life to August 2019.

F.5.d Cover Material

There has been no substantial change to this subsection since the Phase 3 construction permit application submittal. Cover material will be utilized to minimize vector breeding, animal

attraction, and fire potential, as well as to prevent blowing litter and control odors. Daily cover will be composed of soil from the on-site stockpile, a 50/50 mixture of yard waste mulch and soil, synthetic materials such as tarps and geomembranes, or approved Alternate Daily Cover (ADC) material consisting of a spray on slurry of polymer and recycled paper fibers. Daily soil cover will be placed and compacted to a minimum thickness of 6 inches; spray on daily cover will be applied per manufacturer specifications and shall not be used in the rain. The intermediate cover will be comprised of soil from the on-site stockpile or a 50/50 mixture of yard waste mulch and soil. The intermediate soil cover will be placed and compacted to a minimum thickness of 12 inches. Mulch is from on-site recycled yard waste.

F.6 APPROVED LABORATORY

There has been no substantial change to this subsection since the Phase 3 construction permit application submittal. Currently one of the engineering consultants under contract with the County selects a qualified laboratory as a subcontractor for analytical work for groundwater and leachate monitoring. The credentials of the selected laboratory are presented along with the first report prepared for the County.

F.7 FINANCIAL RESPONSIBILITY

Financial responsibility requirements are discussed in Section S of this Operations Permit Renewal Application.

SECTION G

GENERAL CRITERIA FOR LANDFILLS

There has been no change to this section since the Phase 3 construction permit application submittal.

G.1 100-YEAR FLOODPLAIN

There has been no change in the 100-year flood plain since Phase 1A was constructed as verified by review of FEMA map panel #250 dated August 15, 1984. The proposed Phase 3 disposal area is outside of the 100-year flood plain. A copy of the flood hazard map for the Citrus County Central Landfill is shown in Figure G-1 located in Attachment G-1 of the Phase 3 Construction Permit Application.

G.2 MINIMUM HORIZONTAL SEPARATION

Rule 62-701.340(4)(c), F.A.C., requires a minimum 100-feet horizontal separation between waste deposits and the landfill property boundary as measured from the toe of the proposed final cover slope. As shown on the drawings located in Attachment E-1, more than 100 feet measured horizontally separates the toe of the final cover slope of the Citrus County Central Class I Landfill and the landfill property boundary.

G.3 LANDFILL SCREENING

No substantial change is proposed. Citrus County has implemented a comprehensive plan to screen the landfill from public view. Visual screening of the landfill is provided by the existing pine flatwoods/turkey oak forest, which surrounds most of the site. The County has also planted over 350 native trees and shrubs along the north side of the landfill property. The entrance road from SR 44 is the only area not screened from public view.

Dept. Of Environmental Protection
FEB 01 2010
Southwest District

SECTION H

LANDFILL CONSTRUCTION REQUIREMENTS

Class I area of the Landfill consists of Phases 1, 1A, 2, and 3. Phases 1, 1A, and 2 are operating under current operations permit (Permit Number 21375-008-SO). Phase 3 was issued a construction permit (permit Number 21375-013-SC). This application is for renewal of the existing operations permit and does not include new landfill construction.

SCS revised the proposed stormwater management system to incorporate the revised final build out configuration. Stormwater runoff from the upper portion of the landfill located within the Phase 1 area will travel via sheet flow into 5-ft wide collection ditches and is conveyed, via stormwater structures, down the landfill and into the existing side ditches that are located on the perimeter of the landfill. Stormwater from the remaining upper portion of the landfill travels via sheet flow into collection terraces located along the sideslopes of the landfill. Stormwater runoff from these areas are conveyed via stormwater structures down the landfill and into the existing ditches located on the perimeter of the landfill.

The perimeter ditches convey stormwater runoff to the dry retention pond (DRA) located south of the Phase 1 area. All stormwater will be contained in the DRA. The DRA includes an emergency overflow structure located on the southwest end of the pond which allows water to be discharged into the heavily vegetative area located south of the facility.

Please refer to Attachment H-1 for the revised stormwater calculations and results.

ATTACHMENT H-1

STORMWATER CALCULATIONS

==========
==== Basins ====
==========

Name: C1-1L Node: C1-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.260 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C1-1R Node: C1-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.470 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C1-2L Node: C1-2L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.290 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C1-2R Node: C1-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.260 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-1L Node: C10-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.110 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-1R Node: C10-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.110 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-2L Node: C10-2L Status: Onsite

Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.710 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-2R Node: C10-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.450 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-1L Node: C11-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.295 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-1R Node: C11-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.295 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-3L Node: C11-3L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.160 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-3R Node: C11-3R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.280 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-4L Node: C11-4L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.540 Time Shift(hrs): 0.00

Curve Number: 86.00
DCIA(%): 0.00
Max Allowable Q(cfs): 999999.000

Name: C11-4R
Group: BASE
Node: C11-4R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.530
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C12-1L
Group: BASE
Node: C12-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.205
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C12-1R
Group: BASE
Node: C12-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.205
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C12-2L
Group: BASE
Node: C12-2L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.430
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C12-2R
Group: BASE
Node: C12-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.290
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C13-1L
Group: BASE
Node: C13-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.135
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C13-1R Node: C13-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.135 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C13-2L Node: C13-2L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.240 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C13-2R Node: C13-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.290 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C14-1L Node: C14-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.400 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C14-1R Node: C14-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.470 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C14-3L Node: C14-2L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.280 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C14-3R Node: C14-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00

Area(ac): 0.300 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-1L Node: C2-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.230 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-1R Node: C2-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.090 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-2L Node: C2-2L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.260 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-2R Node: C2-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-3R Node: C2-3R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.330 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C3-1R Node: C3-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C4-1L | Node: C4-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	11.250	Time of Conc(min):	10.00
Area(ac):	0.140	Time Shift(hrs):	0.00
Curve Number:	86.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: C4-1R | Node: C4-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	11.250	Time of Conc(min):	10.00
Area(ac):	0.410	Time Shift(hrs):	0.00
Curve Number:	86.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: C4-2R | Node: C4-2R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	11.250	Time of Conc(min):	10.00
Area(ac):	1.000	Time Shift(hrs):	0.00
Curve Number:	86.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: C5-1L | Node: C5-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	11.250	Time of Conc(min):	10.00
Area(ac):	0.550	Time Shift(hrs):	0.00
Curve Number:	86.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: C5-1R | Node: C5-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	11.250	Time of Conc(min):	10.00
Area(ac):	0.300	Time Shift(hrs):	0.00
Curve Number:	86.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: C5-2R | Node: C5-2R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00
Rainfall Amount(in):	11.250	Time of Conc(min):	10.00
Area(ac):	0.750	Time Shift(hrs):	0.00
Curve Number:	86.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: C6-1L | Node: C6-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:	Flmod	Storm Duration(hrs):	24.00

Rainfall Amount(in): 11.250
Area(ac): 0.310
Curve Number: 86.00
DCIA(%): 0.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C6-1R
Group: BASE
Node: C6-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.310
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C6-2R
Group: BASE
Node: C6-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.880
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-1L
Group: BASE
Node: C7-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.220
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-1R
Group: BASE
Node: C7-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.480
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-2R
Group: BASE
Node: C7-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.220
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-4L
Group: BASE
Node: C7-4L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.250
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-4R | Node: C7-4R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.220 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-1L | Node: C8-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.540 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-1R | Node: C8-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.540 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-3L | Node: C8-3L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.270 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-3R | Node: C8-3R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.390 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C9-1R | Node: C9-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.840 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C9-3L | Node: C9-3L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0

Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.130
Curve Number: 86.00
DCIA(%): 0.00
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C9-3R
Group: BASE
Node: C9-3R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.130
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C9-4L
Group: BASE
Node: C9-4L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.260
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C9-4R
Group: BASE
Node: C9-4R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.460
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: DRA
Group: BASE
Node: DRA
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 3.820
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: GRASSY-1
Group: BASE
Node: S-R2
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.630
Curve Number: 39.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS1
Group: BASE
Node: S-1
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.900
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS2 Node: DRA Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 2.220 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS3 Node: S-7 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.690 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS4 Node: S-8 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.310 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS5 Node: S-9 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.780 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS6 Node: S-E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.620 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS7-1 Node: S-NE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.380 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS7-2 Node: S-11 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.380
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS7-3
Group: BASE
Node: S-10
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.460
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS8
Group: BASE
Node: S-12
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 1.020
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS9
Group: BASE
Node: S-W2
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.690
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: N1-A
Group: BASE
Node: N1-A
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.810
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: N2-A
Group: BASE
Node: N2-A
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.570
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: N7-A
Group: BASE
Node: N7-A
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.550
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: N8-A | Node: N8-A | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.910 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-1 | Node: S-W1 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.060 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-2 | Node: S-W2 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.050 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-3 | Node: S-14 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.060 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-4 | Node: S-1 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.060 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-5 | Node: S-2 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.080 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-6 | Node: S-3 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.090
Curve Number: 98.00
DCIA(%): 0.00

Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-7
Group: BASE

Node: S-R3
Type: SCS Unit Hydrograph

Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.160
Curve Number: 98.00
DCIA(%): 0.00

Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-8
Group: BASE

Node: S-R1
Type: SCS Unit Hydrograph

Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.220
Curve Number: 98.00
DCIA(%): 0.00

Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

==========
==== Nodes ==========
==========

Name: C1-1L
Group: BASE
Type: Stage/Area

Base Flow(cfs): 0.000

Init Stage(ft): 181.500
Warn Stage(ft): 183.500

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C1-1R
Group: BASE
Type: Stage/Area

Base Flow(cfs): 0.000

Init Stage(ft): 181.500
Warn Stage(ft): 183.500

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C1-2L
Group: BASE
Type: Stage/Area

Base Flow(cfs): 0.000

Init Stage(ft): 146.500
Warn Stage(ft): 148.500

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C1-2R
Group: BASE
Type: Stage/Area

Base Flow(cfs): 0.000

Init Stage(ft): 146.500
Warn Stage(ft): 148.500

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C10-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C10-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C10-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C10-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C11-1L Base Flow(cfs): 0.000 Init Stage(ft): 207.000
Group: BASE Warn Stage(ft): 209.000
Type: Stage/Area

Stage(ft)	Area(ac)
207.000	0.0000
209.000	0.0000

Name: C11-1R Base Flow(cfs): 0.000 Init Stage(ft): 207.000
Group: BASE Warn Stage(ft): 209.000
Type: Stage/Area

Stage(ft)	Area(ac)
207.000	0.0000
209.000	0.0000

Name: C11-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)

181.500	0.0000
183.500	0.0000

Name: C11-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C11-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C11-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C12-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C12-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C12-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C12-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C13-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C13-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C13-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C13-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C14-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C14-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C14-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C14-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C2-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C2-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C2-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C2-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C2-3R Base Flow(cfs): 0.000 Init Stage(ft): 123.000
Group: BASE Warn Stage(ft): 125.000
Type: Stage/Area

Stage(ft)	Area(ac)
123.000	0.0000
125.000	0.0000

Name: C3-1R Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 128.000
Type: Stage/Area

Stage(ft)	Area(ac)

126.000	0.0000
128.000	0.0000

Name: C4-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C4-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C4-2R Base Flow(cfs): 0.000 Init Stage(ft): 143.000
Group: BASE Warn Stage(ft): 145.500
Type: Stage/Area

Stage(ft)	Area(ac)
143.000	0.0000
145.500	0.0000

Name: C5-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C5-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C5-2R Base Flow(cfs): 0.000 Init Stage(ft): 149.000
Group: BASE Warn Stage(ft): 151.000
Type: Stage/Area

Stage(ft)	Area(ac)
149.000	0.0000
151.000	0.0000

Name: C6-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)

181.500	0.0000
183.500	0.0000

Name: C6-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C6-2R Base Flow(cfs): 0.000 Init Stage(ft): 153.000
Group: BASE Warn Stage(ft): 155.000
Type: Stage/Area

Stage(ft)	Area(ac)
153.000	0.0000
155.000	0.0000

Name: C7-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C7-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C7-2R Base Flow(cfs): 0.000 Init Stage(ft): 169.000
Group: BASE Warn Stage(ft): 171.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.0000
171.000	0.0000

Name: C7-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C7-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C8-1L Base Flow(cfs): 0.000 Init Stage(ft): 184.000
Group: BASE Warn Stage(ft): 186.000
Type: Stage/Area

Stage(ft)	Area(ac)
184.000	0.0000
186.000	0.0000

Name: C8-1R Base Flow(cfs): 0.000 Init Stage(ft): 184.000
Group: BASE Warn Stage(ft): 186.000
Type: Stage/Area

Stage(ft)	Area(ac)
184.000	0.0000
186.000	0.0000

Name: C8-3L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C8-3R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C9-1R Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000
214.000	0.0000

Name: C9-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C9-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)

181.500	0.0000
183.500	0.0000

Name: C9-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C9-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: DRA Base Flow(cfs): 0.000 Init Stage(ft): 89.050
Group: BASE Warn Stage(ft): 110.000
Type: Stage/Area

Water Quality Elevation

Stage(ft)	Area(ac)
87.000	0.7700
88.000	0.8700
89.000	0.9800
90.000	1.0800
91.000	1.1800
92.000	1.2900
93.000	1.4000
94.000	1.5100
95.000	1.6300
96.000	1.7400
97.000	1.8500
98.000	1.9700
99.000	2.0800
100.000	2.1900
101.000	2.3100
102.000	2.4400
103.000	2.5900
104.000	2.7400
105.000	2.8900
106.000	3.0600
107.000	3.2400
108.000	3.4200
109.000	3.6100
110.000	3.8200

Name: LFBNDRY Base Flow(cfs): 0.000 Init Stage(ft): 88.000
Group: BASE Warn Stage(ft): 111.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	88.000
99999.00	88.000

Name: N1-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000

181.500	0.0000

Name: N1-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N1-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N1-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N1-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N1-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N1-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N1-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N10-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N10-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N10-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N10-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N10-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N10-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N11-1 Base Flow(cfs): 0.000 Init Stage(ft): 207.000
Group: BASE Warn Stage(ft): 209.000
Type: Stage/Area

Stage(ft)	Area(ac)
207.000	0.0000

209.000	0.0000

Name: N11-2 Base Flow(cfs): 0.000 Init Stage(ft): 203.000
Group: BASE Warn Stage(ft): 207.000
Type: Stage/Area

Stage(ft)	Area(ac)
203.000	0.0000
207.000	0.0000

Name: N11-3 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N11-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N11-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N11-4 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N11-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N11-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000

148.500	0.0000

Name: N12-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N12-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N12-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N12-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N12-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N12-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N13-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000

181.500	0.0000

Name: N13-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N13-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N13-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N13-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N13-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N14-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N14-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000

183.500	0.0000

Name: N14-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N14-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N14-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N14-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N2-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N2-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N2-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000

183.500	0.0000

Name: N2-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N2-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N2-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N2-3 Base Flow(cfs): 0.000 Init Stage(ft): 123.000
Group: BASE Warn Stage(ft): 125.000
Type: Stage/Area

30-Inch ADS circular inlet

Stage(ft)	Area(ac)
123.000	0.0000
125.000	0.0000

Name: N2-4 Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: BASE Warn Stage(ft): 123.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.000	0.0000
123.000	0.0000

Name: N2-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N2-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N2-C Base Flow(cfs): 0.000 Init Stage(ft): 115.490
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.490	0.0000
120.000	0.0000

Name: N3-1 Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 128.000
Type: Stage/Area

Stage(ft)	Area(ac)
126.000	0.0000
128.000	0.0000

Name: N3-2 Base Flow(cfs): 0.000 Init Stage(ft): 123.000
Group: BASE Warn Stage(ft): 126.000
Type: Stage/Area

Stage(ft)	Area(ac)
123.000	0.0000
126.000	0.0000

Name: N4-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N4-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N4-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N4-2 Base Flow(cfs): 0.000 Init Stage(ft): 143.000
Group: BASE Warn Stage(ft): 145.000
Type: Stage/Area

Stage(ft)	Area(ac)
143.000	0.0000

145.000	0.0000

Name: N4-3 Base Flow(cfs): 0.000 Init Stage(ft): 139.000
Group: BASE Warn Stage(ft): 143.000
Type: Stage/Area

Stage(ft)	Area(ac)
139.000	0.0000
143.000	0.0000

Name: N5-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N5-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N5-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N5-2 Base Flow(cfs): 0.000 Init Stage(ft): 149.000
Group: BASE Warn Stage(ft): 151.000
Type: Stage/Area

Stage(ft)	Area(ac)
149.000	0.0000
151.000	0.0000

Name: N5-3 Base Flow(cfs): 0.000 Init Stage(ft): 145.000
Group: BASE Warn Stage(ft): 149.000
Type: Stage/Area

Stage(ft)	Area(ac)
145.000	0.0000
149.000	0.0000

Name: N6-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000

181.500	0.0000

Name: N6-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N6-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N6-2 Base Flow(cfs): 0.000 Init Stage(ft): 153.000
Group: BASE Warn Stage(ft): 155.000
Type: Stage/Area

Stage(ft)	Area(ac)
153.000	0.0000
155.000	0.0000

Name: N6-3 Base Flow(cfs): 0.000 Init Stage(ft): 149.000
Group: BASE Warn Stage(ft): 153.000
Type: Stage/Area

Stage(ft)	Area(ac)
149.000	0.0000
153.000	0.0000

Name: N7-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N7-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N7-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000

183.500	0.0000

Name: N7-2 Base Flow(cfs): 0.000 Init Stage(ft): 169.000
Group: BASE Warn Stage(ft): 171.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.0000
171.000	0.0000

Name: N7-3 Base Flow(cfs): 0.000 Init Stage(ft): 165.000
Group: BASE Warn Stage(ft): 169.000
Type: Stage/Area

Stage(ft)	Area(ac)
165.000	0.0000
169.000	0.0000

Name: N7-4 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N7-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N7-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N7-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N7-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N8-1 Base Flow(cfs): 0.000 Init Stage(ft): 184.000
Group: BASE Warn Stage(ft): 186.000
Type: Stage/Area

Stage(ft)	Area(ac)
184.000	0.0000
186.000	0.0000

Name: N8-2 Base Flow(cfs): 0.000 Init Stage(ft): 180.000
Group: BASE Warn Stage(ft): 184.000
Type: Stage/Area

Stage(ft)	Area(ac)
180.000	0.0000
184.000	0.0000

Name: N8-3 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N8-3L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N8-3R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N8-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N8-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N8-C Base Flow(cfs): 0.000 Init Stage(ft): 116.400
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.400	0.0000
120.000	0.0000

Name: N9-1 Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000
214.000	0.0000

Name: N9-2 Base Flow(cfs): 0.000 Init Stage(ft): 208.000
Group: BASE Warn Stage(ft): 212.000
Type: Stage/Area

Stage(ft)	Area(ac)
208.000	0.0000
212.000	0.0000

Name: N9-3 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N9-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N9-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N9-4 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000

146.500	0.0000

Name: N9-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N9-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: S-1 Base Flow(cfs): 0.000 Init Stage(ft): 115.880
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.880	0.0000
120.000	0.0000

Name: S-10 Base Flow(cfs): 0.000 Init Stage(ft): 117.900
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.900	0.0000
120.000	0.0000

Name: S-11 Base Flow(cfs): 0.000 Init Stage(ft): 118.400
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
118.400	0.0000
120.000	0.0000

Name: S-12 Base Flow(cfs): 0.000 Init Stage(ft): 117.600
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.600	0.0000
120.000	0.0000

Name: S-13 Base Flow(cfs): 0.000 Init Stage(ft): 117.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.000	0.0000

120.000	0.0000

Name: S-14 Base Flow(cfs): 0.000 Init Stage(ft): 116.270
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.270	0.0000
120.000	0.0000

Name: S-2 Base Flow(cfs): 0.000 Init Stage(ft): 115.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.000	0.0000
120.000	0.0000

Name: S-3 Base Flow(cfs): 0.000 Init Stage(ft): 115.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.000	0.0000
120.000	0.0000

Name: S-7 Base Flow(cfs): 0.000 Init Stage(ft): 116.100
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.100	0.0000
120.000	0.0000

Name: S-8 Base Flow(cfs): 0.000 Init Stage(ft): 116.620
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.620	0.0000
120.000	0.0000

Name: S-9 Base Flow(cfs): 0.000 Init Stage(ft): 117.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.000	0.0000
120.000	0.0000

Name: S-E1 Base Flow(cfs): 0.000 Init Stage(ft): 117.570
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.570	0.0000

120.000	0.0000

Name: S-E2 Base Flow(cfs): 0.000 Init Stage(ft): 116.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.000	0.0000
120.000	0.0000

Name: S-NE Base Flow(cfs): 0.000 Init Stage(ft): 118.500
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
118.500	0.0000
120.000	0.0000

Name: S-NW Base Flow(cfs): 0.000 Init Stage(ft): 118.300
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
118.300	0.0000
120.000	0.0000

Name: S-R1 Base Flow(cfs): 0.000 Init Stage(ft): 107.010
Group: BASE Warn Stage(ft): 109.500
Type: Stage/Area

Stage(ft)	Area(ac)
107.010	0.0000
109.500	0.0000

Name: S-R2 Base Flow(cfs): 0.000 Init Stage(ft): 106.690
Group: BASE Warn Stage(ft): 110.000
Type: Stage/Area

Stage(ft)	Area(ac)
106.690	0.0000
110.000	0.0000

Name: S-R3 Base Flow(cfs): 0.000 Init Stage(ft): 106.040
Group: BASE Warn Stage(ft): 109.000
Type: Stage/Area

Stage(ft)	Area(ac)
106.040	0.0000
109.000	0.0000

Name: S-W1 Base Flow(cfs): 0.000 Init Stage(ft): 117.500
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.500	0.0000

120.000	0.0000

Name: S-W2 Base Flow(cfs): 0.000 Init Stage(ft): 117.300
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.300	0.0000
120.000	0.0000

Name: S-W3 Base Flow(cfs): 0.000 Init Stage(ft): 110.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
110.000	0.0000
120.000	0.0000

Operating Tables

Name: DRA Group: BASE
Type: Rating Curve
Function: US Stage vs. Discharge

Refer to infiltration calculations

US Stage(ft)	Discharge(cfs)
87.500	0.00
88.500	0.00
89.500	0.00
90.500	0.00
91.500	0.00
92.500	0.00
93.500	0.00
94.500	0.00
95.500	0.00
96.500	0.00
97.500	0.00
98.500	0.00
99.500	0.00
100.500	0.00
101.500	0.00
102.500	0.00
103.500	0.00
104.500	0.00
105.500	0.00
106.500	0.00
107.800	0.00
108.500	0.00
109.500	0.00

Pipes

Name: N1-1L From Node: N1-1L Length(ft): 19.00
Group: BASE To Node: N1-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:

Circular: Beveled ring, 45° bevels

Name:	N1-1R	From Node:	N1-1R	Length(ft): 19.00
Group:	BASE	To Node:	N1-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N1-2L	From Node:	N1-2L	Length(ft): 19.00
Group:	BASE	To Node:	N1-2	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N1-2R	From Node:	N1-2R	Length(ft): 19.00
Group:	BASE	To Node:	N1-2	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.035000	0.035000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N1-B/1	From Node:	N1-B	Length(ft): 115.00
Group:	BASE	To Node:	N1-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	212.000	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn

Bot Clip(in): 0.000 0.000 Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N1/1-2 From Node: N1-1 Length(ft): 125.00
Group: BASE To Node: N1-2 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N1/2-S-1 From Node: N1-2 Length(ft): 110.00
Group: BASE To Node: S-1 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	144.100	115.880
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N10-1L From Node: N10-1L Length(ft): 19.00
Group: BASE To Node: N10-1 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N10-1R From Node: N10-1R Length(ft): 19.00
Group: BASE To Node: N10-1 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N10-2L From Node: N10-2L Length(ft): 19.00
Group: BASE To Node: N10-2 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N10-2R From Node: N10-2R Length(ft): 19.00
Group: BASE To Node: N10-2 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N10/1-2 From Node: N10-1 Length(ft): 140.00
Group: BASE To Node: N10-2 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N10/2-S10	From Node:	N10-2	Length(ft): 110.00
Group:	BASE	To Node:	S-10	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	144.100	117.900		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11-3L	From Node:	N11-3L	Length(ft): 19.00
Group:	BASE	To Node:	N11-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-3R	From Node:	N11-3R	Length(ft): 19.00
Group:	BASE	To Node:	N11-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-4L	From Node:	N11-4L	Length(ft): 19.00
Group:	BASE	To Node:	N11-4	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw

Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-4R	From Node: N11-4R	Length(ft): 19.00
Group:	BASE	To Node: N11-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11/2-3	From Node: N11-2	Length(ft): 75.00
Group:	BASE	To Node: N11-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	203.000	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11/3-4	From Node: N11-3	Length(ft): 130.00
Group:	BASE	To Node: N11-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11/4-S11	From Node: N11-4	Length(ft): 120.00

Group: BASE | To Node: S-11 | Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	144.100	118.400
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N12-1L | From Node: N12-1L | Length(ft): 19.00
Group: BASE | To Node: N12-1 | Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N12-1R | From Node: N12-1R | Length(ft): 19.00
Group: BASE | To Node: N12-1 | Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Name: N12-2L | From Node: N12-2L | Length(ft): 19.00
Group: BASE | To Node: N12-2 | Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N12-2R	From Node:	N12-2R	Length(ft): 19.00
Group:	BASE	To Node:	N12-2	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N12/1-2	From Node:	N12-1	Length(ft): 160.00
Group:	BASE	To Node:	N12-2	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00		Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N12/2-S12	From Node:	N12-2	Length(ft): 110.00
Group:	BASE	To Node:	S-12	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	144.100	117.600		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N13-1L	From Node:	N13-1L	Length(ft): 19.00
Group:	BASE	To Node:	N13-2	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50

Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N13-1R	From Node: N13-1R	Length(ft): 19.00
Group:	BASE	To Node: N13-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N13-2L	From Node: N13-2L	Length(ft): 19.00
Group:	BASE	To Node: N13-2	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N13-2R	From Node: N13-2R	Length(ft): 19.00
Group:	BASE	To Node: N13-2	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N13/1-2 From Node: N13-1 Length(ft): 125.00
Group: BASE To Node: N13-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N13/2-S-13 From Node: N13-2 Length(ft): 117.00
Group: BASE To Node: S-13 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	144.100	117.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N14-1L From Node: N14-1L Length(ft): 126.00
Group: BASE To Node: N14-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N14-1R From Node: N14-1R Length(ft): 19.00
Group: BASE To Node: N14-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:

Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14-2L	From Node:	N14-2L	Length(ft):	19.00
Group:	BASE	To Node:	N14-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14-2R	From Node:	N14-2R	Length(ft):	19.00
Group:	BASE	To Node:	N14-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14/1-2	From Node:	N14-1	Length(ft):	126.00
Group:	BASE	To Node:	N14-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	179.100	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N14/2-S-14	From Node:	N14-2	Length(ft):	112.00
Group:	BASE	To Node:	S-14	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.00
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00

Invert(ft):	144.100	116.270	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N2-1L From Node: N2-1L Length(ft): 19.00
Group: BASE To Node: N2-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N2-1R From Node: N2-1R Length(ft): 19.00
Group: BASE To Node: N2-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N2-2L From Node: N2-2L Length(ft): 19.00
Group: BASE To Node: N2-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N2-2R	From Node:	N2-2R	Length(ft):	19.00
Group:	BASE	To Node:	N2-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N2-B/1	From Node:	N2-B	Length(ft):	327.00
Group:	BASE	To Node:	N2-C	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	212.000	115.490		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N2/1-2	From Node:	N2-1	Length(ft):	127.00
Group:	BASE	To Node:	N2-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	179.100	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N2/2-4	From Node:	N2-2	Length(ft):	91.00
Group:	BASE	To Node:	N2-4	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.00
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00
Invert(ft):	144.100	119.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N2/4-S-2	From Node:	N2-4	Length(ft): 18.00
Group:	BASE	To Node:	S-2	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 0.50
Rise(in):	24.00	24.00		Exit Loss Coef: 1.00
Invert(ft):	119.000	115.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N3/2-S-3	From Node:	N3-2	Length(ft): 67.00
Group:	BASE	To Node:	S-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	123.000	115.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N4-1L	From Node:	N4-1L	Length(ft): 19.00
Group:	BASE	To Node:	N4-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N4-1R	From Node:	N4-1R	Length(ft): 19.00
Group:	BASE	To Node:	N4-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50

Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N4/1-3 From Node: N4-1 Length(ft): 136.00
Group: BASE To Node: N4-3 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	179.100	139.000	Exit Loss Coef:	1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N4/3-DRA From Node: N4-3 Length(ft): 106.00
Group: BASE To Node: DRA Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	0.50
Invert(ft):	139.000	114.000	Exit Loss Coef:	1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N5-1L From Node: N5-1L Length(ft): 19.00
Group: BASE To Node: N5-1 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	12.00	12.00	Flow:	Both
Rise(in):	12.00	12.00	Entrance Loss Coef:	0.50
Invert(ft):	181.500	179.100	Exit Loss Coef:	0.00
Manning's N:	0.012000	0!012000	Bend Loss Coef:	0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N5-1R	From Node: N5-1R	Length(ft): 19.00
Group:	BASE	To Node: N5-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N5/1-3	From Node: N5-1	Length(ft): 121.00
Group:	BASE	To Node: N5-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	145.000	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N5/3-DRA	From Node: N5-3	Length(ft): 121.00
Group:	BASE	To Node: DRA	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 0.50
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	145.000	114.000	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N6-1L	From Node: N6-1L	Length(ft): 19.00
Group:	BASE	To Node: N6-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N6-1R	From Node:	N6-1R	Length(ft):	19.00
Group:	BASE	To Node:	N6-1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N6/1-3	From Node:	N6-1	Length(ft):	104.00
Group:	BASE	To Node:	N6-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00
Rise(in):	18.00	18.00		Exit Loss Coef:	1.00
Invert(ft):	179.100	149.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N6/3-DRA	From Node:	N6-3	Length(ft):	139.00
Group:	BASE	To Node:	DRA	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.50
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00
Invert(ft):	149.000	114.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7-1L	From Node:	N7-1L	Length(ft):	19.00
Group:	BASE	To Node:	N7-1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both

Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N7-1R	From Node: N7-1R	Length(ft):	19.00
Group:	BASE	To Node: N7-1	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N7-4L	From Node: N7-4L	Length(ft):	19.00
Group:	BASE	To Node: N7-4	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N7-4R	From Node: N7-4R	Length(ft):	19.00
Group:	BASE	To Node: N7-4	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N7-B/1	From Node:	N7-B	Length(ft): 100.00
Group:	BASE	To Node:	N7-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	212.000	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7/1-3	From Node:	N7-1	Length(ft): 64.00
Group:	BASE	To Node:	N7-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	179.100	165.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7/3-4	From Node:	N7-3	Length(ft): 91.00
Group:	BASE	To Node:	N7-4	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00		Exit Loss Coef: 0.00
Invert(ft):	165.000	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7/4-S-7	From Node:	N7-4	Length(ft): 106.00
Group:	BASE	To Node:	S-7	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00		Exit Loss Coef: 1.00
Invert(ft):	144.100	116.100		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N8-3L	From Node:	N8-3L	Length(ft): 19.00
Group:	BASE	To Node:	N8-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N8-3R	From Node:	N8-3R	Length(ft): 19.00
Group:	BASE	To Node:	N8-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N8-B/C	From Node:	N8-B	Length(ft): 347.00
Group:	BASE	To Node:	N8-C	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 1.00
Invert(ft):	212.000	116.400		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N8/2-3	From Node:	N8-2	Length(ft): 132.00
Group:	BASE	To Node:	N8-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic

Geometry:	Circular	Circular	Flow:	Both
Span(in):	18.00	18.00	Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00	Exit Loss Coef:	0.00
Invert(ft):	180.000	144.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N8/3-S-8	From Node: N8-3	Length(ft):	107.00
Group:	BASE	To Node: S-8	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	24.00	24.00	Entrance Loss Coef:	0.00
Rise(in):	24.00	24.00	Exit Loss Coef:	1.00
Invert(ft):	144.100	116.620	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9-3L	From Node: N9-3L	Length(ft):	19.00
Group:	BASE	To Node: N9-3	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-3R	From Node: N9-3R	Length(ft):	19.00
Group:	BASE	To Node: N9-3	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-4L	From Node: N9-4L	Length(ft): 19.00
Group:	BASE	To Node: N9-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-4R	From Node: N9-4R	Length(ft): 19.00
Group:	BASE	To Node: N9-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.120000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9/2-3	From Node: N9-2	Length(ft): 55.00
Group:	BASE	To Node: N9-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	208.000	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9/3-4	From Node: N9-3	Length(ft): 124.00
Group:	BASE	To Node: N9-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9/4-S-9	From Node:	N9-4	Length(ft): 110.00
Group:	BASE	To Node:	S-9	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00		Exit Loss Coef: 1.00
Invert(ft):	144.100	117.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	S-R3-DRA	From Node:	S-R3	Length(ft): 60.00
Group:	BASE	To Node:	DRA	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	106.040	100.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	S/2-3	From Node:	S-2	Length(ft): 70.00
Group:	BASE	To Node:	S-3	Count: 2
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 1.00
Rise(in):	24.00	24.00		Exit Loss Coef: 0.50
Invert(ft):	115.000	115.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	S/R1-R2	From Node:	S-R1	Length(ft): 63.00
Group:	BASE	To Node:	S-R2	Count: 1
				Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	107.010	106.690
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: S/R2-R3 From Node: S-R2 Length(ft): 34.00
Group: BASE To Node: S-R3 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	106.690	106.040
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: S12-S-W1 From Node: S-12 Length(ft): 40.00
Group: BASE To Node: S-W1 Count: 2
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	117.600	117.500
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 1.00
Exit Loss Coef: 0.50
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

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==== Channels ==========
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Name: C1-1L From Node: C1-1L Length(ft): 96.00
Group: BASE To Node: N1-1L Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name: C1-1R From Node: C1-1R Length(ft): 88.00
Group: BASE To Node: N1-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C1-2L From Node: C1-2L Length(ft): 95.00
Group: BASE To Node: N1-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C1-2R From Node: C1-2R Length(ft): 96.00
Group: BASE To Node: N1-2R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C10-1L From Node: C10-1L Length(ft): 83.00
Group: BASE To Node: N10-1L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C10-1R From Node: C10-1R Length(ft): 136.00
Group: BASE To Node: N10-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C10-2L From Node: C10-2L Length(ft): 178.00
Group: BASE To Node: N10-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C10-2R From Node: C10-2R Length(ft): 166.00
Group: BASE To Node: N10-2R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C11-1L | From Node: C11-1L | Length(ft): 161.00
Group: BASE | To Node: N11-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	208.000	207.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C11-1R | From Node: C11-1R | Length(ft): 161.00
Group: BASE | To Node: N11-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	208.000	207.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C11-3L | From Node: C11-3L | Length(ft): 186.00
Group: BASE | To Node: N11-3L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C11-3R | From Node: C11-3R | Length(ft): 142.00
Group: BASE | To Node: N11-3R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C11-4L	From Node: C11-4L	Length(ft): 183.00
Group:	BASE	To Node: N11-4L	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name:	C11-4R	From Node: C11-4R	Length(ft): 173.00
Group:	BASE	To Node: N11-4R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C12-1L	From Node: C12-1L	Length(ft): 122.00
Group:	BASE	To Node: N12-1L	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name:	C12-1R	From Node:	C12-1R	Length(ft): 44.00
Group:	BASE	To Node:	N12-1R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C12-2L	From Node:	C12-2L	Length(ft): 179.00
Group:	BASE	To Node:	N12-2L	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name:	C12-2R	From Node:	C12-2R	Length(ft): 106.00
Group:	BASE	To Node:	N12-2R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C13-1L	From Node:	C13-1L	Length(ft): 44.00
Group:	BASE	To Node:	N13-1L	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C13-1R From Node: C13-1R Length(ft): 102.00
Group: BASE To Node: N13-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C13-2L From Node: C13-2L Length(ft): 135.00
Group: BASE To Node: N13-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C13-2R From Node: C13-2R Length(ft): 105.00
Group: BASE To Node: N13-2R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C14-1L | From Node: C14-1L | Length(ft): 93.00
Group: BASE | To Node: N14-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C14-1R | From Node: C14-1R | Length(ft): 102.00
Group: BASE | To Node: N14-1R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C14-2L | From Node: C14-2L | Length(ft): 95.00
Group: BASE | To Node: N14-2L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C14-2R | From Node: C14-2R | Length(ft): 101.00
Group: BASE | To Node: N14-2R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C2-1L From Node: C2-1L Length(ft): 96.00
Group: BASE To Node: N2-1L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C2-1R From Node: C2-1R Length(ft): 61.00
Group: BASE To Node: N2-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C2-2L From Node: C2-2L Length(ft): 100.00
Group: BASE To Node: N2-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name: C2-2R | From Node: C2-2R | Length(ft): 200.00
Group: BASE | To Node: N2-2R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C2-3R | From Node: C2-3R | Length(ft): 140.00
Group: BASE | To Node: N2-3 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	124.000	123.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C3-1R | From Node: C3-1R | Length(ft): 251.00
Group: BASE | To Node: N3-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	127.000	126.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C4-1L | From Node: C4-1L | Length(ft): 62.00
Group: BASE | To Node: N4-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C4-1R From Node: C4-1R Length(ft): 140.00
Group: BASE To Node: N4-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C4-2R From Node: C4-2R Length(ft): 288.00
Group: BASE To Node: N4-2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	144.000	143.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C5-1L From Node: C5-1L Length(ft): 155.00
Group: BASE To Node: N5-1L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name:	C5-1R	From Node:	C5-1R	Length(ft): 126.00
Group:	BASE	To Node:	N5-1R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C5-2R	From Node:	C5-2R	Length(ft): 241.00
Group:	BASE	To Node:	N5-2	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	149.500	149.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C6-1L	From Node:	C6-1L	Length(ft): 126.00
Group:	BASE	To Node:	N6-1L	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name:	C6-1R	From Node:	C6-1R	Length(ft): 114.00
Group:	BASE	To Node:	N6-1R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C6-2R | From Node: C6-2R | Length(ft): 382.00
Group: BASE | To Node: N6-2 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	153.500	153.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C7-1L | From Node: C7-1L | Length(ft): 108.00
Group: BASE | To Node: N7-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C7-1R | From Node: C7-1R | Length(ft): 158.00
Group: BASE | To Node: N7-1R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	181.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C7-2R | From Node: C7-2R | Length(ft): 160.00
Group: BASE | To Node: N7-2 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	170.000	169.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C7-4L | From Node: C7-4L | Length(ft): 151.00
Group: BASE | To Node: N7-4L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C7-4R | From Node: C7-4R | Length(ft): 108.00
Group: BASE | To Node: N7-4R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C8-1L | From Node: C8-1L | Length(ft): 61.00
Group: BASE | To Node: N8-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	185.000	184.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C8-1R | From Node: C8-1R | Length(ft): 214.00
Group: BASE | To Node: N8-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	185.000	184.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C8-3L | From Node: C8-3L | Length(ft): 114.00
Group: BASE | To Node: N8-3L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C8-3R | From Node: C8-3R | Length(ft): 109.00
Group: BASE | To Node: N8-3R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C9-1R | From Node: C9-1R | Length(ft): 296.00
Group: BASE | To Node: N9-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	212.500	212.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C9-3L | From Node: C9-3L | Length(ft): 87.00
Group: BASE | To Node: N9-3L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C9-3R | From Node: C9-3R | Length(ft): 62.00
Group: BASE | To Node: N9-3R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C9-4L | From Node: C9-4L | Length(ft): 95.00
Group: BASE | To Node: N9-4L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C9-4R From Node: C9-4R Length(ft): 175.00
Group: BASE To Node: N9-4R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: N1-A From Node: N1-A Length(ft): 238.00
Group: BASE To Node: N1-B Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	213.200	212.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	20.00	20.00		
RtSdSlp(h/v):	20.00	20.00		

Name: N2-A From Node: N2-A Length(ft): 235.00
Group: BASE To Node: N2-B Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	213.200	212.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	20.00	20.00
RtSdSlp(h/v):	20.00	20.00

Name: N2-C-S-2 From Node: N2-C Length(ft): 145.00
Group: BASE To Node: S-2 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	115.490	115.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: N7-A From Node: N7-A Length(ft): 225.00
Group: BASE To Node: N7-B Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	213.200	212.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	20.00	20.00
RtSdSlp(h/v):	20.00	20.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: N8-A From Node: N8-A Length(ft): 245.00
Group: BASE To Node: N8-B Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	213.200	212.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	20.00	20.00
RtSdSlp(h/v):	20.00	20.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: N8-C/S8 From Node: N8-C Length(ft): 240.00
Group: BASE To Node: S-7 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	116.400	116.100	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-1-S-2 From Node: S-1 Length(ft): 315.50
Group: BASE To Node: S-2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	115.880	115.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-10-S-E1 From Node: S-10 Length(ft): 187.00
Group: BASE To Node: S-E1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.900	117.570	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-11-S-10 From Node: S-11 Length(ft): 300.00
Group: BASE To Node: S-10 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	118.400	117.900	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Name: S-11-S-NW From Node: S-11 Length(ft): 185.00
Group: BASE To Node: S-NW Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	118.400	118.300
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: S-13-S-14 From Node: S-13 Length(ft): 260.00
Group: BASE To Node: S-14 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	117.000	116.270
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: S-14-S-1 From Node: S-14 Length(ft): 140.00
Group: BASE To Node: S-1 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	116.270	115.880
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: S-3-S-W3 From Node: S-3 Length(ft): 150.00
Group: BASE To Node: S-W3 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	115.000	110.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: S-7-S-E2 From Node: S-7 Length(ft): 308.00
Group: BASE To Node: S-E2 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	116.100	116.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: S-8-S-7 From Node: S-8 Length(ft): 228.00
Group: BASE To Node: S-7 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	116.620	116.100
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Name: S-9-S-8 From Node: S-9 Length(ft): 274.00
Group: BASE To Node: S-8 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	117.000	116.620
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Contraction Coef: 0.000
Expansion Coef: 0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Name:	S-E1-S-9	From Node:	S-E1	Length(ft): 311.00
Group:	BASE	To Node:	S-9	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.570	117.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	S-E2-DRA	From Node:	S-E2	Length(ft): 150.00
Group:	BASE	To Node:	DRA	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	116.000	105.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.012000	0.012000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	1.00	1.00		
RtSdSlp(h/v):	1.00	1.00		

CONCRETE LINED INTO DRA

Name:	S-NE-S-NW	From Node:	S-NE	Length(ft): 170.00
Group:	BASE	To Node:	S-NW	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	118.500	118.300	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	S-NW-S-12	From Node:	S-NW	Length(ft): 387.00
Group:	BASE	To Node:	S-12	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	118.300	117.600	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-W1-S-W2 | From Node: S-W1 | Length(ft): 90.00
Group: BASE | To Node: S-W2 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.500	117.300	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-W2-S-13 | From Node: S-W2 | Length(ft): 85.00
Group: BASE | To Node: S-13 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.300	117.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-W3-DRA | From Node: S-W3 | Length(ft): 129.00
Group: BASE | To Node: DRA | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	110.000	105.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.012000	0.012000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

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 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 1.00           1.00
  RtSdSlp(h/v): 1.00           1.00

CONCRETE LINED INTO DRA

================================================================================
==== Weirs =====================================================================
================================================================================

         Name: N11/1-2              From Node: N11-1
        Group: BASE                   To Node: N11-2
         Flow: Both                     Count: 1
         Type: Horizontal           Geometry: Circular

                    Span(in): 30.00
                    Rise(in): 30.00
                  Invert(ft): 207.000
       Control Elevation(ft): 207.000
                                       TABLE
            Bottom Clip(in): 0.000
               Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------
         Name: N2/3-4               From Node: N2-3
        Group: BASE                   To Node: N2-4
         Flow: Both                     Count: 1
         Type: Horizontal           Geometry: Circular

                    Span(in): 30.00
                    Rise(in): 30.00
                  Invert(ft): 123.000
       Control Elevation(ft): 123.000
                                       TABLE
            Bottom Clip(in): 0.000
               Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------
         Name: N3/1-2               From Node: N3-1
        Group: BASE                   To Node: N3-2
         Flow: Both                     Count: 1
         Type: Horizontal           Geometry: Circular

                    Span(in): 30.00
                    Rise(in): 30.00
                  Invert(ft): 126.000
       Control Elevation(ft): 126.000
                                       TABLE
            Bottom Clip(in): 0.000
               Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------
         Name: N4/2-3               From Node: N4-2
        Group: BASE                   To Node: N4-3
         Flow: Both                     Count: 1
         Type: Horizontal           Geometry: Circular

                    Span(in): 30.00
                    Rise(in): 30.00
                  Invert(ft): 143.000
       Control Elevation(ft): 143.000
                                       TABLE
            Bottom Clip(in): 0.000
               Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600


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        Name: N5/2-3              From Node: N5-2
       Group: BASE                  To Node: N5-3
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 149.000
      Control Elevation(ft): 149.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N6/2-3              From Node: N6-2
       Group: BASE                  To Node: N6-3
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 153.000
      Control Elevation(ft): 153.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N7/2-3              From Node: N7-2
       Group: BASE                  To Node: N7-3
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 169.000
      Control Elevation(ft): 169.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N8/1-2              From Node: N8-1
       Group: BASE                  To Node: N8-2
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 184.000
      Control Elevation(ft): 184.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N9/1-2              From Node: N9-1
       Group: BASE                  To Node: N9-2
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 212.000
      Control Elevation(ft): 212.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
```

```
        Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: OVERFLOW            From Node: DRA
       Group: BASE                  To Node: LFBNDRY
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Rectangular

                  Span(in): 180.00
                  Rise(in): 6.00
                Invert(ft): 110.500
     Control Elevation(ft): 110.500
                                      TABLE
          Bottom Clip(in): 0.000
             Top Clip(in): 0.000
        Weir Discharge Coef: 2.500
     Orifice Discharge Coef: 0.600

OVERFLOW WEIR

================================================================================
==== Rating Curves =============================================================
================================================================================

        Name: DRA                 From Node: DRA                    Count: 1
       Group: BASE                  To Node: LFBNDRY                 Flow: Both

             TABLE          ELEV ON(ft)     ELEV OFF(ft)
         #1: DRA            0.000           0.000
         #2:                0.000           0.000
         #3:                0.000           0.000
         #4:                0.000           0.000


================================================================================
==== Hydrology Simulations =====================================================
================================================================================

        Name: 36 HR Drawdown
    Filename: F:\PROJECT\Citrus\09208040.03\Calculations-Stormwater\36 HR Drawdown.R32

     Override Defaults: Yes
   Storm Duration(hrs): 24.00
         Rainfall File: Flmod
   Rainfall Amount(in): 0.00

Time(hrs)      Print Inc(min)
-------------- --------------
36.000         15.00

================================================================================
==== Routing Simulations =======================================================
================================================================================

        Name: 36 HR Drawdown      Hydrology Sim: 36 HR Drawdown
    Filename: F:\PROJECT\Citrus\09208040.03\Calculations-Stormwater\36 HR Drawdown.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

      Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                    End Time(hrs): 36.00
   Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
      Boundary Stages:                         Boundary Flows:


Time(hrs)      Print Inc(min)
-------------- --------------
36.000         15.000

Group          Run
-------------- -----
BASE           Yes


================================================================================
==== Boundary Conditions =======================================================
================================================================================
```

Citrus County Operations Permit Renewal
Link Connectivity Report

Name	Group	From Node	To Node	Type	U/S Geometry	D/S Geometry	Flow Dir	Count
N1-1L	BASE	N1-1L	N1-1	Pipe	Circular	Circular	Both	1
N1-1R	BASE	N1-1R	N1-1	Pipe	Circular	Circular	Both	1
N1-2L	BASE	N1-2L	N1-2	Pipe	Circular	Circular	Both	1
N1-2R	BASE	N1-2R	N1-2	Pipe	Circular	Circular	Both	1
N1-B/1	BASE	N1-B	N1-1	Pipe	Circular	Circular	Both	1
N1/1-2	BASE	N1-1	N1-2	Pipe	Circular	Circular	Both	1
N1/2-S-1	BASE	N1-2	S-1	Pipe	Circular	Circular	Both	1
N10-1L	BASE	N10-1L	N10-1	Pipe	Circular	Circular	Both	1
N10-1R	BASE	N10-1R	N10-1	Pipe	Circular	Circular	Both	1
N10-2L	BASE	N10-2L	N10-2	Pipe	Circular	Circular	Both	1
N10-2R	BASE	N10-2R	N10-2	Pipe	Circular	Circular	Both	1
N10/1-2	BASE	N10-1	N10-2	Pipe	Circular	Circular	Both	1
N10/2-S10	BASE	N10-2	S-10	Pipe	Circular	Circular	Both	1
N11-3L	BASE	N11-3L	N11-3	Pipe	Circular	Circular	Both	1
N11-3R	BASE	N11-3R	N11-3	Pipe	Circular	Circular	Both	1
N11-4L	BASE	N11-4L	N11-4	Pipe	Circular	Circular	Both	1
N11-4R	BASE	N11-4R	N11-4	Pipe	Circular	Circular	Both	1
N11/2-3	BASE	N11-2	N11-3	Pipe	Circular	Circular	Both	1
N11/3-4	BASE	N11-3	N11-4	Pipe	Circular	Circular	Both	1
N11/4-S11	BASE	N11-4	S-11	Pipe	Circular	Circular	Both	1
N12-1L	BASE	N12-1L	N12-1	Pipe	Circular	Circular	Both	1
N12-1R	BASE	N12-1R	N12-1	Pipe	Circular	Circular	Both	1
N12-2L	BASE	N12-2L	N12-2	Pipe	Circular	Circular	Both	1
N12-2R	BASE	N12-2R	N12-2	Pipe	Circular	Circular	Both	1
N12/1-2	BASE	N12-1	N12-2	Pipe	Circular	Circular	Both	1
N12/2-S12	BASE	N12-2	S-12	Pipe	Circular	Circular	Both	1
N13-1L	BASE	N13-1L	N13-2	Pipe	Circular	Circular	Both	1
N13-1R	BASE	N13-1R	N13-1	Pipe	Circular	Circular	Both	1
N13-2L	BASE	N13-2L	N13-2	Pipe	Circular	Circular	Both	1
N13-2R	BASE	N13-2R	N13-2	Pipe	Circular	Circular	Both	1
N13/1-2	BASE	N13-1	N13-2	Pipe	Circular	Circular	Both	1
N13/2-S-13	BASE	N13-2	S-13	Pipe	Circular	Circular	Both	1
N14-1L	BASE	N14-1L	N14-1	Pipe	Circular	Circular	Both	1
N14-1R	BASE	N14-1R	N14-1	Pipe	Circular	Circular	Both	1
N14-2L	BASE	N14-2L	N14-2	Pipe	Circular	Circular	Both	1
N14-2R	BASE	N14-2R	N14-2	Pipe	Circular	Circular	Both	1
N14/1-2	BASE	N14-1	N14-2	Pipe	Circular	Circular	Both	1
N14/2-S-14	BASE	N14-2	S-14	Pipe	Circular	Circular	Both	1
N2-1L	BASE	N2-1L	N2-1	Pipe	Circular	Circular	Both	1
N2-1R	BASE	N2-1R	N2-1	Pipe	Circular	Circular	Both	1
N2-2L	BASE	N2-2L	N2-2	Pipe	Circular	Circular	Both	1
N2-2R	BASE	N2-2R	N2-2	Pipe	Circular	Circular	Both	1
N2-B/1	BASE	N2-B	N2-C	Pipe	Circular	Circular	Both	1
N2/1-2	BASE	N2-1	N2-2	Pipe	Circular	Circular	Both	1
N2/2-4	BASE	N2-2	N2-4	Pipe	Circular	Circular	Both	1
N2/4-S-2	BASE	N2-4	S-2	Pipe	Circular	Circular	Both	1
N3/2-S-3	BASE	N3-2	S-3	Pipe	Circular	Circular	Both	1
N4-1L	BASE	N4-1L	N4-1	Pipe	Circular	Circular	Both	1
N4-1R	BASE	N4-1R	N4-1	Pipe	Circular	Circular	Both	1
N4/1-3	BASE	N4-1	N4-3	Pipe	Circular	Circular	Both	1
N4/3-DRA	BASE	N4-3	DRA	Pipe	Circular	Circular	Both	1
N5-1L	BASE	N5-1L	N5-1	Pipe	Circular	Circular	Both	1
N5-1R	BASE	N5-1R	N5-1	Pipe	Circular	Circular	Both	1
N5/1-3	BASE	N5-1	N5-3	Pipe	Circular	Circular	Both	1
N5/3-DRA	BASE	N5-3	DRA	Pipe	Circular	Circular	Both	1
N6-1L	BASE	N6-1L	N6-1	Pipe	Circular	Circular	Both	1
N6-1R	BASE	N6-1R	N6-1	Pipe	Circular	Circular	Both	1
N6/1-3	BASE	N6-1	N6-3	Pipe	Circular	Circular	Both	1
N6/3-DRA	BASE	N6-3	DRA	Pipe	Circular	Circular	Both	1
N7-1L	BASE	N7-1L	N7-1	Pipe	Circular	Circular	Both	1

Citrus County Operations Permit Renewal
Link Connectivity Report

Name	Group	From Node	To Node	Type	U/S Geometry	D/S Geometry	Flow Dir	Count
N7-1R	BASE	N7-1R	N7-1	Pipe	Circular	Circular	Both	1
N7-4L	BASE	N7-4L	N7-4	Pipe	Circular	Circular	Both	1
N7-4R	BASE	N7-4R	N7-4	Pipe	Circular	Circular	Both	1
N7-B/1	BASE	N7-B	N7-1	Pipe	Circular	Circular	Both	1
N7/1-3	BASE	N7-1	N7-3	Pipe	Circular	Circular	Both	1
N7/3-4	BASE	N7-3	N7-4	Pipe	Circular	Circular	Both	1
N7/4-S-7	BASE	N7-4	S-7	Pipe	Circular	Circular	Both	1
N8-3L	BASE	N8-3L	N8-3	Pipe	Circular	Circular	Both	1
N8-3R	BASE	N8-3R	N8-3	Pipe	Circular	Circular	Both	1
N8-B/C	BASE	N8-B	N8-C	Pipe	Circular	Circular	Both	1
N8/2-3	BASE	N8-2	N8-3	Pipe	Circular	Circular	Both	1
N8/3-S-8	BASE	N8-3	S-8	Pipe	Circular	Circular	Both	1
N9-3L	BASE	N9-3L	N9-3	Pipe	Circular	Circular	Both	1
N9-3R	BASE	N9-3R	N9-3	Pipe	Circular	Circular	Both	1
N9-4L	BASE	N9-4L	N9-4	Pipe	Circular	Circular	Both	1
N9-4R	BASE	N9-4R	N9-4	Pipe	Circular	Circular	Both	1
N9/2-3	BASE	N9-2	N9-3	Pipe	Circular	Circular	Both	1
N9/3-4	BASE	N9-3	N9-4	Pipe	Circular	Circular	Both	1
N9/4-S-9	BASE	N9-4	S-9	Pipe	Circular	Circular	Both	1
S-R3-DRA	BASE	S-R3	DRA	Pipe	Circular	Circular	Both	1
S/2-3	BASE	S-2	S-3	Pipe	Circular	Circular	Both	2
S/R1-R2	BASE	S-R1	S-R2	Pipe	Circular	Circular	Both	1
S/R2-R3	BASE	S-R2	S-R3	Pipe	Circular	Circular	Both	1
S12-S-W1	BASE	S-12	S-W1	Pipe	Circular	Circular	Both	2
C1-1L	BASE	C1-1L	N1-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C1-1R	BASE	C1-1R	N1-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C1-2L	BASE	C1-2L	N1-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C1-2R	BASE	C1-2R	N1-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C10-1L	BASE	C10-1L	N10-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C10-1R	BASE	C10-1R	N10-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C10-2L	BASE	C10-2L	N10-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C10-2R	BASE	C10-2R	N10-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C11-1L	BASE	C11-1L	N11-1	Channel	Trapezoidal	Trapezoidal	Both	1
C11-1R	BASE	C11-1R	N11-1	Channel	Trapezoidal	Trapezoidal	Both	1
C11-3L	BASE	C11-3L	N11-3L	Channel	Trapezoidal	Trapezoidal	Both	1
C11-3R	BASE	C11-3R	N11-3R	Channel	Trapezoidal	Trapezoidal	Both	1
C11-4L	BASE	C11-4L	N11-4L	Channel	Trapezoidal	Trapezoidal	Both	1
C11-4R	BASE	C11-4R	N11-4R	Channel	Trapezoidal	Trapezoidal	Both	1
C12-1L	BASE	C12-1L	N12-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C12-1R	BASE	C12-1R	N12-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C12-2L	BASE	C12-2L	N12-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C12-2R	BASE	C12-2R	N12-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C13-1L	BASE	C13-1L	N13-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C13-1R	BASE	C13-1R	N13-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C13-2L	BASE	C13-2L	N13-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C13-2R	BASE	C13-2R	N13-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C14-1L	BASE	C14-1L	N14-1	Channel	Trapezoidal	Trapezoidal	Both	1
C14-1R	BASE	C14-1R	N14-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C14-2L	BASE	C14-2L	N14-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C14-2R	BASE	C14-2R	N14-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C2-1L	BASE	C2-1L	N2-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C2-1R	BASE	C2-1R	N2-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C2-2L	BASE	C2-2L	N2-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C2-2R	BASE	C2-2R	N2-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C2-3R	BASE	C2-3R	N2-3	Channel	Trapezoidal	Trapezoidal	Both	1
C3-1R	BASE	C3-1R	N3-1	Channel	Trapezoidal	Trapezoidal	Both	1
C4-1L	BASE	C4-1L	N4-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C4-1R	BASE	C4-1R	N4-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C4-2R	BASE	C4-2R	N4-2	Channel	Trapezoidal	Trapezoidal	Both	1
C5-1L	BASE	C5-1L	N5-1L	Channel	Trapezoidal	Trapezoidal	Both	1

Name	Group	From Node	To Node	Type	U/S Geometry	D/S Geometry	Flow Dir	Count
C5-1R	BASE	C5-1R	N5-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C5-2R	BASE	C5-2R	N5-2	Channel	Trapezoidal	Trapezoidal	Both	1
C6-1L	BASE	C6-1L	N6-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C6-1R	BASE	C6-1R	N6-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C6-2R	BASE	C6-2R	N6-2	Channel	Trapezoidal	Trapezoidal	Both	1
C7-1L	BASE	C7-1L	N7-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C7-1R	BASE	C7-1R	N7-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C7-2R	BASE	C7-2R	N7-2	Channel	Trapezoidal	Trapezoidal	Both	1
C7-4L	BASE	C7-4L	N7-4L	Channel	Trapezoidal	Trapezoidal	Both	1
C7-4R	BASE	C7-4R	N7-4R	Channel	Trapezoidal	Trapezoidal	Both	1
C8-1L	BASE	C8-1L	N8-1	Channel	Trapezoidal	Trapezoidal	Both	1
C8-1R	BASE	C8-1R	N8-1	Channel	Trapezoidal	Trapezoidal	Both	1
C8-3L	BASE	C8-3L	N8-3L	Channel	Trapezoidal	Trapezoidal	Both	1
C8-3R	BASE	C8-3R	N8-3R	Channel	Trapezoidal	Trapezoidal	Both	1
C9-1R	BASE	C9-1R	N9-1	Channel	Trapezoidal	Trapezoidal	Both	1
C9-3L	BASE	C9-3L	N9-3L	Channel	Trapezoidal	Trapezoidal	Both	1
C9-3R	BASE	C9-3R	N9-3R	Channel	Trapezoidal	Trapezoidal	Both	1
C9-4L	BASE	C9-4L	N9-4L	Channel	Trapezoidal	Trapezoidal	Both	1
C9-4R	BASE	C9-4R	N9-4R	Channel	Trapezoidal	Trapezoidal	Both	1
N1-A	BASE	N1-A	N1-B	Channel	Trapezoidal	Trapezoidal	Both	1
N2-A	BASE	N2-A	N2-B	Channel	Trapezoidal	Trapezoidal	Both	1
N2-C-S-2	BASE	N2-C	S-2	Channel	Trapezoidal	Trapezoidal	Both	1
N7-A	BASE	N7-A	N7-B	Channel	Trapezoidal	Trapezoidal	Both	1
N8-A	BASE	N8-A	N8-B	Channel	Trapezoidal	Trapezoidal	Both	1
N8-C/S8	BASE	N8-C	S-7	Channel	Trapezoidal	Trapezoidal	Both	1
S-1-S-2	BASE	S-1	S-2	Channel	Trapezoidal	Trapezoidal	Both	1
S-10-S-E1	BASE	S-10	S-E1	Channel	Trapezoidal	Trapezoidal	Both	1
S-11-S-10	BASE	S-11	S-10	Channel	Trapezoidal	Trapezoidal	Both	1
S-11-S-NW	BASE	S-11	S-NW	Channel	Trapezoidal	Trapezoidal	Both	1
S-13-S-14	BASE	S-13	S-14	Channel	Trapezoidal	Trapezoidal	Both	1
S-14-S-1	BASE	S-14	S-1	Channel	Trapezoidal	Trapezoidal	Both	1
S-3-S-W3	BASE	S-3	S-W3	Channel	Trapezoidal	Trapezoidal	Both	1
S-7-S-E2	BASE	S-7	S-E2	Channel	Trapezoidal	Trapezoidal	Both	1
S-8-S-7	BASE	S-8	S-7	Channel	Trapezoidal	Trapezoidal	Both	1
S-9-S-8	BASE	S-9	S-8	Channel	Trapezoidal	Trapezoidal	Both	1
S-E1-S-9	BASE	S-E1	S-9	Channel	Trapezoidal	Trapezoidal	Both	1
S-E2-DRA	BASE	S-E2	DRA	Channel	Trapezoidal	Trapezoidal	Both	1
S-NE-S-NW	BASE	S-NE	S-NW	Channel	Trapezoidal	Trapezoidal	Both	1
S-NW-S-12	BASE	S-NW	S-12	Channel	Trapezoidal	Trapezoidal	Both	1
S-W1-S-W2	BASE	S-W1	S-W2	Channel	Trapezoidal	Trapezoidal	Both	1
S-W2-S-13	BASE	S-W2	S-13	Channel	Trapezoidal	Trapezoidal	Both	1
S-W3-DRA	BASE	S-W3	DRA	Channel	Trapezoidal	Trapezoidal	Both	1
N11/1-2	BASE	N11-1	N11-2	Horizontal WGO	Circular		Both	1
N2/3-4	BASE	N2-3	N2-4	Horizontal WGO	Circular		Both	1
N3/1-2	BASE	N3-1	N3-2	Horizontal WGO	Circular		Both	1
N4/2-3	BASE	N4-2	N4-3	Horizontal WGO	Circular		Both	1
N5/2-3	BASE	N5-2	N5-3	Horizontal WGO	Circular		Both	1
N6/2-3	BASE	N6-2	N6-3	Horizontal WGO	Circular		Both	1
N7/2-3	BASE	N7-2	N7-3	Horizontal WGO	Circular		Both	1
N8/1-2	BASE	N8-1	N8-2	Horizontal WGO	Circular		Both	1
N9/1-2	BASE	N9-1	N9-2	Horizontal WGO	Circular		Both	1
OVERFLOW	BASE	DRA	LFBNDRY	Vertical WGO Mavis	Rectangular		Both	1
DRA	BASE	DRA	LFBNDRY	Rating Curve			Both	1

Citrus County Operations Permit Renewal
DRA Node Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af
36 HR Drawdown	DRA	BASE	0.00	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	0.26	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	0.50	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	0.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	1.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	1.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	1.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	1.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	2.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	2.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	2.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	2.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	3.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	3.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	3.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	3.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	4.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	4.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	4.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	4.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	5.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	5.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	5.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	5.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	6.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	6.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	6.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	6.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	7.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	7.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	7.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	7.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	8.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	8.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	8.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	8.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	9.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	9.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	9.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	9.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	10.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	10.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	10.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	10.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	11.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	11.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	11.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	11.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	12.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	12.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	12.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	12.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	13.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	13.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	13.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	13.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	14.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	14.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	14.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	14.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	15.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	15.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	15.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	15.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	16.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	16.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	16.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	16.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	17.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	17.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	17.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	17.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	18.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	18.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	18.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	18.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	19.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	19.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	19.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	19.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	20.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	20.27	89.050	110.000	42962	0.000	0.000	0.0	0.0

Citrus County Operations Permit Renewal
DRA Node Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af
36 HR Drawdown	DRA	BASE	20.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	20.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	21.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	21.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	21.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	21.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	22.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	22.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	22.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	22.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	23.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	23.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	23.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	23.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	24.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	24.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	24.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	24.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	25.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	25.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	25.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	25.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	26.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	26.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	26.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	26.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	27.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	27.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	27.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	27.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	28.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	28.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	28.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	28.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	29.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	29.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	29.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	29.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	30.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	30.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	30.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	30.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	31.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	31.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	31.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	31.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	32.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	32.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	32.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	32.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	33.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	33.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	33.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	33.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	34.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	34.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	34.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	34.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	35.02	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	35.27	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	35.52	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	35.77	89.050	110.000	42962	0.000	0.000	0.0	0.0
36 HR Drawdown	DRA	BASE	36.01	89.050	110.000	42962	0.000	0.000	0.0	0.0

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==== Basins ==========
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Name: C1-1L | Node: C1-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.260 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C1-1R | Node: C1-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.470 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C1-2L | Node: C1-2L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.290 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C1-2R | Node: C1-2R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.260 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-1L | Node: C10-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.110 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-1R | Node: C10-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.110 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-2L | Node: C10-2L | Status: Onsite

Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.710 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C10-2R Node: C10-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.450 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-1L Node: C11-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.295 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-1R Node: C11-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.295 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-3L Node: C11-3L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.160 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-3R Node: C11-3R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.280 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-4L Node: C11-4L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.540 Time Shift(hrs): 0.00

Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C11-4R Node: C11-4R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.530 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C12-1L Node: C12-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.205 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C12-1R Node: C12-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.205 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C12-2L Node: C12-2L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.430 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C12-2R Node: C12-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.290 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C13-1L Node: C13-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.135 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C13-1R
Group: BASE
Node: C13-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.135
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C13-2L
Group: BASE
Node: C13-2L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.240
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C13-2R
Group: BASE
Node: C13-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.290
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C14-1L
Group: BASE
Node: C14-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.400
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C14-1R
Group: BASE
Node: C14-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.470
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C14-3L
Group: BASE
Node: C14-2L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.280
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C14-3R
Group: BASE
Node: C14-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00

Area(ac): 0.300 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-1L Node: C2-1L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.230 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-1R Node: C2-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.090 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-2L Node: C2-2L Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.260 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-2R Node: C2-2R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C2-3R Node: C2-3R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.330 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C3-1R Node: C3-1R Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C4-1L
Group: BASE
Node: C4-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.140
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C4-1R
Group: BASE
Node: C4-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.410
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C4-2R
Group: BASE
Node: C4-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 1.000
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C5-1L
Group: BASE
Node: C5-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.550
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C5-1R
Group: BASE
Node: C5-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.300
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C5-2R
Group: BASE
Node: C5-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.750
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C6-1L
Group: BASE
Node: C6-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Peaking Factor: 484.0
Storm Duration(hrs): 24.00

Rainfall Amount(in): 11.250
Area(ac): 0.310
Curve Number: 86.00
DCIA(%): 0.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C6-1R
Group: BASE
Node: C6-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.310
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C6-2R
Group: BASE
Node: C6-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.880
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-1L
Group: BASE
Node: C7-1L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.220
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-1R
Group: BASE
Node: C7-1R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.480
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-2R
Group: BASE
Node: C7-2R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.220
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-4L
Group: BASE
Node: C7-4L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.250
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C7-4R | Node: C7-4R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.220 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-1L | Node: C8-1L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.540 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-1R | Node: C8-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.540 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-3L | Node: C8-3L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.270 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C8-3R | Node: C8-3R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.390 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C9-1R | Node: C9-1R | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.840 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C9-3L | Node: C9-3L | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0

Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.130
Curve Number: 86.00
DCIA(%): 0.00
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C9-3R
Group: BASE
Node: C9-3R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.130
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C9-4L
Group: BASE
Node: C9-4L
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.260
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: C9-4R
Group: BASE
Node: C9-4R
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.460
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: DRA
Group: BASE
Node: DRA
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 3.820
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: GRASSY-1
Group: BASE
Node: S-R2
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.630
Curve Number: 39.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS1
Group: BASE
Node: S-1
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.900
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: LSS2 Node: DRA Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 2.220 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS3 Node: S-7 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.690 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS4 Node: S-8 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.310 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS5 Node: S-9 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.780 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS6 Node: S-E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.620 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS7-1 Node: S-NE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.380 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS7-2 Node: S-11 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.380 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS7-3 Node: S-10 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.460 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS8 Node: S-12 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 1.020 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: LSS9 Node: S-W2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.690 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: N1-A Node: N1-A Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.810 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: N2-A Node: N2-A Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.570 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: N7-A Node: N7-A Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 Time of Conc(min): 10.00
Area(ac): 0.550 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: N8-A
Group: BASE
Node: N8-A
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.910
Curve Number: 86.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-1
Group: BASE
Node: S-W1
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.060
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-2
Group: BASE
Node: S-W2
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.050
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-3
Group: BASE
Node: S-14
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.060
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-4
Group: BASE
Node: S-1
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.060
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-5
Group: BASE
Node: S-2
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484
Rainfall File: Flmod
Rainfall Amount(in): 11.250
Area(ac): 0.080
Curve Number: 98.00
DCIA(%): 0.00
Peaking Factor: 484.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: ROAD-6
Group: BASE
Node: S-3
Type: SCS Unit Hydrograph
Status: Onsite

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.090 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-7 | Node: S-R3 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.160 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: ROAD-8 | Node: S-R1 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph: Uh484 | Peaking Factor: 484.0
Rainfall File: Flmod | Storm Duration(hrs): 24.00
Rainfall Amount(in): 11.250 | Time of Conc(min): 10.00
Area(ac): 0.220 | Time Shift(hrs): 0.00
Curve Number: 98.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

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==== Nodes ==========
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Name: C1-1L | Base Flow(cfs): 0.000 | Init Stage(ft): 181.500
Group: BASE | Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C1-1R | Base Flow(cfs): 0.000 | Init Stage(ft): 181.500
Group: BASE | Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C1-2L | Base Flow(cfs): 0.000 | Init Stage(ft): 146.500
Group: BASE | Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C1-2R | Base Flow(cfs): 0.000 | Init Stage(ft): 146.500
Group: BASE | Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C10-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C10-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C10-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C10-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C11-1L Base Flow(cfs): 0.000 Init Stage(ft): 207.000
Group: BASE Warn Stage(ft): 209.000
Type: Stage/Area

Stage(ft)	Area(ac)
207.000	0.0000
209.000	0.0000

Name: C11-1R Base Flow(cfs): 0.000 Init Stage(ft): 207.000
Group: BASE Warn Stage(ft): 209.000
Type: Stage/Area

Stage(ft)	Area(ac)
207.000	0.0000
209.000	0.0000

Name: C11-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)

181.500	0.0000
183.500	0.0000

Name: C11-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C11-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C11-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C12-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C12-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C12-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C12-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C13-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C13-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C13-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C13-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C14-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C14-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C14-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C14-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C2-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C2-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C2-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C2-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C2-3R Base Flow(cfs): 0.000 Init Stage(ft): 123.000
Group: BASE Warn Stage(ft): 125.000
Type: Stage/Area

Stage(ft)	Area(ac)
123.000	0.0000
125.000	0.0000

Name: C3-1R Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 128.000
Type: Stage/Area

Stage(ft)	Area(ac)

126.000	0.0000
128.000	0.0000

Name: C4-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C4-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C4-2R Base Flow(cfs): 0.000 Init Stage(ft): 143.000
Group: BASE Warn Stage(ft): 145.500
Type: Stage/Area

Stage(ft)	Area(ac)
143.000	0.0000
145.500	0.0000

Name: C5-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C5-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C5-2R Base Flow(cfs): 0.000 Init Stage(ft): 149.000
Group: BASE Warn Stage(ft): 151.000
Type: Stage/Area

Stage(ft)	Area(ac)
149.000	0.0000
151.000	0.0000

Name: C6-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)

181.500	0.0000
183.500	0.0000

Name: C6-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C6-2R Base Flow(cfs): 0.000 Init Stage(ft): 153.000
Group: BASE Warn Stage(ft): 155.000
Type: Stage/Area

Stage(ft)	Area(ac)
153.000	0.0000
155.000	0.0000

Name: C7-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C7-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C7-2R Base Flow(cfs): 0.000 Init Stage(ft): 169.000
Group: BASE Warn Stage(ft): 171.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.0000
171.000	0.0000

Name: C7-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C7-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)

146.500	0.0000
148.500	0.0000

Name: C8-1L Base Flow(cfs): 0.000 Init Stage(ft): 184.000
Group: BASE Warn Stage(ft): 186.000
Type: Stage/Area

Stage(ft)	Area(ac)
184.000	0.0000
186.000	0.0000

Name: C8-1R Base Flow(cfs): 0.000 Init Stage(ft): 184.000
Group: BASE Warn Stage(ft): 186.000
Type: Stage/Area

Stage(ft)	Area(ac)
184.000	0.0000
186.000	0.0000

Name: C8-3L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C8-3R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C9-1R Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000
214.000	0.0000

Name: C9-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: C9-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)

181.500	0.0000
183.500	0.0000

Name: C9-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: C9-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: DRA Base Flow(cfs): 0.000 Init Stage(ft): 89.050
Group: BASE Warn Stage(ft): 110.000
Type: Stage/Area

Water Quality Elevation

Stage(ft)	Area(ac)
87.000	0.7700
88.000	0.8700
89.000	0.9800
90.000	1.0800
91.000	1.1800
92.000	1.2900
93.000	1.4000
94.000	1.5100
95.000	1.6300
96.000	1.7400
97.000	1.8500
98.000	1.9700
99.000	2.0800
100.000	2.1900
101.000	2.3100
102.000	2.4400
103.000	2.5900
104.000	2.7400
105.000	2.8900
106.000	3.0600
107.000	3.2400
108.000	3.4200
109.000	3.6100
110.000	3.8200

Name: LFBNDRY Base Flow(cfs): 0.000 Init Stage(ft): 88.000
Group: BASE Warn Stage(ft): 111.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	88.000
99999.00	88.000

Name: N1-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000

181.500	0.0000

Name: N1-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N1-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N1-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N1-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N1-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N1-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N1-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N10-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N10-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N10-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N10-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N10-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N10-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N11-1 Base Flow(cfs): 0.000 Init Stage(ft): 207.000
Group: BASE Warn Stage(ft): 209.000
Type: Stage/Area

Stage(ft)	Area(ac)
207.000	0.0000

209.000	0.0000

Name: N11-2 Base Flow(cfs): 0.000 Init Stage(ft): 203.000
Group: BASE Warn Stage(ft): 207.000
Type: Stage/Area

Stage(ft)	Area(ac)
203.000	0.0000
207.000	0.0000

Name: N11-3 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N11-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N11-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N11-4 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N11-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N11-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000

148.500	0.0000

Name: N12-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N12-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N12-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N12-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N12-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N12-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N13-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000

181.500	0.0000

Name: N13-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N13-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N13-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N13-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N13-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N14-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N14-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000

183.500	0.0000

Name: N14-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N14-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N14-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N14-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N2-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N2-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N2-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000

183.500	0.0000

Name: N2-2 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N2-2L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N2-2R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N2-3 Base Flow(cfs): 0.000 Init Stage(ft): 123.000
Group: BASE Warn Stage(ft): 125.000
Type: Stage/Area

30-Inch ADS circular inlet

Stage(ft)	Area(ac)
123.000	0.0000
125.000	0.0000

Name: N2-4 Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: BASE Warn Stage(ft): 123.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.000	0.0000
123.000	0.0000

Name: N2-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N2-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N2-C Base Flow(cfs): 0.000 Init Stage(ft): 115.490
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.490	0.0000
120.000	0.0000

Name: N3-1 Base Flow(cfs): 0.000 Init Stage(ft): 126.000
Group: BASE Warn Stage(ft): 128.000
Type: Stage/Area

Stage(ft)	Area(ac)
126.000	0.0000
128.000	0.0000

Name: N3-2 Base Flow(cfs): 0.000 Init Stage(ft): 123.000
Group: BASE Warn Stage(ft): 126.000
Type: Stage/Area

Stage(ft)	Area(ac)
123.000	0.0000
126.000	0.0000

Name: N4-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N4-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N4-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N4-2 Base Flow(cfs): 0.000 Init Stage(ft): 143.000
Group: BASE Warn Stage(ft): 145.000
Type: Stage/Area

Stage(ft)	Area(ac)
143.000	0.0000

145.000	0.0000

Name: N4-3 Base Flow(cfs): 0.000 Init Stage(ft): 139.000
Group: BASE Warn Stage(ft): 143.000
Type: Stage/Area

Stage(ft)	Area(ac)
139.000	0.0000
143.000	0.0000

Name: N5-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N5-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N5-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N5-2 Base Flow(cfs): 0.000 Init Stage(ft): 149.000
Group: BASE Warn Stage(ft): 151.000
Type: Stage/Area

Stage(ft)	Area(ac)
149.000	0.0000
151.000	0.0000

Name: N5-3 Base Flow(cfs): 0.000 Init Stage(ft): 145.000
Group: BASE Warn Stage(ft): 149.000
Type: Stage/Area

Stage(ft)	Area(ac)
145.000	0.0000
149.000	0.0000

Name: N6-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000

181.500	0.0000

Name: N6-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N6-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N6-2 Base Flow(cfs): 0.000 Init Stage(ft): 153.000
Group: BASE Warn Stage(ft): 155.000
Type: Stage/Area

Stage(ft)	Area(ac)
153.000	0.0000
155.000	0.0000

Name: N6-3 Base Flow(cfs): 0.000 Init Stage(ft): 149.000
Group: BASE Warn Stage(ft): 153.000
Type: Stage/Area

Stage(ft)	Area(ac)
149.000	0.0000
153.000	0.0000

Name: N7-1 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name: N7-1L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N7-1R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000

183.500	0.0000

Name: N7-2 Base Flow(cfs): 0.000 Init Stage(ft): 169.000
Group: BASE Warn Stage(ft): 171.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.0000
171.000	0.0000

Name: N7-3 Base Flow(cfs): 0.000 Init Stage(ft): 165.000
Group: BASE Warn Stage(ft): 169.000
Type: Stage/Area

Stage(ft)	Area(ac)
165.000	0.0000
169.000	0.0000

Name: N7-4 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N7-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N7-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N7-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N7-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N8-1 Base Flow(cfs): 0.000 Init Stage(ft): 184.000
Group: BASE Warn Stage(ft): 186.000
Type: Stage/Area

Stage(ft)	Area(ac)
184.000	0.0000
186.000	0.0000

Name: N8-2 Base Flow(cfs): 0.000 Init Stage(ft): 180.000
Group: BASE Warn Stage(ft): 184.000
Type: Stage/Area

Stage(ft)	Area(ac)
180.000	0.0000
184.000	0.0000

Name: N8-3 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000
146.500	0.0000

Name: N8-3L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N8-3R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N8-A Base Flow(cfs): 0.000 Init Stage(ft): 213.200
Group: BASE Warn Stage(ft): 215.200
Type: Stage/Area

Stage(ft)	Area(ac)
213.200	0.0000
215.200	0.0000

Name: N8-B Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000

214.000	0.0000

Name: N8-C Base Flow(cfs): 0.000 Init Stage(ft): 116.400
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.400	0.0000
120.000	0.0000

Name: N9-1 Base Flow(cfs): 0.000 Init Stage(ft): 212.000
Group: BASE Warn Stage(ft): 214.000
Type: Stage/Area

Stage(ft)	Area(ac)
212.000	0.0000
214.000	0.0000

Name: N9-2 Base Flow(cfs): 0.000 Init Stage(ft): 208.000
Group: BASE Warn Stage(ft): 212.000
Type: Stage/Area

Stage(ft)	Area(ac)
208.000	0.0000
212.000	0.0000

Name: N9-3 Base Flow(cfs): 0.000 Init Stage(ft): 179.100
Group: BASE Warn Stage(ft): 181.500
Type: Stage/Area

Stage(ft)	Area(ac)
179.100	0.0000
181.500	0.0000

Name; N9-3L Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N9-3R Base Flow(cfs): 0.000 Init Stage(ft): 181.500
Group: BASE Warn Stage(ft): 183.500
Type: Stage/Area

Stage(ft)	Area(ac)
181.500	0.0000
183.500	0.0000

Name: N9-4 Base Flow(cfs): 0.000 Init Stage(ft): 144.100
Group: BASE Warn Stage(ft): 146.500
Type: Stage/Area

Stage(ft)	Area(ac)
144.100	0.0000

146.500	0.0000

Name: N9-4L Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: N9-4R Base Flow(cfs): 0.000 Init Stage(ft): 146.500
Group: BASE Warn Stage(ft): 148.500
Type: Stage/Area

Stage(ft)	Area(ac)
146.500	0.0000
148.500	0.0000

Name: S-1 Base Flow(cfs): 0.000 Init Stage(ft): 115.880
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.880	0.0000
120.000	0.0000

Name: S-10 Base Flow(cfs): 0.000 Init Stage(ft): 117.900
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.900	0.0000
120.000	0.0000

Name: S-11 Base Flow(cfs): 0.000 Init Stage(ft): 118.400
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
118.400	0.0000
120.000	0.0000

Name: S-12 Base Flow(cfs): 0.000 Init Stage(ft): 117.600
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.600	0.0000
120.000	0.0000

Name: S-13 Base Flow(cfs): 0.000 Init Stage(ft): 117.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.000	0.0000

120.000	0.0000

Name: S-14 Base Flow(cfs): 0.000 Init Stage(ft): 116.270
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.270	0.0000
120.000	0.0000

Name: S-2 Base Flow(cfs): 0.000 Init Stage(ft): 115.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.000	0.0000
120.000	0.0000

Name: S-3 Base Flow(cfs): 0.000 Init Stage(ft): 115.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
115.000	0.0000
120.000	0.0000

Name: S-7 Base Flow(cfs): 0.000 Init Stage(ft): 116.100
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.100	0.0000
120.000	0.0000

Name: S-8 Base Flow(cfs): 0.000 Init Stage(ft): 116.620
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.620	0.0000
120.000	0.0000

Name: S-9 Base Flow(cfs): 0.000 Init Stage(ft): 117.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.000	0.0000
120.000	0.0000

Name: S-E1 Base Flow(cfs): 0.000 Init Stage(ft): 117.570
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.570	0.0000

120.000	0.0000

Name: S-E2 Base Flow(cfs): 0.000 Init Stage(ft): 116.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
116.000	0.0000
120.000	0.0000

Name: S-NE Base Flow(cfs): 0.000 Init Stage(ft): 118.500
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
118.500	0.0000
120.000	0.0000

Name: S-NW Base Flow(cfs): 0.000 Init Stage(ft): 118.300
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
118.300	0.0000
120.000	0.0000

Name: S-R1 Base Flow(cfs): 0.000 Init Stage(ft): 107.010
Group: BASE Warn Stage(ft): 109.500
Type: Stage/Area

Stage(ft)	Area(ac)
107.010	0.0000
109.500	0.0000

Name: S-R2 Base Flow(cfs): 0.000 Init Stage(ft): 106.690
Group: BASE Warn Stage(ft): 110.000
Type: Stage/Area

Stage(ft)	Area(ac)
106.690	0.0000
110.000	0.0000

Name: S-R3 Base Flow(cfs): 0.000 Init Stage(ft): 106.040
Group: BASE Warn Stage(ft): 109.000
Type: Stage/Area

Stage(ft)	Area(ac)
106.040	0.0000
109.000	0.0000

Name: S-W1 Base Flow(cfs): 0.000 Init Stage(ft): 117.500
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.500	0.0000

120.000	0.0000

Name: S-W2 Base Flow(cfs): 0.000 Init Stage(ft): 117.300
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
117.300	0.0000
120.000	0.0000

Name: S-W3 Base Flow(cfs): 0.000 Init Stage(ft): 110.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
110.000	0.0000
120.000	0.0000

Operating Tables

Name: DRA Group: BASE
Type: Rating Curve
Function: US Stage vs. Discharge

Refer to infiltration calculations

US Stage(ft)	Discharge(cfs)
87.500	0.00
88.500	0.00
89.500	0.00
90.500	0.00
91.500	0.00
92.500	0.00
93.500	0.00
94.500	0.00
95.500	0.00
96.500	0.00
97.500	0.00
98.500	0.00
99.500	0.00
100.500	0.00
101.500	0.00
102.500	0.00
103.500	0.00
104.500	0.00
105.500	0.00
106.500	0.00
107.800	0.00
108.500	0.00
109.500	0.00

Pipes

Name: N1-1L From Node: N1-1L Length(ft): 19.00
Group: BASE To Node: N1-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:

Circular: Beveled ring, 45° bevels

Name: N1-1R	From Node: N1-1R	Length(ft): 19.00	
Group: BASE	To Node: N1-1	Count: 1	
		Friction Equation:	Average Conveyance
UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry: Circular	Circular	Flow:	Both
Span(in): 12.00	12.00	Entrance Loss Coef:	0.50
Rise(in): 12.00	12.00	Exit Loss Coef:	0.00
Invert(ft): 181.500	179.100	Bend Loss Coef:	0.50
Manning's N: 0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in): 0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N1-2L	From Node: N1-2L	Length(ft): 19.00	
Group: BASE	To Node: N1-2	Count: 1	
		Friction Equation:	Average Conveyance
UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry: Circular	Circular	Flow:	Both
Span(in): 12.00	12.00	Entrance Loss Coef:	0.50
Rise(in): 12.00	12.00	Exit Loss Coef:	0.00
Invert(ft): 146.500	144.100	Bend Loss Coef:	0.50
Manning's N: 0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in): 0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N1-2R	From Node: N1-2R	Length(ft): 19.00	
Group: BASE	To Node: N1-2	Count: 1	
		Friction Equation:	Average Conveyance
UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry: Circular	Circular	Flow:	Both
Span(in): 12.00	12.00	Entrance Loss Coef:	0.50
Rise(in): 12.00	12.00	Exit Loss Coef:	0.00
Invert(ft): 146.500	144.100	Bend Loss Coef:	0.50
Manning's N: 0.035000	0.035000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in): 0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N1-B/1	From Node: N1-B	Length(ft): 115.00	
Group: BASE	To Node: N1-1	Count: 1	
		Friction Equation:	Average Conveyance
UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry: Circular	Circular	Flow:	Both
Span(in): 12.00	12.00	Entrance Loss Coef:	0.50
Rise(in): 12.00	12.00	Exit Loss Coef:	0.00
Invert(ft): 212.000	179.100	Bend Loss Coef:	0.50
Manning's N: 0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec:	Use dn

Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N1/1-2	From Node: N1-1	Length(ft): 125.00
Group:	BASE	To Node: N1-2	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N1/2-S-1	From Node: N1-2	Length(ft): 110.00
Group:	BASE	To Node: S-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	144.100	115.880	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N10-1L	From Node: N10-1L	Length(ft): 19.00
Group:	BASE	To Node: N10-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N10-1R	From Node: N10-1R	Length(ft): 19.00
Group:	BASE	To Node: N10-1	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	12.00	12.00	Solution Algorithm:	Automatic
Rise(in):	12.00	12.00	Flow:	Both
Invert(ft):	181.500	179.100	Entrance Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Exit Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Bend Loss Coef:	0.50
Bot Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
			Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N10-2L	From Node:	N10-2L	Length(ft):	19.00
Group:	BASE	To Node:	N10-2	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	12.00	12.00	Solution Algorithm:	Automatic
Rise(in):	12.00	12.00	Flow:	Both
Invert(ft):	146.500	144.100	Entrance Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Exit Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Bend Loss Coef:	0.50
Bot Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
			Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N10-2R	From Node:	N10-2R	Length(ft):	19.00
Group:	BASE	To Node:	N10-2	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	12.00	12.00	Solution Algorithm:	Automatic
Rise(in):	12.00	12.00	Flow:	Both
Invert(ft):	146.500	144.100	Entrance Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Exit Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Bend Loss Coef:	0.50
Bot Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
			Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N10/1-2	From Node:	N10-1	Length(ft):	140.00
Group:	BASE	To Node:	N10-2	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	18.00	18.00	Solution Algorithm:	Automatic
Rise(in):	18.00	18.00	Flow:	Both
Invert(ft):	179.100	144.100	Entrance Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Exit Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Bend Loss Coef:	0.50
Bot Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
			Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N10/2-S10	From Node:	N10-2	Length(ft): 110.00
Group:	BASE	To Node:	S-10	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	144.100	117.900		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11-3L	From Node:	N11-3L	Length(ft): 19.00
Group:	BASE	To Node:	N11-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-3R	From Node:	N11-3R	Length(ft): 19.00
Group:	BASE	To Node:	N11-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-4L	From Node:	N11-4L	Length(ft): 19.00
Group:	BASE	To Node:	N11-4	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw

Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-4R	From Node: N11-4R	Length(ft): 19.00
Group:	BASE	To Node: N11-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11/2-3	From Node: N11-2	Length(ft): 75.00
Group:	BASE	To Node: N11-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	203.000	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11/3-4	From Node: N11-3	Length(ft): 130.00
Group:	BASE	To Node: N11-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11/4-S11	From Node: N11-4	Length(ft): 120.00

Group: BASE | To Node: S-11 | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	144.100	118.400
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N12-1L | From Node: N12-1L | Length(ft): 19.00
Group: BASE | To Node: N12-1 | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N12-1R | From Node: N12-1R | Length(ft): 19.00
Group: BASE | To Node: N12-1 | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Name: N12-2L | From Node: N12-2L | Length(ft): 19.00
Group: BASE | To Node: N12-2 | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N12-2R	From Node:	N12-2R	Length(ft):	19.00
Group:	BASE	To Node:	N12-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N12/1-2	From Node:	N12-1	Length(ft):	160.00
Group:	BASE	To Node:	N12-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	179.100	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N12/2-S12	From Node:	N12-2	Length(ft):	110.00
Group:	BASE	To Node:	S-12	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00
Rise(in):	18.00	18.00		Exit Loss Coef:	1.00
Invert(ft):	144.100	117.600		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N13-1L	From Node:	N13-1L	Length(ft):	19.00
Group:	BASE	To Node:	N13-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100		Bend Loss Coef:	0.50

Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N13-1R From Node: N13-1R Length(ft): 19.00
Group: BASE To Node: N13-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N13-2L From Node: N13-2L Length(ft): 19.00
Group: BASE To Node: N13-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N13-2R From Node: N13-2R Length(ft): 19.00
Group: BASE To Node: N13-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N13/1-2	From Node:	N13-1	Length(ft):	125.00
Group:	BASE	To Node:	N13-2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	179.100	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N13/2-S-13	From Node:	N13-2	Length(ft):	117.00
Group:	BASE	To Node:	S-13	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00
Rise(in):	18.00	18.00		Exit Loss Coef:	1.00
Invert(ft):	144.100	117.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N14-1L	From Node:	N14-1L	Length(ft):	126.00
Group:	BASE	To Node:	N14-1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	181.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14-1R	From Node:	N14-1R	Length(ft):	19.00
Group:	BASE	To Node:	N14-1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:

Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14-2L		From Node:	N14-2L	
Group:	BASE		To Node:	N14-2	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	12.00	12.00			
Rise(in):	12.00	12.00			
Invert(ft):	146.500	144.100			
Manning's N:	0.012000	0.012000			
Top Clip(in):	0.000	0.000			
Bot Clip(in):	0.000	0.000			

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14-2R		From Node:	N14-2R	
Group:	BASE		To Node:	N14-2	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	12.00	12.00			
Rise(in):	12.00	12.00			
Invert(ft):	146.500	144.100			
Manning's N:	0.012000	0.012000			
Top Clip(in):	0.000	0.000			
Bot Clip(in):	0.000	0.000			

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N14/1-2		From Node:	N14-1	
Group:	BASE		To Node:	N14-2	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	18.00	18.00			
Rise(in):	18.00	18.00			
Invert(ft):	179.100	144.100			
Manning's N:	0.012000	0.012000			
Top Clip(in):	0.000	0.000			
Bot Clip(in):	0.000	0.000			

Length(ft):	126.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N14/2-S-14		From Node:	N14-2	
Group:	BASE		To Node:	S-14	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	24.00	24.00			
Rise(in):	24.00	24.00			

Length(ft):	112.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.00
Exit Loss Coef:	1.00

Invert(ft):	144.100	116.270	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N2-1L	From Node: N2-1L	Length(ft): 19.00
Group:	BASE	To Node: N2-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N2-1R	From Node: N2-1R	Length(ft): 19.00
Group:	BASE	To Node: N2-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N2-2L	From Node: N2-2L	Length(ft): 19.00
Group:	BASE	To Node: N2-2	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N2-2R
Group: BASE

From Node: N2-2R
To Node: N2-2

Length(ft): 19.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N2-B/1
Group: BASE

From Node: N2-B
To Node: N2-C

Length(ft): 327.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	212.000	115.490
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N2/1-2
Group: BASE

From Node: N2-1
To Node: N2-2

Length(ft): 127.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N2/2-4
Group: BASE

From Node: N2-2
To Node: N2-4

Length(ft): 91.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	144.100	119.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N2/4-S-2	From Node:	N2-4
Group:	BASE	To Node:	S-2
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	24.00	24.00	
Rise(in):	24.00	24.00	
Invert(ft):	119.000	115.000	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	18.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	1.00
Bend Loss Coef:	0.00
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N3/2-S-3	From Node:	N3-2
Group:	BASE	To Node:	S-3
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	18.00	18.00	
Rise(in):	18.00	18.00	
Invert(ft):	123.000	115.000	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	67.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	1.00
Bend Loss Coef:	0.00
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N4-1L	From Node:	N4-1L
Group:	BASE	To Node:	N4-1
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	12.00	12.00	
Rise(in):	12.00	12.00	
Invert(ft):	181.500	179.100	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N4-1R	From Node:	N4-1R
Group:	BASE	To Node:	N4-1
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	12.00	12.00	

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50

Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N4/1-3 From Node: N4-1 Length(ft): 136.00
Group: BASE To Node: N4-3 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	139.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N4/3-DRA From Node: N4-3 Length(ft): 106.00
Group: BASE To Node: DRA Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	139.000	114.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N5-1L From Node: N5-1L Length(ft): 19.00
Group: BASE To Node: N5-1 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	181.500	179.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N5-1R	From Node:	N5-1R	Length(ft):	19.00
Group:	BASE	To Node:	N5-1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N5/1-3	From Node:	N5-1	Length(ft):	121.00
Group:	BASE	To Node:	N5-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	179.100	145.000		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N5/3-DRA	From Node:	N5-3	Length(ft):	121.00
Group:	BASE	To Node:	DRA	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.50
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00
Invert(ft):	145.000	114.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N6-1L	From Node:	N6-1L	Length(ft):	19.00
Group:	BASE	To Node:	N6-1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N6-1R	From Node:	N6-1R	Length(ft): 19.00
Group:	BASE	To Node:	N6-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	12.00	12.00		Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00		Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100		Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N6/1-3	From Node:	N6-1	Length(ft): 104.00
Group:	BASE	To Node:	N6-3	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00		Exit Loss Coef: 1.00
Invert(ft):	179.100	149.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N6/3-DRA	From Node:	N6-3	Length(ft): 139.00
Group:	BASE	To Node:	DRA	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 0.50
Rise(in):	24.00	24.00		Exit Loss Coef: 1.00
Invert(ft):	149.000	114.000		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7-1L	From Node:	N7-1L	Length(ft): 19.00
Group:	BASE	To Node:	N7-1	Count: 1
				Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Automatic
Geometry:	Circular	Circular		Flow: Both

Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	181.500	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N7-1R From Node: N7-1R Length(ft): 19.00
Group: BASE To Node: N7-1 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	12.00	12.00	Flow: Both
Rise(in):	12.00	12.00	Entrance Loss Coef: 0.50
Invert(ft):	181.500	179.100	Exit Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N7-4L From Node: N7-4L Length(ft): 19.00
Group: BASE To Node: N7-4 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	12.00	12.00	Flow: Both
Rise(in):	12.00	12.00	Entrance Loss Coef: 0.50
Invert(ft):	146.500	144.100	Exit Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N7-4R From Node: N7-4R Length(ft): 19.00
Group: BASE To Node: N7-4 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	12.00	12.00	Flow: Both
Rise(in):	12.00	12.00	Entrance Loss Coef: 0.50
Invert(ft):	146.500	144.100	Exit Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N7-B/1	From Node: N7-B	Length(ft): 100.00
Group:	BASE	To Node: N7-1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	212.000	179.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7/1-3	From Node: N7-1	Length(ft): 64.00
Group:	BASE	To Node: N7-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	179.100	165.000	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7/3-4	From Node: N7-3	Length(ft): 91.00
Group:	BASE	To Node: N7-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	165.000	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N7/4-S-7	From Node: N7-4	Length(ft): 106.00
Group:	BASE	To Node: S-7	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	144.100	116.100	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N8-3L	From Node: N8-3L	Length(ft): 19.00
Group:	BASE	To Node: N8-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N8-3R	From Node: N8-3R	Length(ft): 19.00
Group:	BASE	To Node: N8-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 0.00
Invert(ft):	146.500	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N8-B/C	From Node: N8-B	Length(ft): 347.00
Group:	BASE	To Node: N8-C	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	12.00	12.00	Entrance Loss Coef: 0.50
Rise(in):	12.00	12.00	Exit Loss Coef: 1.00
Invert(ft):	212.000	116.400	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N8/2-3	From Node: N8-2	Length(ft): 132.00
Group:	BASE	To Node: N8-3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic

Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	180.000	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N8/3-S-8 From Node: N8-3 Length(ft): 107.00
Group: BASE To Node: S-8 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	24.00	24.00	Flow: Both
Rise(in):	24.00	24.00	Entrance Loss Coef: 0.00
Invert(ft):	144.100	116.620	Exit Loss Coef: 1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N9-3L From Node: N9-3L Length(ft): 19.00
Group: BASE To Node: N9-3 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	12.00	12.00	Flow: Both
Rise(in):	12.00	12.00	Entrance Loss Coef: 0.50
Invert(ft):	181.500	179.100	Exit Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N9-3R From Node: N9-3R Length(ft): 19.00
Group: BASE To Node: N9-3 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	12.00	12.00	Flow: Both
Rise(in):	12.00	12.00	Entrance Loss Coef: 0.50
Invert(ft):	181.500	179.100	Exit Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-4L	From Node:	N9-4L	Length(ft):	19.00
Group:	BASE	To Node:	N9-4	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-4R	From Node:	N9-4R	Length(ft):	19.00
Group:	BASE	To Node:	N9-4	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.120000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9/2-3	From Node:	N9-2	Length(ft):	55.00
Group:	BASE	To Node:	N9-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	208.000	179.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9/3-4	From Node:	N9-3	Length(ft):	124.00
Group:	BASE	To Node:	N9-4	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	179.100	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9/4-S-9	From Node: N9-4	Length(ft): 110.00
Group:	BASE	To Node: S-9	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	144.100	117.000	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	S-R3-DRA	From Node: S-R3	Length(ft): 60.00
Group:	BASE	To Node: DRA	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	106.040	100.000	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	S/2-3	From Node: S-2	Length(ft): 70.00
Group:	BASE	To Node: S-3	Count: 2
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 1.00
Rise(in):	24.00	24.00	Exit Loss Coef: 0.50
Invert(ft):	115.000	115.000	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	S/R1-R2	From Node: S-R1	Length(ft): 63.00
Group:	BASE	To Node: S-R2	Count: 1
			Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	107.010	106.690	Exit Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: S/R2-R3 From Node: S-R2 Length(ft): 34.00
Group: BASE To Node: S-R3 Count: 1
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	106.690	106.040	Exit Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.50
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: S12-S-W1 From Node: S-12 Length(ft): 40.00
Group: BASE To Node: S-W1 Count: 2
Friction Equation: Average Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	1.00
Invert(ft):	117.600	117.500	Exit Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

==========
==== Channels ==========
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Name: C1-1L From Node: C1-1L Length(ft): 96.00
Group: BASE To Node: N1-1L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name: C1-1R | From Node: C1-1R | Length(ft): 88.00
Group: BASE | To Node: N1-1R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C1-2L | From Node: C1-2L | Length(ft): 95.00
Group: BASE | To Node: N1-2L | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C1-2R | From Node: C1-2R | Length(ft): 96.00
Group: BASE | To Node: N1-2R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C10-1L | From Node: C10-1L | Length(ft): 83.00
Group: BASE | To Node: N10-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C10-1R From Node: C10-1R Length(ft): 136.00
Group: BASE To Node: N10-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C10-2L From Node: C10-2L Length(ft): 178.00
Group: BASE To Node: N10-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C10-2R From Node: C10-2R Length(ft): 166.00
Group: BASE To Node: N10-2R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C11-1L | From Node: C11-1L | Length(ft): 161.00
Group: BASE | To Node: N11-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	208.000	207.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C11-1R | From Node: C11-1R | Length(ft): 161.00
Group: BASE | To Node: N11-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	208.000	207.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C11-3L | From Node: C11-3L | Length(ft): 186.00
Group: BASE | To Node: N11-3L | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C11-3R | From Node: C11-3R | Length(ft): 142.00
Group: BASE | To Node: N11-3R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C11-4L | From Node: C11-4L | Length(ft): 183.00
Group: BASE | To Node: N11-4L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C11-4R | From Node: C11-4R | Length(ft): 173.00
Group: BASE | To Node: N11-4R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C12-1L | From Node: C12-1L | Length(ft): 122.00
Group: BASE | To Node: N12-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name: C12-1R | From Node: C12-1R | Length(ft): 44.00
Group: BASE | To Node: N12-1R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C12-2L | From Node: C12-2L | Length(ft): 179.00
Group: BASE | To Node: N12-2L | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C12-2R | From Node: C12-2R | Length(ft): 106.00
Group: BASE | To Node: N12-2R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C13-1L | From Node: C13-1L | Length(ft): 44.00
Group: BASE | To Node: N13-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C13-1R From Node: C13-1R Length(ft): 102.00
Group: BASE To Node: N13-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C13-2L From Node: C13-2L Length(ft): 135.00
Group: BASE To Node: N13-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C13-2R From Node: C13-2R Length(ft): 105.00
Group: BASE To Node: N13-2R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C14-1L | From Node: C14-1L | Length(ft): 93.00
Group: BASE | To Node: N14-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C14-1R | From Node: C14-1R | Length(ft): 102.00
Group: BASE | To Node: N14-1R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C14-2L | From Node: C14-2L | Length(ft): 95.00
Group: BASE | To Node: N14-2L | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C14-2R | From Node: C14-2R | Length(ft): 101.00
Group: BASE | To Node: N14-2R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C2-1L From Node: C2-1L Length(ft): 96.00
Group: BASE To Node: N2-1L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C2-1R From Node: C2-1R Length(ft): 61.00
Group: BASE To Node: N2-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C2-2L From Node: C2-2L Length(ft): 100.00
Group: BASE To Node: N2-2L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name: C2-2R | From Node: C2-2R | Length(ft): 200.00
Group: BASE | To Node: N2-2R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C2-3R | From Node: C2-3R | Length(ft): 140.00
Group: BASE | To Node: N2-3 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	124.000	123.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C3-1R | From Node: C3-1R | Length(ft): 251.00
Group: BASE | To Node: N3-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	127.000	126.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C4-1L | From Node: C4-1L | Length(ft): 62.00
Group: BASE | To Node: N4-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C4-1R | From Node: C4-1R | Length(ft): 140.00
Group: BASE | To Node: N4-1R | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C4-2R | From Node: C4-2R | Length(ft): 288.00
Group: BASE | To Node: N4-2 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	144.000	143.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C5-1L | From Node: C5-1L | Length(ft): 155.00
Group: BASE | To Node: N5-1L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Name:	C5-1R	From Node:	C5-1R	Length(ft): 126.00
Group:	BASE	To Node:	N5-1R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C5-2R	From Node:	C5-2R	Length(ft): 241.00
Group:	BASE	To Node:	N5-2	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	149.500	149.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name:	C6-1L	From Node:	C6-1L	Length(ft): 126.00
Group:	BASE	To Node:	N6-1L	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name:	C6-1R	From Node:	C6-1R	Length(ft): 114.00
Group:	BASE	To Node:	N6-1R	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C6-2R From Node: C6-2R Length(ft): 382.00
Group: BASE To Node: N6-2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	153.500	153.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C7-1L From Node: C7-1L Length(ft): 108.00
Group: BASE To Node: N7-1L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	182.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C7-1R From Node: C7-1R Length(ft): 158.00
Group: BASE To Node: N7-1R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	181.500	181.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C7-2R | From Node: C7-2R | Length(ft): 160.00
Group: BASE | To Node: N7-2 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	170.000	169.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C7-4L | From Node: C7-4L | Length(ft): 151.00
Group: BASE | To Node: N7-4L | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C7-4R | From Node: C7-4R | Length(ft): 108.00
Group: BASE | To Node: N7-4R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	147.500	146.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C8-1L | From Node: C8-1L | Length(ft): 61.00
Group: BASE | To Node: N8-1 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	185.000	184.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C8-1R From Node: C8-1R Length(ft): 214.00
Group: BASE To Node: N8-1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	185.000	184.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: C8-3L From Node: C8-3L Length(ft): 114.00
Group: BASE To Node: N8-3L Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C8-3R From Node: C8-3R Length(ft): 109.00
Group: BASE To Node: N8-3R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Name: C9-1R | From Node: C9-1R | Length(ft): 296.00
Group: BASE | To Node: N9-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	212.500	212.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C9-3L | From Node: C9-3L | Length(ft): 87.00
Group: BASE | To Node: N9-3L | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	6.00	6.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C9-3R | From Node: C9-3R | Length(ft): 62.00
Group: BASE | To Node: N9-3R | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	182.500	181.500
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	0.000	0.000
LtSdSlp(h/v):	6.00	6.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: C9-4L | From Node: C9-4L | Length(ft): 95.00
Group: BASE | To Node: N9-4L | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	6.00	6.00		

Name: C9-4R From Node: C9-4R Length(ft): 175.00
Group: BASE To Node: N9-4R Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	147.500	146.500	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	0.000	0.000		
LtSdSlp(h/v):	6.00	6.00		
RtSdSlp(h/v):	3.00	3.00		

Name: N1-A From Node: N1-A Length(ft): 238.00
Group: BASE To Node: N1-B Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	213.200	212.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	20.00	20.00		
RtSdSlp(h/v):	20.00	20.00		

Name: N2-A From Node: N2-A Length(ft): 235.00
Group: BASE To Node: N2-B Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	213.200	212.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	20.00	20.00
RtSdSlp(h/v):	20.00	20.00

Name: N2-C-S-2 | From Node: N2-C | Length(ft): 145.00
Group: BASE | To Node: S-2 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	115.490	115.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: N7-A | From Node: N7-A | Length(ft): 225.00
Group: BASE | To Node: N7-B | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	213.200	212.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	20.00	20.00
RtSdSlp(h/v):	20.00	20.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: N8-A | From Node: N8-A | Length(ft): 245.00
Group: BASE | To Node: N8-B | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	213.200	212.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	20.00	20.00
RtSdSlp(h/v):	20.00	20.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: N8-C/S8 | From Node: N8-C | Length(ft): 240.00
Group: BASE | To Node: S-7 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	116.400	116.100	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-1-S-2 From Node: S-1 Length(ft): 315.50
Group: BASE To Node: S-2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	115.880	115.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-10-S-E1 From Node: S-10 Length(ft): 187.00
Group: BASE To Node: S-E1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.900	117.570	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-11-S-10 From Node: S-11 Length(ft): 300.00
Group: BASE To Node: S-10 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	118.400	117.900	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Name: S-11-S-NW | From Node: S-11 | Length(ft): 185.00
Group: BASE | To Node: S-NW | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	118.400	118.300
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: S-13-S-14 | From Node: S-13 | Length(ft): 260.00
Group: BASE | To Node: S-14 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	117.000	116.270
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: S-14-S-1 | From Node: S-14 | Length(ft): 140.00
Group: BASE | To Node: S-1 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	116.270	115.880
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: S-3-S-W3 | From Node: S-3 | Length(ft): 150.00
Group: BASE | To Node: S-W3 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	115.000	110.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-7-S-E2 From Node: S-7 Length(ft): 308.00
Group: BASE To Node: S-E2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	116.100	116.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-8-S-7 From Node: S-8 Length(ft): 228.00
Group: BASE To Node: S-7 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	116.620	116.100	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-9-S-8 From Node: S-9 Length(ft): 274.00
Group: BASE To Node: S-8 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.000	116.620	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Name: S-E1-S-9 | From Node: S-E1 | Length(ft): 311.00
Group: BASE | To Node: S-9 | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	117.570	117.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: S-E2-DRA | From Node: S-E2 | Length(ft): 150.00
Group: BASE | To Node: DRA | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	116.000	105.000
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.012000	0.012000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	1.00	1.00
RtSdSlp(h/v):	1.00	1.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

CONCRETE LINED INTO DRA

Name: S-NE-S-NW | From Node: S-NE | Length(ft): 170.00
Group: BASE | To Node: S-NW | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Trapezoidal	Trapezoidal
Invert(ft):	118.500	118.300
TClpInitZ(ft):	9999.000	9999.000
Manning's N:	0.035000	0.035000
Top Clip(ft):	0.000	0.000
Bot Clip(ft):	0.000	0.000
Main XSec:		
AuxElev1(ft):		
Aux XSec1:		
AuxElev2(ft):		
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):	5.000	5.000
LtSdSlp(h/v):	3.00	3.00
RtSdSlp(h/v):	3.00	3.00

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Contraction Coef:	0.000
Expansion Coef:	0.000
Entrance Loss Coef:	0.000
Exit Loss Coef:	0.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Name: S-NW-S-12 | From Node: S-NW | Length(ft): 387.00
Group: BASE | To Node: S-12 | Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	118.300	117.600	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-W1-S-W2 From Node: S-W1 Length(ft): 90.00
Group: BASE To Node: S-W2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.500	117.300	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-W2-S-13 From Node: S-W2 Length(ft): 85.00
Group: BASE To Node: S-13 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	117.300	117.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.035000	0.035000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	5.000	5.000		
LtSdSlp(h/v):	3.00	3.00		
RtSdSlp(h/v):	3.00	3.00		

Name: S-W3-DRA From Node: S-W3 Length(ft): 129.00
Group: BASE To Node: DRA Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Average Conveyance
Invert(ft):	110.000	105.000	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.012000	0.012000	Contraction Coef:	0.000
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.000
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dn
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				

```
 Top Width(ft):
    Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 1.00           1.00
  RtSdSlp(h/v): 1.00           1.00

CONCRETE LINED INTO DRA

================================================================================================
==== Weirs =====================================================================================
================================================================================================

        Name: N11/1-2              From Node: N11-1
       Group: BASE                   To Node: N11-2
        Flow: Both                     Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 207.000
     Control Elevation(ft): 207.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
        Weir Discharge Coef: 3.200
    Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------------
        Name: N2/3-4               From Node: N2-3
       Group: BASE                   To Node: N2-4
        Flow: Both                     Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 123.000
     Control Elevation(ft): 123.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
        Weir Discharge Coef: 3.200
    Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------------
        Name: N3/1-2               From Node: N3-1
       Group: BASE                   To Node: N3-2
        Flow: Both                     Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 126.000
     Control Elevation(ft): 126.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
        Weir Discharge Coef: 3.200
    Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------------
        Name: N4/2-3               From Node: N4-2
       Group: BASE                   To Node: N4-3
        Flow: Both                     Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 143.000
     Control Elevation(ft): 143.000
                                       TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
        Weir Discharge Coef: 3.200
    Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------------
```

```
        Name: N5/2-3              From Node: N5-2
       Group: BASE                  To Node: N5-3
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 149.000
      Control Elevation(ft): 149.000
                                            TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N6/2-3              From Node: N6-2
       Group: BASE                  To Node: N6-3
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 153.000
      Control Elevation(ft): 153.000
                                            TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N7/2-3              From Node: N7-2
       Group: BASE                  To Node: N7-3
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 169.000
      Control Elevation(ft): 169.000
                                            TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N8/1-2              From Node: N8-1
       Group: BASE                  To Node: N8-2
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 184.000
      Control Elevation(ft): 184.000
                                            TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
     Weir Discharge Coef: 3.200
   Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------
        Name: N9/1-2              From Node: N9-1
       Group: BASE                  To Node: N9-2
        Flow: Both                    Count: 1
        Type: Horizontal           Geometry: Circular

                  Span(in): 30.00
                  Rise(in): 30.00
                Invert(ft): 212.000
      Control Elevation(ft): 212.000
                                            TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
```

Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

Name: OVERFLOW From Node: DRA
Group: BASE To Node: LFBNDRY
Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Rectangular

Span(in): 180.00
Rise(in): 6.00
Invert(ft): 110.500
Control Elevation(ft): 110.500
TABLE
Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Discharge Coef: 2.500
Orifice Discharge Coef: 0.600

OVERFLOW WEIR

==========
==== Rating Curves ==========
==========

Name: DRA From Node: DRA Count: 1
Group: BASE To Node: LFBNDRY Flow: Both

	TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1:	DRA	0.000	0.000
#2:		0.000	0.000
#3:		0.000	0.000
#4:		0.000	0.000

==========
==== Hydrology Simulations ==========
==========

Name: 100 YR STORM
Filename: F:\PROJECT\Citrus\09208040.03\Calculations-Stormwater\100 YR STORM.R32

Override Defaults: No

Time(hrs)	Print Inc(min)
120.000	15.00

==========
==== Routing Simulations ==========
==========

Name: 100 YR STORM Hydrology Sim: 100 YR STORM
Filename: F:\PROJECT\Citrus\09208040.03\Calculations-Stormwater\100 YR STORM.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 120.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
120.000	15.000

Group	Run
BASE	Yes

==========
==== Boundary Conditions ==========
==========

Citrus County Phase 3 Expansion
Link Connectivity Report

Name	Group	From Node	To Node	Type	U/S Geometry	D/S Geometry	Flow Dir	Count
N1-1L	BASE	N1-1L	N1-1	Pipe	Circular	Circular	Both	1
N1-1R	BASE	N1-1R	N1-1	Pipe	Circular	Circular	Both	1
N1-2L	BASE	N1-2L	N1-2	Pipe	Circular	Circular	Both	1
N1-2R	BASE	N1-2R	N1-2	Pipe	Circular	Circular	Both	1
N1-B/1	BASE	N1-B	N1-1	Pipe	Circular	Circular	Both	1
N1/1-2	BASE	N1-1	N1-2	Pipe	Circular	Circular	Both	1
N1/2-S-1	BASE	N1-2	S-1	Pipe	Circular	Circular	Both	1
N10-1L	BASE	N10-1L	N10-1	Pipe	Circular	Circular	Both	1
N10-1R	BASE	N10-1R	N10-1	Pipe	Circular	Circular	Both	1
N10-2L	BASE	N10-2L	N10-2	Pipe	Circular	Circular	Both	1
N10-2R	BASE	N10-2R	N10-2	Pipe	Circular	Circular	Both	1
N10/1-2	BASE	N10-1	N10-2	Pipe	Circular	Circular	Both	1
N10/2-S10	BASE	N10-2	S-10	Pipe	Circular	Circular	Both	1
N11-3L	BASE	N11-3L	N11-3	Pipe	Circular	Circular	Both	1
N11-3R	BASE	N11-3R	N11-3	Pipe	Circular	Circular	Both	1
N11-4L	BASE	N11-4L	N11-4	Pipe	Circular	Circular	Both	1
N11-4R	BASE	N11-4R	N11-4	Pipe	Circular	Circular	Both	1
N11/2-3	BASE	N11-2	N11-3	Pipe	Circular	Circular	Both	1
N11/3-4	BASE	N11-3	N11-4	Pipe	Circular	Circular	Both	1
N11/4-S11	BASE	N11-4	S-11	Pipe	Circular	Circular	Both	1
N12-1L	BASE	N12-1L	N12-1	Pipe	Circular	Circular	Both	1
N12-1R	BASE	N12-1R	N12-1	Pipe	Circular	Circular	Both	1
N12-2L	BASE	N12-2L	N12-2	Pipe	Circular	Circular	Both	1
N12-2R	BASE	N12-2R	N12-2	Pipe	Circular	Circular	Both	1
N12/1-2	BASE	N12-1	N12-2	Pipe	Circular	Circular	Both	1
N12/2-S12	BASE	N12-2	S-12	Pipe	Circular	Circular	Both	1
N13-1L	BASE	N13-1L	N13-2	Pipe	Circular	Circular	Both	1
N13-1R	BASE	N13-1R	N13-1	Pipe	Circular	Circular	Both	1
N13-2L	BASE	N13-2L	N13-2	Pipe	Circular	Circular	Both	1
N13-2R	BASE	N13-2R	N13-2	Pipe	Circular	Circular	Both	1
N13/1-2	BASE	N13-1	N13-2	Pipe	Circular	Circular	Both	1
N13/2-S-13	BASE	N13-2	S-13	Pipe	Circular	Circular	Both	1
N14-1L	BASE	N14-1L	N14-1	Pipe	Circular	Circular	Both	1
N14-1R	BASE	N14-1R	N14-1	Pipe	Circular	Circular	Both	1
N14-2L	BASE	N14-2L	N14-2	Pipe	Circular	Circular	Both	1
N14-2R	BASE	N14-2R	N14-2	Pipe	Circular	Circular	Both	1
N14/1-2	BASE	N14-1	N14-2	Pipe	Circular	Circular	Both	1
N14/2-S-14	BASE	N14-2	S-14	Pipe	Circular	Circular	Both	1
N2-1L	BASE	N2-1L	N2-1	Pipe	Circular	Circular	Both	1
N2-1R	BASE	N2-1R	N2-1	Pipe	Circular	Circular	Both	1
N2-2L	BASE	N2-2L	N2-2	Pipe	Circular	Circular	Both	1
N2-2R	BASE	N2-2R	N2-2	Pipe	Circular	Circular	Both	1
N2-B/1	BASE	N2-B	N2-C	Pipe	Circular	Circular	Both	1
N2/1-2	BASE	N2-1	N2-2	Pipe	Circular	Circular	Both	1
N2/2-4	BASE	N2-2	N2-4	Pipe	Circular	Circular	Both	1
N2/4-S-2	BASE	N2-4	S-2	Pipe	Circular	Circular	Both	1
N3/2-S-3	BASE	N3-2	S-3	Pipe	Circular	Circular	Both	1
N4-1L	BASE	N4-1L	N4-1	Pipe	Circular	Circular	Both	1
N4-1R	BASE	N4-1R	N4-1	Pipe	Circular	Circular	Both	1
N4/1-3	BASE	N4-1	N4-3	Pipe	Circular	Circular	Both	1
N4/3-DRA	BASE	N4-3	DRA	Pipe	Circular	Circular	Both	1
N5-1L	BASE	N5-1L	N5-1	Pipe	Circular	Circular	Both	1
N5-1R	BASE	N5-1R	N5-1	Pipe	Circular	Circular	Both	1
N5/1-3	BASE	N5-1	N5-3	Pipe	Circular	Circular	Both	1
N5/3-DRA	BASE	N5-3	DRA	Pipe	Circular	Circular	Both	1
N6-1L	BASE	N6-1L	N6-1	Pipe	Circular	Circular	Both	1
N6-1R	BASE	N6-1R	N6-1	Pipe	Circular	Circular	Both	1
N6/1-3	BASE	N6-1	N6-3	Pipe	Circular	Circular	Both	1
N6/3-DRA	BASE	N6-3	DRA	Pipe	Circular	Circular	Both	1
N7-1L	BASE	N7-1L	N7-1	Pipe	Circular	Circular	Both	1

Citrus County Phase 3 Expansion
Link Connectivity Report

Name	Group	From Node	To Node	Type	U/S Geometry	D/S Geometry	Flow Dir	Count
N7-1R	BASE	N7-1R	N7-1	Pipe	Circular	Circular	Both	1
N7-4L	BASE	N7-4L	N7-4	Pipe	Circular	Circular	Both	1
N7-4R	BASE	N7-4R	N7-4	Pipe	Circular	Circular	Both	1
N7-B/1	BASE	N7-B	N7-1	Pipe	Circular	Circular	Both	1
N7/1-3	BASE	N7-1	N7-3	Pipe	Circular	Circular	Both	1
N7/3-4	BASE	N7-3	N7-4	Pipe	Circular	Circular	Both	1
N7/4-S-7	BASE	N7-4	S-7	Pipe	Circular	Circular	Both	1
N8-3L	BASE	N8-3L	N8-3	Pipe	Circular	Circular	Both	1
N8-3R	BASE	N8-3R	N8-3	Pipe	Circular	Circular	Both	1
N8-B/C	BASE	N8-B	N8-C	Pipe	Circular	Circular	Both	1
N8/2-3	BASE	N8-2	N8-3	Pipe	Circular	Circular	Both	1
N8/3-S-8	BASE	N8-3	S-8	Pipe	Circular	Circular	Both	1
N9-3L	BASE	N9-3L	N9-3	Pipe	Circular	Circular	Both	1
N9-3R	BASE	N9-3R	N9-3	Pipe	Circular	Circular	Both	1
N9-4L	BASE	N9-4L	N9-4	Pipe	Circular	Circular	Both	1
N9-4R	BASE	N9-4R	N9-4	Pipe	Circular	Circular	Both	1
N9/2-3	BASE	N9-2	N9-3	Pipe	Circular	Circular	Both	1
N9/3-4	BASE	N9-3	N9-4	Pipe	Circular	Circular	Both	1
N9/4-S-9	BASE	N9-4	S-9	Pipe	Circular	Circular	Both	1
S-R3-DRA	BASE	S-R3	DRA	Pipe	Circular	Circular	Both	1
S/2-3	BASE	S-2	S-3	Pipe	Circular	Circular	Both	2
S/R1-R2	BASE	S-R1	S-R2	Pipe	Circular	Circular	Both	1
S/R2-R3	BASE	S-R2	S-R3	Pipe	Circular	Circular	Both	1
S12-S-W1	BASE	S-12	S-W1	Pipe	Circular	Circular	Both	2
C1-1L	BASE	C1-1L	N1-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C1-1R	BASE	C1-1R	N1-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C1-2L	BASE	C1-2L	N1-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C1-2R	BASE	C1-2R	N1-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C10-1L	BASE	C10-1L	N10-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C10-1R	BASE	C10-1R	N10-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C10-2L	BASE	C10-2L	N10-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C10-2R	BASE	C10-2R	N10-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C11-1L	BASE	C11-1L	N11-1	Channel	Trapezoidal	Trapezoidal	Both	1
C11-1R	BASE	C11-1R	N11-1	Channel	Trapezoidal	Trapezoidal	Both	1
C11-3L	BASE	C11-3L	N11-3L	Channel	Trapezoidal	Trapezoidal	Both	1
C11-3R	BASE	C11-3R	N11-3R	Channel	Trapezoidal	Trapezoidal	Both	1
C11-4L	BASE	C11-4L	N11-4L	Channel	Trapezoidal	Trapezoidal	Both	1
C11-4R	BASE	C11-4R	N11-4R	Channel	Trapezoidal	Trapezoidal	Both	1
C12-1L	BASE	C12-1L	N12-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C12-1R	BASE	C12-1R	N12-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C12-2L	BASE	C12-2L	N12-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C12-2R	BASE	C12-2R	N12-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C13-1L	BASE	C13-1L	N13-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C13-1R	BASE	C13-1R	N13-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C13-2L	BASE	C13-2L	N13-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C13-2R	BASE	C13-2R	N13-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C14-1L	BASE	C14-1L	N14-1	Channel	Trapezoidal	Trapezoidal	Both	1
C14-1R	BASE	C14-1R	N14-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C14-2L	BASE	C14-2L	N14-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C14-2R	BASE	C14-2R	N14-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C2-1L	BASE	C2-1L	N2-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C2-1R	BASE	C2-1R	N2-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C2-2L	BASE	C2-2L	N2-2L	Channel	Trapezoidal	Trapezoidal	Both	1
C2-2R	BASE	C2-2R	N2-2R	Channel	Trapezoidal	Trapezoidal	Both	1
C2-3R	BASE	C2-3R	N2-3	Channel	Trapezoidal	Trapezoidal	Both	1
C3-1R	BASE	C3-1R	N3-1	Channel	Trapezoidal	Trapezoidal	Both	1
C4-1L	BASE	C4-1L	N4-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C4-1R	BASE	C4-1R	N4-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C4-2R	BASE	C4-2R	N4-2	Channel	Trapezoidal	Trapezoidal	Both	1
C5-1L	BASE	C5-1L	N5-1L	Channel	Trapezoidal	Trapezoidal	Both	1

Citrus County Phase 3 Expansion
Link Connectivity Report

Name	Group	From Node	To Node	Type	U/S Geometry	D/S Geometry	Flow Dir	Count
C5-1R	BASE	C5-1R	N5-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C5-2R	BASE	C5-2R	N5-2	Channel	Trapezoidal	Trapezoidal	Both	1
C6-1L	BASE	C6-1L	N6-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C6-1R	BASE	C6-1R	N6-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C6-2R	BASE	C6-2R	N6-2	Channel	Trapezoidal	Trapezoidal	Both	1
C7-1L	BASE	C7-1L	N7-1L	Channel	Trapezoidal	Trapezoidal	Both	1
C7-1R	BASE	C7-1R	N7-1R	Channel	Trapezoidal	Trapezoidal	Both	1
C7-2R	BASE	C7-2R	N7-2	Channel	Trapezoidal	Trapezoidal	Both	1
C7-4L	BASE	C7-4L	N7-4L	Channel	Trapezoidal	Trapezoidal	Both	1
C7-4R	BASE	C7-4R	N7-4R	Channel	Trapezoidal	Trapezoidal	Both	1
C8-1L	BASE	C8-1L	N8-1	Channel	Trapezoidal	Trapezoidal	Both	1
C8-1R	BASE	C8-1R	N8-1	Channel	Trapezoidal	Trapezoidal	Both	1
C8-3L	BASE	C8-3L	N8-3L	Channel	Trapezoidal	Trapezoidal	Both	1
C8-3R	BASE	C8-3R	N8-3R	Channel	Trapezoidal	Trapezoidal	Both	1
C9-1R	BASE	C9-1R	N9-1	Channel	Trapezoidal	Trapezoidal	Both	1
C9-3L	BASE	C9-3L	N9-3L	Channel	Trapezoidal	Trapezoidal	Both	1
C9-3R	BASE	C9-3R	N9-3R	Channel	Trapezoidal	Trapezoidal	Both	1
C9-4L	BASE	C9-4L	N9-4L	Channel	Trapezoidal	Trapezoidal	Both	1
C9-4R	BASE	C9-4R	N9-4R	Channel	Trapezoidal	Trapezoidal	Both	1
N1-A	BASE	N1-A	N1-B	Channel	Trapezoidal	Trapezoidal	Both	1
N2-A	BASE	N2-A	N2-B	Channel	Trapezoidal	Trapezoidal	Both	1
N2-C-S-2	BASE	N2-C	S-2	Channel	Trapezoidal	Trapezoidal	Both	1
N7-A	BASE	N7-A	N7-B	Channel	Trapezoidal	Trapezoidal	Both	1
N8-A	BASE	N8-A	N8-B	Channel	Trapezoidal	Trapezoidal	Both	1
N8-C/S8	BASE	N8-C	S-7	Channel	Trapezoidal	Trapezoidal	Both	1
S-1-S-2	BASE	S-1	S-2	Channel	Trapezoidal	Trapezoidal	Both	1
S-10-S-E1	BASE	S-10	S-E1	Channel	Trapezoidal	Trapezoidal	Both	1
S-11-S-10	BASE	S-11	S-10	Channel	Trapezoidal	Trapezoidal	Both	1
S-11-S-NW	BASE	S-11	S-NW	Channel	Trapezoidal	Trapezoidal	Both	1
S-13-S-14	BASE	S-13	S-14	Channel	Trapezoidal	Trapezoidal	Both	1
S-14-S-1	BASE	S-14	S-1	Channel	Trapezoidal	Trapezoidal	Both	1
S-3-S-W3	BASE	S-3	S-W3	Channel	Trapezoidal	Trapezoidal	Both	1
S-7-S-E2	BASE	S-7	S-E2	Channel	Trapezoidal	Trapezoidal	Both	1
S-8-S-7	BASE	S-8	S-7	Channel	Trapezoidal	Trapezoidal	Both	1
S-9-S-8	BASE	S-9	S-8	Channel	Trapezoidal	Trapezoidal	Both	1
S-E1-S-9	BASE	S-E1	S-9	Channel	Trapezoidal	Trapezoidal	Both	1
S-E2-DRA	BASE	S-E2	DRA	Channel	Trapezoidal	Trapezoidal	Both	1
S-NE-S-NW	BASE	S-NE	S-NW	Channel	Trapezoidal	Trapezoidal	Both	1
S-NW-S-12	BASE	S-NW	S-12	Channel	Trapezoidal	Trapezoidal	Both	1
S-W1-S-W2	BASE	S-W1	S-W2	Channel	Trapezoidal	Trapezoidal	Both	1
S-W2-S-13	BASE	S-W2	S-13	Channel	Trapezoidal	Trapezoidal	Both	1
S-W3-DRA	BASE	S-W3	DRA	Channel	Trapezoidal	Trapezoidal	Both	1
N11/1-2	BASE	N11-1	N11-2	Horizontal WGO	Circular		Both	1
N2/3-4	BASE	N2-3	N2-4	Horizontal WGO	Circular		Both	1
N3/1-2	BASE	N3-1	N3-2	Horizontal WGO	Circular		Both	1
N4/2-3	BASE	N4-2	N4-3	Horizontal WGO	Circular		Both	1
N5/2-3	BASE	N5-2	N5-3	Horizontal WGO	Circular		Both	1
N6/2-3	BASE	N6-2	N6-3	Horizontal WGO	Circular		Both	1
N7/2-3	BASE	N7-2	N7-3	Horizontal WGO	Circular		Both	1
N8/1-2	BASE	N8-1	N8-2	Horizontal WGO	Circular		Both	1
N9/1-2	BASE	N9-1	N9-2	Horizontal WGO	Circular		Both	1
OVERFLOW	BASE	DRA	LFBNDRY	Vertical WGO Mavis	Rectangular		Both	1
DRA	BASE	DRA	LFBNDRY	Rating Curve			Both	1

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Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
C1-1L	BASE	100 YR STORM	12.01	1.999	-0.016	12.01	182.998	12.04	182.492
C1-1R	BASE	100 YR STORM	12.00	3.626	-0.022	12.00	183.132	12.00	182.498
C1-2L	BASE	100 YR STORM	12.01	2.230	-0.017	12.01	148.020	12.00	147.497
C1-2R	BASE	100 YR STORM	12.01	1.999	-0.027	12.01	147.998	12.00	147.442
C10-1L	BASE	100 YR STORM	12.01	0.843	-0.012	12.01	182.853	12.03	182.128
C10-1R	BASE	100 YR STORM	12.01	0.838	-0.280	12.01	182.852	12.05	182.122
C10-2L	BASE	100 YR STORM	12.02	5.350	-1.824	12.02	148.197	11.76	147.710
C10-2R	BASE	100 YR STORM	11.99	4.810	-1.771	12.00	148.090	12.04	147.497
C11-1L	BASE	100 YR STORM	12.01	2.249	0.005	12.01	208.669	12.01	207.435
C11-1R	BASE	100 YR STORM	12.01	2.249	0.005	12.01	208.669	12.01	207.435
C11-3L	BASE	100 YR STORM	11.96	1.724	-0.634	12.01	182.908	12.06	182.242
C11-3R	BASE	100 YR STORM	12.01	2.143	-0.456	12.01	183.012	12.03	182.497
C11-4L	BASE	100 YR STORM	11.98	4.460	-1.645	12.00	148.072	11.98	147.497
C11-4R	BASE	100 YR STORM	12.01	4.663	-1.722	12.00	148.082	12.04	147.498
C12-1L	BASE	100 YR STORM	12.01	1.570	-0.305	12.01	182.952	12.04	182.362
C12-1R	BASE	100 YR STORM	12.00	1.587	0.247	12.00	182.904	11.73	182.108
C12-2L	BASE	100 YR STORM	12.00	4.526	-1.664	12.01	148.076	12.00	147.497
C12-2R	BASE	100 YR STORM	12.01	2.228	-0.018	12.01	148.020	12.00	147.497
C13-1L	BASE	100 YR STORM	11.88	1.056	0.247	11.88	182.847	11.88	182.108
C13-1R	BASE	100 YR STORM	12.01	1.034	-0.012	12.01	182.883	12.04	182.194
C13-2L	BASE	100 YR STORM	12.01	1.837	0.362	12.01	147.981	12.05	147.438
C13-2R	BASE	100 YR STORM	11.82	2.267	-0.835	12.01	148.020	12.04	147.399
C14-1L	BASE	100 YR STORM	12.00	3.085	0.008	12.00	183.161	12.00	181.993
C14-1R	BASE	100 YR STORM	12.01	3.622	-0.022	12.01	183.132	11.87	182.760
C14-2L	BASE	100 YR STORM	12.01	2.153	-0.017	12.01	148.013	12.01	147.497
C14-2R	BASE	100 YR STORM	12.01	2.306	-0.018	12.01	148.027	12.01	147.497
C2-1L	BASE	100 YR STORM	12.01	1.767	-0.015	12.01	182.974	12.04	182.425
C2-1R	BASE	100 YR STORM	12.01	0.691	-0.009	12.01	182.826	12.03	182.072
C2-2L	BASE	100 YR STORM	12.01	1.998	-0.017	12.01	147.998	12.04	147.491
C2-2R	BASE	100 YR STORM	11.99	5.933	-2.235	11.97	148.144	11.97	147.869
C2-3R	BASE	100 YR STORM	12.01	2.526	0.006	12.01	124.677	12.01	123.455
C3-1R	BASE	100 YR STORM	12.01	3.624	0.008	12.01	127.872	12.01	126.526
C4-1L	BASE	100 YR STORM	12.01	1.077	-0.011	12.01	182.889	12.03	182.212
C4-1R	BASE	100 YR STORM	12.01	3.082	0.503	12.02	183.127	12.07	182.923
C4-2R	BASE	100 YR STORM	12.01	7.566	0.017	12.01	145.166	12.01	143.706
C5-1L	BASE	100 YR STORM	11.96	6.283	-2.320	11.93	183.172	11.92	182.947
C5-1R	BASE	100 YR STORM	12.01	2.301	-0.364	12.01	183.027	12.01	182.497
C5-2R	BASE	100 YR STORM	12.01	5.674	0.013	12.01	150.614	12.01	149.630
C6-1L	BASE	100 YR STORM	12.01	2.362	0.348	12.01	183.036	12.06	182.691
C6-1R	BASE	100 YR STORM	12.01	2.365	-0.019	12.01	183.037	12.06	182.698
C6-2R	BASE	100 YR STORM	12.02	6.517	0.012	12.02	154.766	12.02	153.665
C7-1L	BASE	100 YR STORM	12.01	1.688	-0.015	12.01	182.965	12.04	182.399
C7-1R	BASE	100 YR STORM	12.01	3.692	0.044	12.01	182.614	12.00	182.497
C7-2R	BASE	100 YR STORM	12.01	1.674	0.004	12.01	170.601	12.01	169.386
C7-4L	BASE	100 YR STORM	12.01	1.911	0.461	12.01	147.989	12.05	147.456
C7-4R	BASE	100 YR STORM	12.01	1.688	-0.015	12.01	147.965	12.04	147.399
C8-1L	BASE	100 YR STORM	12.00	4.184	0.011	12.00	185.662	12.00	184.557
C8-1R	BASE	100 YR STORM	12.01	4.105	0.010	12.01	185.882	12.01	184.553
C8-3L	BASE	100 YR STORM	12.01	2.072	-0.017	12.01	148.005	12.02	147.497
C8-3R	BASE	100 YR STORM	12.01	3.001	-0.021	12.01	148.086	12.01	147.497
C9-1R	BASE	100 YR STORM	12.02	6.308	0.013	12.02	213.698	12.02	212.657
C9-3L	BASE	100 YR STORM	12.03	1.414	-0.521	12.03	182.861	12.03	182.011
C9-3R	BASE	100 YR STORM	12.01	1.000	-0.010	12.01	182.877	12.03	182.186
C9-4L	BASE	100 YR STORM	12.01	1.999	-0.016	12.01	147.998	12.04	147.492
C9-4R	BASE	100 YR STORM	11.87	4.177	-1.536	11.87	148.057	11.87	147.458
DRA	BASE	100 YR STORM	120.00	0.000	0.000	120.00	104.594	0.00	88.000
N1-1L	BASE	100 YR STORM	12.04	1.914	-0.016	12.04	182.492	12.04	179.352
N1-1R	BASE	100 YR STORM	11.78	9.744	-7.827	12.00	182.498	12.04	180.842

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Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
N1-2L	BASE	100 YR STORM	11.97	8.473	-6.554	12.00	147.497	12.03	145.842
N1-2R	BASE	100 YR STORM	11.97	3.909	-2.162	12.00	147.442	12.03	145.846
N1-A	BASE	100 YR STORM	12.01	6.118	-0.229	12.01	213.528	12.23	213.368
N1-B/1	BASE	100 YR STORM	12.23	3.611	0.070	12.23	213.368	12.23	179.383
N1/1-2	BASE	100 YR STORM	12.19	60.275	-53.266	12.04	180.848	12.19	145.600
N1/2-S-1	BASE	100 YR STORM	12.03	12.778	0.449	12.03	145.849	12.03	116.313
N10-1L	BASE	100 YR STORM	12.03	0.815	-0.016	12.03	182.128	12.03	179.265
N10-1R	BASE	100 YR STORM	12.05	0.798	-0.016	12.05	182.122	12.05	179.264
N10-2L	BASE	100 YR STORM	11.76	10.174	7.954	11.76	147.710	12.03	146.265
N10-2R	BASE	100 YR STORM	12.22	9.024	-7.102	12.04	147.497	12.03	146.261
N10/1-2	BASE	100 YR STORM	12.05	1.604	-0.149	12.06	179.569	13.31	144.403
N10/2-S10	BASE	100 YR STORM	12.02	10.249	0.138	12.02	146.265	12.02	118.337
N11-3L	BASE	100 YR STORM	12.06	1.131	-0.016	12.06	182.242	12.06	179.294
N11-3R	BASE	100 YR STORM	12.01	8.704	-6.783	12.03	182.497	12.03	180.643
N11-4L	BASE	100 YR STORM	11.77	9.314	-7.391	11.98	147.497	12.02	146.206
N11-4R	BASE	100 YR STORM	11.77	9.343	-7.421	12.04	147.498	12.02	146.206
N11/1-2	BASE	100 YR STORM	12.02	4.471	0.010	12.02	207.316	12.03	203.959
N11/2-3	BASE	100 YR STORM	12.03	4.459	0.242	12.03	203.959	12.03	179.368
N11/3-4	BASE	100 YR STORM	12.04	7.662	0.177	12.04	180.654	12.04	144.465
N11/4-S11	BASE	100 YR STORM	12.02	15.578	0.227	12.02	146.210	12.02	118.901
N12-1L	BASE	100 YR STORM	12.04	1.494	-0.016	12.04	182.362	12.04	179.323
N12-1R	BASE	100 YR STORM	12.01	1.559	-0.016	12.02	182.382	12.01	179.328
N12-2L	BASE	100 YR STORM	11.84	9.465	-7.543	12.00	147.497	12.02	145.824
N12-2R	BASE	100 YR STORM	11.97	8.474	-6.554	12.00	147.497	12.02	145.823
N12/1-2	BASE	100 YR STORM	12.04	3.021	0.116	12.04	179.878	12.04	144.343
N12/2-S12	BASE	100 YR STORM	12.02	8.428	0.140	12.02	145.830	12.02	117.994
N13-1L	BASE	100 YR STORM	12.02	1.024	-0.016	12.02	182.205	12.02	179.285
N13-1R	BASE	100 YR STORM	12.04	0.993	-0.016	12.04	182.194	12.04	179.282
N13-2L	BASE	100 YR STORM	12.05	1.738	-0.016	12.05	147.438	12.05	144.340
N13-2R	BASE	100 YR STORM	12.04	2.131	0.014	12.04	147.399	12.04	144.366
N13/1-2	BASE	100 YR STORM	12.05	0.988	-0.188	12.05	179.395	12.71	144.445
N13/2-S-13	BASE	100 YR STORM	12.05	5.834	0.129	12.05	145.363	12.05	117.331
N14-1L	BASE	100 YR STORM	0.00	0.000	0.000	0.00	181.500	12.02	180.461
N14-1R	BASE	100 YR STORM	11.87	10.146	-7.839	11.87	182.760	12.02	180.458
N14-2L	BASE	100 YR STORM	11.99	8.747	-6.828	12.01	147.497	12.02	145.652
N14-2R	BASE	100 YR STORM	11.95	8.927	-7.008	12.01	147.497	12.02	145.653
N14/1-2	BASE	100 YR STORM	12.02	6.602	0.183	12.02	180.461	12.02	144.436
N14/2-S-14	BASE	100 YR STORM	12.02	11.006	0.305	12.02	145.658	12.02	116.676
N2-1L	BASE	100 YR STORM	12.03	1.694	-0.016	12.04	182.425	12.03	179.337
N2-1R	BASE	100 YR STORM	12.03	0.671	-0.016	12.03	182.072	12.03	179.250
N2-2L	BASE	100 YR STORM	12.04	1.911	-0.016	12.04	147.491	12.04	144.352
N2-2R	BASE	100 YR STORM	11.97	10.246	-7.838	11.97	147.869	12.01	145.560
N2-A	BASE	100 YR STORM	12.01	4.302	-0.227	12.01	213.474	12.20	213.049
N2-B/1	BASE	100 YR STORM	12.20	2.858	0.074	12.20	213.049	12.20	115.739
N2/1-2	BASE	100 YR STORM	12.04	2.356	0.181	12.05	179.708	12.04	144.303
N2/2-4	BASE	100 YR STORM	12.01	10.416	0.378	12.01	145.564	12.01	119.385
N2/3-4	BASE	100 YR STORM	12.02	2.518	0.006	12.02	123.216	12.01	120.788
N2/4-S-2	BASE	100 YR STORM	12.01	12.828	1.385	12.01	120.788	12.25	119.270
N3/1-2	BASE	100 YR STORM	12.03	3.605	0.007	12.03	126.274	12.03	123.957
N3/2-S-3	BASE	100 YR STORM	12.03	3.597	0.036	12.03	123.957	12.03	115.307
N4-1L	BASE	100 YR STORM	12.02	1.046	-0.016	12.03	182.212	12.02	179.287
N4-1R	BASE	100 YR STORM	12.07	2.791	-0.472	12.07	182.923	12.07	179.406
N4/1-3	BASE	100 YR STORM	12.06	3.806	0.208	12.06	179.963	12.06	139.252
N4/2-3	BASE	100 YR STORM	12.03	7.514	0.015	12.03	143.447	12.04	140.596
N4/3-DRA	BASE	100 YR STORM	12.04	11.235	-0.276	12.04	140.596	12.04	114.415
N5-1L	BASE	100 YR STORM	11.92	10.266	-7.858	11.92	182.947	11.97	180.735
N5-1R	BASE	100 YR STORM	12.08	9.328	-7.409	12.01	182.497	11.97	180.713
N5/1-3	BASE	100 YR STORM	11.97	8.124	0.189	11.97	180.735	11.97	145.372

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Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
N5/2-3	BASE	100 YR STORM	12.03	5.642	0.012	12.03	149.369	11.97	146.789
N5/3-DRA	BASE	100 YR STORM	11.97	13.132	0.327	11.97	146.789	11.97	114.439
N6-1L	BASE	100 YR STORM	12.06	2.167	-0.472	12.06	182.691	12.06	179.369
N6-1R	BASE	100 YR STORM	12.06	2.188	0.471	12.06	182.698	12.06	179.370
N6/1-3	BASE	100 YR STORM	12.07	4.347	0.200	12.07	180.062	12.07	149.271
N6/2-3	BASE	100 YR STORM	12.04	6.463	0.011	12.04	153.404	12.06	150.526
N6/3-DRA	BASE	100 YR STORM	12.06	10.750	0.317	12.06	150.526	12.06	114.400
N7-1L	BASE	100 YR STORM	12.04	1.613	-0.016	12.04	182.399	12.04	179.332
N7-1R	BASE	100 YR STORM	11.84	9.696	-7.773	12.00	182.497	12.03	180.698
N7-4L	BASE	100 YR STORM	12.05	1.796	-0.016	12.05	147.456	12.05	144.344
N7-4R	BASE	100 YR STORM	12.04	1.613	-0.016	12.04	147.399	12.04	144.332
N7-A	BASE	100 YR STORM	12.01	4.156	0.622	12.01	213.470	12.19	213.026
N7-B/1	BASE	100 YR STORM	12.19	2.839	0.091	12.19	213.026	12.19	179.342
N7/1-3	BASE	100 YR STORM	12.04	7.739	0.117	12.04	180.705	12.04	165.386
N7/2-3	BASE	100 YR STORM	12.02	1.668	0.004	12.02	169.164	12.04	166.946
N7/3-4	BASE	100 YR STORM	12.04	9.348	-0.128	12.04	166.946	12.04	144.520
N7/4-S-7	BASE	100 YR STORM	12.05	12.737	0.344	12.05	145.836	20.27	116.734
N8-3L	BASE	100 YR STORM	12.01	8.057	-6.136	12.02	147.497	12.03	145.885
N8-3R	BASE	100 YR STORM	11.85	9.144	-7.226	12.01	147.497	12.03	145.890
N8-A	BASE	100 YR STORM	12.01	6.815	-0.208	12.02	213.548	12.24	213.466
N8-B/C	BASE	100 YR STORM	12.24	3.804	-0.065	12.24	213.466	12.24	116.694
N8/1-2	BASE	100 YR STORM	12.01	8.218	0.019	12.01	184.475	12.02	181.656
N8/2-3	BASE	100 YR STORM	12.02	8.191	0.176	12.02	181.656	12.02	144.476
N8/3-S-8	BASE	100 YR STORM	12.03	13.189	0.325	12.03	145.895	12.03	117.060
N9-3L	BASE	100 YR STORM	12.03	0.951	0.014	12.03	182.011	12.03	179.278
N9-3R	BASE	100 YR STORM	12.03	0.971	-0.016	12.03	182.186	12.03	179.280
N9-4L	BASE	100 YR STORM	12.04	1.915	-0.016	12.04	147.492	12.04	144.352
N9-4R	BASE	100 YR STORM	11.87	6.115	-3.818	11.87	147.458	12.04	145.925
N9/1-2	BASE	100 YR STORM	12.03	6.266	0.012	12.03	212.396	12.04	209.115
N9/2-3	BASE	100 YR STORM	12.04	6.255	-0.633	12.04	209.115	12.04	179.379
N9/3-4	BASE	100 YR STORM	12.05	8.147	0.193	12.05	180.739	12.05	144.472
N9/4-S-9	BASE	100 YR STORM	12.04	13.363	0.300	12.04	145.925	12.04	117.448
OVERFLOW	BASE	100 YR STORM	0.00	0.000	0.000	120.00	104.594	0.00	88.000
S-1-S-2	BASE	100 YR STORM	12.10	44.830	1.847	12.24	119.290	12.25	119.270
S-10-S-E1	BASE	100 YR STORM	12.09	22.434	0.031	12.11	119.525	12.12	119.385
S-11-S-10	BASE	100 YR STORM	12.19	10.806	0.192	12.12	119.624	12.11	119.525
S-11-S-NW	BASE	100 YR STORM	12.01	7.263	0.014	12.12	119.624	12.14	119.602
S-13-S-14	BASE	100 YR STORM	12.06	26.648	0.049	12.24	119.325	12.24	119.301
S-14-S-1	BASE	100 YR STORM	12.10	32.448	-0.064	12.24	119.301	12.24	119.290
S-3-S-W3	BASE	100 YR STORM	12.21	54.096	0.074	12.21	116.051	12.21	111.051
S-7-S-E2	BASE	100 YR STORM	12.13	74.511	0.081	12.13	118.828	12.13	117.430
S-8-S-7	BASE	100 YR STORM	12.10	55.546	-0.506	12.12	119.014	12.13	118.828
S-9-S-8	BASE	100 YR STORM	12.10	42.615	0.055	12.12	119.233	12.12	119.014
S-E1-S-9	BASE	100 YR STORM	12.12	25.943	-0.336	12.12	119.385	12.12	119.233
S-E2-DRA	BASE	100 YR STORM	12.14	74.501	0.077	12.14	116.617	12.14	105.617
S-NE-S-NW	BASE	100 YR STORM	12.00	2.229	0.007	12.14	119.606	12.14	119.602
S-NW-S-12	BASE	100 YR STORM	12.08	7.083	-0.762	12.14	119.602	12.15	119.578
S-R3-DRA	BASE	100 YR STORM	12.01	4.392	0.054	12.02	107.151	120.00	104.594
S-W1-S-W2	BASE	100 YR STORM	12.05	20.616	0.032	12.23	119.357	12.24	119.338
S-W2-S-13	BASE	100 YR STORM	12.04	24.344	0.041	12.24	119.338	12.24	119.325
S-W3-DRA	BASE	100 YR STORM	12.21	54.094	0.073	12.21	110.616	12.21	105.616
S/2-3	BASE	100 YR STORM	12.25	51.384	0.069	12.25	119.270	12.23	116.779
S/R1-R2	BASE	100 YR STORM	12.00	1.788	-0.316	12.01	107.703	12.01	107.665
S/R2-R3	BASE	100 YR STORM	12.01	3.124	0.007	12.01	107.665	12.02	107.151
S12-S-W1	BASE	100 YR STORM	12.05	20.865	0.038	12.15	119.578	12.23	119.357

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Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
C1-1L	BASE	100 YR STORM	12.01	182.998	183.500	0.0012	380	12.00	2.026	12.01	1.999
C1-1R	BASE	100 YR STORM	12.00	183.132	183.500	0.0023	399	12.00	3.662	12.00	3.626
C1-2L	BASE	100 YR STORM	12.01	148.020	148.500	0.0014	386	12.00	2.259	12.01	2.230
C1-2R	BASE	100 YR STORM	12.01	147.998	148.500	0.0012	376	12.00	2.026	12.01	1.999
C10-1L	BASE	100 YR STORM	12.01	182.853	183.500	0.0008	270	12.00	0.857	12.01	0.843
C10-1R	BASE	100 YR STORM	12.01	182.852	183.500	0.0015	368	12.00	0.857	12.01	0.838
C10-2L	BASE	100 YR STORM	12.02	148.197	148.500	0.0034	732	12.00	5.532	12.02	5.350
C10-2R	BASE	100 YR STORM	12.00	148.090	148.500	0.0032	629	12.00	3.506	11.99	4.810
C11-1L	BASE	100 YR STORM	12.01	208.669	209.000	0.0014	555	12.00	2.298	12.01	2.249
C11-1R	BASE	100 YR STORM	12.01	208.669	209.000	0.0014	555	12.00	2.298	12.01	2.249
C11-3L	BASE	100 YR STORM	12.01	182.908	183.500	0.0015	520	12.00	1.247	11.96	1.724
C11-3R	BASE	100 YR STORM	12.01	183.012	183.500	0.0023	517	12.00	2.181	12.01	2.143
C11-4L	BASE	100 YR STORM	12.00	148.072	148.500	0.0037	671	12.00	4.207	11.98	4.460
C11-4R	BASE	100 YR STORM	12.00	148.082	148.500	0.0034	647	12.00	4.129	12.01	4.663
C12-1L	BASE	100 YR STORM	12.01	182.952	183.500	0.0016	415	12.00	1.597	12.01	1.570
C12-1R	BASE	100 YR STORM	12.00	182.904	183.500	-0.0025	193	12.00	1.597	12.00	1.587
C12-2L	BASE	100 YR STORM	12.01	148.076	148.500	0.0029	661	12.00	3.350	12.00	4.526
C12-2R	BASE	100 YR STORM	12.01	148.020	148.500	0.0014	418	12.00	2.259	12.01	2.228
C13-1L	BASE	100 YR STORM	11.88	182.847	183.500	0.0009	195	12.00	1.052	11.88	1.056
C13-1R	BASE	100 YR STORM	12.01	182.883	183.500	0.0009	323	12.00	1.052	12.01	1.034
C13-2L	BASE	100 YR STORM	12.01	147.981	148.500	0.0020	472	12.00	1.870	12.01	1.837
C13-2R	BASE	100 YR STORM	12.01	148.020	148.500	0.0021	401	12.00	2.259	11.82	2.267
C14-1L	BASE	100 YR STORM	12.00	183.161	183.500	0.0019	372	12.00	3.116	12.00	3.085
C14-1R	BASE	100 YR STORM	12.01	183.132	183.500	0.0023	445	12.00	3.662	12.01	3.622
C14-2L	BASE	100 YR STORM	12.01	148.013	148.500	0.0013	384	12.00	2.181	12.01	2.153
C14-2R	BASE	100 YR STORM	12.01	148.027	148.500	0.0014	406	12.00	2.337	12.01	2.306
C2-1L	BASE	100 YR STORM	12.01	182.974	183.500	0.0011	365	12.00	1.792	12.01	1.767
C2-1R	BASE	100 YR STORM	12.01	182.826	183.500	0.0007	219	12.00	0.701	12.01	0.691
C2-2L	BASE	100 YR STORM	12.01	147.998	148.500	0.0012	391	12.00	2.026	12.01	1.998
C2-2R	BASE	100 YR STORM	11.97	148.144	148.500	0.0026	837	12.00	3.740	11.99	5.933
C2-3R	BASE	100 YR STORM	12.01	124.677	125.000	0.0016	504	12.00	2.571	12.01	2.526
C3-1R	BASE	100 YR STORM	12.01	127.872	128.000	0.0023	1001	12.00	3.740	12.01	3.624
C4-1L	BASE	100 YR STORM	12.01	182.889	183.500	0.0009	244	12.00	1.091	12.01	1.077
C4-1R	BASE	100 YR STORM	12.02	183.127	183.500	0.0021	629	12.00	3.194	12.01	3.082
C4-2R	BASE	100 YR STORM	12.01	145.166	145.500	0.0048	1475	12.00	7.791	12.01	7.566
C5-1L	BASE	100 YR STORM	11.93	183.172	183.500	0.0026	707	12.00	4.285	11.96	6.283
C5-1R	BASE	100 YR STORM	12.01	183.027	183.500	0.0017	478	12.00	2.337	12.01	2.301
C5-2R	BASE	100 YR STORM	12.01	150.614	151.000	0.0036	1189	12.00	5.843	12.01	5.674
C6-1L	BASE	100 YR STORM	12.01	183.036	183.500	0.0017	505	12.00	2.415	12.01	2.362
C6-1R	BASE	100 YR STORM	12.01	183.037	183.500	0.0015	469	12.00	2.415	12.01	2.365
C6-2R	BASE	100 YR STORM	12.02	154.766	155.000	0.0042	2031	12.00	6.856	12.02	6.517
C7-1L	BASE	100 YR STORM	12.01	182.965	183.500	0.0011	390	12.00	1.714	12.01	1.688
C7-1R	BASE	100 YR STORM	12.01	182.614	183.500	0.0020	884	12.00	3.740	12.01	3.692
C7-2R	BASE	100 YR STORM	12.01	170.601	171.000	0.0012	507	12.00	1.714	12.01	1.674
C7-4L	BASE	100 YR STORM	12.01	147.989	148.500	0.0025	521	12.00	1.948	12.01	1.911
C7-4R	BASE	100 YR STORM	12.01	147.965	148.500	0.0011	390	12.00	1.714	12.01	1.688
C8-1L	BASE	100 YR STORM	12.00	185.662	186.000	0.0026	288	12.00	4.207	12.00	4.184
C8-1R	BASE	100 YR STORM	12.01	185.882	186.000	0.0026	884	12.00	4.207	12.01	4.105
C8-3L	BASE	100 YR STORM	12.01	148.005	148.500	0.0013	435	12.00	2.104	12.01	2.072
C8-3R	BASE	100 YR STORM	12.01	148.086	148.500	0.0019	451	12.00	3.038	12.01	3.001
C9-1R	BASE	100 YR STORM	12.02	213.698	214.000	0.0040	1528	12.00	6.544	12.02	6.308
C9-3L	BASE	100 YR STORM	12.03	182.861	183.500	0.0009	269	12.00	1.013	12.03	1.414
C9-3R	BASE	100 YR STORM	12.01	182.877	183.500	0.0009	239	12.00	1.013	12.01	1.000
C9-4L	BASE	100 YR STORM	12.01	147.998	148.500	0.0012	377	12.00	2.026	12.01	1.999
C9-4R	BASE	100 YR STORM	11.87	148.057	148.500	0.0034	630	12.00	3.584	11.87	4.177
DRA	BASE	100 YR STORM	120.00	104.594	110.000	0.0037	123941	12.07	201.127	120.00	0.000
LFBNDRY	BASE	100 YR STORM	0.00	88.000	111.000	0.0000	0	120.00	0.000	0.00	0.000
N1-1	BASE	100 YR STORM	12.04	180.848	181.500	-0.0693	189	12.19	13.844	12.19	60.275

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Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N1-1L	BASE	100 YR STORM	12.04	182.492	183.500	0.0018	490	12.01	1.999	12.04	1.914
N1-1R	BASE	100 YR STORM	12.00	182.498	183.500	-0.0040	472	12.00	3.626	11.78	9.744
N1-2	BASE	100 YR STORM	12.03	145.849	146.500	0.0503	268	12.19	63.272	12.03	12.778
N1-2L	BASE	100 YR STORM	12.00	147.497	148.500	-0.0032	489	12.01	2.230	11.97	8.473
N1-2R	BASE	100 YR STORM	12.00	147.442	148.500	0.0018	475	12.01	1.999	11.97	3.909
N1-A	BASE	100 YR STORM	12.01	213.528	215.200	0.0008	3271	12.00	6.311	12.01	6.118
N1-B	BASE	100 YR STORM	12.23	213.368	214.000	0.0016	5938	12.01	6.118	12.23	3.611
N10-1	BASE	100 YR STORM	12.06	179.569	181.500	0.0022	218	12.04	1.611	12.05	1.604
N10-1L	BASE	100 YR STORM	12.03	182.128	183.500	0.0011	330	12.01	0.843	12.03	0.815
N10-1R	BASE	100 YR STORM	12.05	182.122	183.500	0.0012	460	12.01	0.838	12.05	0.798
N10-2	BASE	100 YR STORM	12.02	146.265	146.500	0.0155	222	12.21	19.008	12.02	10.249
N10-2L	BASE	100 YR STORM	11.76	147.710	148.500	0.0049	959	12.02	5.350	11.76	10.174
N10-2R	BASE	100 YR STORM	12.04	147.497	148.500	0.0034	782	11.99	4.810	12.22	9.024
N11-1	BASE	100 YR STORM	12.02	207.316	209.000	0.0008	826	12.01	4.498	12.02	4.471
N11-2	BASE	100 YR STORM	12.03	203.959	207.000	-0.0031	164	12.02	4.471	12.03	4.459
N11-3	BASE	100 YR STORM	12.04	180.654	181.500	0.0089	198	12.03	14.150	12.04	7.662
N11-3L	BASE	100 YR STORM	12.06	182.242	183.500	0.0014	670	11.96	1.724	12.06	1.131
N11-3R	BASE	100 YR STORM	12.03	182.497	183.500	0.0028	672	12.01	2.143	12.01	8.704
N11-4	BASE	100 YR STORM	12.02	146.210	146.500	0.0122	220	12.20	22.621	12.02	15.578
N11-4L	BASE	100 YR STORM	11.98	147.497	148.500	0.0037	847	11.98	4.460	11.77	9.314
N11-4R	BASE	100 YR STORM	12.04	147.498	148.500	0.0038	809	12.01	4.663	11.77	9.343
N12-1	BASE	100 YR STORM	12.04	179.878	181.500	0.0018	240	12.02	3.036	12.04	3.021
N12-1L	BASE	100 YR STORM	12.04	182.362	183.500	0.0027	536	12.01	1.570	12.04	1.494
N12-1R	BASE	100 YR STORM	12.02	182.382	183.500	0.0033	199	12.00	1.587	12.01	1.559
N12-2	BASE	100 YR STORM	12.02	145.830	146.500	0.0112	243	11.99	19.502	12.02	8.428
N12-2L	BASE	100 YR STORM	12.00	147.497	148.500	0.0034	832	12.00	4.526	11.84	9.465
N12-2R	BASE	100 YR STORM	12.00	147.497	148.500	-0.0030	532	12.01	2.228	11.97	8.474
N13-1	BASE	100 YR STORM	12.05	179.395	181.500	-0.0036	190	12.04	0.993	12.05	0.988
N13-1L	BASE	100 YR STORM	12.02	182.205	183.500	0.0014	189	11.88	1.056	12.02	1.024
N13-1R	BASE	100 YR STORM	12.04	182.194	183.500	0.0012	403	12.01	1.034	12.04	0.993
N13-2	BASE	100 YR STORM	12.05	145.363	146.500	0.0034	261	12.04	5.857	12.05	5.834
N13-2L	BASE	100 YR STORM	12.05	147.438	148.500	0.0027	617	12.01	1.837	12.05	1.738
N13-2R	BASE	100 YR STORM	12.04	147.399	148.500	0.0024	498	11.82	2.267	12.04	2.131
N14-1	BASE	100 YR STORM	12.02	180.461	181.500	0.0097	406	11.87	12.517	12.02	6.602
N14-1L	BASE	100 YR STORM	0.00	181.500	183.500	0.0000	116	0.00	0.000	0.00	0.000
N14-1R	BASE	100 YR STORM	11.87	182.760	183.500	-0.0059	616	12.01	3.622	11.87	10.146
N14-2	BASE	100 YR STORM	12.02	145.658	146.500	0.0114	291	11.99	23.771	12.02	11.006
N14-2L	BASE	100 YR STORM	12.01	147.497	148.500	-0.0034	488	12.01	2.153	11.99	8.747
N14-2R	BASE	100 YR STORM	12.01	147.497	148.500	-0.0033	513	12.01	2.306	11.95	8.927
N2-1	BASE	100 YR STORM	12.05	179.708	181.500	0.0026	214	12.03	2.366	12.04	2.356
N2-1L	BASE	100 YR STORM	12.04	182.425	183.500	0.0017	469	12.01	1.767	12.03	1.694
N2-1R	BASE	100 YR STORM	12.03	182.072	183.500	0.0010	262	12.01	0.691	12.03	0.671
N2-2	BASE	100 YR STORM	12.01	145.564	146.500	0.0135	276	11.97	14.056	12.01	10.416
N2-2L	BASE	100 YR STORM	12.04	147.491	148.500	0.0018	506	12.01	1.998	12.04	1.911
N2-2R	BASE	100 YR STORM	11.97	147.869	148.500	0.0036	1184	11.99	5.933	11.97	10.246
N2-3	BASE	100 YR STORM	12.02	123.216	125.000	0.0005	434	12.01	2.526	12.02	2.518
N2-4	BASE	100 YR STORM	12.01	120.788	123.000	-0.0049	199	12.01	12.929	12.01	12.828
N2-A	BASE	100 YR STORM	12.01	213.474	215.200	0.0007	2740	12.00	4.441	12.01	4.302
N2-B	BASE	100 YR STORM	12.20	213.049	214.000	0.0013	4702	12.01	4.302	12.20	2.858
N2-C	BASE	100 YR STORM	12.25	119.269	120.000	0.0044	2281	12.20	2.858	13.12	1.687
N3-1	BASE	100 YR STORM	12.03	126.274	128.000	0.0006	804	12.01	3.624	12.03	3.605
N3-2	BASE	100 YR STORM	12.03	123.957	126.000	0.0021	159	12.03	3.605	12.03	3.597
N4-1	BASE	100 YR STORM	12.06	179.963	181.500	0.0027	222	12.05	3.812	12.06	3.806
N4-1L	BASE	100 YR STORM	12.03	182.212	183.500	0.0013	297	12.01	1.077	12.02	1.046
N4-1R	BASE	100 YR STORM	12.07	182.923	183.500	0.0043	885	12.01	3.082	12.07	2.791
N4-2	BASE	100 YR STORM	12.03	143.447	145.000	0.0010	1174	12.01	7.566	12.03	7.514
N4-3	BASE	100 YR STORM	12.04	140.596	143.000	-0.0042	281	12.03	11.260	12.04	11.235
N5-1	BASE	100 YR STORM	11.97	180.735	181.500	0.0179	143	12.07	18.582	11.97	8.124

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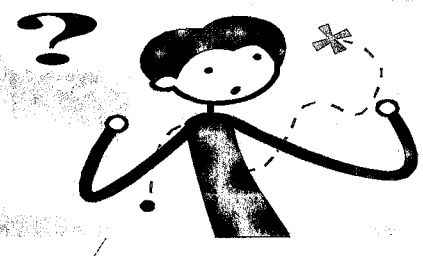
Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N5-1L	BASE	100 YR STORM	11.92	182.947	183.500	0.0046	989	11.96	6.283	11.92	10.266
N5-1R	BASE	100 YR STORM	12.01	182.497	183.500	0.0036	612	12.01	2.301	12.08	9.328
N5-2	BASE	100 YR STORM	12.03	149.369	151.000	0.0008	925	12.01	5.674	12.03	5.642
N5-3	BASE	100 YR STORM	11.97	146.789	149.000	0.0049	253	11.97	13.306	11.97	13.132
N6-1	BASE	100 YR STORM	12.07	180.062	181.500	0.0032	197	12.06	4.354	12.07	4.347
N6-1L	BASE	100 YR STORM	12.06	182.691	183.500	0.0039	696	12.01	2.362	12.06	2.167
N6-1R	BASE	100 YR STORM	12.06	182.698	183.500	0.0020	643	12.01	2.365	12.06	2.188
N6-2	BASE	100 YR STORM	12.04	153.404	155.000	0.0008	1511	12.02	6.517	12.04	6.463
N6-3	BASE	100 YR STORM	12.06	150.526	153.000	0.0045	293	12.05	10.772	12.06	10.750
N7-1	BASE	100 YR STORM	12.04	180.705	181.500	0.0096	177	12.23	13.033	12.04	7.739
N7-1L	BASE	100 YR STORM	12.04	182.399	183.500	0.0016	503	12.01	1.688	12.04	1.613
N7-1R	BASE	100 YR STORM	12.00	182.497	183.500	-0.0021	843	12.01	3.692	11.84	9.696
N7-2	BASE	100 YR STORM	12.02	169.164	171.000	0.0004	429	12.01	1.674	12.02	1.668
N7-3	BASE	100 YR STORM	12.04	166.946	169.000	-0.0030	163	12.03	9.399	12.04	9.348
N7-4	BASE	100 YR STORM	12.05	145.836	146.500	-0.0040	250	12.04	12.755	12.05	12.737
N7-4L	BASE	100 YR STORM	12.05	147.456	148.500	0.0025	686	12.01	1.911	12.05	1.796
N7-4R	BASE	100 YR STORM	12.04	147.399	148.500	0.0016	503	12.01	1.688	12.04	1.613
N7-A	BASE	100 YR STORM	12.01	213.470	215.200	0.0009	2596	12.00	4.285	12.01	4.156
N7-B	BASE	100 YR STORM	12.19	213.026	214.000	0.0020	4399	12.01	4.156	12.19	2.839
N8-1	BASE	100 YR STORM	12.01	184.475	186.000	0.0012	884	12.01	8.273	12.01	8.218
N8-2	BASE	100 YR STORM	12.02	181.656	184.000	0.0039	138	12.01	8.218	12.02	8.191
N8-3	BASE	100 YR STORM	12.03	145.895	146.500	0.0100	262	12.01	24.256	12.03	13.189
N8-3L	BASE	100 YR STORM	12.02	147.497	148.500	-0.0027	562	12.01	2.072	12.01	8.057
N8-3R	BASE	100 YR STORM	12.01	147.497	148.500	-0.0032	552	12.01	3.001	11.85	9.144
N8-A	BASE	100 YR STORM	12.02	213.548	215.200	0.0009	3559	12.00	7.090	12.01	6.815
N8-B	BASE	100 YR STORM	12.24	213.466	214.000	0.0017	6558	12.01	6.815	12.24	3.804
N8-C	BASE	100 YR STORM	12.13	118.829	120.000	0.0028	2636	12.24	3.804	12.31	4.916
N9-1	BASE	100 YR STORM	12.03	212.396	214.000	0.0008	1166	12.02	6.308	12.03	6.266
N9-2	BASE	100 YR STORM	12.04	209.115	212.000	0.0050	148	12.03	6.266	12.04	6.255
N9-3	BASE	100 YR STORM	12.05	180.739	181.500	0.0043	185	12.04	8.174	12.05	8.147
N9-3L	BASE	100 YR STORM	12.03	182.011	183.500	0.0013	307	12.03	1.414	12.03	0.951
N9-3R	BASE	100 YR STORM	12.03	182.186	183.500	0.0013	291	12.01	1.000	12.03	0.971
N9-4	BASE	100 YR STORM	12.04	145.925	146.500	0.0042	252	12.05	15.382	12.04	13.363
N9-4L	BASE	100 YR STORM	12.04	147.492	148.500	0.0019	487	12.01	1.999	12.04	1.915
N9-4R	BASE	100 YR STORM	11.87	147.458	148.500	0.0036	791	11.87	4.177	11.87	6.115
S-1	BASE	100 YR STORM	12.24	119.290	120.000	0.0037	6165	12.04	51.623	12.10	44.830
S-10	BASE	100 YR STORM	12.11	119.525	120.000	0.0020	3697	12.03	23.416	12.09	22.434
S-11	BASE	100 YR STORM	12.12	119.624	120.000	0.0017	3298	12.02	18.420	12.04	17.006
S-12	BASE	100 YR STORM	12.15	119.578	120.000	0.0037	3266	12.03	22.510	12.05	20.865
S-13	BASE	100 YR STORM	12.24	119.325	120.000	0.0025	3573	12.05	30.174	12.06	26.648
S-14	BASE	100 YR STORM	12.24	119.301	120.000	0.0029	4741	12.05	37.751	12.10	32.448
S-2	BASE	100 YR STORM	12.25	119.270	120.000	0.0044	6938	12.01	48.244	12.25	51.384
S-3	BASE	100 YR STORM	12.21	116.051	120.000	0.0013	1069	12.20	54.102	12.21	54.096
S-7	BASE	100 YR STORM	12.13	118.828	120.000	0.0028	8079	12.10	75.286	12.13	74.511
S-8	BASE	100 YR STORM	12.12	119.014	120.000	0.0029	5084	12.07	56.670	12.10	55.546
S-9	BASE	100 YR STORM	12.12	119.233	120.000	0.0027	5518	12.06	43.745	12.10	42.615
S-E1	BASE	100 YR STORM	12.12	119.385	120.000	0.0023	4140	12.06	26.549	12.12	25.943
S-E2	BASE	100 YR STORM	12.14	116.617	120.000	0.0007	2972	12.13	74.511	12.14	74.501
S-NE	BASE	100 YR STORM	12.14	119.606	120.000	0.0014	1127	12.00	2.961	12.00	2.229
S-NW	BASE	100 YR STORM	12.14	119.602	120.000	0.0022	5026	12.01	9.467	12.08	7.083
S-R1	BASE	100 YR STORM	12.01	107.703	109.500	0.0034	159	12.00	1.810	12.00	1.788
S-R2	BASE	100 YR STORM	12.01	107.665	110.000	-0.0027	182	12.00	3.164	12.01	3.124
S-R3	BASE	100 YR STORM	12.02	107.151	109.000	0.0047	175	12.01	4.415	12.01	4.392
S-W1	BASE	100 YR STORM	12.23	119.357	120.000	0.0024	889	12.05	21.304	12.05	20.616
S-W2	BASE	100 YR STORM	12.24	119.338	120.000	0.0024	1627	12.03	25.854	12.04	24.344
S-W3	BASE	100 YR STORM	12.21	110.616	120.000	0.0008	1363	12.21	54.096	12.21	54.094

ATTENTION



AN OVERSIZED MAP HAS BEEN SCANNED SEPARTELY. PLEASE SEE:

- **21375-018-SO/01 CITRUS CENTRAL CLASS I LF OP. RENEWAL APP. APPENDIX H-FINAL CLOSURE PLAN**

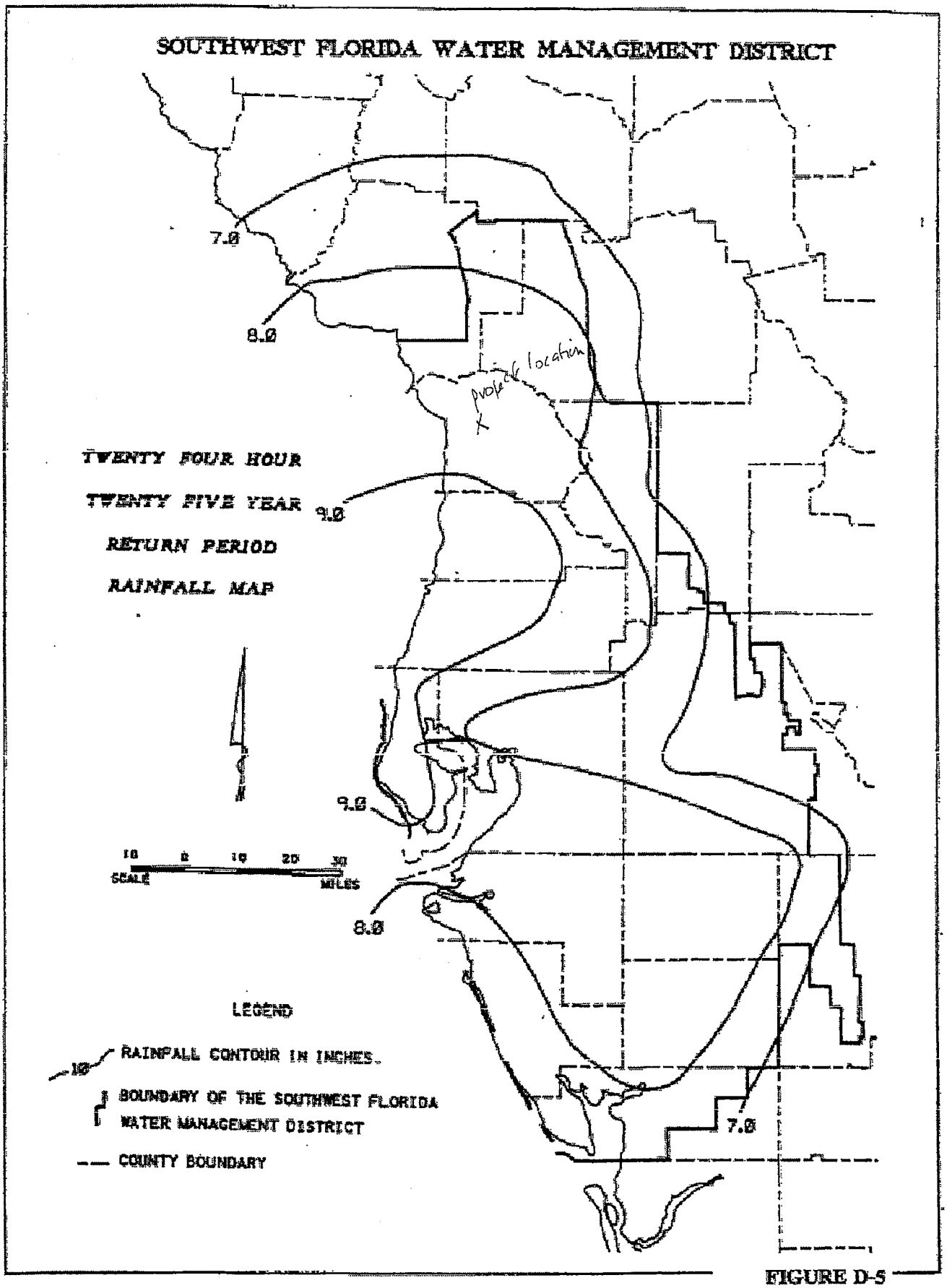

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
7.0
8.0
project location
X
TWENTY FOUR HOUR
TWENTY FIVE YEAR
RETURN PERIOD
RAINFALL MAP
9.0
9.0
10 0 10 20 30
SCALE MILES
8.0
LEGEND
10 RAINFALL CONTOUR IN INCHES.
BOUNDARY OF THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
COUNTY BOUNDARY
7.0

FIGURE D-5

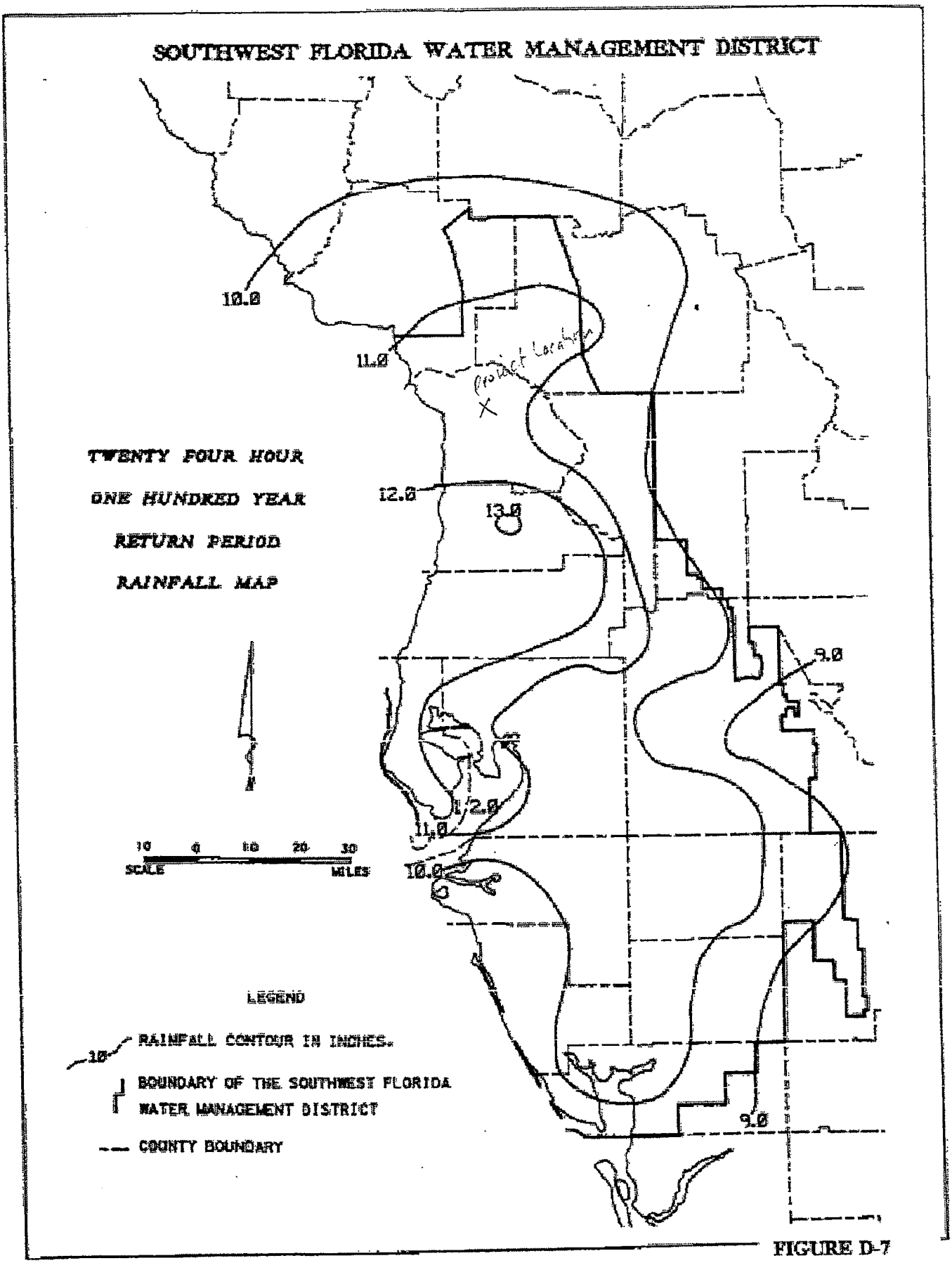

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
TWENTY FOUR HOUR
ONE HUNDRED YEAR
RETURN PERIOD
RAINFALL MAP
10.0
11.0
12.0
13.0
12.0
11.0
10.0
9.0
9.0
10 0 10 20 30
SCALE MILES
LEGEND
10 RAINFALL CONTOUR IN INCHES.
BOUNDARY OF THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
COUNTY BOUNDARY

FIGURE D-7

Table B-6. Recommended Energy Loss Coefficients, K, for Flanged Pipe Fittings[a]

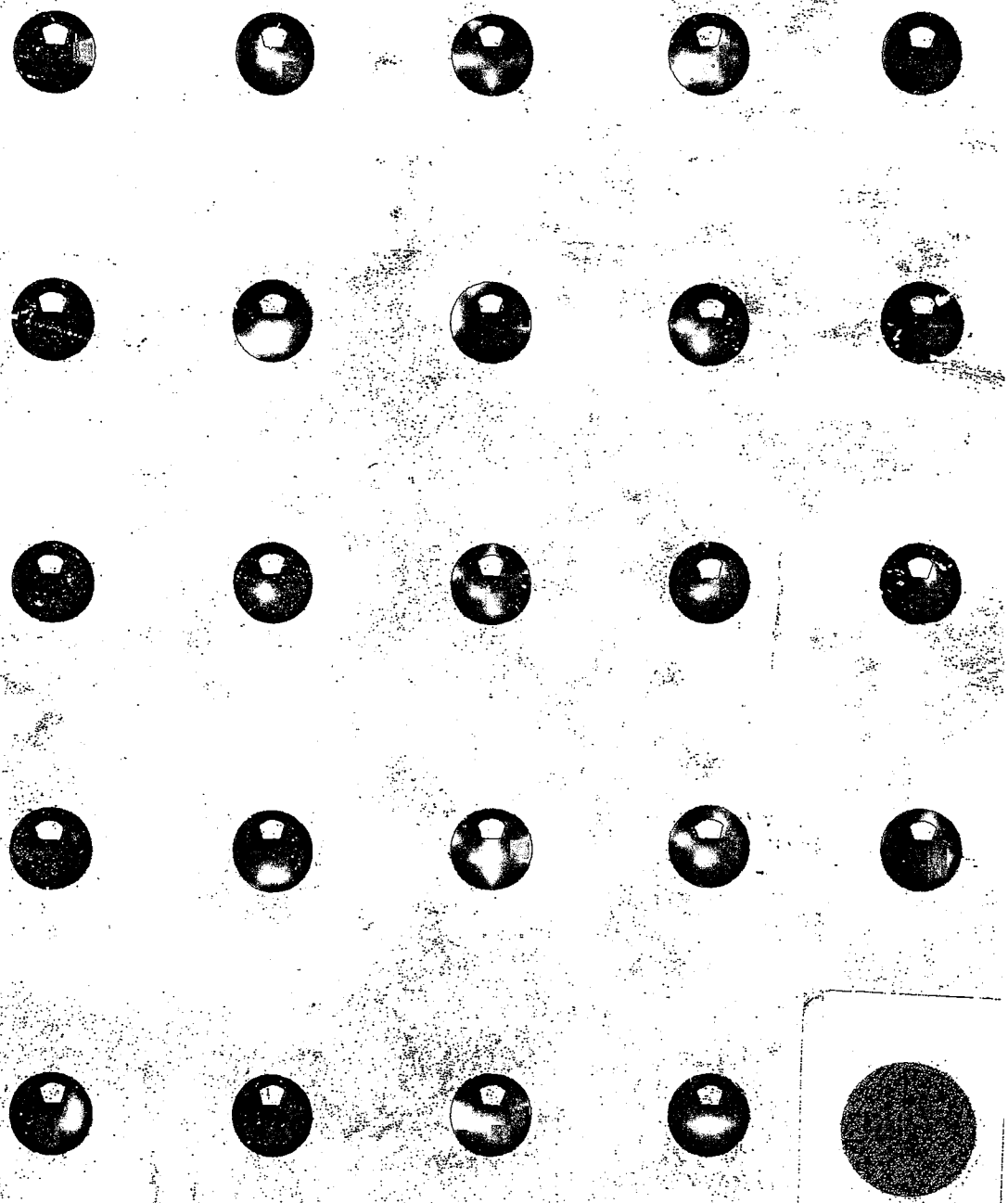
Fitting	K
Entrance	
Bellmouth	0.05
Rounded	0.25
Sharp-edged	0.5
Projecting	0.8
Exits	
All of the above	1.0
Bends, mitered	
$\theta = 15°$	0.05
$\theta = 22.5°$	0.075
$\theta = 30°$	0.10
$\theta = 45°$	0.20
$\theta = 60°$	0.35
$\theta = 90°$	0.80
90° bend $3 \times 30° = 90°$ $4 \times 22.5° = 90°$	0.30
Forged or cast fittings	
90° elbow, standard	0.25
90° elbow long radius	0.18
45° elbow	0.18
Forged or cast fittings	
Return bend, $r = 1.4\ D$	0.40
Tee, line flow	0.30
Tee, branch flow	0.75
Cross, line flow	0.50
Cross, branch flow	0.75
Wye, 45°	0.50
Increasers	
Conical	$h = K\left[1 - \left(\frac{D_1}{D_2}\right)^2\right] v_2^2/2g$ $K = 3.5(\tan\theta)^{1.22}$
Conical (approximate)	$h = 0.25\left(v_1^2 - v_2^2\right)/2g$
Sudden	$h = \frac{v_1^2 - v_2^2}{2g} = \left[\left(\frac{A_2}{A_1}\right)^2 - 1\right]\frac{v_2^2}{2g}$
Reducers	
Conical	$h = K v_2^2/2g$ $K = 0.03 \pm 0.01$
Sudden	$h = \frac{1}{2}\left[1 - \left(\frac{D_2}{D_1}\right)^2\right] v_2^2/2g$

[a] $h = Kv^2/2g$, where v is the maximum velocity in nonprismatic fittings. Increase K by 5% for each 25-mm (1-in.) decrement in pipe smaller than 300 mm (12 in.). Expect K values to vary from −20 to +30% or more.

Reference: Robert L Sanks – 2nd edition pumping station design 1998

Groundwater Hydrology

SECOND EDITION



David Keith Todd

TABLE 3.1 Representative Values of Hydraulic Conductivity (after Morris and Johnson[45])

Material	Hydraulic Conductivity, m/day	Type of Measurement[a]
Gravel, coarse	150	R
Gravel, medium	270	R
Gravel, fine	450	R
Sand, coarse	45	R
Sand, medium	12	R
Sand, fine	2.5	R
Silt	0.08	H
Clay	0.0002	H
Sandstone, fine-grained	0.2	V
Sandstone, medium-grained	3.1	V
Limestone	0.94	V
Dolomite	0.001	V
Dune sand	20	V
Loess	0.08	V
Peat	5.7	V
Schist	0.2	V
Slate	0.00008	V
Till, predominantly sand	0.49	R
Till, predominantly gravel	30	R
Tuff	0.2	V
Basalt	0.01	V
Gabbro, weathered	0.2	V
Granite, weathered	1.4	V

[a]H is horizontal hydraulic conductivity, R is a repacked sample, and V is vertical hydraulic conductivity.

mental work. Most permeability formulas have the general form

$$k = cd^2 \tag{3.15}$$

where c is a dimensionless coefficient, or

$$k = f_s f_\alpha d^2 \tag{3.16}$$

where f_s is a grain (or pore) shape factor, f_α is a porosity factor, and d is characteristic grain diameter.[17,37,43] Few formulas give reliable estimates of results because of the difficulty of including all possible variables in porous media. For an ideal medium, such as an assemblage of spheres of uniform diameter, hydraulic conductivity can be accurately evaluated from known porosity and packing conditions.

Because of the problems inherent in formulas, other techniques for determining hydraulic conductivity are preferable.

TIERRA REPORT

DRA-5
(ORIGINAL)

TIERRA

May 23, 2008
Revised June 16, 2008

SCS Engineers
4041 Park Oaks Blvd.
Suite 100
Tampa, FL 33610

Attn: Mr. Dan Cooper, P.E.

RE: Geotechnical Services Report
Citrus County Central Landfill, Phase 3 Expansion
Citrus County, Florida
Tierra Project No.: 6511-08-086

Mr. Cooper:

Tierra, Inc. (Tierra) has completed the geotechnical services for the above referenced project. The results of our field and laboratory services are provided herein.

We understand that SCS Engineers plan to evaluate the subsurface conditions at the Citrus County Central Landfill Phase 3 Expansion. As we understand it, Citrus County is proposing to expand an existing landfill. According to information provided by SCS, there is one (1) Drainage Retention Area (DRA) on the landfill that requires geotechnical services. This report details the results of our findings for DRA-5.

A laboratory permeability test was performed to evaluate drainage properties of the onsite soils within the existing DRA. One (1) laboratory permeability test was completed on a soil sample recovered from the existing pond bottom depth in DRA-5. A hand auger boring was performed to a depth of 6 feet below existing grade at the test location. An additional two (2) hand auger borings were completed to a depth of approximately 6 feet below existing grade within the DRA at either end of the pond.

In addition to the hand auger borings, the deeper subsurface conditions below the pond bottom were explored using one (1) Standard Penetration Test (SPT) performed near the center of DRA-5 but offset onto the embankment. Due to the steep side slopes in the DRA and due to soft conditions at the bottom of the pond, access to the proposed boring location was not possible with our truck mounted equipment. The boring was relocated and performed at the top of the slope to a depth of approximately 75 feet below the existing ground surface; approximately 50 feet below the existing pond bottom. The boring was located in the field by a representative of Tierra with the aid of a Global Positioning System (GPS) and measuring distances from existing site features. The approximate boring locations and soil profiles are presented in the attachments.

7805 Professional Place · Tampa, Florida 33637
813.989.1354 · FAX 813.989.1355

General Soil Conditions

The SPT boring was performed with the use of a truck-mounted drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with American Society for Testing and Materials (ASTM) Test Designation D-1586 titled Penetration Test and Split-Barrel Sampling of Soils. SPT resistance N-values were taken continuously in the initial top 10 feet and at intervals of 5 feet thereafter.

The auger borings were performed by manually twisting and advancing a bucket auger into the ground in 6 inch increments. The soil samples were classified in the field and transported to our laboratory for verification and review of the visual classification.

The soil samples were classified in the field and transported to our laboratory for review. Boring profiles are presented in the attachments.

The soil strata encountered in the borings performed at the site are summarized in the following table:

Stratum Number	Typical Soil Description	USCS Symbol
1	Gray to Orange Fine SAND to Fine SAND With Silt	SP/SP-SM
2	Orange Silty SAND to Clayey SAND	SM/SC
3	Orange Fine SAND With Silt to Silty SAND	SP-SM/SM
4	Gray to Brown Clayey SAND to Sandy CLAY	SC/CL

Soil stratification was determined based on review of recovered samples, laboratory test results, and interpretation of field boring logs. Stratification lines represent approximate boundaries between soil layers of different engineering properties; however actual transitions between layers may be gradual. In some cases, small variations in properties not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The soil profiles represent the conditions at the particular boring location and variations do occur among the borings. Specific details concerning subsurface conditions and materials encountered at each test location can be obtained from the soil profiles presented in the attachments.

Groundwater Conditions

At the time of our investigation, water was present within DRA-5. It appears that the water present within the pond was perched within the pond due to the clayey soils at the pond bottom and due to stormwater flow into the pond. The groundwater table was not apparent in the SPT boring to the start of mud rotary drilling at a depth of 10 feet below the existing ground surface at the time of our field activities. When performing SPT borings, the use of drilling mud can limit the ability to obtain accurate groundwater table measurements when the groundwater table depth is greater than the depth where the drilling mud is introduced. As a result, GNA (groundwater not apparent) is indicated on the SPT soil profile of the subject boring presented in the attachments.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences (i.e. existing swales, drainage ponds, underdrains and areas of covered soils, such as paved parking lots).

Laboratory Testing

Representative soil samples collected from the SPT and auger borings were classified and stratified in general accordance with the Unified Soil Classification System (USCS). Our classification was based on visual observations, using the results from the laboratory testing as confirmation. These tests included fines content determination (percentage passing the No.200 mesh sieve), natural moisture content determination, and a back pressure permeability test. The following list summarizes the laboratory tests performed by type and number:

- Fines Content (No.200 Mesh Sieve) 3
- Natural Moisture Content 3
- Atterberg Limits 3
- Back Pressure Permeability Test 1

Laboratory Back Pressure Permeability Testing

In DRA-5, due to the clayey nature of the near surface soil, a Shelby Tube sample was collected and a permeability test was completed on the undisturbed soil sample recovered. The soil sample was tested in general accordance with ASTM D-5084-03 "Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter."

Once the specimen was extruded from the Shelby tube, trimmed and installed in the permeameter, the sample was subjected to back pressure saturation to minimize the effects of entrapped air on the one-dimensional laminar flow of water within porous materials such as soil and rock.

After the saturation of the specimen was essentially complete (minimum 95% saturation), the head water and tail water pressures were adjusted to begin the test. Periodically, the system pressures were checked and the flow of water through the sample is recorded. The testing time was ultimately controlled by meeting the equilibrium flow criteria.

The soil samples for the laboratory permeability test were collected May 8, 2008. The following table presents the results of the laboratory permeability test performed at DRA-5.

Test Location		Percent Passing No. 200 Sieve	USCS Symbol	Atterberg Limits		Depth of Test (ft) [2]	Permeability (ft/day) [3]
Pond	Boring Number[1]			Liquid Limit	Plasticity Index		
DRA-5	SPT-5	73	CL	43	19	At Grade	6.5×10^{-5}

[1] Test was performed on soils in the vicinity of the specified boring.
[2] Depth below existing ground surface.
[3] This permeability rates is not factored. An appropriate factor of safety should be applied to the permeability rate by the design engineer.

Should there be any questions regarding these results, please do not hesitate to contact our office at (813) 989-1354. We look forward to working with you and your organization on this and future projects.

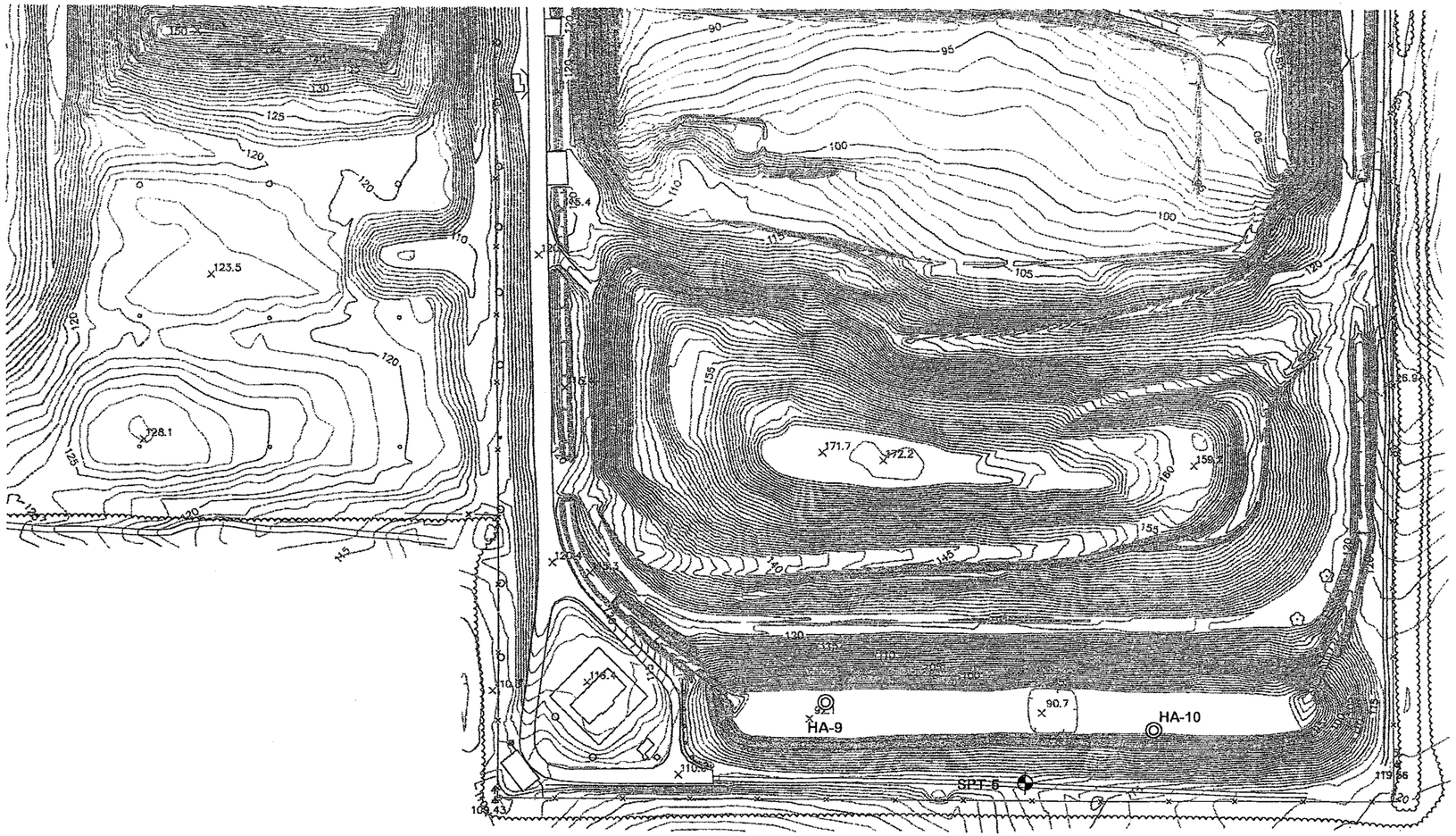
Respectfully Submitted,

TIERRA, INC.

Sean C. Olsen, E.I.
Geotechnical Engineer Intern

Larry P. Moore, P.E. 6/23/08
Principal Geotechnical Engineer
Florida License No. 47673

Attachments:



BORING LOCATION PLAN

0 200'

PLAN SCALE

LEGEND

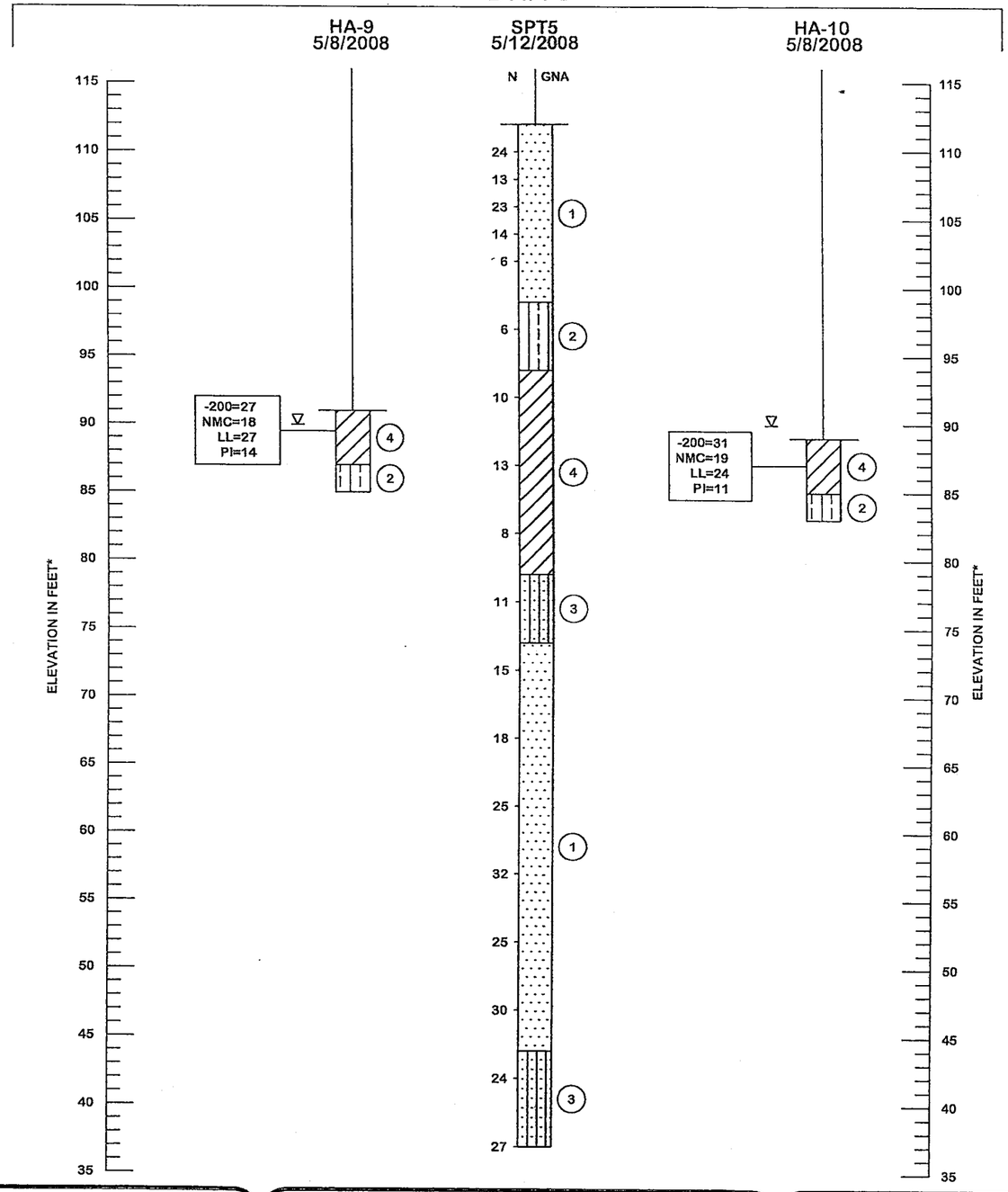
APPROXIMATE LOCATION OF SPT BORING

APPROXIMATE LOCATION OF AUGER BORING

BY: SW CHECKED BY: SCO	APPROVED BY: LPM DATE: APRIL 2008	ENGINEER OF RECORD: LARRY P. MOORE, P.E. FLORIDA LICENSE NO.: 47673	TIERRA 7805 Professional Place Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-08-086	GEOTECHNICAL ENGINEERING SERVICES CITRUS COUNTY CENTRAL LANDFILL CITRUS COUNTY, FLORIDA	SHEET 1

SOIL PROFILES

DRA-5



LEGEND

1. GRAY TO ORANGE FINE SAND TO FINE SAND WITH SILT (SP/SP-SM)
2. ORANGE SILTY SAND TO CLAYEY SAND (SM/SC)
3. ORANGE FINE SAND WITH SILT TO SILTY SAND (SP-SM/SM)
4. GRAY TO BROWN CLAYEY SAND TO SANDY CLAY (SC/CL)

N SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)

SP UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GNA GROUNDWATER NOT APPARENT DUE TO DRILLING METHOD USED

▽ GROUNDWATER TABLE ESTIMATED TO BE APERCHED CONDITION DUE TO STORMWATER INFILTRATION INTO THE POND.

* BORING ELEVATIONS ESTIMATED BASED ON DESIGN CONTOUR FILES PROVIDED BY SCS ENGINEERS AND THEREFORE SHOULD BE CONSIDERED APPROXIMATE.

GRANULAR MATERIALS-RELATIVE DENSITY	SPT (BLOWS/FT.)
VERY LOOSE	LESS THAN 4
LOOSE	4 TO 10
MEDIUM	10 TO 30
DENSE	30 TO 50
VERY DENSE	GREATER THAN 50

SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/FT.)
VERY SOFT	LESS THAN 2
SOFT	2 TO 4
FIRM	4 TO 8
STIFF	8 TO 15
VERY STIFF	16 TO 30
HARD	GREATER THAN 30

CHECKED BY: SCO	APPROVED BY: LPM	ENGINEER OF RECORD: LARRY P. MOORE, P.E. FLORIDA LICENSE NO.: 47673	TIERRA 7805 Professional Place Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-08-086	GEOTECHNICAL ENGINEERING SERVICES CITRUS COUNTY CENTRAL LANDFILL CITRUS COUNTY, FLORIDA	SHEET 2
	DATE: APRIL 2008						

TIERRA REPORT

DRA-1, 2, 3, AND 4
(COPY)

TIERRA

May 23, 2008
Revised June 16, 2008

SCS Engineers
4041 Park Oaks Blvd.
Suite 100
Tampa, FL 33610

Attn: Mr. Dan Cooper, P.E.

RE: Geotechnical Services Report
Citrus County Central Landfill, Re-Closure
Citrus County, Florida
Tierra Project No.: 6511-08-086

Mr. Cooper:

Tierra, Inc. (Tierra) has completed the geotechnical services for the above referenced project. The results of our field and laboratory services are provided herein.

We understand that SCS Engineers plan to evaluate the subsurface conditions at the Citrus County Central Landfill, Re-closure. As we understand it, Citrus County is proposing to re-close an existing closed landfill. According to information provided by SCS there are four (4) dry Drainage Retention Areas (DRAs) on the landfill that require geotechnical services. We understand that it is desired to redesign the existing ponds with deeper bottom elevations than what presently exists. This report details the results of our findings for DRA-1, 2, 3, and 4.

Field and laboratory permeability tests were performed to evaluate drainage properties of the onsite soils within each of the existing DRAs. One (1) set of horizontal and vertical permeability tests were performed within DRA-1, 2, and 3 at the proposed pond bottom depths ranging from 2 to 6 feet below existing grade. One (1) laboratory permeability test was completed on samples recovered from the proposed pond bottom depth in each DRA. At each of the test locations a hand auger boring was performed to a depth of 6 feet below existing grade. An additional two (2) hand auger borings were completed to a depth of approximately 6 feet below existing grade in each DRA at either end of the pond.

In addition to the hand auger borings, the deeper subsurface conditions below the proposed pond bottom were explored using one (1) Standard Penetration Test (SPT) performed near the center of each DRA to a depth of approximately 30 feet below the existing ground surface. The borings were located in the field by a representative of Tierra with the aid of a Global Positioning System (GPS) and measuring distances from existing site features. The approximate boring locations and soil profiles are presented in the attachments.

7805 Professional Place · Tampa, Florida 33637
813.989.1354 · FAX 813.989.1355

General Soil Conditions

The SPT borings were performed with the use of a truck-mounted drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with American Society for Testing and Materials (ASTM) Test Designation D-1586 titled Penetration Test and Split-Barrel Sampling of Soils. SPT resistance N-values were taken continuously in the initial top 10 feet and at intervals of 5 feet thereafter.

The auger borings were performed by manually twisting and advancing a bucket auger into the ground in 6 inch increments. The soil samples were classified in the field and transported to our laboratory for verification and review of the visual classification.

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3	Orange Fine SAND With Silt to Silty SAND	SP-SM/SM

Soil stratification was determined based on review of recovered samples, laboratory test results, and interpretation of field boring logs. Stratification lines represent approximate boundaries between soil layers of different engineering properties; however actual transitions between layers may be gradual. In some cases, small variations in properties not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The soil profiles represent the conditions at the particular boring location and variations do occur among the borings. Specific details concerning subsurface conditions and materials encountered at each test location can be obtained from the soil profiles presented in the attachments.

Groundwater Conditions

The groundwater table was not encountered in the hand auger borings to a depth of 6 feet, and not apparent in the SPT borings to the start of mud rotary drilling at a depth of 10 feet below the existing ground surface at the time of our field activities. When performing SPT borings, the use of drilling mud can limit the ability to obtain accurate groundwater table measurements when the groundwater table depth is greater than the depth where the drilling mud is introduced. As a result, GNE (groundwater not encountered) and GNA (groundwater not apparent) is indicated on the soil profiles of these borings presented in the Appendix.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences (i.e. existing swales, drainage ponds, underdrains and areas of covered soils, such as paved parking lots).

Laboratory Testing

Representative soil samples collected from the SPT and auger borings were classified and stratified in general accordance with the Unified Soil Classification System (USCS). Our classification was based on visual observations, using the results from the laboratory testing as confirmation. These tests included fines content determination (percentage passing the No.200 mesh sieve), natural moisture content determination, falling head permeability tests, and back pressure permeability tests. The following list summarizes the laboratory tests performed by type and number:

- Fines Content (No.200 Mesh Sieve) 15
- Natural Moisture Content 3
- Falling Head Permeability Tests 3
- Back Pressure Permeability Tests 1

Laboratory Falling Head Permeability Testing

Falling head permeability tests were conducted in accordance with the FDOT test designation FM 5-513. These tests were performed on recovered samples obtained from selected borings performed within the ponds at the proposed pond bottom depths ranging from 2 to 6 feet below existing grade. Generally, this test method includes re-compacting a disturbed sample to a specified dry density range. The sample is then encapsulated in the permeameter and covered on both ends by porous stones. Water is then allowed to flow through the sample to saturate the soil. Once the sample is completely saturated, the time necessary for a specified drop in head level is measured several times. The average time for the specified drop in head level is then used to compute the permeability (K) for the sample.

The soil samples for the laboratory falling head permeability tests were collected May 8, 2008. The following table presents the results of the laboratory permeability tests:

Test Location		Percent Passing No. 200 Sieve	USCS Symbol	Depth of Test (ft) [2]	Permeability (ft/day) [3]	Dry Unit Weight (pcf)
Pond	Boring Number[1]					
DRA-1	SPT-1	19	SM	2	0.5	96.5
DRA-2	SPT-2	9	SP-SM	6	5	98.2
DRA-3	SPT-3	2	SP	6	15	95.2

[1] Test was performed on soils in the vicinity of the specified boring.
[2] Depth below existing ground surface.
[3] These permeability rates are not factored. An appropriate factor of safety should be applied to the permeability rates by the design engineer.

Laboratory Back Pressure Permeability Testing

In DRA-4, due to the clayey nature of the near surface soil, a Shelby Tube sample was collected and a permeability test was completed on the undisturbed soil sample recovered. The soil sample was tested in general accordance with ASTM D-5084-03 "Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter."

Once the specimen was extruded from the Shelby tube, trimmed and installed in the permeameter, the sample was subjected to back pressure saturation to minimize the effects of entrapped air on the one-dimensional laminar flow of water within porous materials such as soil and rock.

After the saturation of the specimen was essentially complete (minimum 95% saturation), the head water and tail water pressures were adjusted to begin the test. Periodically, the system pressures were checked and the flow of water through the sample is recorded. The testing time was ultimately controlled by meeting the equilibrium flow criteria.

The soil samples for the laboratory back pressure permeability test were collected May 8, 2008. The following table presents the results of the laboratory permeability test performed at DRA-4.

Test Location		Percent Passing No. 200 Sieve	USCS Symbol	Depth of Test (ft) [2]	Permeability (ft/day) [3]
Pond	Boring Number[1]				
DRA-4	SPT-4	22	SM/SC	At Grade	0.2

[1] Test was performed on soils in the vicinity of the specified boring.
[2] Depth below existing ground surface.
[3] This permeability rates is not factored. An appropriate factor of safety should be applied to the permeability rate by the design engineer.

Field Permeability Testing

Horizontal Permeability Testing

One (1) horizontal permeability test was performed within DRA-1, 2, and 3. The tests were performed at depths ranging from 2 to 6 feet below existing grade. The test procedure uses a slotted screen at the test depth to allow water to flow into the soils in a horizontal direction, under a measured head pressure. The flow of water into the test apparatus is measured and recorded for a given time interval. The tests were performed, and the results evaluated in general accordance with methodology presented in booklet titled "Stormwater Retention Pond Infiltration Analyses In Unconfined Aquifers", Jammal & Associates, Inc.

Vertical Permeability Testing

One (1) vertical permeability test was performed within DRA-1, 2, and 3. The tests were performed at depths ranging from 2 to 6 feet below existing grade. The test procedure uses a solid pipe placed into the ground to a specified depth that allows water to flow into the soils in a vertical direction, under a measured head pressure. The flow of water into the test apparatus is measured and recorded for a given time interval. The tests were performed, and the results evaluated in general accordance with methodology presented in booklet titled "Stormwater Retention Pond Infiltration Analyses In Unconfined Aquifers", Jammal & Associates, Inc.

The field permeability tests were completed May 8, 2008. The following table presents the results of the field permeability tests:

Test Location		Percent Passing No. 200 Sieve	USCS Symbol	Depth of Test (ft) [2]	Permeability (ft/day)	
Pond	Boring Number[1]				Horizontal[3]	Vertical[3]
DRA-1	SPT-1	14	SM	2	1.4	1.8
DRA-2	SPT-2	8	SP-SM	6	11.2	1.6
DRA-3	SPT-3	4	SP	6	16.1	2.2

[1] Test was performed on soils in the vicinity of the specified boring.
[2] Depth below existing ground surface.
[3] These permeability rates are not factored. An appropriate factor of safety should be applied to the permeability rates by the design engineer.

Should there be any questions regarding these results, please do not hesitate to contact our office at (813) 989-1354. We look forward to working with you and your organization on this and future projects.

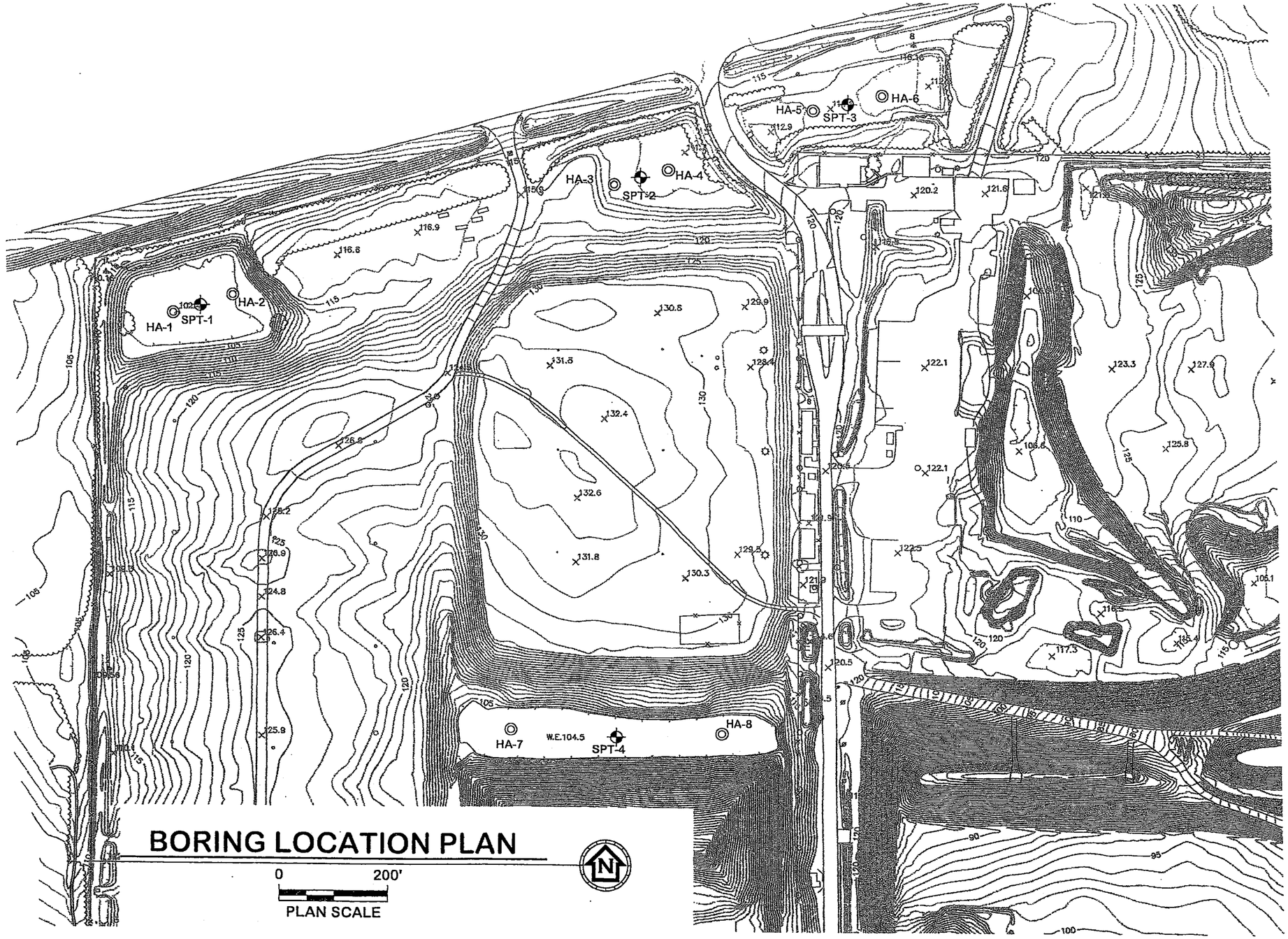
Respectfully Submitted,

TIERRA, INC.

Sean C. Olsen, E.I.
Geotechnical Engineer Intern

Larry P. Moore, P.E. 6/23/08
Principal Geotechnical Engineer
Florida License No. 47673

Attachments:



BORING LOCATION PLAN

0 200'

PLAN SCALE

N

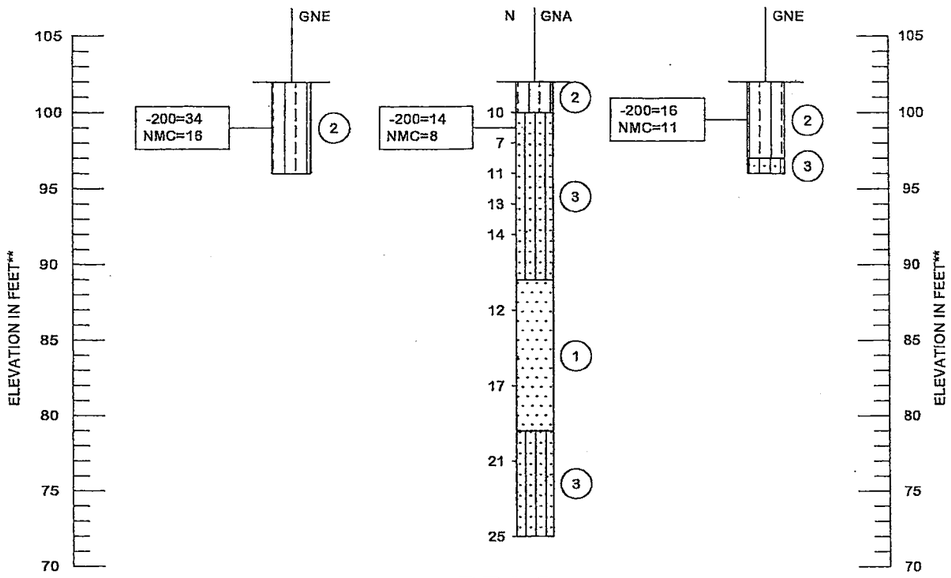
LEGEND

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF AUGER BORING

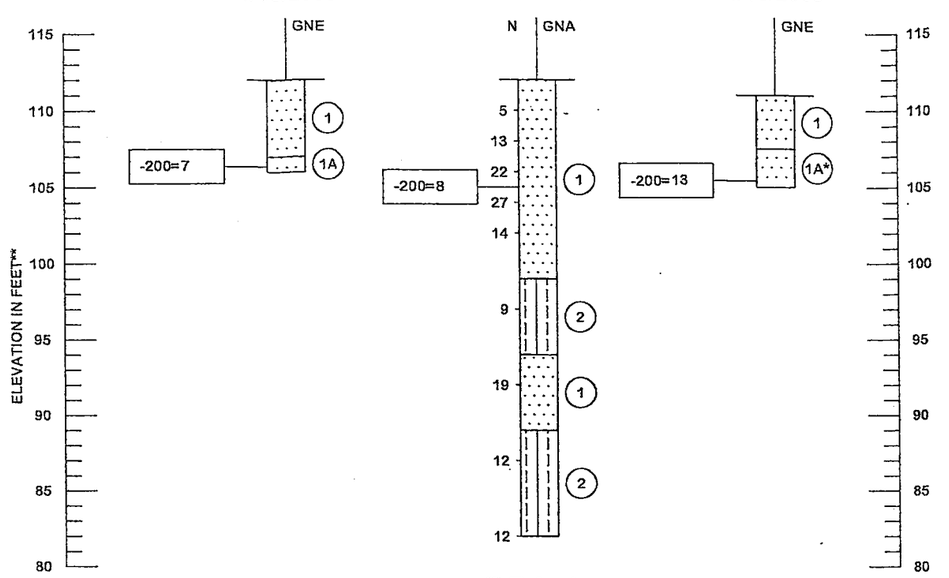
DRAWN BY: SW CHECKED BY: SCO	APPROVED BY: LPM DATE: APRIL 2008	ENGINEER OF RECORD: LARRY P. MOORE, P.E. FLORIDA LICENSE NO.: 47673	TIERRA 7805 Professional Place Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-08-086	GEOTECHNICAL ENGINEERING SERVICES CITRUS COUNTY CENTRAL LANDFILL CITRUS COUNTY, FLORIDA	SHEET 1

SOIL PROFILES

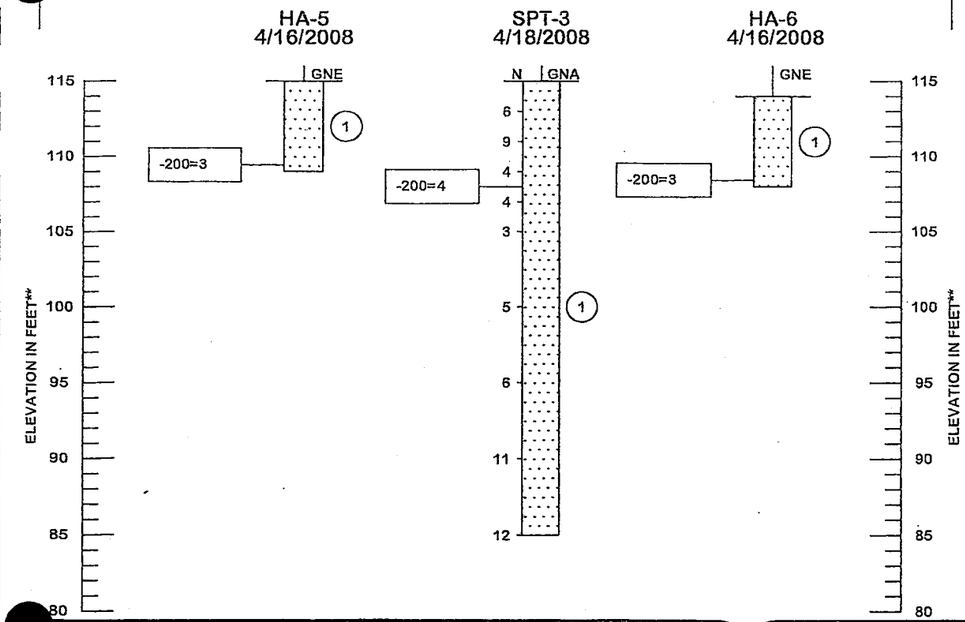
DRA-1



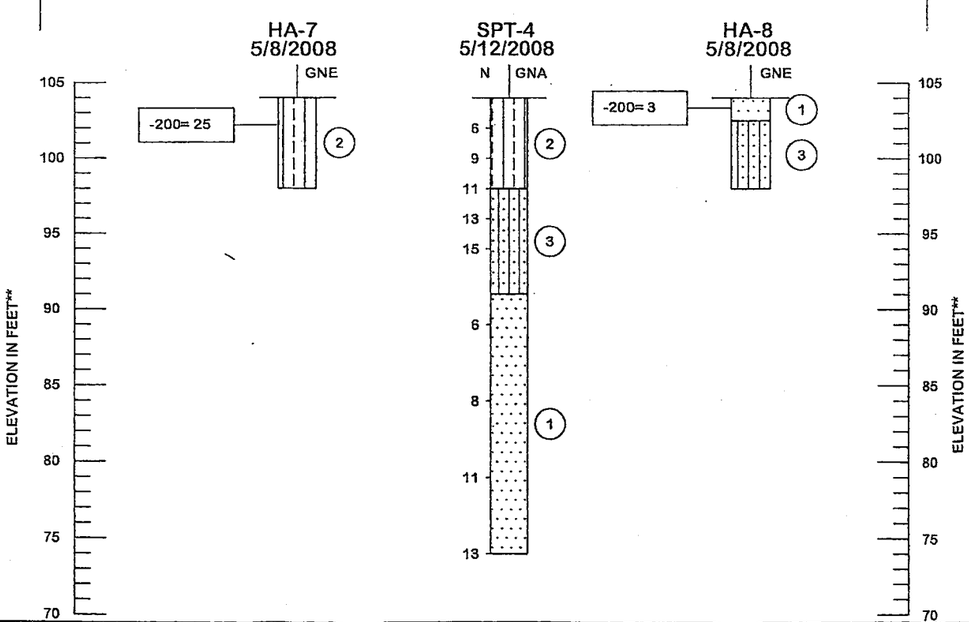
DRA-2



DRA-3



DRA-4



LEGEND

1. GRAY TO ORANGE FINE SAND TO FINE SAND WITH SILT (SP/SP-SM)
2. ORANGE SILTY SAND TO CLAYEY SAND (SM/SC)
3. ORANGE FINE SAND WITH SILT TO SILTY SAND (SP-SM/SM)

A - WITH CLAYEY SAND LENSES

* - AT LOCATION HA-4 SAMPLE CONSISTED OF FINE SAND WITH SILT (SP-SM). HOWEVER CLAY LENSES PRODUCED A USCS CLASSIFICATION OF SILTY SAND (SM).

N SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)

SP UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GNE GROUNDWATER TABLE NOT ENCOUNTERED

GNA GROUNDWATER NOT APPARENT DUE TO DRILLING METHOD USED

▽ GROUNDWATER TABLE

** BORING ELEVATIONS ESTIMATED BASED ON DESIGN CONTOUR FILES PROVIDED BY SCS ENGINEERS AND THEREFORE SHOULD BE CONSIDERED APPROXIMATE.

GRANULAR MATERIALS-RELATIVE DENSITY	SPT (BLOWS/FT.)
VERY LOOSE	LESS THAN 4
LOOSE	4 TO 10
MEDIUM	10 TO 30
DENSE	30 TO 50
VERY DENSE	GREATER THAN 50

SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/FT.)
VERY SOFT	LESS THAN 2
SOFT	2 TO 4
FIRM	4 TO 8
STIFF	8 TO 15
VERY STIFF	16 TO 30
HARD	GREATER THAN 30

DRAWN BY: SW
CHECKED BY: SCO
APPROVED BY: LPM
DATE: APRIL 2008
ENGINEER OF RECORD: LARRY P. MOORE, P.E.
FLORIDA LICENSE NO.: 47673

TIERRA
7805 Professional Place
Tampa, Florida 33637
Phone: 813-988-1354 Fax: 813-989-1355
FL Cert. No.: 6486

SCALE: NOTED
PROJECT NUMBER: 6511-08-086

GEOTECHNICAL ENGINEERING SERVICES
CITRUS COUNTY CENTRAL LANDFILL
CITRUS COUNTY, FLORIDA

SHEET 2

SECTION I

HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS

There has been no change to this section since the Phase 3 construction permit application submittal.

I.1 HYDROGEOLOGICAL INVESTIGATION AND SITE REPORT

No substantial change is proposed. The Citrus County Landfill has had numerous geological, hydrogeological and geotechnical investigations conducted over the last 20 years as part of the design, permitting, and on-going monitoring of lined waste disposal cells at the facility. Copies of these reports were provided in the Phase 2 Expansion Construction Permit Application or under a separate cover to FDEP and include the following:

- *Citrus County Central Landfill – Expansion Site Ground Water Monitoring Plan*, August 1988, prepared by Post, Buckley, Schuh & Jernigan, Inc. (PBS&J): The PBS&J investigation was performed for the new (at the time) proposed 80-acre landfill. The PBS&J report was provided in Appendix G of the Phase 2 Expansion Construction Permit Application.

- *Ground Water and Leachate Monitoring Plan Review, Class I Central Landfill, Citrus County, FL*, July 2001, prepared by Jones Edmunds and Associates, Inc. (JE&A): The JE&A Report provides information on the overall ground water resources and monitoring effort on-going for the entire 80-acre site. The JE&A report was provided in Appendix M of the Phase 2 Expansion Construction Permit Application.

- *Geotechnical Investigation for Citrus County Central Landfill – New Disposal Cell*, November 2001, prepared by Universal Engineering Sciences (Universal): The Universal report provides specific geologic, hydrogeologic and geotechnical information. A copy of the Universal report is provided in Appendix F.

- *Citrus County Central Class I Landfill, Biennial Report 2004-2007*, July 2007, prepared by JE&A: The JE&A Report provides information on the overall ground water resources and monitoring effort on-going for the entire 80-acre site for the period extending from October 2004 through April 2007. This document was provided under a separate cover to FDEP.

The following documents provide new or revised information regarding aspects of the site hydrogeology:

- Ground Water Monitoring Plan Evaluation, 2004 prepared by JE&A. The Ground Water Monitoring Plan Evaluation document provides site hydrogeology

description, calculation of hydraulic gradient and ground water velocity.

- Ground Water Investigation Report, November 2006, prepared by JE&A. This document provides slug test results at compliance wells, revised calculation of ground water velocity.

- *Citrus County Central Landfill Site Assessment Report*, October 2007, prepared by JE&A. This document provides slug test results at assessment wells/new piezometers.

- *Citrus County Central Landfill Water Quality and Leachate Monitoring Plan,* November 2008, prepared by JE&A. This document was prepared to update the monitoring program from the Citrus County Central Landfill in response to the construction of the Phase 3 Expansion Area.

- *Citrus County Central Landfill Biennial Water Quality Monitoring Report,* 2009, prepared by SCS. This biennial report was prepared in accordance with FDEP Permit No. 21375-008-SO/01 Condition E.11.b, Chapter 62-701.510(9)(b) F.A.C. This biennial report includes a summary and evaluation of the groundwater and leachate analytical data from monitoring events performed at the Citrus County Central Landfill from July 2007 through July 2009 (the reporting period).

I.1.a Regional and Site-Specific Geology and Hydrology

Sections 3 and 4 of the PBS&J Hydrogeological Investigation Report present regional and site-specific geology and hydrogeology for the overall Landfill site. In addition, the geotechnical investigation performed by Universal Engineering Sciences on November 15, 2001 provides more information on the site-specific geology of the proposed Phase 3 Expansion area.

I.1.b Groundwater and Surface Water Flow Direction and Rate

The Water Quality and Leachate Monitoring Plan (WQLMP), November 2008, prepared by JE&A document mentions that the overall gradient across the site is towards the west however, the percolation basin for the leachate treatment plant effluent has created a localized northwesterly flow direction near the northern boundary of the proposed Phase 3 Expansion area. A conceptual diagram that displays the effects of the groundwater mounding caused by the percolation basin on flow across the site was provided as Figure 1 of the WQLMP, November 2008, prepared by JE&A document. The groundwater mounding creates a localized zone of influence where flow patterns are different than the regional gradient. When groundwater flow leaves the zone of influence of the percolation basin it flows westerly parallel to the regional gradient.

The construction and operation of the proposed Phase 3 waste disposal cell is not anticipated to affect the regional ground water flow direction.

There are no permanent surface waters on or near the Landfill site.

I.1.c Background Quality

The most current background ground water quality information for the Landfill site is presented in the JE&A report referenced in Section I.1 above. No adverse changes are expected to the background ground water quality as a result of the proposed Phase 3 expansion.

I.1.d Hydraulic Connections

There are no changes to the description of the hydrogeology at the site for the proposed Phase 3 disposal area. There is a hydraulic connection between two aquifers at the site as described in Section I.1.e.

I.1.e Site Stratigraphy and Aquifer Characteristics

There are no changes to the site stratigraphy and aquifer characteristics below the landfill site that may be affected by the proposed Phase 3 disposal area.

The Floridan aquifer is located approximately 35 to 40 feet below the base of the proposed Phase 3 disposal area in the sandy deposits of the Alachua formation. Water levels in the Floridan aquifer often rise above the contact between the overlying sands/clayey sands and the underlying limestone formations.

These features are described in Sections 3.2, 4.1, and 4.6 of the PBS&J Report.

I.1.f Site Topography and Soil Characteristics

Sections 2.1 and 4.2 of the PBS&J Hydrogeological Investigation Report present site topography, soil characteristics and surface water drainage systems. In addition, the geotechnical investigation performed by Universal Engineering Sciences on November 15, 2001 provides more information on the site-specific geology of the Phase 3 Expansion.

I.1.g Well Inventory

SCS has obtained from the Southwest Florida Water Management District (SWFWMD) an updated printout of the inventory of all public and private water wells within a one-mile radius of the Citrus County Central Landfill. The list was included in Attachment I-1 of the Phase 3 Expansion construction application.

I.1.h Existing Contaminated Areas

There are no known contaminated areas at the proposed Phase 3 landfill expansion site.

I.1.i Map of Potable Wells and Community Water Supply Wells

A revised well inventory map was included in Attachment I-1 of the Phase 3 Expansion construction application. The edge of Phase 3 was measured out to the closest domestic and public supply well and it was determined that the domestic and public supply wells identified by the SWFWMD Well Construction Permitting database query for Section 6, Twp 19, Rge 19

were not located within the 500-foot and 1,000-foot setbacks for potable supply wells and public supply wells, respectively for the Phase 3 Expansion Area only. Thus, the proposed Phase 3 Expansion Area meets the prohibitions of Rules 62-701.300(2)(b) and 62-701.300(2)(h), F.A.C.

I.2 PROFESSIONAL ENGINEER OR GEOLOGIST SIGNATURE

The PBS&J Hydrogeological Investigation Report was previously submitted to FDEP in support of permitting for the Citrus County Central Landfill. This previous submission was signed, sealed, and dated by a professional engineer or professional geologist, as were the JE&A reports and the Universal report referenced in this section.

SECTION J

GEOTECHNICAL INVESTIGATION REQUIREMENTS

There has been no change to this section since the Phase 3 construction permit application submittal.

J.1 GEOTECHNICAL SITE INVESTIGATION REPORT

No substantial change is proposed. Geotechnical investigation reports were included in Appendix F, Appendix G, and Appendix M of the Construction Permit Application, Phase 2 expansion, Citrus County Central Landfill, Submitted to FDEP in August 2002.

J.1.a Subsurface Conditions Description

No substantial change is proposed. Refer to Appendix F, Section 3.4 of Appendix G, and the description given in Section J.1.b of the engineering report of the Phase 2 Construction Permit Application submitted to the FDEP in August 2002.

J.1.b Investigation for the Presence of Muck, Previously Filled Areas, Soft Ground, Lineaments and Sinkholes

No substantial change is proposed. Refer to Subsection J.1.b of the Phase 3 construction permit application.

J.1.c Average and Maximum High Water Table

No substantial change is proposed. Estimates of the average and maximum high water table are presented in Section 3.3 of the Universal Geotechnical Investigation in Appendix F and in Section 2.1.2 of the Citrus County Central Landfill Groundwater and Leachate Monitoring Plan Review in Appendix M.

J.1.d Foundation Analysis

J.1.d.1 Foundation Bearing Capacity Analysis

No changes are proposed. Refer to Section J.1.d .1 of the Phase 3 construction permit application.

J.1.d.2 Settlement Analysis

Rule 62-701.410(2)(e)2 F.A.C. requires that the foundation analysis include an analysis of "...subgrade settlements, both total and differential...". As discussed in the Universal Geotechnical Investigation, included in the Phase 2 Expansion Construction Permit Application as Appendix F, the soil in the area consists of loose to medium dense tan to brown fine sand from surface grade to a depth of approximately 20 to 25 feet below surface grade, where a 10 to 15 feet of medium

dense orange and gray clayey sand is present. Beneath this layer there typically lies a medium dense to very dense orange to tan or white fine sand to the maximum boring depth of 120 feet. Lenses of gray and orange slightly clayey sand were encountered from 50 to 60 feet below grade.

As discussed in the Universal Geotechnical Report the differential settlement is estimated to be approximately 3 inches or less under the full height of the landfill (Elevation 220.0 feet NGVD). Therefore, settlement of the sub-base is expected to have no significant effect on the lining system integrity and performance.

No changes are proposed to the settlement calculations since the Universal calculations were computed for a maximum elevation of 220.0 ft NGVD. The maximum final build out elevation is 218.1 ft NGVD with a maximum elevation of 215 ft NGVD within the Phase 1 area. In addition to the settlement calculations computed by Universal, SCS estimated the settlement of the subsurface soil layers in the expansion area (Phase 3 area) using a buried waste density of 76.5 pounds per cubic feet (pcf) which reflects bioreactor unit weights of waste. The calculations and references to the estimated waste unit weight of 76.5 pcf were included in the Phase 3 Expansion Construction Permit Application as Attachment J-1 and Attachment 9 of Attachment H-3, respectively.

J.1.d.3 Slope Stability Analysis

Two cross sections were modeled on the new final build out configuration provided in the drawings. One cross section runs from the dry retention area (DRA) through the highest build out elevation (215 ft NGVD). The other cross section runs north-south through the highest build out elevation (218.1 ft NGVD). The slope stability analysis models are contained in Attachment J-1.

J.1.e Investigation Methods

A description of the methods used in the investigation, soil borings, laboratory results, cross sections, interpretations, and conclusions have been included in Sections 2.4 and 2.5 of the Universal Geotechnical Investigation included in the Phase 2 Expansion Construction Permit Application as Appendix F.

J.1.f Fault Areas, Seismic Impact Zones, and Unstable Areas Investigation

No changes are expected.

J.2 PROFESSIONAL ENGINEER OR GEOLOGIST SIGNATURE

All the geotechnical investigation reports attached with the Phase 3 construction permit application were signed, sealed and dated by a professional engineer or geologist. All revised calculations have been signed, sealed and dated by a professional engineer or geologist.

ATTACHMENT J-1

SLOPE STABILITY CALCULATIONS

SCS ENGINEERS

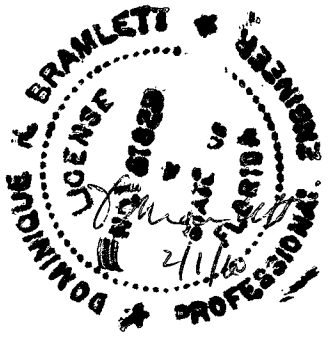
Sheet 1 of 1

Client:	Project:	Job No.
Citrus County	Operations Permit Renewal	09208040.03

Subject:	By:	Date:
Slope Stability Factor of Safety Summary Results	DHB	2/1/10
	Checked: CEL	Date: 1/30/10

	CIRCULAR MODE FACTOR SAFETY (FS)	BLOCK MODE FACTOR SAFETY (FS)
South Side Slope Final Buildout		
No Equipment	2.0	3.1
CAT 826G Series II	1.9	3.0
CAT D8R Series II	1.8	2.9
North Side Slope Final Buildout		
No Equipment	2.1	2.5
CAT 826G Series II	2.0	2.4
CAT D8R Series II	2.0	2.4

The slope stability calculations used to derive the Factor of Safety summary results listed in the above table have been reviewed and have been completed in accordance with good engineering practice and industry-accepted values.



Citrus Operations Permit Renewal South Slope

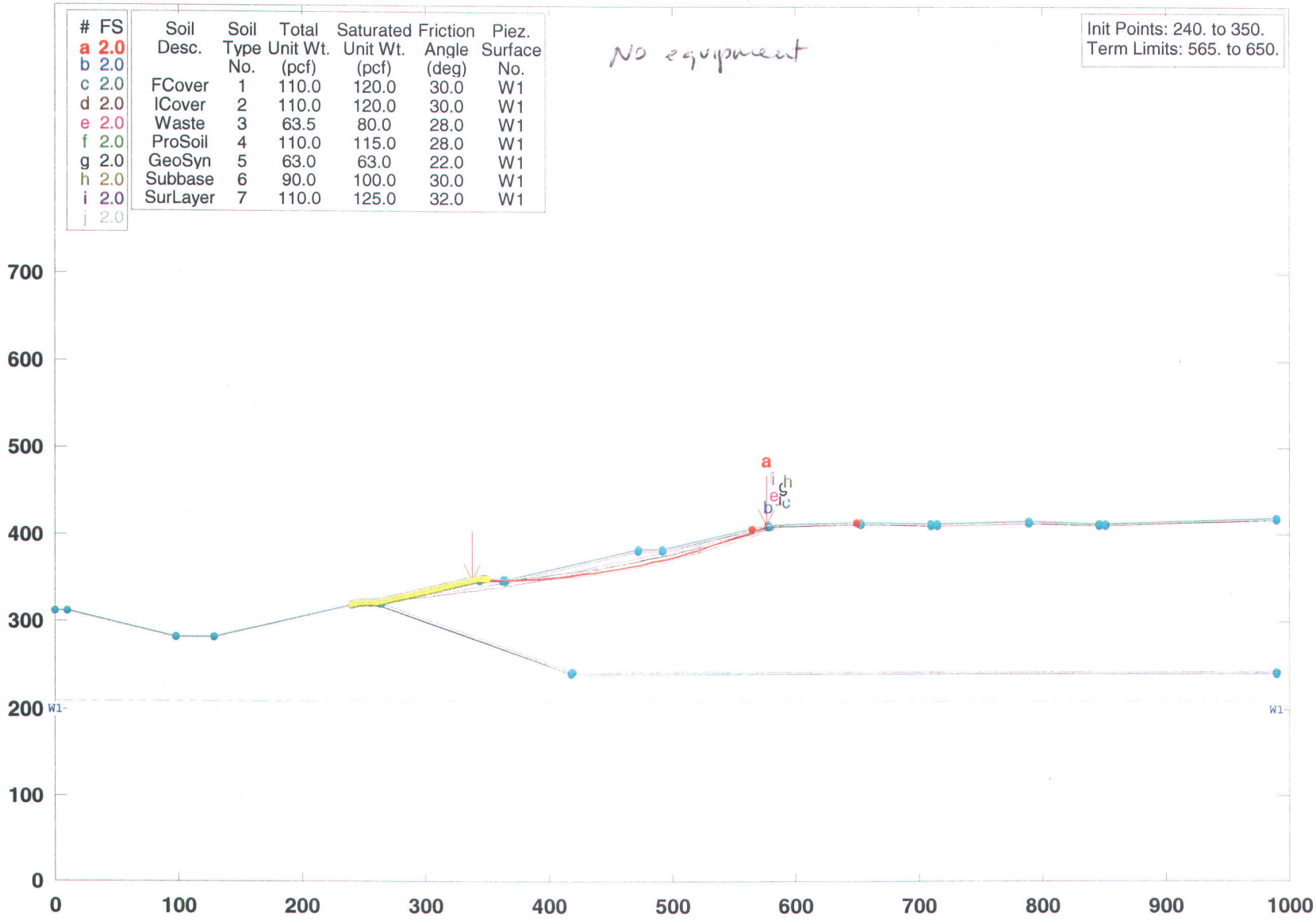
F:\PROJECT\CITRUS\09208040.03\CALCUL~1\CSFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:57PM

Circular

No equipment

#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
a	2.0						
b	2.0						
c	2.0	FCover	1	110.0	120.0	30.0	W1
d	2.0	ICover	2	110.0	120.0	30.0	W1
e	2.0	Waste	3	63.5	80.0	28.0	W1
f	2.0	ProSoil	4	110.0	115.0	28.0	W1
g	2.0	GeoSyn	5	63.0	63.0	22.0	W1
h	2.0	Subbase	6	90.0	100.0	30.0	W1
i	2.0	SurLayer	7	110.0	125.0	32.0	W1
j	2.0						

Init Points: 240. to 350.
Term Limits: 565. to 650.



STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:57PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:csfinal.
Output Filename: F:csfinal.OUT
Plotted Output Filename: F:csfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
South Slope

BOUNDARY COORDINATES
21 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	311.50	10.00	311.50	7
2	10.00	311.50	98.20	282.10	7
3	98.20	282.10	128.20	282.10	7
4	128.20	282.10	247.00	321.70	7
5	247.00	321.70	254.60	321.90	7
6	254.60	321.90	255.60	321.90	6
7	255.60	321.90	256.70	321.90	5
8	256.70	321.90	261.00	322.00	4
9	261.00	322.00	343.00	349.30	1
10	343.00	349.30	363.50	348.90	1
11	363.50	348.90	365.50	347.90	1
12	365.50	347.90	472.40	383.50	1
13	472.40	383.50	492.40	383.50	1
14	492.40	383.50	577.90	412.00	1
15	577.90	412.00	652.90	415.00	1
16	652.90	415.00	709.60	412.70	1
17	709.60	412.70	714.60	412.70	1
18	714.60	412.70	789.60	415.70	1
19	789.60	415.70	846.20	413.50	1
20	846.20	413.50	851.20	413.50	1
21	851.20	413.50	989.70	419.00	1
22	261.00	322.00	263.50	320.70	4
23	263.50	320.70	343.30	347.30	2
24	343.30	347.30	363.00	346.90	2
25	363.00	346.90	365.40	345.70	2
26	365.40	345.70	472.70	381.50	2
27	472.70	381.50	492.70	381.50	2
28	492.70	381.50	578.30	410.00	2
29	578.30	410.00	652.90	413.00	2
30	652.90	413.00	709.50	410.70	2
31	709.50	410.70	714.60	410.70	2
32	714.60	410.70	789.60	413.70	2
33	789.60	413.70	846.20	411.50	2
34	846.20	411.50	851.20	411.50	2
35	851.20	411.50	989.70	417.00	2
36	263.50	320.70	264.20	320.40	4
37	264.20	320.40	343.40	346.80	3
38	343.40	346.80	362.90	346.40	3
39	362.90	346.40	365.30	345.20	3
40	365.30	345.20	472.80	381.00	3
41	472.80	381.00	492.80	381.00	3
42	492.80	381.00	578.40	409.50	3
43	578.40	409.50	652.90	412.50	3
44	652.90	412.50	709.50	410.20	3
45	709.50	410.20	714.60	410.20	3
46	714.60	410.20	789.60	413.20	3
47	789.60	413.20	846.20	411.00	3
48	846.20	411.00	851.30	411.00	3
49	851.30	411.00	989.70	416.50	3

50	264.20	320.40	419.00	243.00	4
51	419.00	243.00	989.70	243.00	4
52	256.70	321.90	418.50	241.00	5
53	418.50	241.00	989.70	241.00	5
54	255.60	321.90	418.40	240.50	6
55	418.40	240.50	989.70	240.50	6
56	254.60	321.90	418.30	240.00	7
57	418.30	240.00	989.70	240.00	7

ISOTROPIC SOIL PARAMETERS
7 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	63.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	22.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	989.70	208.50

BOUNDARY LOAD(S)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	577.90	588.40	2172.8	.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.
SURCHARGE BOUNDARY LOAD DATA HAS BEEN SUPPRESSED
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
5000 Trial Surfaces Have Been Generated.
50 Surfaces Initiate From Each Of100 Points Equally Spaced
Along The Ground Surface Between X = 240.00 ft.
and X = 350.00 ft.
Each Surface Terminates Between X = 565.00 ft.
and X = 650.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	337.78	347.56
2	347.78	347.47
3	357.78	347.61
4	367.77	347.97
5	377.75	348.56
6	387.72	349.36
7	397.67	350.40
8	407.59	351.65
9	417.48	353.13
10	427.33	354.83
11	437.15	356.76
12	446.91	358.90
13	456.63	361.26
14	466.29	363.84
15	475.89	366.63

16	485.43	369.64
17	494.90	372.87
18	504.29	376.30
19	513.60	379.95
20	522.83	383.80
21	531.97	387.86
22	541.01	392.12
23	549.96	396.59
24	558.80	401.26
25	567.54	406.12
26	576.17	411.18
27	577.01	411.70

Circle Center At X = 346.7 ; Y = 792.4 and Radius, 445.0

*** 1.953 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	334.45	346.45
2	344.44	346.66
3	354.43	347.07
4	364.42	347.67
5	374.38	348.47
6	384.33	349.47
7	394.26	350.66
8	404.17	352.05
9	414.04	353.63
10	423.88	355.41
11	433.68	357.38
12	443.45	359.55
13	453.17	361.90
14	462.84	364.45
15	472.45	367.19
16	482.02	370.11
17	491.52	373.23
18	500.96	376.53
19	510.33	380.02
20	519.63	383.69
21	528.86	387.54
22	538.01	391.58
23	547.08	395.79
24	556.06	400.18
25	564.96	404.75
26	573.76	409.50
27	578.22	412.01

Circle Center At X = 328.8 ; Y = 853.6 and Radius, 507.2

*** 1.960 ***

Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	262.22	322.41
2	272.04	324.31
3	281.85	326.25
4	291.65	328.24
5	301.44	330.27
6	311.22	332.35
7	321.00	334.47
8	330.76	336.63
9	340.51	338.84
10	350.26	341.09
11	359.99	343.39
12	369.71	345.73
13	379.42	348.11
14	389.12	350.54
15	398.81	353.01
16	408.49	355.53
17	418.16	358.08
18	427.81	360.69
19	437.46	363.33

20	447.09	366.02
21	456.71	368.75
22	466.32	371.53
23	475.91	374.34
24	485.49	377.21
25	495.06	380.11
26	504.62	383.06
27	514.16	386.05
28	523.69	389.08
29	533.20	392.16
30	542.71	395.28
31	552.19	398.44
32	561.67	401.64
33	571.12	404.89
34	580.57	408.18
35	589.99	411.51
36	593.04	412.61

Circle Center At X = -154.8 ; Y = 2503.6 and Radius, 2220.7

*** 1.962 ***

Failure Surface Specified By 35 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	261.11	322.04
2	271.01	323.43
3	280.91	324.89
4	290.79	326.44
5	300.65	328.07
6	310.51	329.78
7	320.34	331.56
8	330.17	333.43
9	339.98	335.38
10	349.77	337.40
11	359.55	339.51
12	369.30	341.69
13	379.05	343.96
14	388.77	346.30
15	398.47	348.72
16	408.15	351.22
17	417.81	353.79
18	427.46	356.45
19	437.07	359.18
20	446.67	361.99
21	456.25	364.88
22	465.80	367.85
23	475.32	370.89
24	484.82	374.01
25	494.30	377.21
26	503.75	380.48
27	513.17	383.83
28	522.56	387.26
29	531.93	390.76
30	541.27	394.34
31	550.58	397.99
32	559.85	401.72
33	569.10	405.53
34	578.32	409.41
35	585.01	412.28

Circle Center At X = 94.6 ; Y = 1546.3 and Radius, 1235.5

*** 1.962 ***

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	273.33	326.11
2	283.17	327.88
3	293.01	329.72
4	302.82	331.61
5	312.63	333.56
6	322.43	335.57

7	332.21	337.63
8	341.98	339.76
9	351.74	341.94
10	361.49	344.18
11	371.22	346.48
12	380.94	348.83
13	390.65	351.24
14	400.34	353.71
15	410.01	356.24
16	419.67	358.83
17	429.32	361.47
18	438.95	364.17
19	448.56	366.92
20	458.15	369.74
21	467.73	372.60
22	477.30	375.53
23	486.84	378.51
24	496.37	381.55
25	505.88	384.65
26	515.37	387.80
27	524.84	391.01
28	534.29	394.27
29	543.72	397.59
30	553.14	400.97
31	562.53	404.40
32	571.90	407.89
33	581.25	411.43
34	583.30	412.22

Circle Center At X = -21.6 ; Y = 1988.5 and Radius, 1688.4

*** 1.967 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.45	343.12
2	334.40	344.08
3	344.34	345.16
4	354.27	346.36
5	364.18	347.67
6	374.08	349.10
7	383.96	350.65
8	393.82	352.31
9	403.66	354.09
10	413.48	355.99
11	423.27	358.01
12	433.04	360.13
13	442.79	362.38
14	452.51	364.74
15	462.19	367.22
16	471.85	369.80
17	481.48	372.51
18	491.08	375.33
19	500.64	378.26
20	510.16	381.30
21	519.65	384.46
22	529.10	387.73
23	538.51	391.11
24	547.88	394.60
25	557.21	398.20
26	566.50	401.91
27	575.74	405.73
28	584.93	409.67
29	591.45	412.54

Circle Center At X = 248.3 ; Y = 1184.4 and Radius, 844.7

*** 1.968 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	323.33	342.75

2	333.29	343.66
3	343.24	344.68
4	353.17	345.84
5	363.09	347.11
6	372.99	348.51
7	382.88	350.02
8	392.74	351.67
9	402.59	353.43
10	412.41	355.31
11	422.20	357.32
12	431.97	359.45
13	441.72	361.70
14	451.43	364.07
15	461.12	366.56
16	470.77	369.16
17	480.39	371.89
18	489.98	374.74
19	499.53	377.71
20	509.04	380.79
21	518.52	383.99
22	527.95	387.31
23	537.34	390.74
24	546.69	394.30
25	555.99	397.96
26	565.25	401.74
27	574.46	405.64
28	583.62	409.65
29	589.87	412.48

Circle Center At X = 255.3 ; Y = 1147.4 and Radius, 807.5

*** 1.970 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	334.45	346.45
2	344.44	346.65
3	354.44	347.03
4	364.42	347.58
5	374.39	348.31
6	384.35	349.22
7	394.29	350.30
8	404.22	351.55
9	414.11	352.98
10	423.98	354.59
11	433.82	356.37
12	443.63	358.32
13	453.40	360.44
14	463.14	362.74
15	472.83	365.20
16	482.47	367.84
17	492.07	370.65
18	501.62	373.62
19	511.11	376.77
20	520.55	380.08
21	529.92	383.56
22	539.24	387.20
23	548.48	391.00
24	557.66	394.97
25	566.77	399.10
26	575.81	403.39
27	584.76	407.83
28	593.64	412.44
29	594.02	412.64

Circle Center At X = 328.1 ; Y = 913.6 and Radius, 567.2

*** 1.973 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	337.78	347.56

2	347.77	347.14
3	357.77	346.96
4	367.77	347.03
5	377.76	347.33
6	387.75	347.89
7	397.72	348.68
8	407.66	349.72
9	417.58	351.00
10	427.46	352.52
11	437.31	354.28
12	447.11	356.28
13	456.85	358.52
14	466.54	361.00
15	476.17	363.71
16	485.72	366.65
17	495.20	369.83
18	504.61	373.23
19	513.92	376.87
20	523.15	380.73
21	532.28	384.81
22	541.30	389.12
23	550.22	393.64
24	559.02	398.38
25	567.71	403.34
26	576.28	408.50
27	582.03	412.17

Circle Center At X = 360.1 ; Y = 757.4 and Radius, 410.4

*** 1.974 ***

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	268.89	324.63
2	278.80	325.95
3	288.70	327.37
4	298.59	328.87
5	308.46	330.47
6	318.32	332.15
7	328.16	333.92
8	337.98	335.78
9	347.79	337.72
10	357.58	339.76
11	367.36	341.88
12	377.11	344.09
13	386.84	346.38
14	396.55	348.77
15	406.24	351.24
16	415.91	353.80
17	425.56	356.44
18	435.18	359.17
19	444.77	361.99
20	454.34	364.89
21	463.88	367.88
22	473.40	370.95
23	482.89	374.11
24	492.35	377.35
25	501.78	380.68
26	511.18	384.10
27	520.54	387.59
28	529.88	391.17
29	539.18	394.84
30	548.46	398.59
31	557.69	402.42
32	566.90	406.33
33	576.06	410.33
34	579.99	412.08

Circle Center At X = 125.9 ; Y = 1430.4 and Radius, 1115.0

*** 1.976 ***

Citrus Operations Permit Renewal South Slope

F:\PROJECT\CITRUS\09208040.03\CALCUL~1\CSFINEQ.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 5:01PM

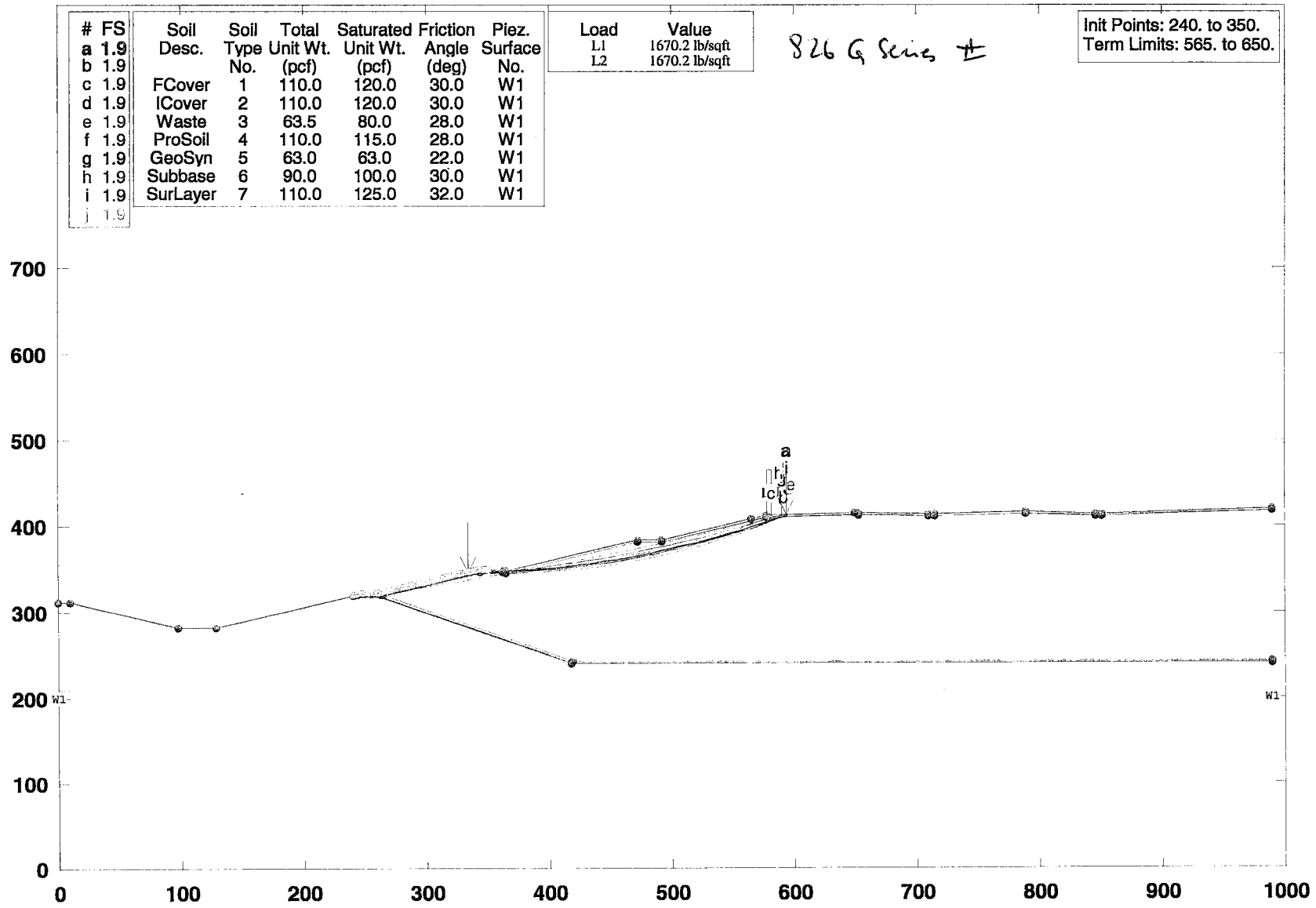
Crumlen

826 G Series ±

#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
a	1.9						
b	1.9						
c	1.9	FCover	1	110.0	120.0	30.0	W1
d	1.9	ICover	2	110.0	120.0	30.0	W1
e	1.9	Waste	3	63.5	80.0	28.0	W1
f	1.9	ProSoil	4	110.0	115.0	28.0	W1
g	1.9	GeoSyn	5	63.0	63.0	22.0	W1
h	1.9	Subbase	6	90.0	100.0	30.0	W1
i	1.9	SurLayer	7	110.0	125.0	32.0	W1
j	1.9						

Load	Value
L1	1670.2 lb/sqft
L2	1670.2 lb/sqft

Init Points: 240. to 350.
Term Limits: 565. to 650.



STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Bishop Method

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 5:01PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:csfineq.
Output Filename: F:csfineq.OUT
Plotted Output Filename: F:csfineq.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
South Slope

BOUNDARY COORDINATES
21 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	311.50	10.00	311.50	7
2	10.00	311.50	98.20	282.10	7
3	98.20	282.10	128.20	282.10	7
4	128.20	282.10	247.00	321.70	7
5	247.00	321.70	254.60	321.90	7
6	254.60	321.90	255.60	321.90	6
7	255.60	321.90	256.70	321.90	5
8	256.70	321.90	261.00	322.00	4
9	261.00	322.00	343.00	349.30	1
10	343.00	349.30	363.50	348.90	1
11	363.50	348.90	365.50	347.90	1
12	365.50	347.90	472.40	383.50	1
13	472.40	383.50	492.40	383.50	1
14	492.40	383.50	577.90	412.00	1
15	577.90	412.00	652.90	415.00	1
16	652.90	415.00	709.60	412.70	1
17	709.60	412.70	714.60	412.70	1
18	714.60	412.70	789.60	415.70	1
19	789.60	415.70	846.20	413.50	1
20	846.20	413.50	851.20	413.50	1
21	851.20	413.50	989.70	419.00	1
22	261.00	322.00	263.50	320.70	4
23	263.50	320.70	343.30	347.30	2
24	343.30	347.30	363.00	346.90	2
25	363.00	346.90	365.40	345.70	2
26	365.40	345.70	472.70	381.50	2
27	472.70	381.50	492.70	381.50	2
28	492.70	381.50	578.30	410.00	2
29	578.30	410.00	652.90	413.00	2
30	652.90	413.00	709.50	410.70	2
31	709.50	410.70	714.60	410.70	2
32	714.60	410.70	789.60	413.70	2
33	789.60	413.70	846.20	411.50	2
34	846.20	411.50	851.20	411.50	2
35	851.20	411.50	989.70	417.00	2
36	263.50	320.70	264.20	320.40	4
37	264.20	320.40	343.40	346.80	3
38	343.40	346.80	362.90	346.40	3
39	362.90	346.40	365.30	345.20	3
40	365.30	345.20	472.80	381.00	3
41	472.80	381.00	492.80	381.00	3
42	492.80	381.00	578.40	409.50	3
43	578.40	409.50	652.90	412.50	3
44	652.90	412.50	709.50	410.20	3
45	709.50	410.20	714.60	410.20	3
46	714.60	410.20	789.60	413.20	3
47	789.60	413.20	846.20	411.00	3
48	846.20	411.00	851.30	411.00	3
49	851.30	411.00	989.70	416.50	3

50	264.20	320.40	419.00	243.00	4
51	419.00	243.00	989.70	243.00	4
52	256.70	321.90	418.50	241.00	5
53	418.50	241.00	989.70	241.00	5
54	255.60	321.90	418.40	240.50	6
55	418.40	240.50	989.70	240.50	6
56	254.60	321.90	418.30	240.00	7
57	418.30	240.00	989.70	240.00	7

ISOTROPIC SOIL PARAMETERS

7 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	63.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	22.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	989.70	208.50

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	577.90	581.12	1670.2	.0
2	590.04	593.26	1670.2	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

5000 Trial Surfaces Have Been Generated.

50 Surfaces Initiate From Each Of100 Points Equally Spaced Along The Ground Surface Between X = 240.00 ft.
and X = 350.00 ft.

Each Surface Terminates Between X = 565.00 ft.
and X = 650.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	334.45	346.45
2	344.44	346.65
3	354.44	347.03
4	364.42	347.58
5	374.39	348.31
6	384.35	349.22
7	394.29	350.30
8	404.22	351.55
9	414.11	352.98
10	423.98	354.59
11	433.82	356.37
12	443.63	358.32
13	453.40	360.44
14	463.14	362.74
15	472.83	365.20

16	482.47	367.84
17	492.07	370.65
18	501.62	373.62
19	511.11	376.77
20	520.55	380.08
21	529.92	383.56
22	539.24	387.20
23	548.48	391.00
24	557.66	394.97
25	566.77	399.10
26	575.81	403.39
27	584.76	407.83
28	593.64	412.44
29	594.02	412.64

Circle Center At X = 328.1 ; Y = 913.6 and Radius, 567.2

*** 1.900 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.45	343.12
2	334.40	344.08
3	344.34	345.16
4	354.27	346.36
5	364.18	347.67
6	374.08	349.10
7	383.96	350.65
8	393.82	352.31
9	403.66	354.09
10	413.48	355.99
11	423.27	358.01
12	433.04	360.13
13	442.79	362.38
14	452.51	364.74
15	462.19	367.22
16	471.85	369.80
17	481.48	372.51
18	491.08	375.33
19	500.64	378.26
20	510.16	381.30
21	519.65	384.46
22	529.10	387.73
23	538.51	391.11
24	547.88	394.60
25	557.21	398.20
26	566.50	401.91
27	575.74	405.73
28	584.93	409.67
29	591.45	412.54

Circle Center At X = 248.3 ; Y = 1184.4 and Radius, 844.7

*** 1.918 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	337.78	347.56
2	347.77	347.14
3	357.77	346.96
4	367.77	347.03
5	377.76	347.33
6	387.75	347.89
7	397.72	348.68
8	407.66	349.72
9	417.58	351.00
10	427.46	352.52
11	437.31	354.28
12	447.11	356.28
13	456.85	358.52
14	466.54	361.00
15	476.17	363.71

16	485.72	366.65
17	495.20	369.83
18	504.61	373.23
19	513.92	376.87
20	523.15	380.73
21	532.28	384.81
22	541.30	389.12
23	550.22	393.64
24	559.02	398.38
25	567.71	403.34
26	576.28	408.50
27	582.03	412.17

Circle Center At X = 360.1 ; Y = 757.4 and Radius, 410.4

*** 1.924 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	331.11	345.34
2	341.11	345.36
3	351.11	345.57
4	361.10	345.96
5	371.09	346.54
6	381.06	347.31
7	391.01	348.26
8	400.95	349.39
9	410.86	350.72
10	420.74	352.22
11	430.60	353.91
12	440.42	355.78
13	450.21	357.84
14	459.96	360.08
15	469.66	362.50
16	479.32	365.10
17	488.92	367.88
18	498.47	370.83
19	507.97	373.97
20	517.41	377.28
21	526.78	380.77
22	536.08	384.43
23	545.32	388.26
24	554.48	392.27
25	563.57	396.44
26	572.58	400.79
27	581.50	405.30
28	590.34	409.97
29	595.26	412.69

Circle Center At X = 335.0 ; Y = 881.9 and Radius, 536.5

*** 1.926 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	325.56	343.49
2	335.54	344.12
3	345.51	344.88
4	355.47	345.78
5	365.41	346.81
6	375.34	347.98
7	385.26	349.29
8	395.15	350.73
9	405.03	352.31
10	414.88	354.02
11	424.71	355.86
12	434.51	357.85
13	444.29	359.96
14	454.03	362.21
15	463.74	364.59
16	473.42	367.10
17	483.06	369.75

18	492.67	372.53
19	502.24	375.44
20	511.76	378.48
21	521.25	381.65
22	530.69	384.95
23	540.08	388.38
24	549.43	391.93
25	558.73	395.62
26	567.97	399.43
27	577.16	403.37
28	586.30	407.43
29	595.38	411.62
30	597.85	412.80

Circle Center At X = 284.9 ; Y = 1073.0 and Radius, 730.6

*** 1.932 ***

Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	262.22	322.41
2	272.04	324.31
3	281.85	326.25
4	291.65	328.24
5	301.44	330.27
6	311.22	332.35
7	321.00	334.47
8	330.76	336.63
9	340.51	338.84
10	350.26	341.09
11	359.99	343.39
12	369.71	345.73
13	379.42	348.11
14	389.12	350.54
15	398.81	353.01
16	408.49	355.53
17	418.16	358.08
18	427.81	360.69
19	437.46	363.33
20	447.09	366.02
21	456.71	368.75
22	466.32	371.53
23	475.91	374.34
24	485.49	377.21
25	495.06	380.11
26	504.62	383.06
27	514.16	386.05
28	523.69	389.08
29	533.20	392.16
30	542.71	395.28
31	552.19	398.44
32	561.67	401.64
33	571.12	404.89
34	580.57	408.18
35	589.99	411.51
36	593.04	412.61

Circle Center At X = -154.8 ; Y = 2503.6 and Radius, 2220.7

*** 1.932 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	323.33	342.75
2	333.29	343.66
3	343.24	344.68
4	353.17	345.84
5	363.09	347.11
6	372.99	348.51
7	382.88	350.02
8	392.74	351.67
9	402.59	353.43

10	412.41	355.31
11	422.20	357.32
12	431.97	359.45
13	441.72	361.70
14	451.43	364.07
15	461.12	366.56
16	470.77	369.16
17	480.39	371.89
18	489.98	374.74
19	499.53	377.71
20	509.04	380.79
21	518.52	383.99
22	527.95	387.31
23	537.34	390.74
24	546.69	394.30
25	555.99	397.96
26	565.25	401.74
27	574.46	405.64
28	583.62	409.65
29	589.87	412.48

Circle Center At X = 255.3 ; Y = 1147.4 and Radius, 807.5

*** 1.933 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	327.78	344.23
2	337.77	344.57
3	347.76	345.07
4	357.74	345.75
5	367.70	346.60
6	377.65	347.61
7	387.58	348.80
8	397.49	350.16
9	407.37	351.69
10	417.22	353.39
11	427.05	355.25
12	436.84	357.28
13	446.59	359.48
14	456.31	361.85
15	465.98	364.38
16	475.61	367.08
17	485.19	369.95
18	494.73	372.97
19	504.20	376.16
20	513.62	379.51
21	522.99	383.03
22	532.29	386.70
23	541.53	390.53
24	550.70	394.52
25	559.80	398.66
26	568.83	402.96
27	577.78	407.42
28	586.65	412.02
29	587.31	412.38

Circle Center At X = 313.2 ; Y = 928.0 and Radius, 583.9

*** 1.933 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	333.33	346.08
2	343.32	345.59
3	353.32	345.32
4	363.32	345.27
5	373.32	345.46
6	383.31	345.88
7	393.29	346.52
8	403.25	347.39
9	413.19	348.48

10	423.10	349.81
11	432.98	351.35
12	442.82	353.13
13	452.62	355.12
14	462.37	357.34
15	472.07	359.78
16	481.71	362.45
17	491.28	365.33
18	500.79	368.42
19	510.23	371.74
20	519.58	375.27
21	528.86	379.01
22	538.05	382.96
23	547.14	387.12
24	556.14	391.48
25	565.03	396.05
26	573.82	400.82
27	582.50	405.79
28	591.06	410.96
29	593.70	412.63

Circle Center At X = 360.1 ; Y = 784.0 and Radius, 438.7

*** 1.935 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.00	349.16
2	359.93	347.99
3	369.89	347.12
4	379.88	346.55
5	389.87	346.29
6	399.87	346.33
7	409.87	346.67
8	419.85	347.33
9	429.80	348.28
10	439.72	349.54
11	449.60	351.10
12	459.42	352.96
13	469.19	355.12
14	478.88	357.57
15	488.50	360.32
16	498.02	363.36
17	507.45	366.69
18	516.78	370.31
19	525.99	374.21
20	535.07	378.38
21	544.03	382.84
22	552.84	387.56
23	561.51	392.55
24	570.02	397.80
25	578.36	403.31
26	586.54	409.07
27	591.15	412.53

Circle Center At X = 393.5 ; Y = 674.3 and Radius, 328.1

*** 1.935 ***

Crucible

Citrus Operations Permit Renewal South Slope

F:\PROJECT\CITRUS\09208040.03\CALCUL~1\CSFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 5:00PM

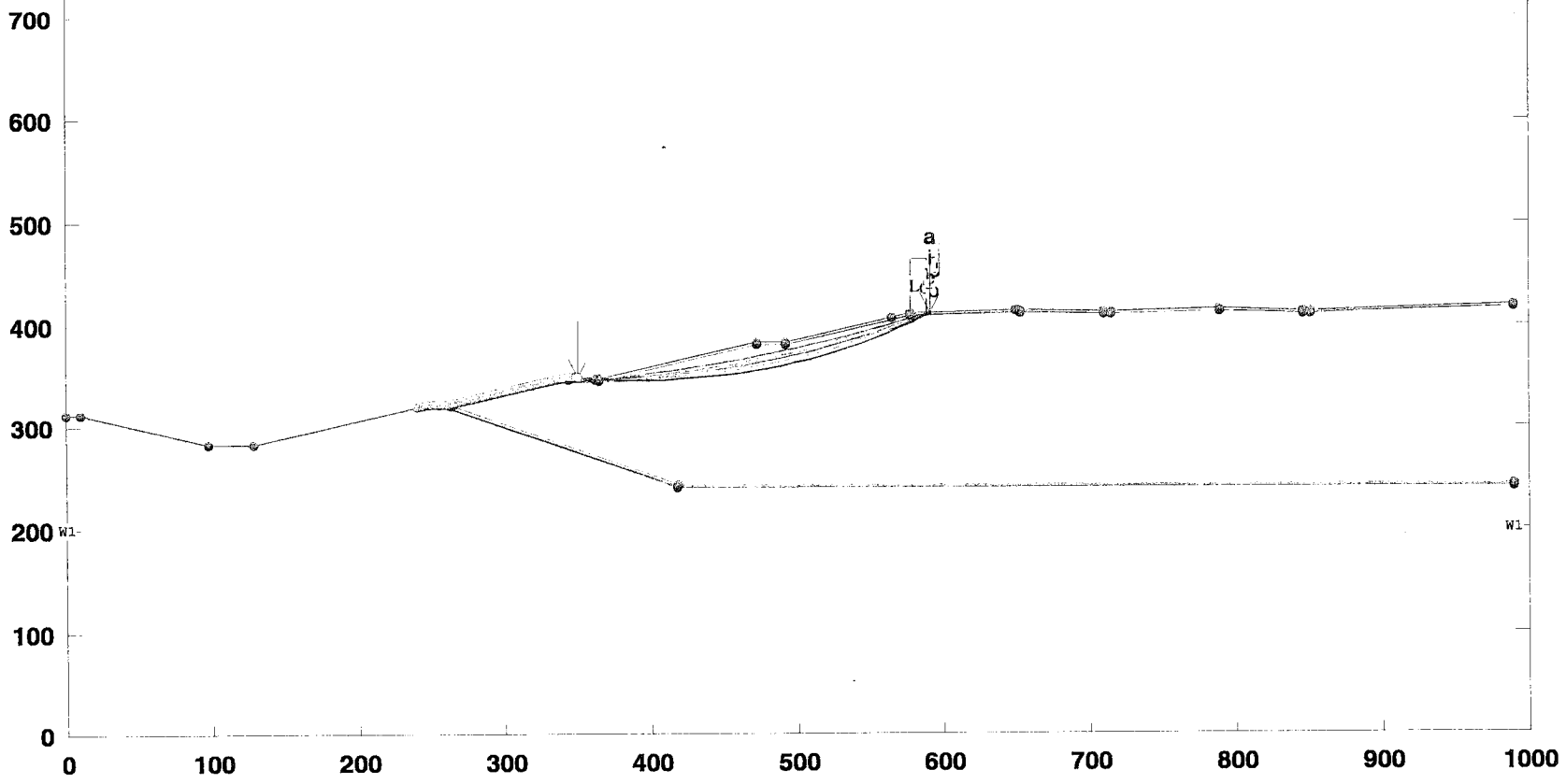
#	FS
a	1.8
b	1.8
c	1.8
d	1.8
e	1.8
f	1.8
g	1.9
h	1.9
i	1.9
j	1.9

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
FCover	1	110.0	120.0	30.0	W1
ICover	2	110.0	120.0	30.0	W1
Waste	3	63.5	80.0	28.0	W1
ProSoil	4	110.0	115.0	28.0	W1
GeoSyn	5	63.0	63.0	22.0	W1
Subbase	6	90.0	100.0	30.0	W1
SurLayer	7	110.0	125.0	32.0	W1

Load	Value
L1	2172.8 lb/sqft

DSI Series II with

Init Points: 240. to 350.
Term Limits: 565. to 650.



STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Bishop Method

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 5:00PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:csfinal.
Output Filename: F:csfinal.OUT
Plotted Output Filename: F:csfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
South Slope

BOUNDARY COORDINATES
21 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	311.50	10.00	311.50	7
2	10.00	311.50	98.20	282.10	7
3	98.20	282.10	128.20	282.10	7
4	128.20	282.10	247.00	321.70	7
5	247.00	321.70	254.60	321.90	7
6	254.60	321.90	255.60	321.90	6
7	255.60	321.90	256.70	321.90	5
8	256.70	321.90	261.00	322.00	4
9	261.00	322.00	343.00	349.30	1
10	343.00	349.30	363.50	348.90	1
11	363.50	348.90	365.50	347.90	1
12	365.50	347.90	472.40	383.50	1
13	472.40	383.50	492.40	383.50	1
14	492.40	383.50	577.90	412.00	1
15	577.90	412.00	652.90	415.00	1
16	652.90	415.00	709.60	412.70	1
17	709.60	412.70	714.60	412.70	1
18	714.60	412.70	789.60	415.70	1
19	789.60	415.70	846.20	413.50	1
20	846.20	413.50	851.20	413.50	1
21	851.20	413.50	989.70	419.00	1
22	261.00	322.00	263.50	320.70	4
23	263.50	320.70	343.30	347.30	2
24	343.30	347.30	363.00	346.90	2
25	363.00	346.90	365.40	345.70	2
26	365.40	345.70	472.70	381.50	2
27	472.70	381.50	492.70	381.50	2
28	492.70	381.50	578.30	410.00	2
29	578.30	410.00	652.90	413.00	2
30	652.90	413.00	709.50	410.70	2
31	709.50	410.70	714.60	410.70	2
32	714.60	410.70	789.60	413.70	2
33	789.60	413.70	846.20	411.50	2
34	846.20	411.50	851.20	411.50	2
35	851.20	411.50	989.70	417.00	2
36	263.50	320.70	264.20	320.40	4
37	264.20	320.40	343.40	346.80	3
38	343.40	346.80	362.90	346.40	3
39	362.90	346.40	365.30	345.20	3
40	365.30	345.20	472.80	381.00	3
41	472.80	381.00	492.80	381.00	3
42	492.80	381.00	578.40	409.50	3
43	578.40	409.50	652.90	412.50	3
44	652.90	412.50	709.50	410.20	3
45	709.50	410.20	714.60	410.20	3
46	714.60	410.20	789.60	413.20	3
47	789.60	413.20	846.20	411.00	3
48	846.20	411.00	851.30	411.00	3
49	851.30	411.00	989.70	416.50	3

50	264.20	320.40	419.00	243.00	4
51	419.00	243.00	989.70	243.00	4
52	256.70	321.90	418.50	241.00	5
53	418.50	241.00	989.70	241.00	5
54	255.60	321.90	418.40	240.50	6
55	418.40	240.50	989.70	240.50	6
56	254.60	321.90	418.30	240.00	7
57	418.30	240.00	989.70	240.00	7

ISOTROPIC SOIL PARAMETERS

7 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	63.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	22.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	989.70	208.50

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	577.90	588.40	2172.8	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

5000 Trial Surfaces Have Been Generated.

50 Surfaces Initiate From Each Of100 Points Equally Spaced Along The Ground Surface Between X = 240.00 ft.
and X = 350.00 ft.

Each Surface Terminates Between X = 565.00 ft.
and X = 650.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.00	349.16
2	359.93	347.99
3	369.89	347.12
4	379.88	346.55
5	389.87	346.29
6	399.87	346.33
7	409.87	346.67
8	419.85	347.33
9	429.80	348.28
10	439.72	349.54
11	449.60	351.10
12	459.42	352.96
13	469.19	355.12
14	478.88	357.57
15	488.50	360.32
16	498.02	363.36

17	507.45	366.69
18	516.78	370.31
19	525.99	374.21
20	535.07	378.38
21	544.03	382.84
22	552.84	387.56
23	561.51	392.55
24	570.02	397.80
25	578.36	403.31
26	586.54	409.07
27	591.15	412.53

Circle Center At X = 393.5 ; Y = 674.3 and Radius, 328.1

*** 1.822 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	334.45	346.45
2	344.44	346.65
3	354.44	347.03
4	364.42	347.58
5	374.39	348.31
6	384.35	349.22
7	394.29	350.30
8	404.22	351.55
9	414.11	352.98
10	423.98	354.59
11	433.82	356.37
12	443.63	358.32
13	453.40	360.44
14	463.14	362.74
15	472.83	365.20
16	482.47	367.84
17	492.07	370.65
18	501.62	373.62
19	511.11	376.77
20	520.55	380.08
21	529.92	383.56
22	539.24	387.20
23	548.48	391.00
24	557.66	394.97
25	566.77	399.10
26	575.81	403.39
27	584.76	407.83
28	593.64	412.44
29	594.02	412.64

Circle Center At X = 328.1 ; Y = 913.6 and Radius, 567.2

*** 1.826 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	327.78	344.23
2	337.77	344.57
3	347.76	345.07
4	357.74	345.75
5	367.70	346.60
6	377.65	347.61
7	387.58	348.80
8	397.49	350.16
9	407.37	351.69
10	417.22	353.39
11	427.05	355.25
12	436.84	357.28
13	446.59	359.48
14	456.31	361.85
15	465.98	364.38
16	475.61	367.08
17	485.19	369.95
18	494.73	372.97

19	504.20	376.16
20	513.62	379.51
21	522.99	383.03
22	532.29	386.70
23	541.53	390.53
24	550.70	394.52
25	559.80	398.66
26	568.83	402.96
27	577.78	407.42
28	586.65	412.02
29	587.31	412.38

Circle Center At X = 313.2 ; Y = 928.0 and Radius, 583.9

*** 1.836 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	323.33	342.75
2	333.29	343.66
3	343.24	344.68
4	353.17	345.84
5	363.09	347.11
6	372.99	348.51
7	382.88	350.02
8	392.74	351.67
9	402.59	353.43
10	412.41	355.31
11	422.20	357.32
12	431.97	359.45
13	441.72	361.70
14	451.43	364.07
15	461.12	366.56
16	470.77	369.16
17	480.39	371.89
18	489.98	374.74
19	499.53	377.71
20	509.04	380.79
21	518.52	383.99
22	527.95	387.31
23	537.34	390.74
24	546.69	394.30
25	555.99	397.96
26	565.25	401.74
27	574.46	405.64
28	583.62	409.65
29	589.87	412.48

Circle Center At X = 255.3 ; Y = 1147.4 and Radius, 807.5

*** 1.837 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.45	343.12
2	334.40	344.08
3	344.34	345.16
4	354.27	346.36
5	364.18	347.67
6	374.08	349.10
7	383.96	350.65
8	393.82	352.31
9	403.66	354.09
10	413.48	355.99
11	423.27	358.01
12	433.04	360.13
13	442.79	362.38
14	452.51	364.74
15	462.19	367.22
16	471.85	369.80
17	481.48	372.51
18	491.08	375.33

19	500.64	378.26
20	510.16	381.30
21	519.65	384.46
22	529.10	387.73
23	538.51	391.11
24	547.88	394.60
25	557.21	398.20
26	566.50	401.91
27	575.74	405.73
28	584.93	409.67
29	591.45	412.54

Circle Center At X = 248.3 ; Y = 1184.4 and Radius, 844.7

*** 1.839 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.67	343.86
2	336.67	343.75
3	346.67	343.85
4	356.66	344.14
5	366.65	344.63
6	376.63	345.33
7	386.59	346.22
8	396.53	347.32
9	406.44	348.61
10	416.33	350.10
11	426.19	351.79
12	436.01	353.68
13	445.79	355.76
14	455.52	358.04
15	465.21	360.51
16	474.85	363.18
17	484.43	366.04
18	493.96	369.09
19	503.42	372.33
20	512.81	375.76
21	522.13	379.38
22	531.38	383.19
23	540.55	387.18
24	549.64	391.35
25	558.64	395.71
26	567.55	400.24
27	576.37	404.95
28	585.10	409.84
29	589.57	412.47

Circle Center At X = 337.0 ; Y = 842.4 and Radius, 498.7

*** 1.847 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	331.11	345.34
2	341.11	345.36
3	351.11	345.57
4	361.10	345.96
5	371.09	346.54
6	381.06	347.31
7	391.01	348.26
8	400.95	349.39
9	410.86	350.72
10	420.74	352.22
11	430.60	353.91
12	440.42	355.78
13	450.21	357.84
14	459.96	360.08
15	469.66	362.50
16	479.32	365.10
17	488.92	367.88
18	498.47	370.83

19	507.97	373.97
20	517.41	377.28
21	526.78	380.77
22	536.08	384.43
23	545.32	388.26
24	554.48	392.27
25	563.57	396.44
26	572.58	400.79
27	581.50	405.30
28	590.34	409.97
29	595.26	412.69

Circle Center At X = 335.0 ; Y = 881.9 and Radius, 536.5

*** 1.854 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	333.33	346.08
2	343.32	345.59
3	353.32	345.32
4	363.32	345.27
5	373.32	345.46
6	383.31	345.88
7	393.29	346.52
8	403.25	347.39
9	413.19	348.48
10	423.10	349.81
11	432.98	351.35
12	442.82	353.13
13	452.62	355.12
14	462.37	357.34
15	472.07	359.78
16	481.71	362.45
17	491.28	365.33
18	500.79	368.42
19	510.23	371.74
20	519.58	375.27
21	528.86	379.01
22	538.05	382.96
23	547.14	387.12
24	556.14	391.48
25	565.03	396.05
26	573.82	400.82
27	582.50	405.79
28	591.06	410.96
29	593.70	412.63

Circle Center At X = 360.1 ; Y = 784.0 and Radius, 438.7

*** 1.857 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	315.56	340.16
2	325.50	341.23
3	335.43	342.40
4	345.35	343.68
5	355.25	345.07
6	365.14	346.57
7	375.01	348.17
8	384.86	349.88
9	394.70	351.69
10	404.51	353.62
11	414.30	355.64
12	424.07	357.78
13	433.82	360.02
14	443.54	362.36
15	453.23	364.81
16	462.90	367.37
17	472.54	370.02
18	482.15	372.79

19	491.73	375.65
20	501.28	378.62
21	510.80	381.70
22	520.28	384.87
23	529.73	388.15
24	539.14	391.53
25	548.51	395.02
26	557.85	398.60
27	567.15	402.28
28	576.40	406.07
29	585.62	409.95
30	591.59	412.55

Circle Center At X = 222.0 ; Y = 1259.7 and Radius, 924.3

*** 1.862 ***

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	344.45	349.27
2	354.36	348.01
3	364.32	347.03
4	374.29	346.34
5	384.28	345.93
6	394.28	345.82
7	404.28	346.00
8	414.27	346.46
9	424.24	347.22
10	434.19	348.26
11	444.10	349.59
12	453.97	351.20
13	463.79	353.10
14	473.55	355.28
15	483.24	357.75
16	492.85	360.49
17	502.39	363.51
18	511.83	366.80
19	521.17	370.36
20	530.41	374.20
21	539.53	378.30
22	548.53	382.66
23	557.40	387.28
24	566.13	392.15
25	574.72	397.27
26	583.16	402.64
27	591.43	408.25
28	597.73	412.79

Circle Center At X = 393.2 ; Y = 691.7 and Radius, 345.9

*** 1.868 ***

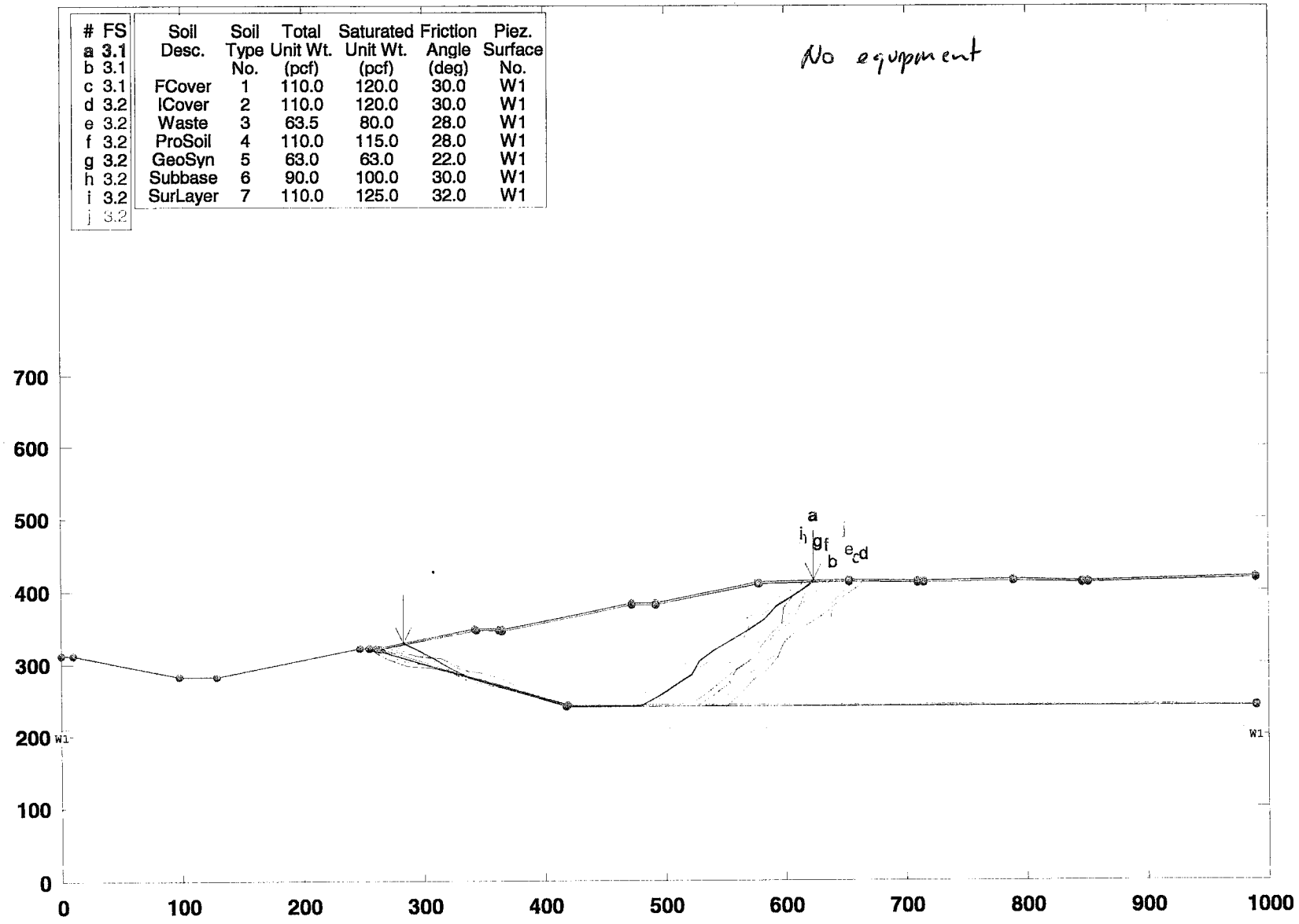
Citrus Operations Permit Renewal South Slope

Block

F:\PROJECT\CITRUS\09208040.03\CALCUL~1\BSFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:39PM

#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
a	3.1						
b	3.1						
c	3.1	FCover	1	110.0	120.0	30.0	W1
d	3.2	ICover	2	110.0	120.0	30.0	W1
e	3.2	Waste	3	63.5	80.0	28.0	W1
f	3.2	ProSoil	4	110.0	115.0	28.0	W1
g	3.2	GeoSyn	5	63.0	63.0	22.0	W1
h	3.2	Subbase	6	90.0	100.0	30.0	W1
i	3.2	SurLayer	7	110.0	125.0	32.0	W1
j	3.2						

No equipment



STABL6H FSmin=3.1

Safety Factors Are Calculated By The Modified Janbu Method

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:39PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:bsfinal.
Output Filename: F:bsfinal.OUT
Plotted Output Filename: F:bsfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
South Slope

BOUNDARY COORDINATES
21 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	311.50	10.00	311.50	7
2	10.00	311.50	98.20	282.10	7
3	98.20	282.10	128.20	282.10	7
4	128.20	282.10	247.00	321.70	7
5	247.00	321.70	254.60	321.90	7
6	254.60	321.90	255.60	321.90	6
7	255.60	321.90	256.70	321.90	5
8	256.70	321.90	261.00	322.00	4
9	261.00	322.00	343.00	349.30	1
10	343.00	349.30	363.50	348.90	1
11	363.50	348.90	365.50	347.90	1
12	365.50	347.90	472.40	383.50	1
13	472.40	383.50	492.40	383.50	1
14	492.40	383.50	577.90	412.00	1
15	577.90	412.00	652.90	415.00	1
16	652.90	415.00	709.60	412.70	1
17	709.60	412.70	714.60	412.70	1
18	714.60	412.70	789.60	415.70	1
19	789.60	415.70	846.20	413.50	1
20	846.20	413.50	851.20	413.50	1
21	851.20	413.50	989.70	419.00	1
22	261.00	322.00	263.50	320.70	4
23	263.50	320.70	343.30	347.30	2
24	343.30	347.30	363.00	346.90	2
25	363.00	346.90	365.40	345.70	2
26	365.40	345.70	472.70	381.50	2
27	472.70	381.50	492.70	381.50	2
28	492.70	381.50	578.30	410.00	2
29	578.30	410.00	652.90	413.00	2
30	652.90	413.00	709.50	410.70	2
31	709.50	410.70	714.60	410.70	2
32	714.60	410.70	789.60	413.70	2
33	789.60	413.70	846.20	411.50	2
34	846.20	411.50	851.20	411.50	2
35	851.20	411.50	989.70	417.00	2
36	263.50	320.70	264.20	320.40	4
37	264.20	320.40	343.40	346.80	3
38	343.40	346.80	362.90	346.40	3
39	362.90	346.40	365.30	345.20	3
40	365.30	345.20	472.80	381.00	3
41	472.80	381.00	492.80	381.00	3
42	492.80	381.00	578.40	409.50	3
43	578.40	409.50	652.90	412.50	3
44	652.90	412.50	709.50	410.20	3
45	709.50	410.20	714.60	410.20	3
46	714.60	410.20	789.60	413.20	3
47	789.60	413.20	846.20	411.00	3
48	846.20	411.00	851.30	411.00	3
49	851.30	411.00	989.70	416.50	3

50	264.20	320.40	419.00	243.00	4
51	419.00	243.00	989.70	243.00	4
52	256.70	321.90	418.50	241.00	5
53	418.50	241.00	989.70	241.00	5
54	255.60	321.90	418.40	240.50	6
55	418.40	240.50	989.70	240.50	6
56	254.60	321.90	418.30	240.00	7
57	418.30	240.00	989.70	240.00	7

ISOTROPIC SOIL PARAMETERS

7 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	63.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	22.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	989.70	208.50

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	577.90	588.40	2172.8	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

SURCHARGE BOUNDARY LOAD DATA HAS BEEN SUPPRESSED

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	260.20	319.90	416.60	241.70	.25
2	419.50	240.80	424.50	240.80	.25
3	429.50	240.80	606.00	240.80	.25

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	282.95	329.31
2	292.62	321.35
3	307.85	308.39
4	322.08	294.33
5	337.32	281.38
6	420.14	240.82
7	480.51	240.73
8	494.48	255.05
9	508.62	269.19
10	521.47	284.52
11	527.96	303.43
12	541.15	318.47
13	555.20	332.71
14	569.26	346.93

15	582.87	361.58
16	593.12	378.75
17	607.15	393.01
18	620.14	408.22
19	624.08	413.85

*** 3.088 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	258.37	321.94
2	278.22	319.69
3	297.56	314.58
4	311.70	300.44
5	326.36	286.84
6	423.82	240.75
7	512.96	240.82
8	519.81	259.61
9	531.66	275.72
10	545.29	290.35
11	557.69	306.04
12	571.42	320.59
13	584.05	336.10
14	596.28	351.93
15	603.98	370.38
16	617.00	385.57
17	627.91	402.33
18	639.68	414.47

*** 3.098 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	259.40	321.96
2	267.87	315.94
3	424.33	240.72
4	537.95	240.72
5	551.67	255.28
6	558.91	273.92
7	573.05	288.06
8	585.51	303.71
9	599.16	318.32
10	613.10	332.67
11	626.94	347.11
12	638.46	363.46
13	639.75	383.41
14	649.52	400.87
15	659.75	414.72

*** 3.130 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.56	322.85
2	273.21	313.34
3	422.90	240.68
4	552.26	240.82
5	562.63	257.92
6	572.19	275.49
7	585.58	290.35
8	593.65	308.65
9	599.19	327.86
10	609.45	345.03
11	623.58	359.18
12	637.28	373.75
13	647.92	390.69
14	660.92	405.88
15	665.00	414.51

*** 3.150 ***

Failure Surface Specified By 17 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	264.14	323.04
2	266.77	321.97
3	281.74	308.71
4	299.79	300.09
5	423.36	240.84
6	532.61	240.70
7	542.38	258.14
8	556.00	272.79
9	569.98	287.09
10	582.37	302.80
11	590.01	321.28
12	603.73	335.83
13	605.34	355.77
14	617.98	371.27
15	631.75	385.77
16	644.50	401.18
17	653.57	414.97
***	3.178	***

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	269.61	324.87
2	277.63	317.28
3	296.39	310.33
4	316.00	306.42
5	330.21	292.34
6	349.44	286.84
7	366.90	277.09
8	381.06	262.96
9	397.27	251.25
10	422.31	240.74
11	527.48	240.76
12	541.24	255.27
13	552.44	271.84
14	559.23	290.65
15	572.68	305.46
16	583.44	322.32
17	591.86	340.46
18	604.46	355.99
19	611.71	374.63
20	615.95	394.17
21	629.87	408.53
22	634.66	414.27
***	3.181	***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	254.06	321.89
2	255.24	321.03
3	269.76	307.28
4	287.18	297.45
5	306.95	294.43
6	325.56	287.10
7	421.28	240.84
8	519.64	240.92
9	532.75	256.02
10	545.01	271.82
11	556.67	288.06
12	569.90	303.07
13	579.15	320.80
14	587.04	339.18
15	597.87	355.99
16	598.56	375.98
17	607.89	393.67
18	621.46	408.36
19	626.90	413.96
***	3.226	***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.91	321.90
2	267.07	318.23
3	281.22	304.10
4	300.78	299.94
5	319.28	292.34
6	333.59	278.37
7	351.93	270.38
8	370.62	263.26
9	389.41	256.43
10	406.82	246.57
11	421.54	240.91
12	489.99	240.78
13	499.70	258.26
14	511.25	274.59
15	525.14	288.98
16	538.40	303.95
17	552.27	318.35
18	565.33	333.51
19	570.31	352.88
20	582.62	368.64
21	596.56	382.98
22	610.50	397.32
23	615.29	413.50
***	3.227	***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	274.03	326.34
2	278.18	322.40
3	294.26	310.51
4	314.15	308.42
5	329.73	295.88
6	344.05	281.92
7	360.08	269.95
8	420.90	240.86
9	475.85	240.75
10	483.37	259.29
11	497.39	273.55
12	511.50	287.72
13	520.01	305.82
14	534.13	319.98
15	544.13	337.30
16	558.27	351.45
17	571.26	366.65
18	585.29	380.91
19	599.33	395.16
20	613.33	409.44
21	614.00	413.44
***	3.241	***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.82	322.94
2	273.16	318.43
3	287.31	304.30
4	306.77	299.71
5	323.15	288.22
6	337.53	274.32
7	357.29	271.26
8	422.33	240.80
9	532.69	240.73
10	546.83	254.88
11	554.97	273.15
12	562.78	291.56
13	569.07	310.55

14	583.21	324.69
15	594.19	341.40
16	602.56	359.57
17	616.02	374.37
18	629.88	388.79
19	643.96	402.98
20	649.15	414.85
***	3.245	***

Block

Citrus Operations Permit Renewal South Slope

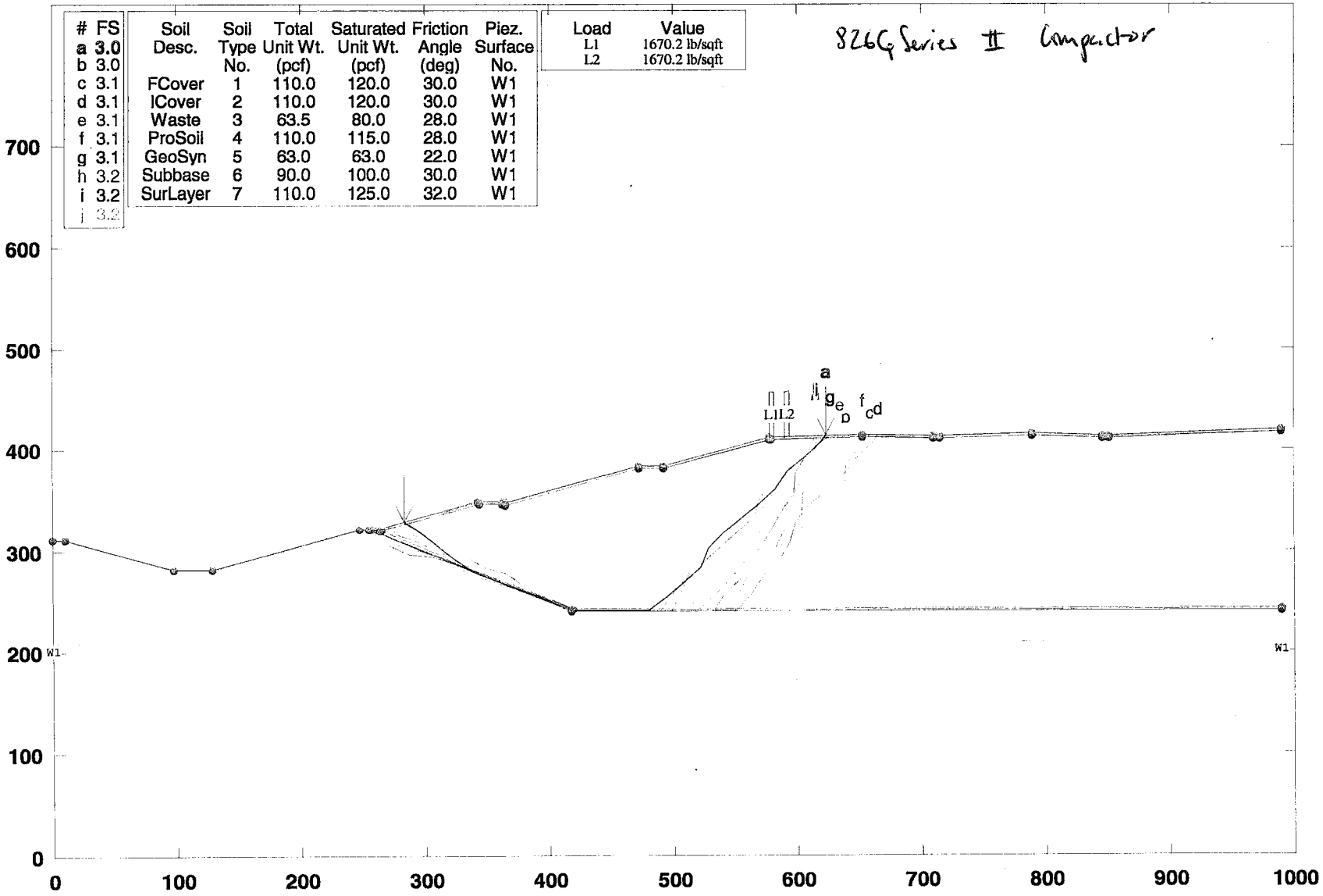
F:\PROJECT\CITRUS\09208040.03\CALCUL~1\BSFINEQ.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:44PM

#	FS
a	3.0
b	3.0
c	3.1
d	3.1
e	3.1
f	3.1
g	3.1
h	3.2
i	3.2
j	3.2

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
FCover	1	110.0	120.0	30.0	W1
ICover	2	110.0	120.0	30.0	W1
Waste	3	63.5	80.0	28.0	W1
ProSoil	4	110.0	115.0	28.0	W1
GeoSyn	5	63.0	63.0	22.0	W1
Subbase	6	90.0	100.0	30.0	W1
SurLayer	7	110.0	125.0	32.0	W1

Load	Value
L1	1670.2 lb/sqft
L2	1670.2 lb/sqft

826G Series II Compactor



STABL6H FSmin=3.0

Safety Factors Are Calculated By The Modified Janbu Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:44PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:bsfineq.
Output Filename: F:bsfineq.OUT
Plotted Output Filename: F:bsfineq.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
South Slope

BOUNDARY COORDINATES
21 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	311.50	10.00	311.50	7
2	10.00	311.50	98.20	282.10	7
3	98.20	282.10	128.20	282.10	7
4	128.20	282.10	247.00	321.70	7
5	247.00	321.70	254.60	321.90	7
6	254.60	321.90	255.60	321.90	6
7	255.60	321.90	256.70	321.90	5
8	256.70	321.90	261.00	322.00	4
9	261.00	322.00	343.00	349.30	1
10	343.00	349.30	363.50	348.90	1
11	363.50	348.90	365.50	347.90	1
12	365.50	347.90	472.40	383.50	1
13	472.40	383.50	492.40	383.50	1
14	492.40	383.50	577.90	412.00	1
15	577.90	412.00	652.90	415.00	1
16	652.90	415.00	709.60	412.70	1
17	709.60	412.70	714.60	412.70	1
18	714.60	412.70	789.60	415.70	1
19	789.60	415.70	846.20	413.50	1
20	846.20	413.50	851.20	413.50	1
21	851.20	413.50	989.70	419.00	1
22	261.00	322.00	263.50	320.70	4
23	263.50	320.70	343.30	347.30	2
24	343.30	347.30	363.00	346.90	2
25	363.00	346.90	365.40	345.70	2
26	365.40	345.70	472.70	381.50	2
27	472.70	381.50	492.70	381.50	2
28	492.70	381.50	578.30	410.00	2
29	578.30	410.00	652.90	413.00	2
30	652.90	413.00	709.50	410.70	2
31	709.50	410.70	714.60	410.70	2
32	714.60	410.70	789.60	413.70	2
33	789.60	413.70	846.20	411.50	2
34	846.20	411.50	851.20	411.50	2
35	851.20	411.50	989.70	417.00	2
36	263.50	320.70	264.20	320.40	4
37	264.20	320.40	343.40	346.80	3
38	343.40	346.80	362.90	346.40	3
39	362.90	346.40	365.30	345.20	3
40	365.30	345.20	472.80	381.00	3
41	472.80	381.00	492.80	381.00	3
42	492.80	381.00	578.40	409.50	3
43	578.40	409.50	652.90	412.50	3
44	652.90	412.50	709.50	410.20	3
45	709.50	410.20	714.60	410.20	3
46	714.60	410.20	789.60	413.20	3
47	789.60	413.20	846.20	411.00	3
48	846.20	411.00	851.30	411.00	3
49	851.30	411.00	989.70	416.50	3

50	264.20	320.40	419.00	243.00	4
51	419.00	243.00	989.70	243.00	4
52	256.70	321.90	418.50	241.00	5
53	418.50	241.00	989.70	241.00	5
54	255.60	321.90	418.40	240.50	6
55	418.40	240.50	989.70	240.50	6
56	254.60	321.90	418.30	240.00	7
57	418.30	240.00	989.70	240.00	7

ISOTROPIC SOIL PARAMETERS

7 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	63.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	22.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	989.70	208.50

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	577.90	581.12	1670.2	.0
2	590.04	593.26	1670.2	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	260.20	319.90	416.60	241.70	.25
2	419.50	240.80	424.50	240.80	.25
3	429.50	240.80	606.00	240.80	.25

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	282.95	329.31
2	292.62	321.35
3	307.85	308.39
4	322.08	294.33
5	337.32	281.38
6	420.14	240.82
7	480.51	240.73
8	494.48	255.05
9	508.62	269.19
10	521.47	284.52
11	527.96	303.43
12	541.15	318.47
13	555.20	332.71
14	569.26	346.93

15	582.87	361.58
16	593.12	378.75
17	607.15	393.01
18	620.14	408.22
19	624.08	413.85

*** 3.020 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	258.37	321.94
2	278.22	319.69
3	297.56	314.58
4	311.70	300.44
5	326.36	286.84
6	423.82	240.75
7	512.96	240.82
8	519.81	259.61
9	531.66	275.72
10	545.29	290.35
11	557.69	306.04
12	571.42	320.59
13	584.05	336.10
14	596.28	351.93
15	603.98	370.38
16	617.00	385.57
17	627.91	402.33
18	639.68	414.47

*** 3.040 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	259.40	321.96
2	267.87	315.94
3	424.33	240.72
4	537.95	240.72
5	551.67	255.28
6	558.91	273.92
7	573.05	288.06
8	585.51	303.71
9	599.16	318.32
10	613.10	332.67
11	626.94	347.11
12	638.46	363.46
13	639.75	383.41
14	649.52	400.87
15	659.75	414.72

*** 3.079 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.56	322.85
2	273.21	313.34
3	422.90	240.68
4	552.26	240.82
5	562.63	257.92
6	572.19	275.49
7	585.58	290.35
8	593.65	308.65
9	599.19	327.86
10	609.45	345.03
11	623.58	359.18
12	637.28	373.75
13	647.92	390.69
14	660.92	405.88
15	665.00	414.51

*** 3.081 ***

Failure Surface Specified By 22 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	269.61	324.87
2	277.63	317.28
3	296.39	310.33
4	316.00	306.42
5	330.21	292.34
6	349.44	286.84
7	366.90	277.09
8	381.06	262.96
9	397.27	251.25
10	422.31	240.74
11	527.48	240.76
12	541.24	255.27
13	552.44	271.84
14	559.23	290.65
15	572.68	305.46
16	583.44	322.32
17	591.86	340.46
18	604.46	355.99
19	611.71	374.63
20	615.95	394.17
21	629.87	408.53
22	634.66	414.27
***	3.107	***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.14	323.04
2	266.77	321.97
3	281.74	308.71
4	299.79	300.09
5	423.36	240.84
6	532.61	240.70
7	542.38	258.14
8	556.00	272.79
9	569.98	287.09
10	582.37	302.80
11	590.01	321.28
12	603.73	335.83
13	605.34	355.77
14	617.98	371.27
15	631.75	385.77
16	644.50	401.18
17	653.57	414.97
***	3.124	***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	254.06	321.89
2	255.24	321.03
3	269.76	307.28
4	287.18	297.45
5	306.95	294.43
6	325.56	287.10
7	421.28	240.84
8	519.64	240.92
9	532.75	256.02
10	545.01	271.82
11	556.67	288.06
12	569.90	303.07
13	579.15	320.80
14	587.04	339.18
15	597.87	355.99
16	598.56	375.98
17	607.89	393.67
18	621.46	408.36
19	626.90	413.96
***	3.139	***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.91	321.90
2	267.07	318.23
3	281.22	304.10
4	300.78	299.94
5	319.28	292.34
6	333.59	278.37
7	351.93	270.38
8	370.62	263.26
9	389.41	256.43
10	406.82	246.57
11	421.54	240.91
12	489.99	240.78
13	499.70	258.26
14	511.25	274.59
15	525.14	288.98
16	538.40	303.95
17	552.27	318.35
18	565.33	333.51
19	570.31	352.88
20	582.62	368.64
21	596.56	382.98
22	610.50	397.32
23	615.29	413.50
***	3.167	***

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.14	322.71
2	276.39	316.35
3	295.32	309.89
4	311.20	297.73
5	331.20	297.33
6	346.31	284.24
7	365.31	277.97
8	380.82	265.34
9	395.74	252.03
10	423.43	240.89
11	498.18	240.77
12	506.19	259.09
13	512.77	277.98
14	526.77	292.26
15	540.54	306.77
16	554.50	321.08
17	568.39	335.48
18	578.46	352.75
19	587.58	370.56
20	601.69	384.72
21	614.49	400.10
22	616.66	413.55
***	3.177	***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	274.03	326.34
2	278.18	322.40
3	294.26	310.51
4	314.15	308.42
5	329.73	295.88
6	344.05	281.92
7	360.08	269.95
8	420.90	240.86
9	475.85	240.75
10	483.37	259.29
11	497.39	273.55
12	511.50	287.72

13	520.01	305.82
14	534.13	319.98
15	544.13	337.30
16	558.27	351.45
17	571.26	366.65
18	585.29	380.91
19	599.33	395.16
20	613.33	409.44
21	614.00	413.44
***	3.182	***

Block

Citrus Operations Permit Renewal South Slope

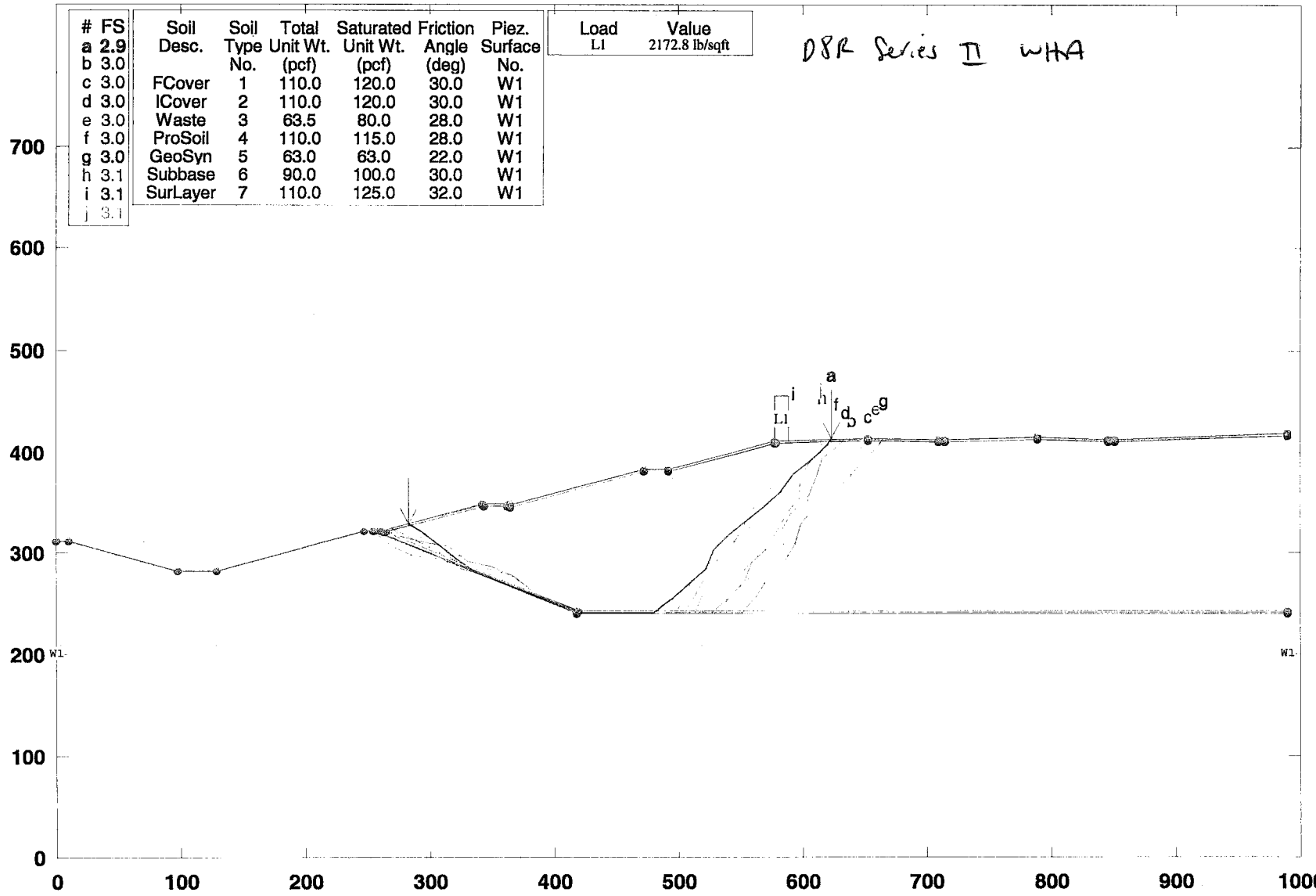
F:\PROJECT\CITRUS\09208040.03\CALCUL~1\BSFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:41PM

#	FS
a	2.9
b	3.0
c	3.0
d	3.0
e	3.0
f	3.0
g	3.0
h	3.1
i	3.1
j	3.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
FCover	1	110.0	120.0	30.0	W1
ICover	2	110.0	120.0	30.0	W1
Waste	3	63.5	80.0	28.0	W1
ProSoil	4	110.0	115.0	28.0	W1
GeoSyn	5	63.0	63.0	22.0	W1
Subbase	6	90.0	100.0	30.0	W1
SurLayer	7	110.0	125.0	32.0	W1

Load	Value
L1	2172.8 lb/sqft

D8R Series II WHA



STABL6H FSmin=2.9

Safety Factors Are Calculated By The Modified Janbu Method

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:41PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:bsfinal.
Output Filename: F:bsfinal.OUT
Plotted Output Filename: F:bsfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
South Slope

BOUNDARY COORDINATES
21 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	311.50	10.00	311.50	7
2	10.00	311.50	98.20	282.10	7
3	98.20	282.10	128.20	282.10	7
4	128.20	282.10	247.00	321.70	7
5	247.00	321.70	254.60	321.90	7
6	254.60	321.90	255.60	321.90	6
7	255.60	321.90	256.70	321.90	5
8	256.70	321.90	261.00	322.00	4
9	261.00	322.00	343.00	349.30	1
10	343.00	349.30	363.50	348.90	1
11	363.50	348.90	365.50	347.90	1
12	365.50	347.90	472.40	383.50	1
13	472.40	383.50	492.40	383.50	1
14	492.40	383.50	577.90	412.00	1
15	577.90	412.00	652.90	415.00	1
16	652.90	415.00	709.60	412.70	1
17	709.60	412.70	714.60	412.70	1
18	714.60	412.70	789.60	415.70	1
19	789.60	415.70	846.20	413.50	1
20	846.20	413.50	851.20	413.50	1
21	851.20	413.50	989.70	419.00	1
22	261.00	322.00	263.50	320.70	4
23	263.50	320.70	343.30	347.30	2
24	343.30	347.30	363.00	346.90	2
25	363.00	346.90	365.40	345.70	2
26	365.40	345.70	472.70	381.50	2
27	472.70	381.50	492.70	381.50	2
28	492.70	381.50	578.30	410.00	2
29	578.30	410.00	652.90	413.00	2
30	652.90	413.00	709.50	410.70	2
31	709.50	410.70	714.60	410.70	2
32	714.60	410.70	789.60	413.70	2
33	789.60	413.70	846.20	411.50	2
34	846.20	411.50	851.20	411.50	2
35	851.20	411.50	989.70	417.00	2
36	263.50	320.70	264.20	320.40	4
37	264.20	320.40	343.40	346.80	3
38	343.40	346.80	362.90	346.40	3
39	362.90	346.40	365.30	345.20	3
40	365.30	345.20	472.80	381.00	3
41	472.80	381.00	492.80	381.00	3
42	492.80	381.00	578.40	409.50	3
43	578.40	409.50	652.90	412.50	3
44	652.90	412.50	709.50	410.20	3
45	709.50	410.20	714.60	410.20	3
46	714.60	410.20	789.60	413.20	3
47	789.60	413.20	846.20	411.00	3
48	846.20	411.00	851.30	411.00	3
49	851.30	411.00	989.70	416.50	3

50	264.20	320.40	419.00	243.00	4
51	419.00	243.00	989.70	243.00	4
52	256.70	321.90	418.50	241.00	5
53	418.50	241.00	989.70	241.00	5
54	255.60	321.90	418.40	240.50	6
55	418.40	240.50	989.70	240.50	6
56	254.60	321.90	418.30	240.00	7
57	418.30	240.00	989.70	240.00	7

ISOTROPIC SOIL PARAMETERS

7 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	63.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	22.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	989.70	208.50

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	577.90	588.40	2172.8	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	260.20	319.90	416.60	241.70	.25
2	419.50	240.80	424.50	240.80	.25
3	429.50	240.80	606.00	240.80	.25

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	282.95	329.31
2	292.62	321.35
3	307.85	308.39
4	322.08	294.33
5	337.32	281.38
6	420.14	240.82
7	480.51	240.73
8	494.48	255.05
9	508.62	269.19
10	521.47	284.52
11	527.96	303.43
12	541.15	318.47
13	555.20	332.71
14	569.26	346.93
15	582.87	361.58

16	593.12	378.75
17	607.15	393.01
18	620.14	408.22
19	624.08	413.85

*** 2.944 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	258.37	321.94
2	278.22	319.69
3	297.56	314.58
4	311.70	300.44
5	326.36	286.84
6	423.82	240.75
7	512.96	240.82
8	519.81	259.61
9	531.66	275.72
10	545.29	290.35
11	557.69	306.04
12	571.42	320.59
13	584.05	336.10
14	596.28	351.93
15	603.98	370.38
16	617.00	385.57
17	627.91	402.33
18	639.68	414.47

*** 2.978 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.14	323.04
2	266.77	321.97
3	281.74	308.71
4	299.79	300.09
5	423.36	240.84
6	532.61	240.70
7	542.38	258.14
8	556.00	272.79
9	569.98	287.09
10	582.37	302.80
11	590.01	321.28
12	603.73	335.83
13	605.34	355.77
14	617.98	371.27
15	631.75	385.77
16	644.50	401.18
17	653.57	414.97

*** 3.007 ***

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	269.61	324.87
2	277.63	317.28
3	296.39	310.33
4	316.00	306.42
5	330.21	292.34
6	349.44	286.84
7	366.90	277.09
8	381.06	262.96
9	397.27	251.25
10	422.31	240.74
11	527.48	240.76
12	541.24	255.27
13	552.44	271.84
14	559.23	290.65
15	572.68	305.46
16	583.44	322.32
17	591.86	340.46

18	604.46	355.99
19	611.71	374.63
20	615.95	394.17
21	629.87	408.53
22	634.66	414.27

*** 3.015 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	259.40	321.96
2	267.87	315.94
3	424.33	240.72
4	537.95	240.72
5	551.67	255.28
6	558.91	273.92
7	573.05	288.06
8	585.51	303.71
9	599.16	318.32
10	613.10	332.67
11	626.94	347.11
12	638.46	363.46
13	639.75	383.41
14	649.52	400.87
15	659.75	414.72

*** 3.020 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	254.06	321.89
2	255.24	321.03
3	269.76	307.28
4	287.18	297.45
5	306.95	294.43
6	325.56	287.10
7	421.28	240.84
8	519.64	240.92
9	532.75	256.02
10	545.01	271.82
11	556.67	288.06
12	569.90	303.07
13	579.15	320.80
14	587.04	339.18
15	597.87	355.99
16	598.56	375.98
17	607.89	393.67
18	621.46	408.36
19	626.90	413.96

*** 3.024 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.56	322.85
2	273.21	313.34
3	422.90	240.68
4	552.26	240.82
5	562.63	257.92
6	572.19	275.49
7	585.58	290.35
8	593.65	308.65
9	599.19	327.86
10	609.45	345.03
11	623.58	359.18
12	637.28	373.75
13	647.92	390.69
14	660.92	405.88
15	665.00	414.51

*** 3.028 ***

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.14	322.71
2	276.39	316.35
3	295.32	309.89
4	311.20	297.73
5	331.20	297.33
6	346.31	284.24
7	365.31	277.97
8	380.82	265.34
9	395.74	252.03
10	423.43	240.89
11	498.18	240.77
12	506.19	259.09
13	512.77	277.98
14	526.77	292.26
15	540.54	306.77
16	554.50	321.08
17	568.39	335.48
18	578.46	352.75
19	587.58	370.56
20	601.69	384.72
21	614.49	400.10
22	616.66	413.55
***	3.060	***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	269.20	324.73
2	277.34	320.66
3	294.17	309.85
4	310.23	297.94
5	324.78	284.21
6	343.99	278.65
7	361.61	269.17
8	419.78	240.71
9	505.16	240.74
10	513.11	259.09
11	522.08	276.97
12	532.56	294.00
13	544.82	309.81
14	553.10	328.01
15	562.01	345.92
16	573.99	361.93
17	578.76	381.36
18	581.91	401.11
19	592.75	412.59
***	3.078	***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.91	321.90
2	267.07	318.23
3	281.22	304.10
4	300.78	299.94
5	319.28	292.34
6	333.59	278.37
7	351.93	270.38
8	370.62	263.26
9	389.41	256.43
10	406.82	246.57
11	421.54	240.91
12	489.99	240.78
13	499.70	258.26
14	511.25	274.59
15	525.14	288.98
16	538.40	303.95
17	552.27	318.35

18	565.33	333.51
19	570.31	352.88
20	582.62	368.64
21	596.56	382.98
22	610.50	397.32
23	615.29	413.50
***	3.105	***

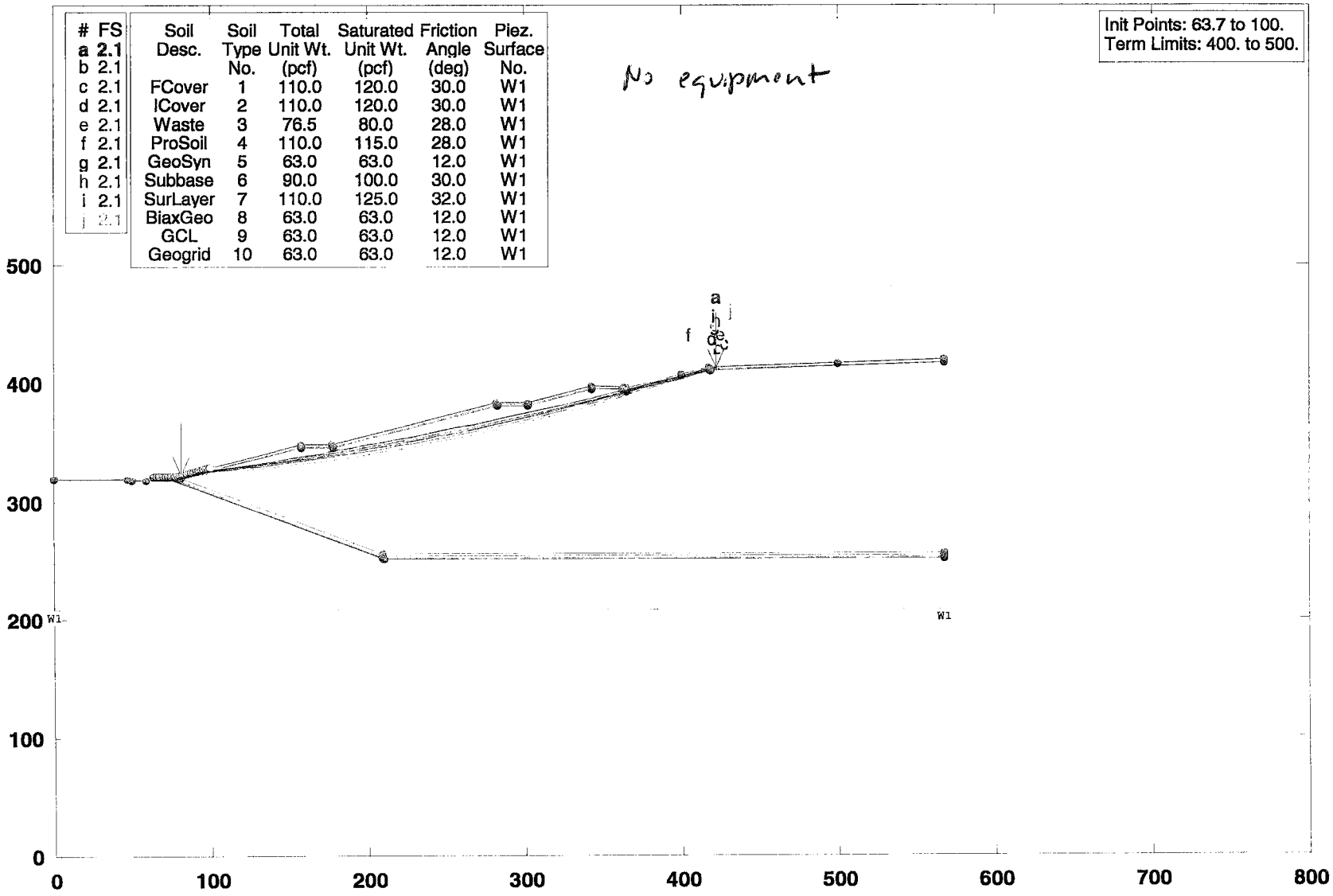
Citrus Operations Permit Renewal North Slope

F:\PROJECT\CITRUS\09208040.03\CALCUL~1\CNFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:46PM

#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
a	2.1						
b	2.1						
c	2.1	FCover	1	110.0	120.0	30.0	W1
d	2.1	ICover	2	110.0	120.0	30.0	W1
e	2.1	Waste	3	76.5	80.0	28.0	W1
f	2.1	ProSoil	4	110.0	115.0	28.0	W1
g	2.1	GeoSyn	5	63.0	63.0	12.0	W1
h	2.1	Subbase	6	90.0	100.0	30.0	W1
i	2.1	SurLayer	7	110.0	125.0	32.0	W1
j	2.1	BiaxGeo	8	63.0	63.0	12.0	W1
		GCL	9	63.0	63.0	12.0	W1
		Geogrid	10	63.0	63.0	12.0	W1

Init Points: 63.7 to 100.
Term Limits: 400. to 500.

No equipment



STABL6H FSmin=2.1

Safety Factors Are Calculated By The Modified Bishop Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:46PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:cnfinal.
Output Filename: F:cnfinal.OUT
Plotted Output Filename: F:cnfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
North Slope

BOUNDARY COORDINATES
18 Top Boundaries
50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	320.00	46.80	319.90	7
2	46.80	319.90	49.40	318.50	7
3	49.40	318.50	58.90	318.50	7
4	58.90	318.50	63.70	321.70	7
5	63.70	321.70	70.20	321.80	7
6	70.20	321.80	71.30	321.90	8
7	71.30	321.90	72.40	321.90	5
8	72.40	321.90	73.40	321.90	10
9	73.40	321.90	77.70	322.00	4
10	77.70	322.00	157.20	348.50	1
11	157.20	348.50	177.20	348.50	1
12	177.20	348.50	282.20	383.50	1
13	282.20	383.50	302.20	383.50	1
14	302.20	383.50	342.70	397.00	1
15	342.70	397.00	363.30	396.50	1
16	363.30	396.50	365.30	395.50	1
17	365.30	395.50	417.60	413.00	1
18	417.60	413.00	567.60	419.00	1
19	80.30	320.70	157.60	346.50	2
20	157.60	346.50	177.60	346.50	2
21	177.60	346.50	282.60	381.50	2
22	282.60	381.50	302.60	381.50	2
23	302.60	381.50	343.00	395.00	2
24	343.00	395.00	362.80	394.60	2
25	362.80	394.60	365.10	393.40	2
26	365.10	393.40	418.00	411.00	2
27	418.00	411.00	567.60	417.00	2
28	77.70	322.00	80.30	320.70	4
29	80.90	320.40	157.60	346.00	3
30	157.60	346.00	177.60	346.00	3
31	177.60	346.00	282.70	381.00	3
32	282.70	381.00	302.70	381.00	3
33	302.70	381.00	343.10	394.50	3
34	343.10	394.50	362.60	394.10	3
35	362.60	394.10	365.10	392.80	3
36	365.10	392.80	418.10	410.50	3
37	418.10	410.50	567.60	416.50	3
38	80.30	320.70	80.90	320.40	4
39	80.90	320.40	209.70	256.00	4
40	209.70	256.00	567.60	256.00	4
41	73.40	321.90	209.30	254.00	10
42	209.30	254.00	567.60	254.00	5
43	72.40	321.90	209.10	253.50	5
44	209.10	253.50	209.30	254.00	5
45	71.30	321.90	209.00	253.00	8
46	209.00	253.00	567.60	253.00	9
47	209.00	253.00	209.30	252.50	8
48	209.30	252.50	567.60	252.50	8
49	70.20	321.80	209.90	252.00	7

```
    50        209.90     252.00     567.60     252.00        7
ISOTROPIC SOIL PARAMETERS
 10 Type(s) of Soil
 Soil  Total  Saturated  Cohesion Friction   Pore   Pressure   Piez.
 Type Unit Wt. Unit Wt. Intercept   Angle  Pressure Constant Surface
  No.  (pcf)    (pcf)     (psf)     (deg)   Param.    (psf)    No.
   1   110.0    120.0       .0      30.0     .00        .0      1
   2   110.0    120.0       .0      30.0     .00        .0      1
   3    76.5     80.0       .0      28.0     .00        .0      1
   4   110.0    115.0       .0      28.0     .00        .0      1
   5    63.0     63.0       .0      12.0     .00        .0      1
   6    90.0    100.0       .0      30.0     .00        .0      1
   7   110.0    125.0       .0      32.0     .00        .0      1
   8    63.0     63.0       .0      12.0     .00        .0      1
   9    63.0     63.0       .0      12.0     .00        .0      1
  10    63.0     63.0       .0      12.0     .00        .0      1
 1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
 Unit Weight of Water =  62.40
 Piezometric Surface No.  1 Specified by  2 Coordinate Points
   Point      X-Water     Y-Water
    No.         (ft)        (ft)
     1          .00       208.50
     2        567.60      208.50
BOUNDARY LOAD(S)
     1 Load(s) Specified
 Load        X-Left      X-Right      Intensity     Deflection
  No.         (ft)         (ft)       (lb/sqft)       (deg)
   1        417.60       428.10        2172.8           .0
 NOTE - Intensity Is Specified As A Uniformly Distributed
        Force Acting On A Horizontally Projected Surface.
 SURCHARGE BOUNDARY LOAD DATA HAS BEEN SUPPRESSED
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Circular Surfaces, Has Been Specified.
5000 Trial Surfaces Have Been Generated.
  50 Surfaces Initiate From Each Of100 Points Equally Spaced
 Along The Ground Surface Between  X =  63.70 ft.
                                and  X = 100.00 ft.
 Each Surface Terminates Between   X = 400.00 ft.
                                and  X = 500.00 ft.
 Unless Further Limitations Were Imposed, The Minimum Elevation
 At Which A Surface Extends Is  Y =    .00 ft.
 10.00 ft. Line Segments Define Each Trial Failure Surface.
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Modified Bishop Method * *
       Failure Surface Specified By 37 Coordinate Points
         Point      X-Surf      Y-Surf
          No.         (ft)        (ft)
           1         81.30      323.20
           2         91.13      325.05
           3        100.95      326.93
           4        110.76      328.86
           5        120.56      330.83
           6        130.36      332.85
           7        140.15      334.90
           8        149.93      337.00
           9        159.69      339.13
          10        169.45      341.31
          11        179.20      343.53
          12        188.95      345.79
          13        198.68      348.09
          14        208.40      350.44
          15        218.11      352.82
          16        227.81      355.25
          17        237.50      357.71
          18        247.18      360.22
          19        256.85      362.77
```

20	266.51	365.36
21	276.16	367.99
22	285.80	370.67
23	295.42	373.38
24	305.03	376.13
25	314.64	378.93
26	324.22	381.76
27	333.80	384.64
28	343.37	387.55
29	352.92	390.51
30	362.46	393.51
31	371.99	396.55
32	381.50	399.62
33	391.00	402.74
34	400.49	405.90
35	409.97	409.10
36	419.43	412.34
37	421.82	413.17

Circle Center At X = -348.8 ; Y = 2640.4 and Radius, 2356.8

*** 2.057 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	80.93	323.08
2	90.83	324.53
3	100.71	326.06
4	110.58	327.64
5	120.45	329.29
6	130.30	331.00
7	140.14	332.78
8	149.97	334.62
9	159.79	336.52
10	169.59	338.49
11	179.38	340.52
12	189.16	342.62
13	198.93	344.77
14	208.68	346.99
15	218.41	349.28
16	228.13	351.62
17	237.84	354.03
18	247.53	356.51
19	257.20	359.04
20	266.86	361.64
21	276.50	364.30
22	286.12	367.02
23	295.72	369.81
24	305.31	372.65
25	314.88	375.56
26	324.43	378.53
27	333.96	381.57
28	343.46	384.66
29	352.95	387.82
30	362.42	391.03
31	371.87	394.31
32	381.30	397.65
33	390.70	401.05
34	400.08	404.51
35	409.44	408.03
36	418.78	411.62
37	422.85	413.21

Circle Center At X = -139.1 ; Y = 1851.8 and Radius, 1544.4

*** 2.061 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.30	323.20
2	91.15	324.91
3	101.00	326.67

4	110.83	328.48
5	120.66	330.33
6	130.48	332.23
7	140.29	334.17
8	150.09	336.17
9	159.88	338.20
10	169.66	340.29
11	179.43	342.42
12	189.19	344.60
13	198.94	346.82
14	208.68	349.09
15	218.40	351.41
16	228.12	353.77
17	237.83	356.18
18	247.52	358.63
19	257.20	361.13
20	266.87	363.67
21	276.53	366.27
22	286.18	368.90
23	295.81	371.59
24	305.43	374.31
25	315.04	377.09
26	324.63	379.91
27	334.22	382.77
28	343.78	385.68
29	353.34	388.64
30	362.88	391.64
31	372.40	394.68
32	381.91	397.77
33	391.41	400.91
34	400.89	404.09
35	410.35	407.32
36	419.80	410.59
37	427.83	413.41

Circle Center At X = -275.4 ; Y = 2404.8 and Radius, 2111.9

*** 2.063 ***

Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	83.50	323.93
2	93.38	325.46
3	103.26	327.04
4	113.12	328.69
5	122.97	330.40
6	132.82	332.17
7	142.65	334.00
8	152.47	335.89
9	162.27	337.85
10	172.07	339.87
11	181.85	341.95
12	191.62	344.09
13	201.37	346.29
14	211.11	348.55
15	220.84	350.87
16	230.55	353.26
17	240.25	355.70
18	249.93	358.21
19	259.59	360.78
20	269.24	363.41
21	278.87	366.09
22	288.49	368.84
23	298.08	371.65
24	307.66	374.52
25	317.23	377.45
26	326.77	380.44
27	336.29	383.49
28	345.80	386.60
29	355.28	389.77

30	364.75	392.99
31	374.19	396.28
32	383.61	399.63
33	393.02	403.03
34	402.40	406.50
35	411.76	410.02
36	419.74	413.09

Circle Center At X = -154.2 ; Y = 1899.1 and Radius, 1593.0

*** 2.065 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	85.33	324.54
2	95.21	326.13
3	105.07	327.77
4	114.93	329.46
5	124.77	331.22
6	134.61	333.02
7	144.43	334.88
8	154.25	336.80
9	164.05	338.77
10	173.84	340.80
11	183.63	342.88
12	193.39	345.02
13	203.15	347.21
14	212.90	349.46
15	222.63	351.76
16	232.34	354.12
17	242.05	356.53
18	251.74	358.99
19	261.42	361.51
20	271.08	364.09
21	280.73	366.72
22	290.36	369.40
23	299.98	372.14
24	309.58	374.93
25	319.17	377.77
26	328.74	380.67
27	338.29	383.63
28	347.83	386.63
29	357.35	389.69
30	366.85	392.81
31	376.34	395.98
32	385.81	399.20
33	395.26	402.47
34	404.69	405.80
35	414.10	409.18
36	423.49	412.61
37	425.38	413.31

Circle Center At X = -191.3 ; Y = 2079.8 and Radius, 1776.9

*** 2.067 ***

Failure Surface Specified By 35 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	83.13	323.81
2	93.05	325.08
3	102.96	326.43
4	112.86	327.86
5	122.74	329.37
6	132.62	330.96
7	142.48	332.63
8	152.32	334.38
9	162.15	336.20
10	171.97	338.11
11	181.77	340.10
12	191.56	342.16
13	201.32	344.31
14	211.07	346.53

15	220.80	348.83
16	230.52	351.22
17	240.21	353.68
18	249.88	356.21
19	259.53	358.83
20	269.16	361.52
21	278.77	364.29
22	288.36	367.14
23	297.92	370.07
24	307.46	373.07
25	316.97	376.15
26	326.46	379.31
27	335.92	382.54
28	345.36	385.85
29	354.77	389.24
30	364.15	392.70
31	373.50	396.24
32	382.83	399.85
33	392.12	403.54
34	401.39	407.30
35	404.72	408.69

Circle Center At X = -69.0 ; Y = 1552.0 and Radius, 1237.6

*** 2.067 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.77	323.69
2	92.70	324.83
3	102.63	326.05
4	112.54	327.36
5	122.44	328.75
6	132.34	330.22
7	142.21	331.78
8	152.08	333.42
9	161.93	335.14
10	171.76	336.95
11	181.58	338.84
12	191.39	340.82
13	201.17	342.87
14	210.94	345.01
15	220.69	347.23
16	230.42	349.53
17	240.13	351.92
18	249.82	354.39
19	259.49	356.94
20	269.14	359.57
21	278.77	362.28
22	288.37	365.07
23	297.95	367.95
24	307.50	370.90
25	317.03	373.94
26	326.53	377.06
27	336.01	380.25
28	345.45	383.53
29	354.87	386.89
30	364.26	390.32
31	373.63	393.84
32	382.96	397.43
33	392.26	401.10
34	401.53	404.85
35	410.77	408.68
36	419.97	412.59
37	421.25	413.15

Circle Center At X = -47.0 ; Y = 1499.8 and Radius, 1183.2

*** 2.070 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	78.00	322.10
2	87.96	323.05
3	97.90	324.09
4	107.84	325.23
5	117.76	326.46
6	127.67	327.78
7	137.57	329.20
8	147.46	330.71
9	157.33	332.31
10	167.18	334.01
11	177.02	335.79
12	186.84	337.67
13	196.65	339.65
14	206.43	341.71
15	216.20	343.87
16	225.94	346.12
17	235.66	348.46
18	245.36	350.89
19	255.04	353.41
20	264.69	356.03
21	274.32	358.73
22	283.92	361.53
23	293.49	364.41
24	303.04	367.39
25	312.56	370.45
26	322.05	373.61
27	331.51	376.85
28	340.94	380.18
29	350.33	383.60
30	359.70	387.11
31	369.03	390.71
32	378.32	394.40
33	387.59	398.17
34	396.81	402.03
35	406.00	405.97
36	415.15	410.01
37	422.18	413.18

Circle Center At X = -17.9 ; Y = 1380.5 and Radius, 1062.7

*** 2.071 ***

Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	88.27	325.52
2	98.18	326.85
3	108.08	328.26
4	117.97	329.73
5	127.85	331.28
6	137.72	332.91
7	147.57	334.61
8	157.41	336.38
9	167.24	338.22
10	177.06	340.14
11	186.86	342.13
12	196.64	344.19
13	206.41	346.33
14	216.16	348.54
15	225.90	350.82
16	235.62	353.17
17	245.32	355.59
18	255.00	358.09
19	264.67	360.66
20	274.31	363.30
21	283.94	366.01
22	293.54	368.80
23	303.13	371.65
24	312.69	374.58
25	322.23	377.58
26	331.75	380.65

27	341.24	383.79
28	350.71	387.00
29	360.16	390.28
30	369.58	393.63
31	378.98	397.05
32	388.35	400.54
33	397.69	404.10
34	407.01	407.73
35	416.30	411.42
36	420.46	413.11

Circle Center At X = -85.7 ; Y = 1659.5 and Radius, 1345.2

*** 2.074 ***

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	78.73	322.34
2	88.63	323.80
3	98.51	325.31
4	108.39	326.88
5	118.25	328.51
6	128.11	330.20
7	137.96	331.95
8	147.79	333.76
9	157.62	335.63
10	167.43	337.56
11	177.23	339.54
12	187.02	341.59
13	196.79	343.70
14	206.56	345.86
15	216.31	348.08
16	226.04	350.36
17	235.76	352.70
18	245.47	355.10
19	255.17	357.56
20	264.84	360.08
21	274.51	362.65
22	284.15	365.28
23	293.79	367.97
24	303.40	370.72
25	313.00	373.53
26	322.58	376.39
27	332.14	379.32
28	341.69	382.30
29	351.22	385.33
30	360.73	388.43
31	370.22	391.58
32	379.69	394.79
33	389.14	398.05
34	398.57	401.38
35	407.98	404.76
36	417.37	408.19
37	426.74	411.69
38	431.68	413.56

Circle Center At X = -157.2 ; Y = 1963.9 and Radius, 1658.4

*** 2.075 ***

Citrus Operations Permit Renewal North Slope

F:\PROJECT\CITRUS\09208040.03\CALCUL~1\CNFINEQ.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:55PM

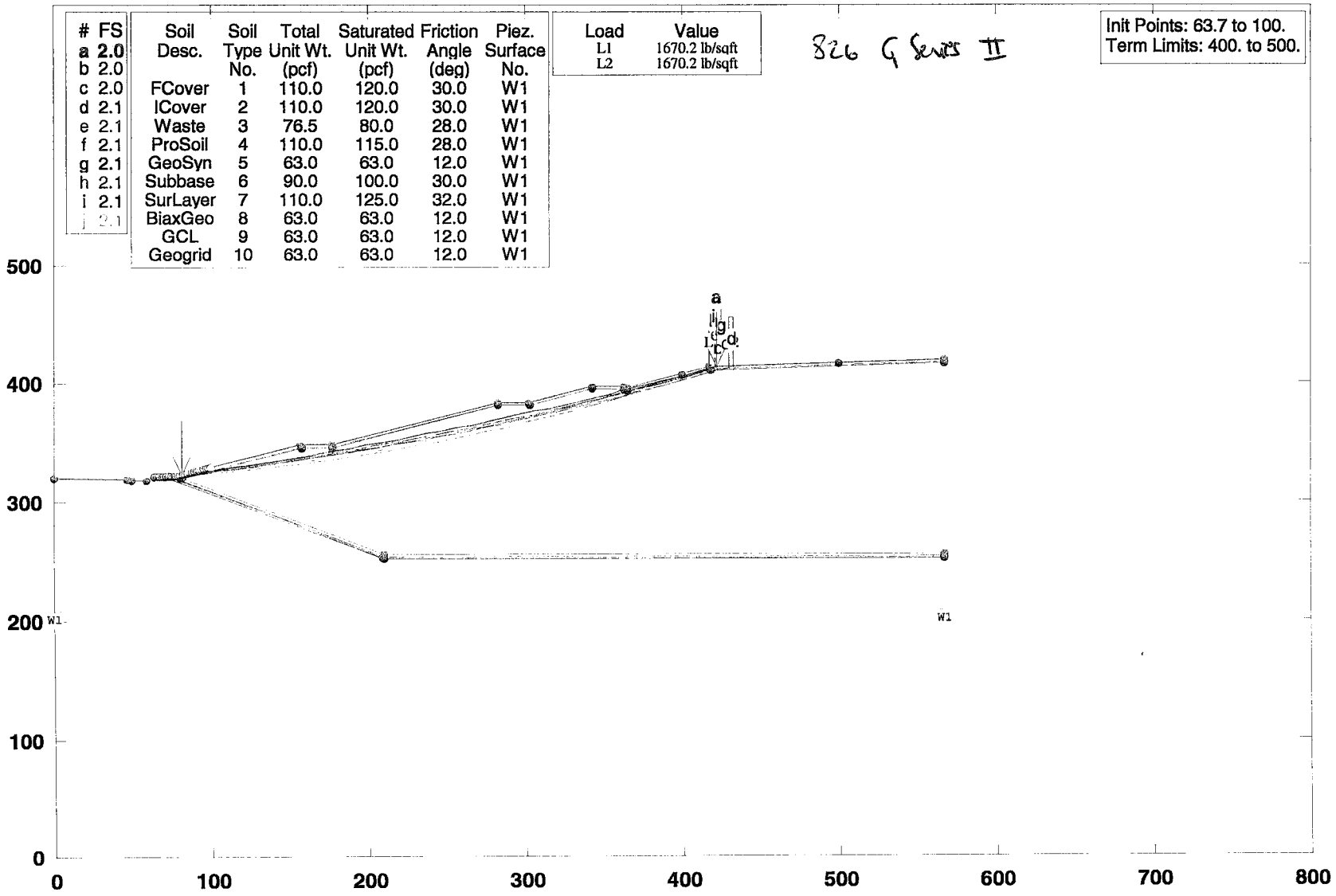
Circular

826 G Series II

#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
a	2.0						
b	2.0						
c	2.0	FCover	1	110.0	120.0	30.0	W1
d	2.1	ICover	2	110.0	120.0	30.0	W1
e	2.1	Waste	3	76.5	80.0	28.0	W1
f	2.1	ProSoil	4	110.0	115.0	28.0	W1
g	2.1	GeoSyn	5	63.0	63.0	12.0	W1
h	2.1	Subbase	6	90.0	100.0	30.0	W1
i	2.1	SurLayer	7	110.0	125.0	32.0	W1
j	2.1	BiaxGeo	8	63.0	63.0	12.0	W1
		GCL	9	63.0	63.0	12.0	W1
		Geogrid	10	63.0	63.0	12.0	W1

Load	Value
L1	1670.2 lb/sqft
L2	1670.2 lb/sqft

Init Points: 63.7 to 100.
Term Limits: 400. to 500.



STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:55PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:cnfineq.
Output Filename: F:cnfineq.OUT
Plotted Output Filename: F:cnfineq.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
North Slope

BOUNDARY COORDINATES
18 Top Boundaries
50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	320.00	46.80	319.90	7
2	46.80	319.90	49.40	318.50	7
3	49.40	318.50	58.90	318.50	7
4	58.90	318.50	63.70	321.70	7
5	63.70	321.70	70.20	321.80	7
6	70.20	321.80	71.30	321.90	8
7	71.30	321.90	72.40	321.90	5
8	72.40	321.90	73.40	321.90	10
9	73.40	321.90	77.70	322.00	4
10	77.70	322.00	157.20	348.50	1
11	157.20	348.50	177.20	348.50	1
12	177.20	348.50	282.20	383.50	1
13	282.20	383.50	302.20	383.50	1
14	302.20	383.50	342.70	397.00	1
15	342.70	397.00	363.30	396.50	1
16	363.30	396.50	365.30	395.50	1
17	365.30	395.50	417.60	413.00	1
18	417.60	413.00	567.60	419.00	1
19	80.30	320.70	157.60	346.50	2
20	157.60	346.50	177.60	346.50	2
21	177.60	346.50	282.60	381.50	2
22	282.60	381.50	302.60	381.50	2
23	302.60	381.50	343.00	395.00	2
24	343.00	395.00	362.80	394.60	2
25	362.80	394.60	365.10	393.40	2
26	365.10	393.40	418.00	411.00	2
27	418.00	411.00	567.60	417.00	2
28	77.70	322.00	80.30	320.70	4
29	80.90	320.40	157.60	346.00	3
30	157.60	346.00	177.60	346.00	3
31	177.60	346.00	282.70	381.00	3
32	282.70	381.00	302.70	381.00	3
33	302.70	381.00	343.10	394.50	3
34	343.10	394.50	362.60	394.10	3
35	362.60	394.10	365.10	392.80	3
36	365.10	392.80	418.10	410.50	3
37	418.10	410.50	567.60	416.50	3
38	80.30	320.70	80.90	320.40	4
39	80.90	320.40	209.70	256.00	4
40	209.70	256.00	567.60	256.00	4
41	73.40	321.90	209.30	254.00	10
42	209.30	254.00	567.60	254.00	5
43	72.40	321.90	209.10	253.50	5
44	209.10	253.50	209.30	254.00	5
45	71.30	321.90	209.00	253.00	8
46	209.00	253.00	567.60	253.00	9
47	209.00	253.00	209.30	252.50	8
48	209.30	252.50	567.60	252.50	8
49	70.20	321.80	209.90	252.00	7

50 209.90 252.00 567.60 252.00 7

ISOTROPIC SOIL PARAMETERS

10 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	76.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	12.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1
8	63.0	63.0	.0	12.0	.00	.0	1
9	63.0	63.0	.0	12.0	.00	.0	1
10	63.0	63.0	.0	12.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	567.60	208.50

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	417.60	420.82	1670.2	.0
2	429.74	432.96	1670.2	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

5000 Trial Surfaces Have Been Generated.

50 Surfaces Initiate From Each Of100 Points Equally Spaced Along The Ground Surface Between X = 63.70 ft.
and X = 100.00 ft.

Each Surface Terminates Between X = 400.00 ft.
and X = 500.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.30	323.20
2	91.13	325.05
3	100.95	326.93
4	110.76	328.86
5	120.56	330.83
6	130.36	332.85
7	140.15	334.90
8	149.93	337.00
9	159.69	339.13
10	169.45	341.31
11	179.20	343.53
12	188.95	345.79
13	198.68	348.09
14	208.40	350.44
15	218.11	352.82
16	227.81	355.25
17	237.50	357.71
18	247.18	360.22
19	256.85	362.77

20	266.51	365.36
21	276.16	367.99
22	285.80	370.67
23	295.42	373.38
24	305.03	376.13
25	314.64	378.93
26	324.22	381.76
27	333.80	384.64
28	343.37	387.55
29	352.92	390.51
30	362.46	393.51
31	371.99	396.55
32	381.50	399.62
33	391.00	402.74
34	400.49	405.90
35	409.97	409.10
36	419.43	412.34
37	421.82	413.17

Circle Center At X = -348.8 ; Y = 2640.4 and Radius, 2356.8

*** 2.045 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	80.93	323.08
2	90.83	324.53
3	100.71	326.06
4	110.58	327.64
5	120.45	329.29
6	130.30	331.00
7	140.14	332.78
8	149.97	334.62
9	159.79	336.52
10	169.59	338.49
11	179.38	340.52
12	189.16	342.62
13	198.93	344.77
14	208.68	346.99
15	218.41	349.28
16	228.13	351.62
17	237.84	354.03
18	247.53	356.51
19	257.20	359.04
20	266.86	361.64
21	276.50	364.30
22	286.12	367.02
23	295.72	369.81
24	305.31	372.65
25	314.88	375.56
26	324.43	378.53
27	333.96	381.57
28	343.46	384.66
29	352.95	387.82
30	362.42	391.03
31	371.87	394.31
32	381.30	397.65
33	390.70	401.05
34	400.08	404.51
35	409.44	408.03
36	418.78	411.62
37	422.85	413.21

Circle Center At X = -139.1 ; Y = 1851.8 and Radius, 1544.4

*** 2.046 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.30	323.20
2	91.15	324.91
3	101.00	326.67

4	110.83	328.48
5	120.66	330.33
6	130.48	332.23
7	140.29	334.17
8	150.09	336.17
9	159.88	338.20
10	169.66	340.29
11	179.43	342.42
12	189.19	344.60
13	198.94	346.82
14	208.68	349.09
15	218.40	351.41
16	228.12	353.77
17	237.83	356.18
18	247.52	358.63
19	257.20	361.13
20	266.87	363.67
21	276.53	366.27
22	286.18	368.90
23	295.81	371.59
24	305.43	374.31
25	315.04	377.09
26	324.63	379.91
27	334.22	382.77
28	343.78	385.68
29	353.34	388.64
30	362.88	391.64
31	372.40	394.68
32	381.91	397.77
33	391.41	400.91
34	400.89	404.09
35	410.35	407.32
36	419.80	410.59
37	427.83	413.41

Circle Center At X = -275.4 ; Y = 2404.8 and Radius, 2111.9

*** 2.050 ***

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	78.73	322.34
2	88.63	323.80
3	98.51	325.31
4	108.39	326.88
5	118.25	328.51
6	128.11	330.20
7	137.96	331.95
8	147.79	333.76
9	157.62	335.63
10	167.43	337.56
11	177.23	339.54
12	187.02	341.59
13	196.79	343.70
14	206.56	345.86
15	216.31	348.08
16	226.04	350.36
17	235.76	352.70
18	245.47	355.10
19	255.17	357.56
20	264.84	360.08
21	274.51	362.65
22	284.15	365.28
23	293.79	367.97
24	303.40	370.72
25	313.00	373.53
26	322.58	376.39
27	332.14	379.32
28	341.69	382.30
29	351.22	385.33

30	360.73	388.43
31	370.22	391.58
32	379.69	394.79
33	389.14	398.05
34	398.57	401.38
35	407.98	404.76
36	417.37	408.19
37	426.74	411.69
38	431.68	413.56

Circle Center At X = -157.2 ; Y = 1963.9 and Radius, 1658.4

*** 2.053 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.77	323.69
2	92.70	324.83
3	102.63	326.05
4	112.54	327.36
5	122.44	328.75
6	132.34	330.22
7	142.21	331.78
8	152.08	333.42
9	161.93	335.14
10	171.76	336.95
11	181.58	338.84
12	191.39	340.82
13	201.17	342.87
14	210.94	345.01
15	220.69	347.23
16	230.42	349.53
17	240.13	351.92
18	249.82	354.39
19	259.49	356.94
20	269.14	359.57
21	278.77	362.28
22	288.37	365.07
23	297.95	367.95
24	307.50	370.90
25	317.03	373.94
26	326.53	377.06
27	336.01	380.25
28	345.45	383.53
29	354.87	386.89
30	364.26	390.32
31	373.63	393.84
32	382.96	397.43
33	392.26	401.10
34	401.53	404.85
35	410.77	408.68
36	419.97	412.59
37	421.25	413.15

Circle Center At X = -47.0 ; Y = 1499.8 and Radius, 1183.2

*** 2.053 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	78.00	322.10
2	87.96	323.05
3	97.90	324.09
4	107.84	325.23
5	117.76	326.46
6	127.67	327.78
7	137.57	329.20
8	147.46	330.71
9	157.33	332.31
10	167.18	334.01
11	177.02	335.79
12	186.84	337.67

13	196.65	339.65
14	206.43	341.71
15	216.20	343.87
16	225.94	346.12
17	235.66	348.46
18	245.36	350.89
19	255.04	353.41
20	264.69	356.03
21	274.32	358.73
22	283.92	361.53
23	293.49	364.41
24	303.04	367.39
25	312.56	370.45
26	322.05	373.61
27	331.51	376.85
28	340.94	380.18
29	350.33	383.60
30	359.70	387.11
31	369.03	390.71
32	378.32	394.40
33	387.59	398.17
34	396.81	402.03
35	406.00	405.97
36	415.15	410.01
37	422.18	413.18

Circle Center At X = -17.9 ; Y = 1380.5 and Radius, 1062.7

*** 2.053 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	85.33	324.54
2	95.21	326.13
3	105.07	327.77
4	114.93	329.46
5	124.77	331.22
6	134.61	333.02
7	144.43	334.88
8	154.25	336.80
9	164.05	338.77
10	173.84	340.80
11	183.63	342.88
12	193.39	345.02
13	203.15	347.21
14	212.90	349.46
15	222.63	351.76
16	232.34	354.12
17	242.05	356.53
18	251.74	358.99
19	261.42	361.51
20	271.08	364.09
21	280.73	366.72
22	290.36	369.40
23	299.98	372.14
24	309.58	374.93
25	319.17	377.77
26	328.74	380.67
27	338.29	383.63
28	347.83	386.63
29	357.35	389.69
30	366.85	392.81
31	376.34	395.98
32	385.81	399.20
33	395.26	402.47
34	404.69	405.80
35	414.10	409.18
36	423.49	412.61
37	425.38	413.31

Circle Center At X = -191.3 ; Y = 2079.8 and Radius, 1776.9

*** 2.053 ***
Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	83.50	323.93
2	93.38	325.46
3	103.26	327.04
4	113.12	328.69
5	122.97	330.40
6	132.82	332.17
7	142.65	334.00
8	152.47	335.89
9	162.27	337.85
10	172.07	339.87
11	181.85	341.95
12	191.62	344.09
13	201.37	346.29
14	211.11	348.55
15	220.84	350.87
16	230.55	353.26
17	240.25	355.70
18	249.93	358.21
19	259.59	360.78
20	269.24	363.41
21	278.87	366.09
22	288.49	368.84
23	298.08	371.65
24	307.66	374.52
25	317.23	377.45
26	326.77	380.44
27	336.29	383.49
28	345.80	386.60
29	355.28	389.77
30	364.75	392.99
31	374.19	396.28
32	383.61	399.63
33	393.02	403.03
34	402.40	406.50
35	411.76	410.02
36	419.74	413.09

Circle Center At X = -154.2 ; Y = 1899.1 and Radius, 1593.0

*** 2.054 ***
Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	88.27	325.52
2	98.18	326.85
3	108.08	328.26
4	117.97	329.73
5	127.85	331.28
6	137.72	332.91
7	147.57	334.61
8	157.41	336.38
9	167.24	338.22
10	177.06	340.14
11	186.86	342.13
12	196.64	344.19
13	206.41	346.33
14	216.16	348.54
15	225.90	350.82
16	235.62	353.17
17	245.32	355.59
18	255.00	358.09
19	264.67	360.66
20	274.31	363.30
21	283.94	366.01
22	293.54	368.80
23	303.13	371.65

24	312.69	374.58
25	322.23	377.58
26	331.75	380.65
27	341.24	383.79
28	350.71	387.00
29	360.16	390.28
30	369.58	393.63
31	378.98	397.05
32	388.35	400.54
33	397.69	404.10
34	407.01	407.73
35	416.30	411.42
36	420.46	413.11

Circle Center At X = -85.7 ; Y = 1659.5 and Radius, 1345.2

*** 2.058 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.40	323.57
2	92.34	324.64
3	102.28	325.80
4	112.20	327.05
5	122.11	328.38
6	132.01	329.79
7	141.89	331.29
8	151.77	332.88
9	161.63	334.55
10	171.47	336.31
11	181.30	338.15
12	191.11	340.08
13	200.91	342.09
14	210.69	344.18
15	220.45	346.36
16	230.19	348.63
17	239.91	350.97
18	249.61	353.40
19	259.29	355.92
20	268.94	358.52
21	278.58	361.20
22	288.19	363.96
23	297.77	366.81
24	307.33	369.74
25	316.87	372.75
26	326.38	375.84
27	335.86	379.02
28	345.32	382.28
29	354.74	385.61
30	364.14	389.03
31	373.51	392.54
32	382.84	396.12
33	392.15	399.78
34	401.42	403.52
35	410.66	407.34
36	419.87	411.24
37	424.56	413.28

Circle Center At X = -37.2 ; Y = 1477.0 and Radius, 1159.6

*** 2.058 ***

Circular

Citrus Operations Permit Renewal North Slope

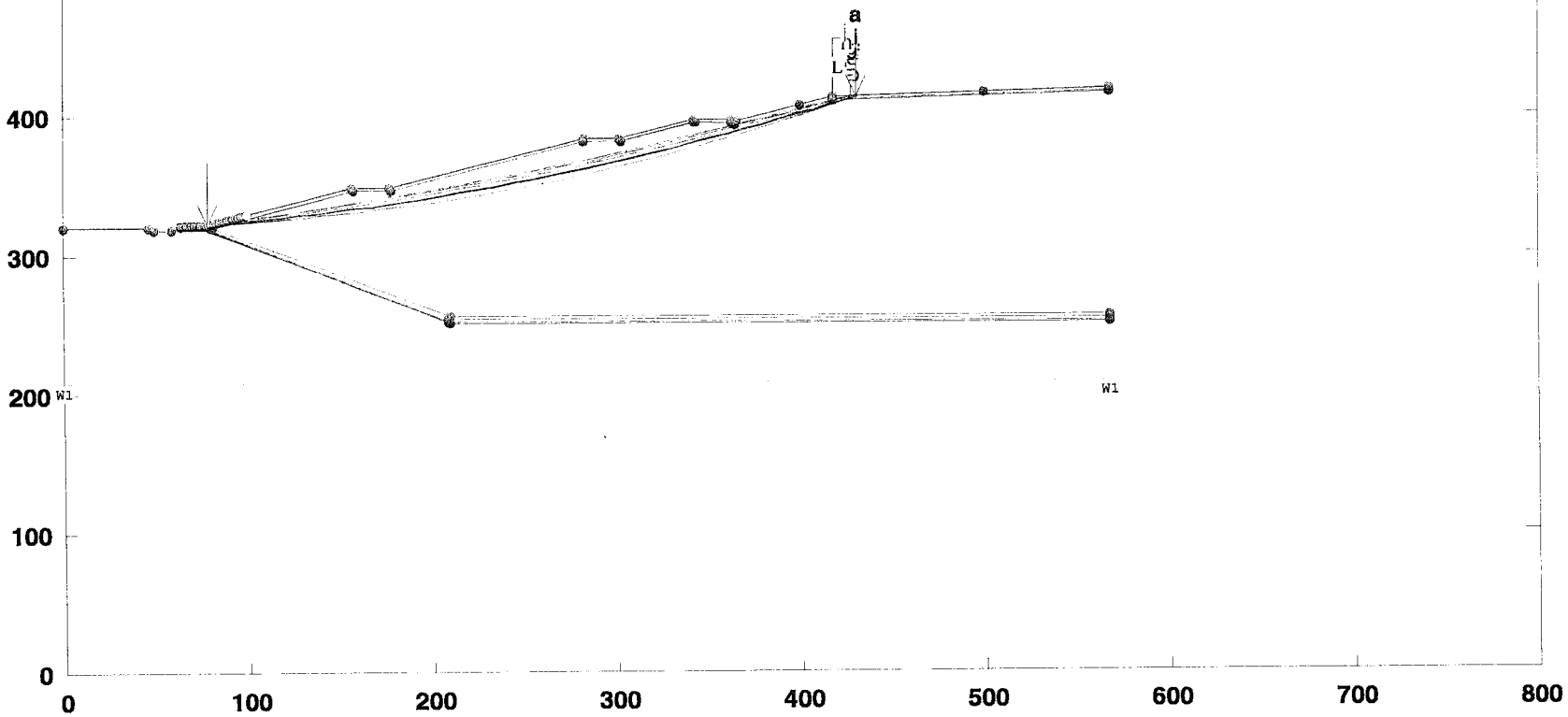
F:\PROJECT\CITRUS\09208040.03\CALCUL~1\CNFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:48PM

#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
a	2.0						
b	2.0						
c	2.0	FCover	1	110.0	120.0	30.0	W1
d	2.0	ICover	2	110.0	120.0	30.0	W1
e	2.0	Waste	3	76.5	80.0	28.0	W1
f	2.0	ProSoil	4	110.0	115.0	28.0	W1
g	2.0	GeoSyn	5	63.0	63.0	12.0	W1
h	2.0	Subbase	6	90.0	100.0	30.0	W1
i	2.0	SurLayer	7	110.0	125.0	32.0	W1
j	2.0	BiaxGeo	8	63.0	63.0	12.0	W1
		GCL	9	63.0	63.0	12.0	W1
		Geogrid	10	63.0	63.0	12.0	W1

Load	Value
L1	2172.8 lb/sqft

D&R Series II with A

Init Points: 63.7 to 100.
Term Limits: 400. to 500.



STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:48PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:cnfinal.
Output Filename: F:cnfinal.OUT
Plotted Output Filename: F:cnfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
North Slope

BOUNDARY COORDINATES
18 Top Boundaries
50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	320.00	46.80	319.90	7
2	46.80	319.90	49.40	318.50	7
3	49.40	318.50	58.90	318.50	7
4	58.90	318.50	63.70	321.70	7
5	63.70	321.70	70.20	321.80	7
6	70.20	321.80	71.30	321.90	8
7	71.30	321.90	72.40	321.90	5
8	72.40	321.90	73.40	321.90	10
9	73.40	321.90	77.70	322.00	4
10	77.70	322.00	157.20	348.50	1
11	157.20	348.50	177.20	348.50	1
12	177.20	348.50	282.20	383.50	1
13	282.20	383.50	302.20	383.50	1
14	302.20	383.50	342.70	397.00	1
15	342.70	397.00	363.30	396.50	1
16	363.30	396.50	365.30	395.50	1
17	365.30	395.50	417.60	413.00	1
18	417.60	413.00	567.60	419.00	1
19	80.30	320.70	157.60	346.50	2
20	157.60	346.50	177.60	346.50	2
21	177.60	346.50	282.60	381.50	2
22	282.60	381.50	302.60	381.50	2
23	302.60	381.50	343.00	395.00	2
24	343.00	395.00	362.80	394.60	2
25	362.80	394.60	365.10	393.40	2
26	365.10	393.40	418.00	411.00	2
27	418.00	411.00	567.60	417.00	2
28	77.70	322.00	80.30	320.70	4
29	80.90	320.40	157.60	346.00	3
30	157.60	346.00	177.60	346.00	3
31	177.60	346.00	282.70	381.00	3
32	282.70	381.00	302.70	381.00	3
33	302.70	381.00	343.10	394.50	3
34	343.10	394.50	362.60	394.10	3
35	362.60	394.10	365.10	392.80	3
36	365.10	392.80	418.10	410.50	3
37	418.10	410.50	567.60	416.50	3
38	80.30	320.70	80.90	320.40	4
39	80.90	320.40	209.70	256.00	4
40	209.70	256.00	567.60	256.00	4
41	73.40	321.90	209.30	254.00	10
42	209.30	254.00	567.60	254.00	5
43	72.40	321.90	209.10	253.50	5
44	209.10	253.50	209.30	254.00	5
45	71.30	321.90	209.00	253.00	8
46	209.00	253.00	567.60	253.00	9
47	209.00	253.00	209.30	252.50	8
48	209.30	252.50	567.60	252.50	8
49	70.20	321.80	209.90	252.00	7

50	209.90	252.00	567.60	252.00	7

ISOTROPIC SOIL PARAMETERS

10 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	76.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	12.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1
8	63.0	63.0	.0	12.0	.00	.0	1
9	63.0	63.0	.0	12.0	.00	.0	1
10	63.0	63.0	.0	12.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	567.60	208.50

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	417.60	428.10	2172.8	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

5000 Trial Surfaces Have Been Generated.

50 Surfaces Initiate From Each Of100 Points Equally Spaced Along The Ground Surface Between X = 63.70 ft.
and X = 100.00 ft.

Each Surface Terminates Between X = 400.00 ft.
and X = 500.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	78.00	322.10
2	87.94	323.23
3	97.86	324.45
4	107.78	325.74
5	117.68	327.11
6	127.58	328.55
7	137.46	330.08
8	147.33	331.68
9	157.19	333.36
10	167.03	335.12
11	176.86	336.96
12	186.68	338.87
13	196.48	340.87
14	206.26	342.93
15	216.03	345.08
16	225.78	347.30
17	235.51	349.60
18	245.22	351.98
19	254.92	354.43
20	264.59	356.96

21	274.25	359.57
22	283.88	362.25
23	293.49	365.01
24	303.08	367.84
25	312.65	370.75
26	322.20	373.74
27	331.72	376.80
28	341.21	379.93
29	350.68	383.14
30	360.13	386.43
31	369.55	389.79
32	378.94	393.22
33	388.30	396.73
34	397.64	400.31
35	406.95	403.96
36	416.23	407.69
37	425.48	411.49
38	430.27	413.51

Circle Center At X = -60.7 ; Y = 1581.2 and Radius, 1266.7

*** 2.016 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.03	323.44
2	91.95	324.77
3	101.85	326.16
4	111.74	327.63
5	121.62	329.16
6	131.49	330.76
7	141.35	332.42
8	151.20	334.16
9	161.04	335.96
10	170.86	337.83
11	180.67	339.77
12	190.47	341.77
13	200.25	343.85
14	210.02	345.99
15	219.77	348.20
16	229.51	350.47
17	239.23	352.82
18	248.94	355.23
19	258.63	357.70
20	268.30	360.25
21	277.95	362.86
22	287.59	365.53
23	297.20	368.28
24	306.80	371.09
25	316.38	373.96
26	325.93	376.90
27	335.47	379.91
28	344.99	382.98
29	354.48	386.12
30	363.95	389.33
31	373.40	392.60
32	382.83	395.93
33	392.24	399.33
34	401.62	402.80
35	410.97	406.33
36	420.31	409.92
37	429.33	413.47

Circle Center At X = -105.0 ; Y = 1759.9 and Radius, 1448.6

*** 2.017 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.40	323.57
2	92.35	324.58
3	102.29	325.67

4	112.22	326.86
5	122.14	328.13
6	132.05	329.49
7	141.94	330.93
8	151.82	332.46
9	161.69	334.08
10	171.54	335.79
11	181.38	337.58
12	191.20	339.46
13	201.01	341.43
14	210.80	343.48
15	220.56	345.62
16	230.31	347.84
17	240.04	350.15
18	249.75	352.55
19	259.44	355.03
20	269.11	357.59
21	278.75	360.24
22	288.37	362.98
23	297.96	365.79
24	307.53	368.70
25	317.07	371.69
26	326.59	374.76
27	336.08	377.91
28	345.54	381.15
29	354.97	384.47
30	364.38	387.88
31	373.75	391.36
32	383.09	394.93
33	392.40	398.58
34	401.68	402.32
35	410.92	406.13
36	420.13	410.03
37	427.94	413.41

Circle Center At X = -27.4 ; Y = 1455.2 and Radius, 1137.0

*** 2.017 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.30	323.20
2	91.15	324.91
3	101.00	326.67
4	110.83	328.48
5	120.66	330.33
6	130.48	332.23
7	140.29	334.17
8	150.09	336.17
9	159.88	338.20
10	169.66	340.29
11	179.43	342.42
12	189.19	344.60
13	198.94	346.82
14	208.68	349.09
15	218.40	351.41
16	228.12	353.77
17	237.83	356.18
18	247.52	358.63
19	257.20	361.13
20	266.87	363.67
21	276.53	366.27
22	286.18	368.90
23	295.81	371.59
24	305.43	374.31
25	315.04	377.09
26	324.63	379.91
27	334.22	382.77
28	343.78	385.68
29	353.34	388.64

30	362.88	391.64
31	372.40	394.68
32	381.91	397.77
33	391.41	400.91
34	400.89	404.09
35	410.35	407.32
36	419.80	410.59
37	427.83	413.41

Circle Center At X = -275.4 ; Y = 2404.8 and Radius, 2111.9

*** 2.017 ***

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	79.10	322.47
2	89.07	323.29
3	99.02	324.21
4	108.97	325.22
5	118.91	326.33
6	128.84	327.54
7	138.75	328.84
8	148.65	330.25
9	158.54	331.74
10	168.41	333.34
11	178.27	335.03
12	188.11	336.82
13	197.93	338.70
14	207.73	340.67
15	217.51	342.75
16	227.28	344.92
17	237.02	347.18
18	246.74	349.54
19	256.43	351.99
20	266.10	354.54
21	275.74	357.18
22	285.36	359.91
23	294.96	362.74
24	304.52	365.66
25	314.05	368.68
26	323.56	371.79
27	333.03	374.99
28	342.47	378.28
29	351.88	381.66
30	361.26	385.14
31	370.60	388.71
32	379.91	392.36
33	389.18	396.11
34	398.42	399.95
35	407.61	403.88
36	416.77	407.90
37	425.89	412.00
38	429.03	413.46

Circle Center At X = -.2 ; Y = 1345.9 and Radius, 1026.5

*** 2.019 ***

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	78.73	322.34
2	88.63	323.80
3	98.51	325.31
4	108.39	326.88
5	118.25	328.51
6	128.11	330.20
7	137.96	331.95
8	147.79	333.76
9	157.62	335.63
10	167.43	337.56
11	177.23	339.54
12	187.02	341.59

13	196.79	343.70
14	206.56	345.86
15	216.31	348.08
16	226.04	350.36
17	235.76	352.70
18	245.47	355.10
19	255.17	357.56
20	264.84	360.08
21	274.51	362.65
22	284.15	365.28
23	293.79	367.97
24	303.40	370.72
25	313.00	373.53
26	322.58	376.39
27	332.14	379.32
28	341.69	382.30
29	351.22	385.33
30	360.73	388.43
31	370.22	391.58
32	379.69	394.79
33	389.14	398.05
34	398.57	401.38
35	407.98	404.76
36	417.37	408.19
37	426.74	411.69
38	431.68	413.56

Circle Center At X = -157.2 ; Y = 1963.9 and Radius, 1658.4

*** 2.020 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	85.70	324.67
2	95.58	326.19
3	105.46	327.76
4	115.33	329.40
5	125.18	331.09
6	135.03	332.84
7	144.86	334.64
8	154.69	336.51
9	164.50	338.43
10	174.30	340.41
11	184.09	342.45
12	193.87	344.54
13	203.64	346.69
14	213.39	348.90
15	223.13	351.17
16	232.86	353.49
17	242.57	355.87
18	252.27	358.30
19	261.95	360.80
20	271.62	363.35
21	281.28	365.95
22	290.92	368.62
23	300.54	371.34
24	310.15	374.11
25	319.74	376.94
26	329.31	379.83
27	338.87	382.78
28	348.41	385.78
29	357.93	388.83
30	367.43	391.94
31	376.92	395.11
32	386.38	398.33
33	395.83	401.61
34	405.26	404.94
35	414.67	408.33
36	424.06	411.77
37	428.51	413.44

Circle Center At X = -168.6 ; Y = 2013.1 and Radius, 1707.4
*** 2.020 ***
Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	85.33	324.54
2	95.21	326.13
3	105.07	327.77
4	114.93	329.46
5	124.77	331.22
6	134.61	333.02
7	144.43	334.88
8	154.25	336.80
9	164.05	338.77
10	173.84	340.80
11	183.63	342.88
12	193.39	345.02
13	203.15	347.21
14	212.90	349.46
15	222.63	351.76
16	232.34	354.12
17	242.05	356.53
18	251.74	358.99
19	261.42	361.51
20	271.08	364.09
21	280.73	366.72
22	290.36	369.40
23	299.98	372.14
24	309.58	374.93
25	319.17	377.77
26	328.74	380.67
27	338.29	383.63
28	347.83	386.63
29	357.35	389.69
30	366.85	392.81
31	376.34	395.98
32	385.81	399.20
33	395.26	402.47
34	404.69	405.80
35	414.10	409.18
36	423.49	412.61
37	425.38	413.31

Circle Center At X = -191.3 ; Y = 2079.8 and Radius, 1776.9
*** 2.027 ***
Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.30	323.20
2	91.28	323.83
3	101.25	324.58
4	111.22	325.42
5	121.17	326.38
6	131.11	327.44
7	141.05	328.61
8	150.96	329.89
9	160.87	331.27
10	170.76	332.76
11	180.63	334.36
12	190.48	336.06
13	200.32	337.87
14	210.13	339.78
15	219.93	341.80
16	229.70	343.93
17	239.45	346.16
18	249.17	348.49
19	258.87	350.93
20	268.54	353.47
21	278.18	356.12

22	287.80	358.87
23	297.38	361.73
24	306.93	364.68
25	316.45	367.74
26	325.94	370.90
27	335.39	374.17
28	344.81	377.53
29	354.19	381.00
30	363.53	384.57
31	372.83	388.24
32	382.10	392.00
33	391.32	395.87
34	400.50	399.84
35	409.64	403.90
36	418.73	408.06
37	427.78	412.33
38	430.21	413.50

Circle Center At X = 27.4 ; Y = 1250.9 and Radius, 929.2

*** 2.029 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.40	323.57
2	92.34	324.64
3	102.28	325.80
4	112.20	327.05
5	122.11	328.38
6	132.01	329.79
7	141.89	331.29
8	151.77	332.88
9	161.63	334.55
10	171.47	336.31
11	181.30	338.15
12	191.11	340.08
13	200.91	342.09
14	210.69	344.18
15	220.45	346.36
16	230.19	348.63
17	239.91	350.97
18	249.61	353.40
19	259.29	355.92
20	268.94	358.52
21	278.58	361.20
22	288.19	363.96
23	297.77	366.81
24	307.33	369.74
25	316.87	372.75
26	326.38	375.84
27	335.86	379.02
28	345.32	382.28
29	354.74	385.61
30	364.14	389.03
31	373.51	392.54
32	382.84	396.12
33	392.15	399.78
34	401.42	403.52
35	410.66	407.34
36	419.87	411.24
37	424.56	413.28

Circle Center At X = -37.2 ; Y = 1477.0 and Radius, 1159.6

*** 2.029 ***

Block

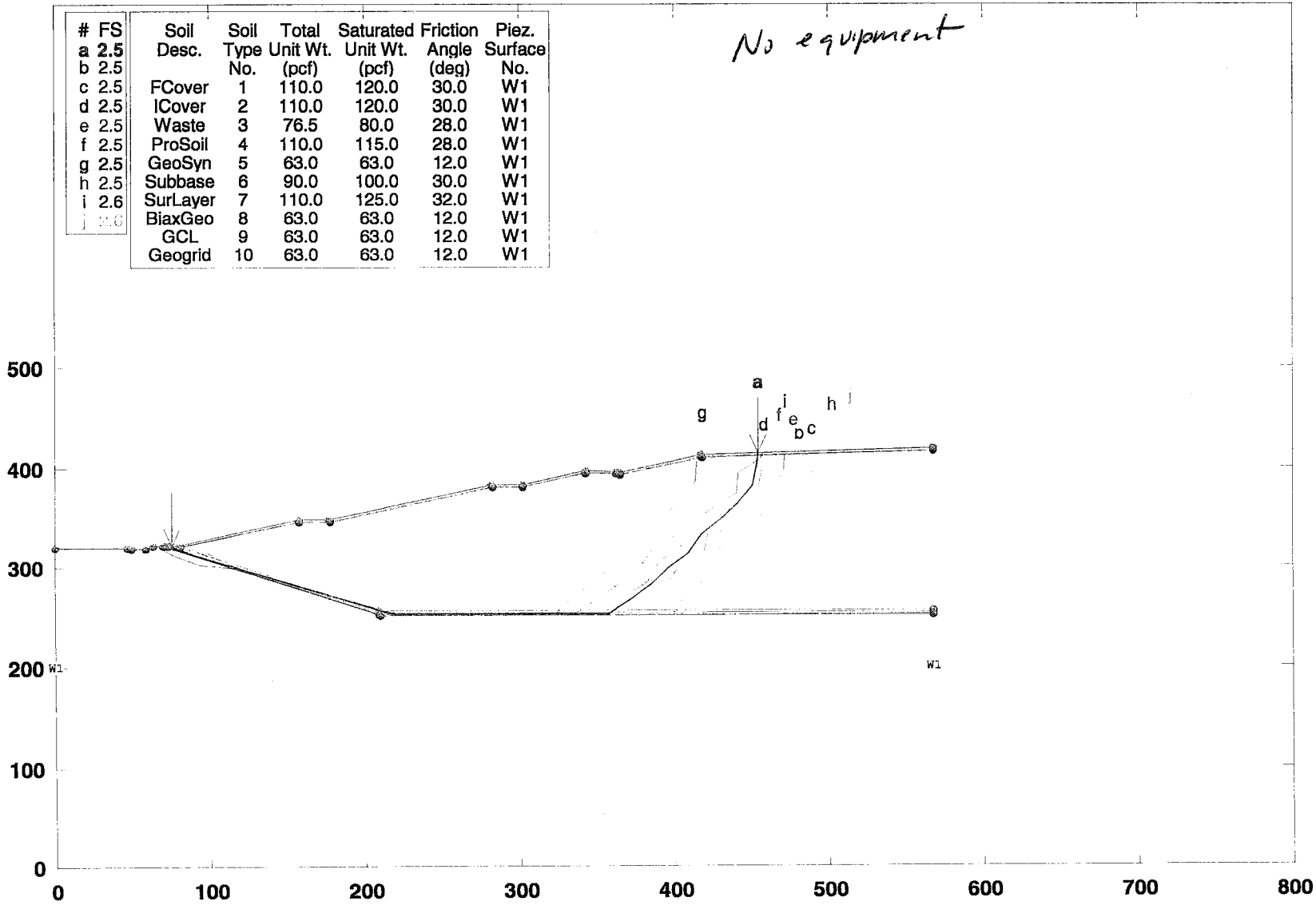
Citrus Operations Permit Renewal North Slope

F:\PROJECT\CITRUS\09208040.03\CALCUL~1\BNFINEQ.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:32PM

No equipment

#	FS
a	2.5
b	2.5
c	2.5
d	2.5
e	2.5
f	2.5
g	2.5
h	2.5
i	2.6
j	2.6

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
FCover	1	110.0	120.0	30.0	W1
ICover	2	110.0	120.0	30.0	W1
Waste	3	76.5	80.0	28.0	W1
ProSoil	4	110.0	115.0	28.0	W1
GeoSyn	5	63.0	63.0	12.0	W1
Subbase	6	90.0	100.0	30.0	W1
SurLayer	7	110.0	125.0	32.0	W1
BiaxGeo	8	63.0	63.0	12.0	W1
GCL	9	63.0	63.0	12.0	W1
Geogrid	10	63.0	63.0	12.0	W1



STABL6H FSmin=2.5

Safety Factors Are Calculated By The Modified Janbu Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:32PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:BNFINEQ.
Output Filename: F:BNFINEQ.OUT
Plotted Output Filename: F:BNFINEQ.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
North Slope

BOUNDARY COORDINATES
18 Top Boundaries
50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	320.00	46.80	319.90	7
2	46.80	319.90	49.40	318.50	7
3	49.40	318.50	58.90	318.50	7
4	58.90	318.50	63.70	321.70	7
5	63.70	321.70	70.20	321.80	7
6	70.20	321.80	71.30	321.90	8
7	71.30	321.90	72.40	321.90	5
8	72.40	321.90	73.40	321.90	10
9	73.40	321.90	77.70	322.00	4
10	77.70	322.00	157.20	348.50	1
11	157.20	348.50	177.20	348.50	1
12	177.20	348.50	282.20	383.50	1
13	282.20	383.50	302.20	383.50	1
14	302.20	383.50	342.70	397.00	1
15	342.70	397.00	363.30	396.50	1
16	363.30	396.50	365.30	395.50	1
17	365.30	395.50	417.60	413.00	1
18	417.60	413.00	567.60	419.00	1
19	80.30	320.70	157.60	346.50	2
20	157.60	346.50	177.60	346.50	2
21	177.60	346.50	282.60	381.50	2
22	282.60	381.50	302.60	381.50	2
23	302.60	381.50	343.00	395.00	2
24	343.00	395.00	362.80	394.60	2
25	362.80	394.60	365.10	393.40	2
26	365.10	393.40	418.00	411.00	2
27	418.00	411.00	567.60	417.00	2
28	77.70	322.00	80.30	320.70	4
29	80.90	320.40	157.60	346.00	3
30	157.60	346.00	177.60	346.00	3
31	177.60	346.00	282.70	381.00	3
32	282.70	381.00	302.70	381.00	3
33	302.70	381.00	343.10	394.50	3
34	343.10	394.50	362.60	394.10	3
35	362.60	394.10	365.10	392.80	3
36	365.10	392.80	418.10	410.50	3
37	418.10	410.50	567.60	416.50	3
38	80.30	320.70	80.90	320.40	4
39	80.90	320.40	209.70	256.00	4
40	209.70	256.00	567.60	256.00	4
41	73.40	321.90	209.30	254.00	10
42	209.30	254.00	567.60	254.00	5
43	72.40	321.90	209.10	253.50	5
44	209.10	253.50	209.30	254.00	5
45	71.30	321.90	209.00	253.00	8
46	209.00	253.00	567.60	253.00	9
47	209.00	253.00	209.30	252.50	8
48	209.30	252.50	567.60	252.50	8
49	70.20	321.80	209.90	252.00	7

50 209.90 252.00 567.60 252.00 7

ISOTROPIC SOIL PARAMETERS

10 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	76.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	12.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1
8	63.0	63.0	.0	12.0	.00	.0	1
9	63.0	63.0	.0	12.0	.00	.0	1
10	63.0	63.0	.0	12.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	567.60	208.50

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	417.60	420.82	1670.2	.0
2	429.74	432.96	1670.2	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

SURCHARGE BOUNDARY LOAD DATA HAS BEEN SUPPRESSED

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	79.40	318.60	205.50	255.60	.25
2	214.30	253.80	219.30	253.80	.25
3	224.30	253.80	419.00	253.80	.25

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	75.81	321.96
2	91.68	312.48
3	217.32	253.74
4	357.91	253.88
5	372.04	268.03
6	385.74	282.59
7	396.38	299.53
8	409.38	314.73
9	417.93	332.81
10	430.39	348.45
11	441.46	365.11
12	450.87	382.76
13	453.77	402.55
14	454.06	414.46

*** 2.454 ***

Failure Surface Specified By 14 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	77.89	322.06
2	83.89	316.47
3	216.30	253.86
4	372.50	253.77
5	386.64	267.91
6	396.34	285.40
7	404.43	303.69
8	415.44	320.39
9	429.50	334.61
10	442.68	349.66
11	450.87	367.90
12	464.99	382.06
13	472.88	400.44
14	481.30	415.55
***	2.456	***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	77.83	322.04
2	83.73	316.46
3	218.32	253.69
4	392.80	253.86
5	406.56	268.37
6	417.76	284.94
7	424.55	303.75
8	438.00	318.56
9	448.76	335.42
10	457.18	353.56
11	469.78	369.09
12	477.03	387.73
13	481.27	407.27
14	489.61	415.88
***	2.491	***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.62	323.31
2	86.00	320.10
3	103.15	309.82
4	119.60	298.44
5	218.73	253.71
6	336.37	253.80
7	349.85	268.58
8	363.96	282.76
9	377.20	297.75
10	385.64	315.88
11	399.55	330.25
12	412.11	345.81
13	426.23	359.98
14	440.37	374.12
15	441.40	394.10
16	455.24	408.53
17	458.49	414.64
***	2.504	***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	79.69	322.66
2	85.32	317.05
3	102.64	307.04
4	214.83	253.69
5	353.53	253.69
6	366.53	268.89
7	380.56	283.14
8	394.60	297.39
9	408.60	311.67
10	411.89	331.40

11	420.69	349.36
12	432.83	365.25
13	446.94	379.43
14	460.88	393.77
15	472.84	409.79
16	477.83	415.41

*** 2.507 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.63	323.31
2	89.70	319.26
3	104.67	305.99
4	219.23	253.86
5	358.19	253.74
6	369.66	270.12
7	382.90	285.11
8	389.84	303.87
9	403.19	318.76
10	416.28	333.88
11	428.25	349.91
12	442.21	364.23
13	454.74	379.81
14	456.84	399.70
15	468.17	415.02

*** 2.523 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	66.37	321.74
2	76.30	312.34
3	93.72	302.50
4	113.49	299.48
5	132.10	292.16
6	216.08	253.84
7	323.73	253.92
8	335.47	270.11
9	348.58	285.21
10	360.84	301.01
11	372.51	317.26
12	385.73	332.26
13	394.98	350.00
14	402.87	368.37
15	413.71	385.18
16	414.39	405.17
17	418.54	413.04

*** 2.526 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.37	323.22
2	82.72	321.87
3	100.73	313.17
4	114.88	299.04
5	134.35	294.45
6	150.72	282.97
7	217.22	253.73
8	398.88	253.71
9	407.03	271.98
10	414.84	290.39
11	421.13	309.38
12	435.27	323.52
13	446.25	340.23
14	454.62	358.40
15	468.07	373.19
16	481.93	387.61
17	496.02	401.81
18	502.39	416.39

*** 2.550 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	86.01	324.77
2	89.59	321.20
3	105.98	309.73
4	121.72	297.40
5	214.92	253.83
6	367.79	253.70
7	380.22	269.37
8	391.85	285.64
9	405.68	300.08
10	419.79	314.26
11	422.40	334.09
12	436.48	348.29
13	447.98	364.65
14	459.44	381.04
15	471.41	397.06
16	471.99	415.18

*** 2.566 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	80.87	323.06
2	81.43	322.51
3	98.81	312.61
4	116.96	304.20
5	135.96	297.97
6	152.06	286.10
7	166.89	272.68
8	183.92	262.19
9	203.18	256.81
10	214.38	253.71
11	412.95	253.90
12	421.57	271.95
13	434.83	286.92
14	442.38	305.44
15	452.16	322.88
16	465.78	337.53
17	479.76	351.83
18	492.14	367.54
19	499.79	386.02
20	513.50	400.58
21	514.82	416.89

*** 2.566 ***

Black

Citrus Operations Permit Renewal North Slope

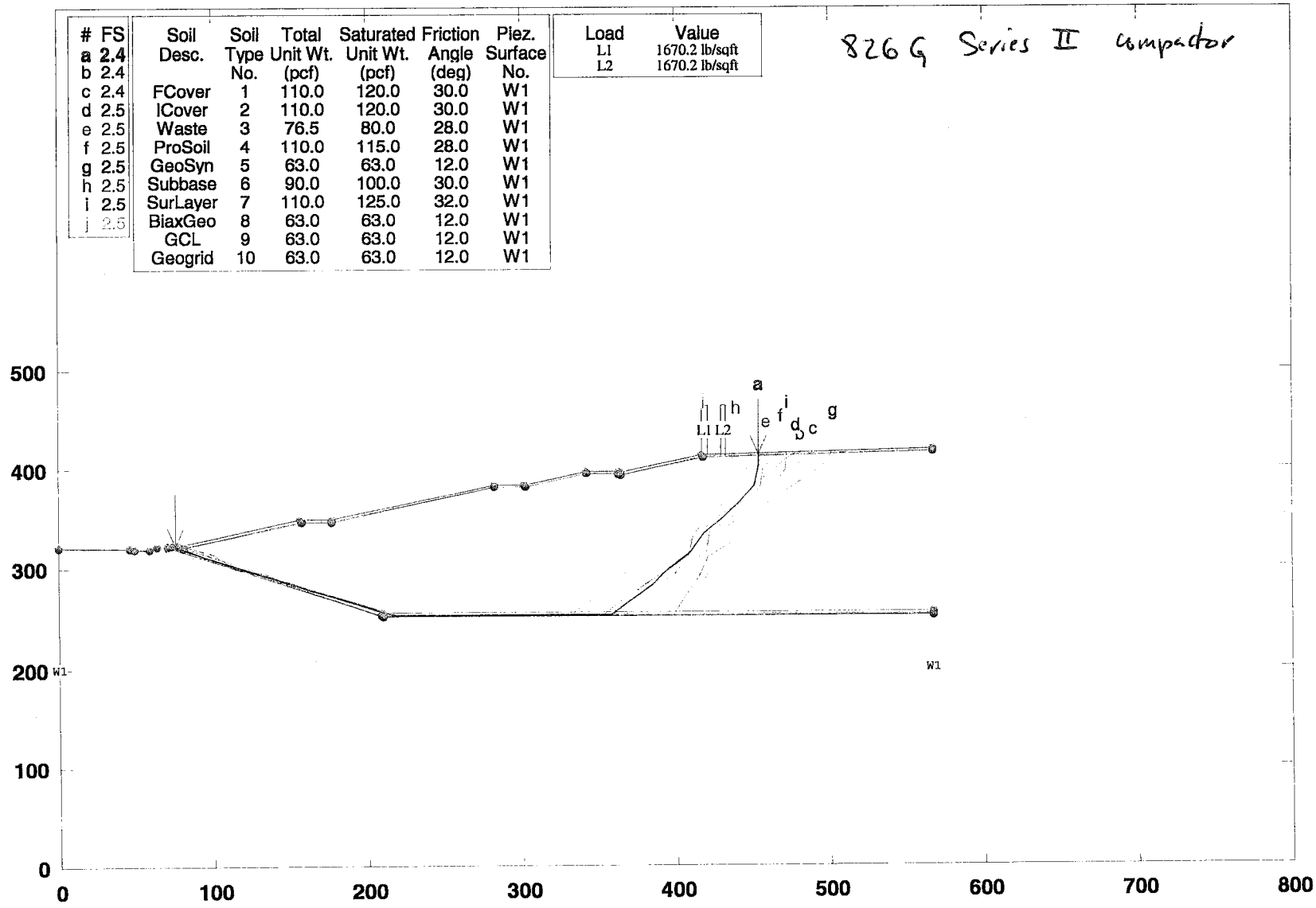
F:\PROJECT\CITRUS\09208040.03\CALCUL~1\BNFINEQ.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:34PM

826 G Series II compactor

#	FS
a	2.4
b	2.4
c	2.4
d	2.5
e	2.5
f	2.5
g	2.5
h	2.5
i	2.5
j	2.5

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
FCover	1	110.0	120.0	30.0	W1
ICover	2	110.0	120.0	30.0	W1
Waste	3	76.5	80.0	28.0	W1
ProSoil	4	110.0	115.0	28.0	W1
GeoSyn	5	63.0	63.0	12.0	W1
Subbase	6	90.0	100.0	30.0	W1
SurLayer	7	110.0	125.0	32.0	W1
BiaxGeo	8	63.0	63.0	12.0	W1
GCL	9	63.0	63.0	12.0	W1
Geogrid	10	63.0	63.0	12.0	W1

Load	Value
L1	1670.2 lb/sqft
L2	1670.2 lb/sqft



STABL6H FSmin=2.4

Safety Factors Are Calculated By The Modified Janbu Method

SCS ENGINEERS

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:34PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:BNFINEQ.
Output Filename: F:BNFINEQ.OUT
Plotted Output Filename: F:BNFINEQ.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
North Slope

BOUNDARY COORDINATES
18 Top Boundaries
50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	320.00	46.80	319.90	7
2	46.80	319.90	49.40	318.50	7
3	49.40	318.50	58.90	318.50	7
4	58.90	318.50	63.70	321.70	7
5	63.70	321.70	70.20	321.80	7
6	70.20	321.80	71.30	321.90	8
7	71.30	321.90	72.40	321.90	5
8	72.40	321.90	73.40	321.90	10
9	73.40	321.90	77.70	322.00	4
10	77.70	322.00	157.20	348.50	1
11	157.20	348.50	177.20	348.50	1
12	177.20	348.50	282.20	383.50	1
13	282.20	383.50	302.20	383.50	1
14	302.20	383.50	342.70	397.00	1
15	342.70	397.00	363.30	396.50	1
16	363.30	396.50	365.30	395.50	1
17	365.30	395.50	417.60	413.00	1
18	417.60	413.00	567.60	419.00	1
19	80.30	320.70	157.60	346.50	2
20	157.60	346.50	177.60	346.50	2
21	177.60	346.50	282.60	381.50	2
22	282.60	381.50	302.60	381.50	2
23	302.60	381.50	343.00	395.00	2
24	343.00	395.00	362.80	394.60	2
25	362.80	394.60	365.10	393.40	2
26	365.10	393.40	418.00	411.00	2
27	418.00	411.00	567.60	417.00	2
28	77.70	322.00	80.30	320.70	4
29	80.90	320.40	157.60	346.00	3
30	157.60	346.00	177.60	346.00	3
31	177.60	346.00	282.70	381.00	3
32	282.70	381.00	302.70	381.00	3
33	302.70	381.00	343.10	394.50	3
34	343.10	394.50	362.60	394.10	3
35	362.60	394.10	365.10	392.80	3
36	365.10	392.80	418.10	410.50	3
37	418.10	410.50	567.60	416.50	3
38	80.30	320.70	80.90	320.40	4
39	80.90	320.40	209.70	256.00	4
40	209.70	256.00	567.60	256.00	4
41	73.40	321.90	209.30	254.00	10
42	209.30	254.00	567.60	254.00	5
43	72.40	321.90	209.10	253.50	5
44	209.10	253.50	209.30	254.00	5
45	71.30	321.90	209.00	253.00	8
46	209.00	253.00	567.60	253.00	9
47	209.00	253.00	209.30	252.50	8
48	209.30	252.50	567.60	252.50	8
49	70.20	321.80	209.90	252.00	7

50 209.90 252.00 567.60 252.00 7

ISOTROPIC SOIL PARAMETERS

10 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	76.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	12.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1
8	63.0	63.0	.0	12.0	.00	.0	1
9	63.0	63.0	.0	12.0	.00	.0	1
10	63.0	63.0	.0	12.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	567.60	208.50

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	417.60	420.82	1670.2	.0
2	429.74	432.96	1670.2	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	79.40	318.60	205.50	255.60	.25
2	214.30	253.80	219.30	253.80	.25
3	224.30	253.80	419.00	253.80	.25

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	75.81	321.96
2	91.68	312.48
3	217.32	253.74
4	357.91	253.88
5	372.04	268.03
6	385.74	282.59
7	396.38	299.53
8	409.38	314.73
9	417.93	332.81
10	430.39	348.45
11	441.46	365.11
12	450.87	382.76
13	453.77	402.55
14	454.06	414.46

*** 2.413 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	77.89	322.06
2	83.89	316.47
3	216.30	253.86
4	372.50	253.77
5	386.64	267.91
6	396.34	285.40
7	404.43	303.69
8	415.44	320.39
9	429.50	334.61
10	442.68	349.66
11	450.87	367.90
12	464.99	382.06
13	472.88	400.44
14	481.30	415.55

*** 2.425 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	77.83	322.04
2	83.73	316.46
3	218.32	253.69
4	392.80	253.86
5	406.56	268.37
6	417.76	284.94
7	424.55	303.75
8	438.00	318.56
9	448.76	335.42
10	457.18	353.56
11	469.78	369.09
12	477.03	387.73
13	481.27	407.27
14	489.61	415.88

*** 2.443 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	79.69	322.66
2	85.32	317.05
3	102.64	307.04
4	214.83	253.69
5	353.53	253.69
6	366.53	268.89
7	380.56	283.14
8	394.60	297.39
9	408.60	311.67
10	411.89	331.40
11	420.69	349.36
12	432.83	365.25
13	446.94	379.43
14	460.88	393.77
15	472.84	409.79
16	477.83	415.41

*** 2.457 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.62	323.31
2	86.00	320.10
3	103.15	309.82
4	119.60	298.44
5	218.73	253.71
6	336.37	253.80
7	349.85	268.58
8	363.96	282.76
9	377.20	297.75
10	385.64	315.88
11	399.55	330.25
12	412.11	345.81

13	426.23	359.98
14	440.37	374.12
15	441.40	394.10
16	455.24	408.53
17	458.49	414.64

*** 2.472 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.63	323.31
2	89.70	319.26
3	104.67	305.99
4	219.23	253.86
5	358.19	253.74
6	369.66	270.12
7	382.90	285.11
8	389.84	303.87
9	403.19	318.76
10	416.28	333.88
11	428.25	349.91
12	442.21	364.23
13	454.74	379.81
14	456.84	399.70
15	468.17	415.02

*** 2.486 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.37	323.22
2	82.72	321.87
3	100.73	313.17
4	114.88	299.04
5	134.35	294.45
6	150.72	282.97
7	217.22	253.73
8	398.88	253.71
9	407.03	271.98
10	414.84	290.39
11	421.13	309.38
12	435.27	323.52
13	446.25	340.23
14	454.62	358.40
15	468.07	373.19
16	481.93	387.61
17	496.02	401.81
18	502.39	416.39

*** 2.497 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	64.44	321.71
2	77.20	310.58
3	97.19	309.77
4	219.17	253.82
5	332.19	253.69
6	346.27	267.89
7	359.33	283.04
8	370.97	299.30
9	376.60	318.49
10	388.23	334.77
11	401.72	349.53
12	415.52	364.00
13	419.90	383.52
14	431.63	399.72
15	439.52	413.88

*** 2.503 ***

Failure Surface Specified By 16 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	86.01	324.77
2	89.59	321.20
3	105.98	309.73
4	121.72	297.40
5	214.92	253.83
6	367.79	253.70
7	380.22	269.37
8	391.85	285.64
9	405.68	300.08
10	419.79	314.26
11	422.40	334.09
12	436.48	348.29
13	447.98	364.65
14	459.44	381.04
15	471.41	397.06
16	471.99	415.18
***	2.517	***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	66.37	321.74
2	76.30	312.34
3	93.72	302.50
4	113.49	299.48
5	132.10	292.16
6	216.08	253.84
7	323.73	253.92
8	335.47	270.11
9	348.58	285.21
10	360.84	301.01
11	372.51	317.26
12	385.73	332.26
13	394.98	350.00
14	402.87	368.37
15	413.71	385.18
16	414.39	405.17
17	418.54	413.04
***	2.517	***

Citrus Operations Permit Renewal North Slope

Block

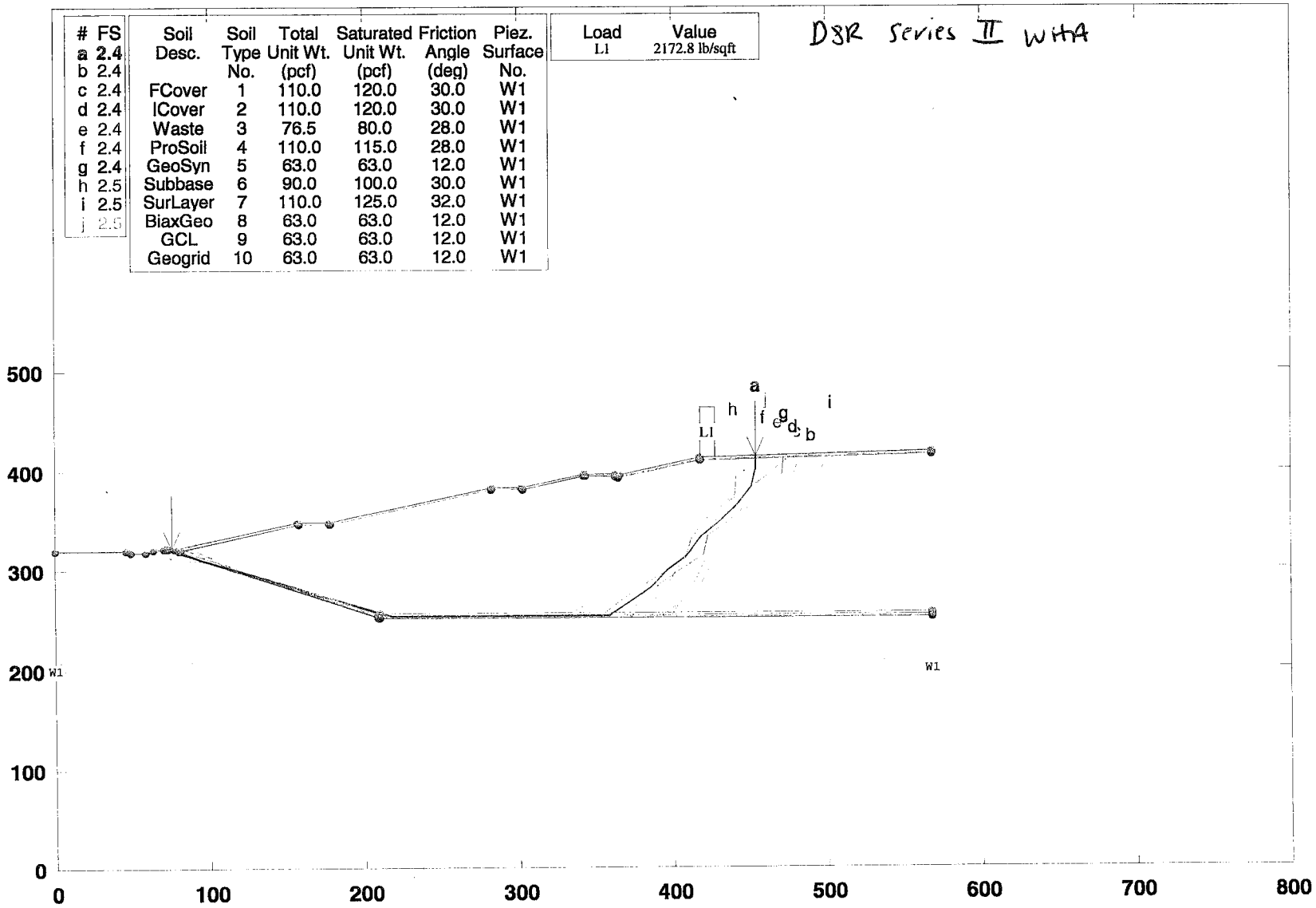
F:\PROJECT\CITRUS\09208040.03\CALCUL~1\BNFINAL.PL2 Run By: Dominique H. Bramlett, P.E. 1/27/2010 4:36PM

#	FS
a	2.4
b	2.4
c	2.4
d	2.4
e	2.4
f	2.4
g	2.4
h	2.5
i	2.5
j	2.5

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Friction Angle (deg)	Piez. Surface No.
FCover	1	110.0	120.0	30.0	W1
ICover	2	110.0	120.0	30.0	W1
Waste	3	76.5	80.0	28.0	W1
ProSoil	4	110.0	115.0	28.0	W1
GeoSyn	5	63.0	63.0	12.0	W1
Subbase	6	90.0	100.0	30.0	W1
SurLayer	7	110.0	125.0	32.0	W1
BiaxGeo	8	63.0	63.0	12.0	W1
GCL	9	63.0	63.0	12.0	W1
Geogrid	10	63.0	63.0	12.0	W1

Load	Value
L1	2172.8 lb/sqft

D&R Series II with



STABL6H FSmin=2.4

Safety Factors Are Calculated By The Modified Janbu Method

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 1/27/2010
Time of Run: 4:36PM
Run By: Dominique H. Bramlett, P.E.
Input Data Filename: F:bnfinal.
Output Filename: F:bnfinal.OUT
Plotted Output Filename: F:bnfinal.PLT
PROBLEM DESCRIPTION Citrus Operations Permit Renewal
North Slope

BOUNDARY COORDINATES
18 Top Boundaries
50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	320.00	46.80	319.90	7
2	46.80	319.90	49.40	318.50	7
3	49.40	318.50	58.90	318.50	7
4	58.90	318.50	63.70	321.70	7
5	63.70	321.70	70.20	321.80	7
6	70.20	321.80	71.30	321.90	8
7	71.30	321.90	72.40	321.90	5
8	72.40	321.90	73.40	321.90	10
9	73.40	321.90	77.70	322.00	4
10	77.70	322.00	157.20	348.50	1
11	157.20	348.50	177.20	348.50	1
12	177.20	348.50	282.20	383.50	1
13	282.20	383.50	302.20	383.50	1
14	302.20	383.50	342.70	397.00	1
15	342.70	397.00	363.30	396.50	1
16	363.30	396.50	365.30	395.50	1
17	365.30	395.50	417.60	413.00	1
18	417.60	413.00	567.60	419.00	1
19	80.30	320.70	157.60	346.50	2
20	157.60	346.50	177.60	346.50	2
21	177.60	346.50	282.60	381.50	2
22	282.60	381.50	302.60	381.50	2
23	302.60	381.50	343.00	395.00	2
24	343.00	395.00	362.80	394.60	2
25	362.80	394.60	365.10	393.40	2
26	365.10	393.40	418.00	411.00	2
27	418.00	411.00	567.60	417.00	2
28	77.70	322.00	80.30	320.70	4
29	80.90	320.40	157.60	346.00	3
30	157.60	346.00	177.60	346.00	3
31	177.60	346.00	282.70	381.00	3
32	282.70	381.00	302.70	381.00	3
33	302.70	381.00	343.10	394.50	3
34	343.10	394.50	362.60	394.10	3
35	362.60	394.10	365.10	392.80	3
36	365.10	392.80	418.10	410.50	3
37	418.10	410.50	567.60	416.50	3
38	80.30	320.70	80.90	320.40	4
39	80.90	320.40	209.70	256.00	4
40	209.70	256.00	567.60	256.00	4
41	73.40	321.90	209.30	254.00	10
42	209.30	254.00	567.60	254.00	5
43	72.40	321.90	209.10	253.50	5
44	209.10	253.50	209.30	254.00	5
45	71.30	321.90	209.00	253.00	8
46	209.00	253.00	567.60	253.00	9
47	209.00	253.00	209.30	252.50	8
48	209.30	252.50	567.60	252.50	8
49	70.20	321.80	209.90	252.00	7

50	209.90	252.00	567.60	252.00	7

ISOTROPIC SOIL PARAMETERS
10 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	120.0	.0	30.0	.00	.0	1
2	110.0	120.0	.0	30.0	.00	.0	1
3	76.5	80.0	.0	28.0	.00	.0	1
4	110.0	115.0	.0	28.0	.00	.0	1
5	63.0	63.0	.0	12.0	.00	.0	1
6	90.0	100.0	.0	30.0	.00	.0	1
7	110.0	125.0	.0	32.0	.00	.0	1
8	63.0	63.0	.0	12.0	.00	.0	1
9	63.0	63.0	.0	12.0	.00	.0	1
10	63.0	63.0	.0	12.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	208.50
2	567.60	208.50

BOUNDARY LOAD(S)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	417.60	428.10	2172.8	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
100 Trial Surfaces Have Been Generated.
3 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	79.40	318.60	205.50	255.60	.25
2	214.30	253.80	219.30	253.80	.25
3	224.30	253.80	419.00	253.80	.25

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	75.81	321.96
2	91.68	312.48
3	217.32	253.74
4	357.91	253.88
5	372.04	268.03
6	385.74	282.59
7	396.38	299.53
8	409.38	314.73
9	417.93	332.81
10	430.39	348.45
11	441.46	365.11
12	450.87	382.76
13	453.77	402.55
14	454.06	414.46
***	2.376	***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	77.83	322.04

2	83.73	316.46
3	218.32	253.69
4	392.80	253.86
5	406.56	268.37
6	417.76	284.94
7	424.55	303.75
8	438.00	318.56
9	448.76	335.42
10	457.18	353.56
11	469.78	369.09
12	477.03	387.73
13	481.27	407.27
14	489.61	415.88
***	2.379	***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	77.89	322.06
2	83.89	316.47
3	216.30	253.86
4	372.50	253.77
5	386.64	267.91
6	396.34	285.40
7	404.43	303.69
8	415.44	320.39
9	429.50	334.61
10	442.68	349.66
11	450.87	367.90
12	464.99	382.06
13	472.88	400.44
14	481.30	415.55
***	2.396	***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	79.69	322.66
2	85.32	317.05
3	102.64	307.04
4	214.83	253.69
5	353.53	253.69
6	366.53	268.89
7	380.56	283.14
8	394.60	297.39
9	408.60	311.67
10	411.89	331.40
11	420.69	349.36
12	432.83	365.25
13	446.94	379.43
14	460.88	393.77
15	472.84	409.79
16	477.83	415.41
***	2.412	***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.63	323.31
2	89.70	319.26
3	104.67	305.99
4	219.23	253.86
5	358.19	253.74
6	369.66	270.12
7	382.90	285.11
8	389.84	303.87
9	403.19	318.76
10	416.28	333.88
11	428.25	349.91
12	442.21	364.23
13	454.74	379.81

14	456.84	399.70
15	468.17	415.02
***	2.437	***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.62	323.31
2	86.00	320.10
3	103.15	309.82
4	119.60	298.44
5	218.73	253.71
6	336.37	253.80
7	349.85	268.58
8	363.96	282.76
9	377.20	297.75
10	385.64	315.88
11	399.55	330.25
12	412.11	345.81
13	426.23	359.98
14	440.37	374.12
15	441.40	394.10
16	455.24	408.53
17	458.49	414.64
***	2.438	***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	86.01	324.77
2	89.59	321.20
3	105.98	309.73
4	121.72	297.40
5	214.92	253.83
6	367.79	253.70
7	380.22	269.37
8	391.85	285.64
9	405.68	300.08
10	419.79	314.26
11	422.40	334.09
12	436.48	348.29
13	447.98	364.65
14	459.44	381.04
15	471.41	397.06
16	471.99	415.18
***	2.448	***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	64.44	321.71
2	77.20	310.58
3	97.19	309.77
4	219.17	253.82
5	332.19	253.69
6	346.27	267.89
7	359.33	283.04
8	370.97	299.30
9	376.60	318.49
10	388.23	334.77
11	401.72	349.53
12	415.52	364.00
13	419.90	383.52
14	431.63	399.72
15	439.52	413.88
***	2.450	***

Failure Surface Specified By 18 Coordinate Points

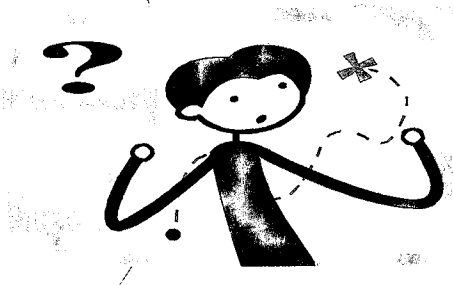
Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.37	323.22
2	82.72	321.87

3	100.73	313.17
4	114.88	299.04
5	134.35	294.45
6	150.72	282.97
7	217.22	253.73
8	398.88	253.71
9	407.03	271.98
10	414.84	290.39
11	421.13	309.38
12	435.27	323.52
13	446.25	340.23
14	454.62	358.40
15	468.07	373.19
16	481.93	387.61
17	496.02	401.81
18	502.39	416.39
***	2.457	***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	19.33	319.96
2	30.17	315.61
3	50.17	315.56
4	70.17	315.22
5	87.91	305.99
6	107.84	304.30
7	215.71	253.68
8	368.41	253.69
9	382.35	268.03
10	389.68	286.63
11	396.39	305.48
12	409.12	320.90
13	422.10	336.12
14	430.10	354.45
15	444.21	368.62
16	454.00	386.06
17	456.36	405.92
18	460.74	414.73
***	2.467	***

ATTENTION



AN OVERSIZED MAP HAS BEEN SCANNED SEPARTELY. PLEASE SEE:

- **21375-018-SO/01 CITRUS CENTRAL CLASS I LF OP. RENEWAL APP. APPENDIX J-FINAL CLOSURE PLAN**

EQUIPMENT LOADING

Caterpillar Performance Handbook

Edition 33

CATERPILLAR®

SOURCE: CATERPILLAR PERFORMANCE HANDBOOK EDITION 33

MODEL	D8R Series II WHA		D9R WHA		D10R WHA	
Flywheel Power	231 kW	310 hp	306 kW	410 hp	433 kW	580 hp
Operating Weight*	—		—		65 764 kg	144,986 lb
Power Shift Clutch Brake	—				—	
Power Shift Differential Steer	37 875 kg	83,500 lb	48 425 kg	106,664 lb	—	
Engine Model			49 567 kg	109,180 lb		
Rated Engine RPM	3406E TA		3408E TA		3412E TA	
No. of Cylinders	2000		1900		1800	
Bore	6		8		12	
Stroke	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"
Displacement	165 mm	6.5"	152 mm	6"	152 mm	6"
Track Rollers (Each Side)	14.6 L	893 in³	18 L	1099 in³	27 L	1649 in³
Width of Standard Track Shoe	8		8		8	
Length of Track on Ground	560 mm	1'10"	610 mm	2'0"	610 mm	2'0"
Ground Contact Area (w/Std. Shoe)	3.21 m	10'6"	3.47 m	11'5"	3.88 m	12'9"
Track Gauge	3.57 m²	5544 in²	4.24 m²	6569 in²	4.74 m²	7347 in²
GENERAL DIMENSIONS:	2.08 m	6'10"	2.25 m	7'5"	2.55 m	8'4"
Height (Stripped Top)**	2.67 m	8'9"	3.00 m	9'10"	3.217 m	10'6"
Height (To Top of ROPS Canopy)	3.51 m	11'6"	3.99 m	13'1"	4.36 m	14'3"
Height (To Top of ROPS Cab)	3.51 m	11'6"	3.82 m	12'6"	4.10 m	13'5"
Overall Length (with Blade & Ripper)	—		—		9.39 m	30'10"
(without Blade & Ripper)	—		—		5.33 m	17'6"
Overall Length (with SU Blade)***	6.91 m	22'8"	6.84 m	22'5"	—	
(without Blade)	4.93 m	16'2"	5.18 m	17'0"	—	
Width (Over Trunnion)	3.05 m	10'0"	3.30 m	10'10"	3.72 m	12'2"
Width (without Trunnion — Std. Shoe)	2.70 m	8'8"	2.93 m	9'8"	3.16 m	10'4"
Ground Clearance	606 mm	1'11"	591 mm	1'11"■	615 mm	2'0.2"■
Blade Types and Widths:						
Angle Straight	4.99 m	16'4"	—		—	
Full 25° Angle	4.52 m	14'10"	—		—	
Universal	4.26 m	14'0"	4.65 m	15'3"	5.26 m	17'3"
Semi-U	3.94 m	12'11"	4.31 m	14'2"	4.86 m	15'11"
Fuel Tank Refill Capacity	625 L	165 U.S. gal	818 L	216 U.S. gal	1109 L	293 U.S. gal

OPERATING WEIGHT

TRACK WIDTH

TRACK LENGTH

TRACK GAUGE

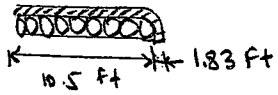
* Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, semi universal blade with tilt, back-up alarm, seat belts, lights, rigid drawbar and front towing device.
— D8R and D9R equipped with track guides, ROPS/FOPS cab, single shank ripper and SU blade.
— D10R includes 10 SU blade single shank ripper and ROPS cab.
** Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.
*** Includes drawbar.
■ SAE J1234.

OPERATING WEIGHT = 83,500 lb

41,750 lb/track

41,750 lb/track

Stress per track

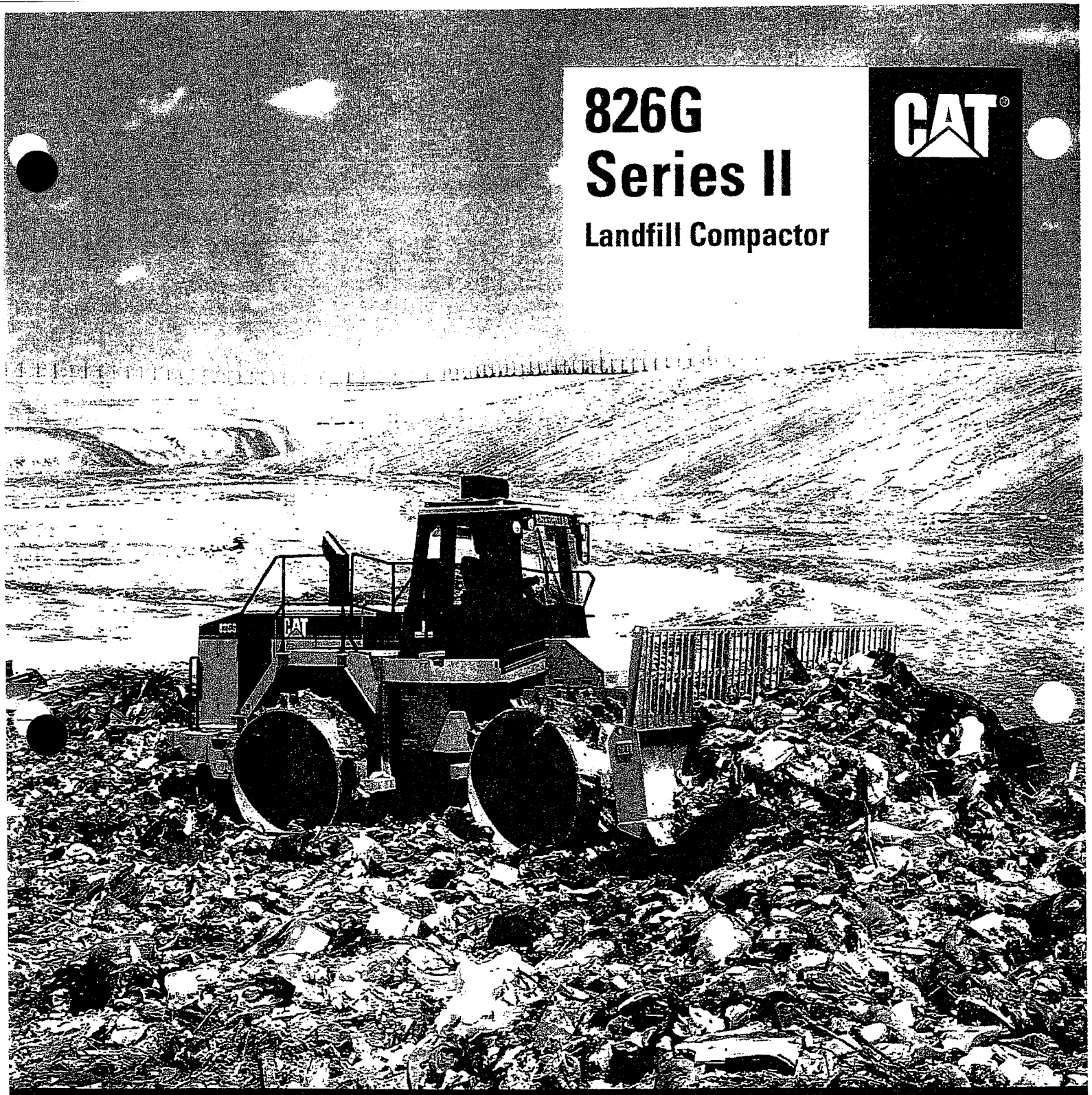


$A = 10.5 \times 1.83 = 19.22\ ft^2$

Stress loading $= f/A = \frac{41{,}750}{19.22} = 2172.78\ psf$

826G Series II

Landfill Compactor

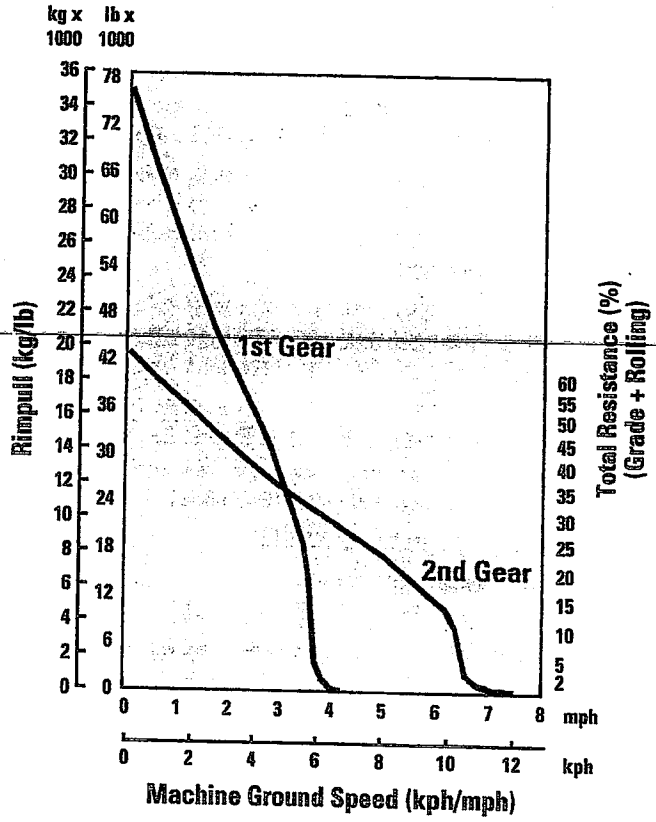


Engine		
Engine Model	Cat® 3406E ATAAC Diesel	
Gross Power	283 kW	380 hp
Flywheel Power	253 kW	340 hp
Weights		
Operating Weight	36 967 kg	81,498 lb

Engine

Engine Model	Cat 3406E ATAAC Diesel	
Gross Power	283 kW	380 hp
Flywheel Power	253 kW	340 hp
Net Power ISO 3046-2	253 kW	340 hp
Net Power ISO 9249	253 kW	340 hp
SAE J1349	253 kW	340 hp
EEC 80/1269	253 kW	340 hp
DIN 70020	327 PS	
Peak Torque (Net) @ 1200 RPM	1671 N•m	1232.5 ft-lb
Torque Rise	28 %	
Bore	137 mm	5.4 in
Stroke	165 mm	6.5 in
Displacement	14.6 L	893 in^3

- Meets U.S. Environmental Protection Agency Tier 2 emissions regulations and Stage II EU Emissions Directive 97/68/EC.



Transmission

Forward 1	5.8 kph	3.6 mph
Forward 2	9.7 kph	6 mph
Reverse 1	6.6 kph	4.1 mph
Reverse 2	10.6 kph	6.6 mph

Hydraulic System

Vane Pump Output @ 2000 RPM and 6900 kPa (1000 psi)	102 L/min	26.5 gal/min
Relief Valve Setting	24 100 kPa	3,500 psi
Lift Cylinder Bore × Stroke	114.3 mm × 576 mm	4.49 in × 22.68 in

Axles

Front	Planetary – Fixed
Oscillating Rear	Planetary – Oscillating ±5°

Brakes

Standards	Meet OSHA, SAE J1473 Dec 84, ISO 3450-1985 standards.

Wheels – Plus Tip Teeth with Abrasion Resistant Material (ARM)

Drum Width	1200 mm	3.94 ft
Drum Diameter	1532 mm	5.03 ft
Diameter with Tips	1850 mm	6.07 ft
Tips per Wheel	25	

Wheels – Traction Tip Wheel with Abrasion Resistant Material (ARM)

Drum Width	1200 mm	3.94 ft
Drum Diameter	1532 mm	5.03 ft
Diameter with Tips	1732 mm	5.7 ft
Tips per Wheel	45	

Wheels – Chevron-Pattern, Chopper Blades

Drum Width	1200 mm	3.94 ft
Drum Diameter	1532 mm	5.03 ft
Diameter with Blades	1850 mm	6.07 ft
Blades per Wheel	25	

- Other wheel options available through customizing.

Straight Blade

Width Over End Bits	4502 mm	14.77 ft
Moldboard Length	4287 mm	14.06 ft
Height	1898 mm	6.23 ft
Lift Speed at Rated RPM	440 m/sec	1.42 ft/sec
Cutting Edges (2), Reversible, End Section Length (Each)	1773.4 mm	5.83 ft
Cutting Edges (2), Reversible, Width × Thickness	254 mm × 25 mm	10 in × 1 in
End Bits (2), Self-sharpening, Length (Each)	472 mm	19 in
End Bits (2), Self-sharpening, Width × Thickness	254 mm × 25 mm	10 in × 1 in

- See your Cat dealer for other blade options.

Service Refill Capacities

Fuel Tank	630 L	166.5 gal
Cooling System	83 L	21.9 gal
Crankcase	34 L	9 gal
Transmission	62 L	16.4 gal
Differentials and Final Drives – Front	90 L	23.8 gal
Differentials and Final Drives – Rear	90 L	23.8 gal
Hydraulic Tank	88 L	23.2 gal

Weights

Maximum Operating Weight	36 967 kg	81,498 lb

- Machine configured with heaviest options, 80 kg (176 lb) operator and full fuel tank.

Cab

ROPS/FOPS	Meets SAE and ISO standards.

- Caterpillar cab and Rollover Protective Structure/Falling Object Protective Structure (ROPS/FOPS) are standard in North America, Europe and Japan.
- Standard air conditioning system contains environmentally-friendly R134a refrigerant.
- ROPS meets SAE J394, SAE 1040 APR88 and ISO 3471-1986 standards.
- FOPS meets SAE J231 JAN81 and ISO 3449-194 standards.

Sound Performance

Standards	Meets ANSI/SAE and ISO standards.

- The operator sound exposure Leq (equivalent sound pressure level) measured according to the work cycle procedures specified in ANSI/SAE J1166 OCT98 is 80 dB(A), for the cab offered by Caterpillar, when properly installed, maintained and tested with the doors and windows closed.
- Hearing protection may be needed when operating with an open operator station and cab (when not properly maintained or doors/windows open) for extended periods or in noisy environment.
- The exterior sound pressure level for the standard machine measured at a distance of 15 m (49.2 ft) according to the test procedures specified in SAE J88 JUN86 mid-gear-moving operation is 80 dB(A).
- The sound power level for the following configurations when measured according to the static test procedure and conditions specified in ISO 6393:1988 are:

  Standard Configuration 111 dB(A)

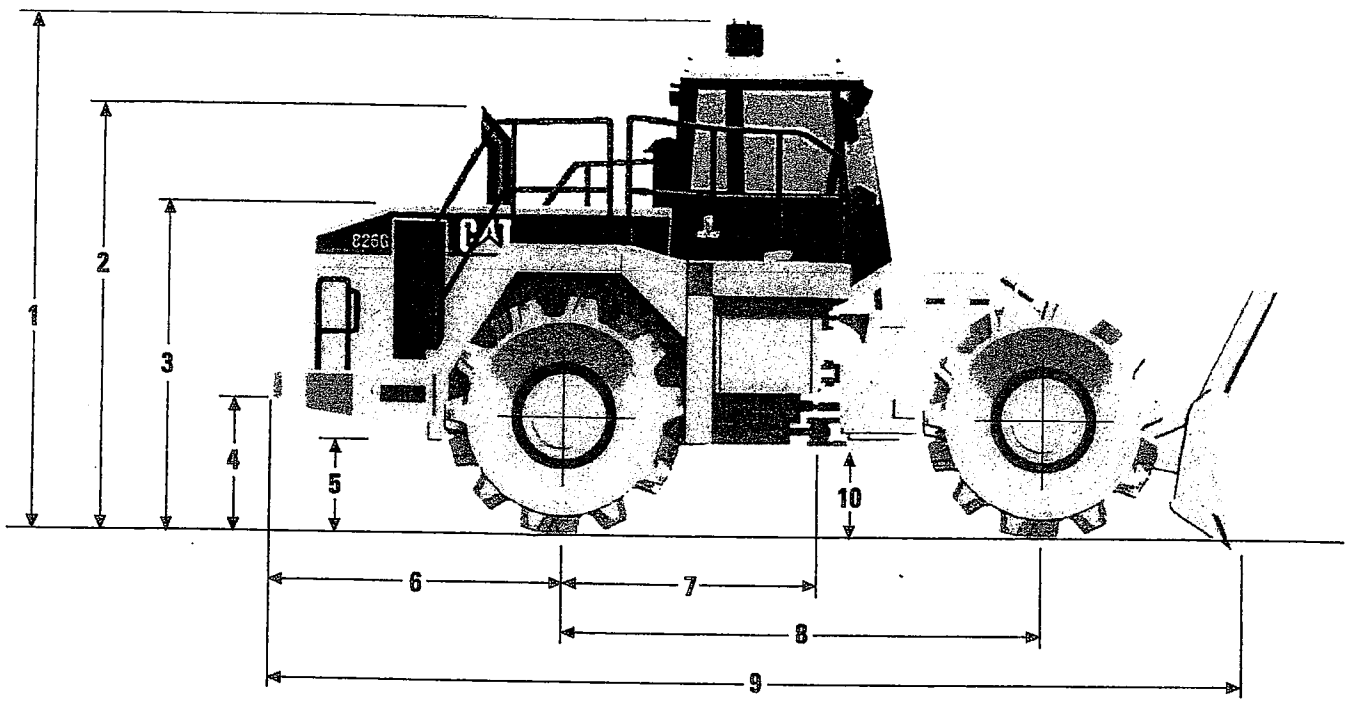
  Optional Sound Suppression 109 dB(A)

Dimensions

Width over Wheels	3800 mm	12.47 ft
Width over Endbits (Blade)	4502 mm	14.77 ft
Turning Radius – Inside	3221 mm	10.58 ft
Turning Radius – Outside	7333 mm	24.06 ft

Dimensions

All dimensions are approximate.



1	Height to Top of Cab with A/C	4191.1 mm	13.75 ft
2	Height to Top of Exhaust Pipe	3830 mm	12.57 ft
3	Height to Top of Hood	2700.51 mm	8.86 ft
4	Ground Clearance to Counterweight	1032.5 mm	3.38 ft
5	Height to Bottom of Ladder	709.9 mm	2.33 ft
6	Center Line of Rear Axle to Edge of Counterweight	2624 mm	8.61 ft
7	Center Line of Rear Axle to Hitch	1850 mm	6.07 ft
8	Wheelbase	3700 mm	12.14 ft
9	Length with Blade on Ground	8268 mm	27.13 ft
10	Ground Clearance	489 mm	1.6 ft

Drum width = 2.94 ft

Drum dia = 5.03 ft

wheel base = 12.14 ft

Operating weight 81,498 lb

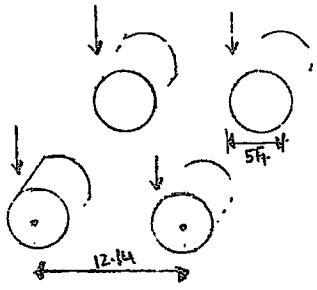
Weight distribution

52% Rear

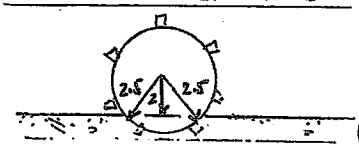
48% front

Rear = 42,378.96 lb

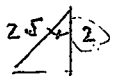
front = 39,119.04 lb



"Wheel" Contact Area



Depth of Embedment

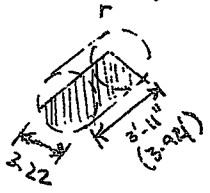


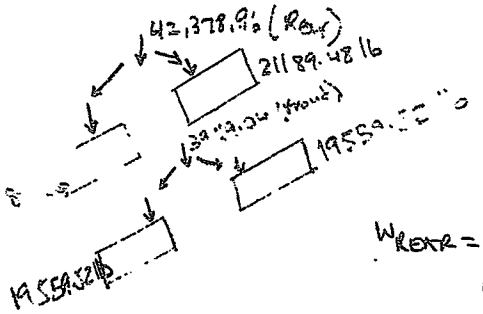
$\cos\phi = \frac{2}{2.5} \Rightarrow \phi_1 = 36.87$

$\phi_2 = 36.87$

$73.74°$

$\phi = \frac{s}{r} \Rightarrow s = 73.74\left(\frac{2\pi}{360}\right)2.5 = 3.22$





$W_{REAR} = \frac{21189.48}{(8.22)(3.94)} = 1670.20$ psf

$W_{FRONT} = \frac{19559.52}{\quad} = 1541.72$ psf

SECTION K

VERTICAL EXPANSION OF LANDFILLS

K.1 LEACHATE LEAKAGE

The landfill expansion will not impede the current leachate collection system. An additional leachate collection and removal system will be installed in the Phase 3 Expansion area. This collection system will be operated in tandem with the existing leachate collection system.

The expansion will not contribute to leachate leakage from the existing landfill.

K.2 VERTICAL EXPANSION OVER UNLINED LANDFILLS

The vertical expansion will occur within the Phase 1A which consists of a double liner system. The vertical expansion will not cause or contribute to any leachate leakage from the existing landfill, will not cause objectionable odors, and will not adversely affect the closure design of the existing landfill.

K.3 FOUNDATION AND SETTLEMENT ANALYSIS

Universal Engineering Sciences (Universal), Gainesville, Florida, conducted field investigations and performed the appropriate analysis and provided their findings and recommendations to SCS as part of the Phase 2 design. The results of the geotechnical investigation indicated that the native soils, consisting primarily of fine sand and clayey sand, will experience minimal total settlement, on the order of less than 6 inches at a landfill final elevation of 220.0 ft NGVD. Differential settlement is expected to be less than 3 inches and not expected to be of long term concern. A copy of the geotechnical report was provided in Appendix F of the Phase 2 Construction Permit Application.

K.4 TOTAL SETTLEMENT CALCULATIONS

Settlement calculations were performed with a landfill final elevation of 220.0 ft NGVD which resulted in less than 6 inches of total settlement. The maximum landfill elevation ranges from 215 ft NGVD to 218.1 ft NGVD. Please note that the vertical expansion will occur outside of the Phase 1 area.

K.5 LANDFILL STABILITY

Two cross sections were modeled on the new final build out configuration provided in the drawings. One cross section runs from the dry retention area (DRA) through the highest build out elevation (215 ft NGVD). The other cross section runs north-south through the highest build out elevation (218.1 ft NGVD). The vertical expansion design achieved a minimum factor of safety of

1.5 using peak strengths for the liner system stability and deep stability. The slope stability analysis models are contained in Attachment J-1.

K.6 SURFACE WATER MANAGEMENT SYSTEM

The stormwater management plan will divert stormwater from the expansion area to the existing dry retention area (DRA). See Attachment H-1 for the stormwater management system calculations.

K.7 LANDFILL GAS CONTROL SYSTEM

See Section O for a discussion of landfill gas accumulation under the liner for the vertical expansion.

SECTION L

LANDFILL OPERATIONS REQUIREMENTS

L.1 TRAINED OPERATORS

No substantial change is proposed. In accordance with Rule 62-701.500(1), F.A.C., key supervisory staff at the Citrus County Central Landfill has received Landfill Operator Certification Training. Operator training certificates and hours completed are provided in the Operations Plan located in Attachment L-1.

As required by Rule 62-701.320(15), F.A.C. a State-certified Landfill Operator will be onsite when waste is received for disposal at the Citrus County Central Landfill and a trained spotter will be onsite during all times when waste is deposited at the landfill working face to detect any unauthorized wastes.

Operator training includes a 24-hour course and 16 hours of continuing education every three years. Spotter training includes an 8-hour course and 4 hours of continuing education every three years. Operator and spotter training courses will be attended as offered by the University of Florida Center for Training, Research and Education for Environmental Occupations (TREEO) and through other FDEP approved sources. A listing of TREEO training courses and schedules is available at www.treeo.ufl.edu.

L.2 LANDFILL OPERATION PLAN

L.2.a Citrus County Central Landfill Organization and Responsibilities

Designating responsible operating and maintenance personnel is discussed in the Operations Plan included in Attachment L-1, Section 2.2. There has been no change to this subsection.

L.2.b Contingency Plan

Contingency plan for the Citrus County Central Landfill is included in Attachment L-1, Section 2.3.

L.2.c Waste Type Control

Waste type control is described in the Operations Plan located in Attachment L-1, Section 2.4. There has been no change to this subsection.

L.2.d Weighing Incoming Waste

The method of weighing incoming waste is described in the Operations Plan located in Attachment L-1, Section 2.5. There has been no change to this subsection.

L.2.e Vehicle Traffic Control

Vehicle traffic control is described in the Operations Plan located in Attachment L-1, Section 2.6. There has been no change to this subsection.

L.2.f Method and Sequence of Filling Waste

Method and sequence of filling waste are included in the Operations Plan of Attachment L-1, Section 2.7.

L.2.g Waste Compaction and Application of Cover

The Operations Plan located in Attachment L-1, Section 2.8, addresses waste compaction and the application of cover. There has been no change to this subsection.

L.2.h Operations of Gas, Leachate, and Storm water Controls

Operation of gas, leachate, and storm water controls is included in Attachment L-1, Section 2.9 of the Operations Plan.

L.2.i Water Quality Monitoring

The Operations Plan located in Attachment L-1, Section 2.10 addresses the water quality monitoring. There has been no change to this subsection.

L.2.j Maintaining and Cleaning the Leachate Collection System

The Operations Plan located in Attachment L-1, Section 2.11 addresses the maintenance and cleaning of the leachate collection system. There has been no change to this subsection.

L.3 OPERATING RECORD

The Operations Plan located in Attachment L-1, Section 3 addresses operating records that will be kept at Citrus County Central Landfill. There has been no change to this section.

L.4 WASTE RECORDS

The Operations Plan located in Attachment L-1, Section 4 addresses waste records that will be kept at the Citrus County Central Landfill. There has been no change to this section.

L.5 ACCESS CONTROLS

The Operations Plan located in Attachment L-1, Section 5 addresses the access controls at the Citrus County Central Landfill. There has been no change to this section.

L.6 LOAD CHECKING PROGRAM

To monitor the waste received at the Citrus County Central Landfill, a load checking program has been implemented. The Operations Plan located in Attachment L-1, Section 6 describes the load-checking program. There has been no change to this section.

L.7 SPREADING AND COMPACTING WASTE

The procedures for filling and compacting of the initial waste lifts over the liner, and the remaining layers on top of the initial lifts, are addressed in the Operations Plan located in Attachment L-1, Section 7.

L.7.a Waste Layer Thickness and Compaction Frequencies

Waste layer thickness and compaction frequencies are included in the Operations Plan located in Attachment L-1, Section 7.1. There has been no change to this subsection.

L.7.b First Layer Thickness

Special considerations for the first layer thickness are included in the Operations Plan located in Attachment L-1, Section 7.2. There has been no change to this subsection.

L.7.c Slopes and Lift Depth

Slopes and lift depths during operation are included in the Operations Plan located in Attachment L-1, Section 7.3. There has been no change to this subsection.

L.7.d Working Face

Maximum width of the working face is included in the Operations Plan located in Attachment L-1, Section 7.4. There has been no change to this subsection.

L.7.e Initial Cover Controls

A description of types of initial cover to be used at the Citrus County Central Landfill is included in the Operations Plan located in Attachment L-1, Section 7.5. There has been no change to this subsection.

L.7.f Initial Cover Frequency

The frequency for applying cover is at the end of each working day as described in the Operations Plan located in Attachment L-1, Section 7.5. There has been no change to this subsection.

L.7.g Intermediate Cover

An intermediate cover in addition to the initial cover will be applied and maintained within seven days of cell completion if additional solid waste will not be deposited within 180 days of cell completion. Refer to the Operations Plan located in Attachment L-1, Section 7.6. There has been no change to this subsection.

L.7.h Final Cover

Areas that have been filled to design dimensions will receive final cover within 180 days after attaining final elevation in accordance with the closure plan for the Citrus County Central Landfill. Refer to the Operations Plan located in Attachment L-1, Section 7.7. There has been no change to this subsection.

L.7.i Scavenging and Salvaging

Procedures for controlling scavenging and salvaging are included in the Operations Plan located in Attachment L-1, Section 7.8. There has been no change to this subsection.

L.7.j Litter Policing

Litter policing is employed to keep litter from leaving the working area of the landfill. Refer to the Operations Plan located in Attachment L-1, Section 7.9. There has been no change to this subsection.

L.7.k Erosion Control Procedures

Erosion control procedures are included in the Operations Plan located in Attachment L-1, Section 7.10. There has been no change to this subsection.

L.8 LEACHATE MANAGEMENT

Operational procedures for leachate management are included in the Operations Plan located in Attachment L-1, Section 8.0.

L.8.a Leachate Monitoring and Sampling

Procedures for leachate monitoring, sampling, analysis and submittal of results to FDEP are included in the Operations Plan located in Attachment L-1, Section 8.1.

L.8.b Operation and Maintenance of the Leachate Collection and Removal System

Operation and maintenance of the leachate collection and removal system is included in the Operations Plan located in Attachment L-1, Section 8.2. There has been no change to this subsection.

L.8.c Procedures for Managing Leachate upon Regulation Changes

If the leachate is classified as a hazardous waste, it shall be managed in accordance with Chapter 62-730, F.A.C. entitled "Hazardous Waste". There has been no change to this subsection.

L.8.d Offsite Discharge and Treatment of Leachate

Leachate from Phases 1/1A and from the 7-acre closed area will be first pumped to the existing master pump station (MPS) then pumped to the leachate storage tank. Leachate is also pumped from Phases 2 and 3 to the leachate storage tank. Effluent from the leachate storage tank will either be treated in an on-site leachate treatment plant or used as irrigation on the Phases 2 and 3. The leachate will be applied in small quantities within the bermed working face area from a spray bar mounted on the rear of a tank truck. Leachate will not be applied during active precipitation, in the presence of ponding or in quantities that may cause runoff, surface seeps, wind-blown spray, or exceedance of limits as the amounts described below:

- A maximum of 4,663 gal/day can be recirculated in Phase 3. Leachate recirculation will only be applied within the bermed working face area. If this area is already wet due to rainfall, leachate recirculation will not be applied. Leachate recirculation will not occur during active rainfall or where any standing water is observed within the bermed working face area.

- A maximum of 4,663 gal/day can be recirculated in Phase 2. Leachate recirculation will only be applied within the bermed working face area. If this area is already wet due to rainfall, leachate recirculation will not be applied. Leachate recirculation will not occur during active rainfall or where any standing water is observed within the bermed working face area.

Offsite discharge and treatment of leachate is described in the Operations Plan located in Attachment L-1.

L.8.e Contingency Plan

The Contingency Plan is described in the Operations Plan located in Attachment L-1.

L.8.f Recording Leachate Generation

Procedures for recording quantities of leachate generated are included in the Operations Plan located in Attachment L-1. There has been no change to this subsection.

L.8.g Precipitation and Leachate Comparison

Procedures comparing precipitation and leachate generation at the site are included in the Operations Plan located in Attachment L-1. There has been no change to this subsection.

L.8.h Leachate Collection System Cleaning

There has been no change to this subsection. The leachate collection pipes as shown on the drawings will be cleaned and maintained, as necessary, through the cleanout riser pipes. The leachate collection pipes may be cleaned by flushing or be inspected by video recording in accordance with Rule 62-701.500(8)(h), F.A.C.

L.9 GAS MONITORING PROGRAM

The gas monitoring program at the Central County Landfill is described in Attachment L-1, Section 9. No change is proposed.

L.10 STORMWATER MANAGEMENT SYSTEM

The storm water management system is addressed in Attachment L-1, Section 10.

L.11 EQUIPMENT AND OPERATION

Landfill operation is discussed in Attachment L-1, Section 11 of the Operations Plan. There are no changes to this subsection.

L.11.a Operating Equipment

As discussed in Operations Plan Section 11.1 located in Attachment L-1, the site must have sufficient equipment to ensure proper operation of the landfill for excavating, spreading, compacting and covering waste. Although the make, model and year of equipment will change over time, the equipment used in operation will include:

- Two landfill compactors
- One self-loading scraper
- One bulldozer
- Two wheel loaders
- One water truck
- One fuel truck
- One water trailer
- Two dump trucks

In addition the site will have auxiliary vehicles including:

- One roll-off truck

- Several pickup trucks
- Several utility vehicles
- Several trailers

Normal maintenance will be performed on site. Major maintenance item repairs (e.g., engine, transmissions, and auxiliary drives) will be handled either at the maintenance facilities or at off-site service facilities.

L.11.b Reserve Equipment

As discussed in the Operations Plan Section 11.2 located in Attachment L-1, there is sufficient redundancy in the equipment to maintain normal operations even during emergency operating conditions. Rental equipment is readily available if it becomes necessary to replace or supplement the equipment available on site. There has been no change to this subsection.

L.11.c Communications Equipment

Communications equipment is described in Attachment L-1, Section 11.3. There has been no change to this subsection.

L.11.d Dust Control

Dust control methods are described in Attachment L-1, Section 11.4. There has been no change to this subsection.

L.11.e Fire Protection

Fire protection capabilities and procedures are described in Attachment L-1, Section 11.5. There has been no change to this subsection.

L.11.f Litter Control

Litter control devices are described in Attachment L-1, Section 11.6. There has been no change to this subsection.

L.11.g Signs

Facility signs are described in Attachment L-1, Section 11.7. There has been no change to this subsection.

L.12 ALL-WEATHER ACCESS ROAD

A description of the all-weather access road is included in Attachment L-1, Section 12. All-weather roads, passable and safe under normal operating conditions, will be maintained to prevent dust, rutting or loss of traction. The facility access roads are surfaced with asphaltic concrete. There has been no change to this section.

L.13 ADDITIONAL RECORDKEEPING

Additional record keeping and reporting requirements are described in Attachment L-1, Section 13. Operating records, such as permits, plans, inspections and other are maintained on site at the Citrus County Central Landfill. There has been no change to this section.

L.13.a Permit Application Development

Records used for developing this permit application are described in Attachment L-1, Section 13.1. The landfill maintains all information including site investigations, construction records, operation records, inspections, permit applications and permits. There has been no change to this subsection.

L.13.b Monitoring Information

Monitoring records are described in Attachment L-1, Section 13.2. The landfill maintains all monitoring records on groundwater, surface water, weather and landfill gas. Copies are submitted to FDEP on a regular basis. There has been no change to this subsection.

L.13.c Remaining Site Life Estimates

Remaining site life estimate is discussed in Attachment L-1, Section 13.3. Remaining site life estimate is discussed in Attachment L-1 of the Operations Plan, Section 13.3. There has been no change to this subsection.

L.13.d Archiving and Retrieving Records

Records of the Citrus County Central Landfill that are more than five years old will be archived if necessary. Archived records will be available for inspection within seven days of the receipt of the request. There has been no change to this subsection.

ATTACHMENT L-1

OPERATIONS PLAN

ATTACHMENT L-1

CITRUS COUNTY CENTRAL CLASS I LANDFILL OPERATIONS PLAN

Prepared for:

Citrus County Board of County Commissioners
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February 1, 2010

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SECTION 1

EXECUTIVE SUMMARY

The purpose of this document is to provide a consolidated manual of operating procedures for the Citrus County Central Landfill, including the Phase 3 expansion area. This document is part of the application to the Florida Department of Environmental Protection (FDEP) for an operations permit for the Phase 3 expansion. This operations plan supersedes previous operations plans submitted to FDEP for this facility.

This plan has been prepared in accordance with Florida Rule 62-701, Florida Administrative Code (F.A.C.). Part L of FDEP's permit application form for solid waste management facilities (Part L) includes requirements for an Operations Plan. All information identified in Part L is provided herein, or in referenced documents. This Operations Plan is organized in accordance with Part L. In addition, Table 1-1 cross-references this document with the requirements of Part L.

TABLE 1-1
CROSS REFERENCE OF FDEP PERMIT APPLICATION, PART L REQUIREMENTS

Part L Landfill Operation Requirements (Rule 62-701.500, F.A.C.)		Corresponding Section of Operation Plan
1.	Provide documentation that landfill will have at least one trained operator during operation and at least one trained spotter at each working face; (62-701.500(1), F.A.C.)	Section 2.1
2.	Provide a landfill operation plan including procedures for: (62-701.500(2), F.A.C.)	
	a. Designating responsible operating and maintenance personnel;	Section 2.2
	b. Contingency operations for emergencies;	Section 2.3
	c. Controlling types of waste received at the landfill;	Section 2.4
	d. Weighing incoming waste;	Section 2.5
	e. Vehicle traffic control and unloading;	Section 2.6
	f. Method and sequence of filling waste;	Section 2.7
	g. Waste compaction and application of cover;	Section 2.8
	h. Operations of gas, leachate, and stormwater controls;	Section 2.9
	i. Water quality monitoring;	Section 2.10

TABLE 1-1
CROSS REFERENCE OF FDEP PERMIT APPLICATION, PART L REQUIREMENTS

Part L Landfill Operation Requirements (Rule 62-701.500, F.A.C.)	Corresponding Section of Operation Plan
j. Maintaining and cleaning the leachate collection system.	Section 2.11
3. Provide a description of the landfill operation record to be used at the landfill; details as to location of where various operational records will be kept (i.e. FDEP permit, engineering drawings, water quality records, etc.); (62-701.500(3), F.A.C.)	Section 3
4. Describe the waste records that will be compiled monthly and provided to the Department quarterly; (62-701.500(4), F.A.C.)	Section 4
5. Describe methods of access control; (62-701.500(5), F.A.C.)	Section 5
6. Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized wastes at the landfill; (62-701.500(6), F.A.C.)	Section 6
7. Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), F.A.C.)	
	Section 7.1
a. Waste layer thickness and compaction;	Section 7.2
b. Special considerations for first layer of waste placed above liner and leachate collection system;	Section 7.3
c. Slopes of cell working face and side grades above land surface, planned lift depths during operation;	Section 7.4
d. Maximum width of working face;	
e. Description of type of initial cover to be used at the facility that controls:	
	Section 7.5
1) Disease vector breeding/animal attraction	Section 7.5
2) Fires	Section 7.5
3) Odors	Section 7.5
4) Blowing litter	Section 7.5

TABLE 1-1
CROSS REFERENCE OF FDEP PERMIT APPLICATION, PART L REQUIREMENTS

Part L Landfill Operation Requirements (Rule 62-701.500, F.A.C.)	Corresponding Section of Operation Plan
5) Moisture infiltration	Section 7.5
6) Procedures for applying initial cover including minimum cover frequencies;	Section 7.6
7) Procedures for applying intermediate cover;	Section 7.7
8) Time frames for applying final cover;	Section 7.8
9) Procedures for controlling scavenging and salvaging;	Section 7.9
10) Description of litter policing methods;	Section 7.10
11) Erosion control procedures.	
8. Describe operational procedures for leachate management including: (62-701.500(8), F.A.C.)	
a. Leachate level monitoring, sampling, analysis and data results submitted to the Department;	Section 8.1
b. Operation and maintenance of leachate collection and removal system, and treatment as required;	Section 8.2
c. Procedures for managing leachate if it becomes regulated as a hazardous waste;	Section 8.3
d. Agreements for off-site discharge and treatment of leachate;	Section 8.4
e. Procedure for off-site leachate treatment;	Section 8.5
f. Contingency plan for managing leachate during emergencies or equipment problems;	Section 8.6
g. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record;	Section 8.7
h. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;	Section 8.8
i. Procedures for water pressure cleaning or video inspecting leachate collection systems.	Section 8.9
9. Describe how the landfill receiving degradable wastes shall implement a gas management system meeting the	Section 9

TABLE 1-1
CROSS REFERENCE OF FDEP PERMIT APPLICATION, PART L REQUIREMENTS

Part L Landfill Operation Requirements (Rule 62-701.500, F.A.C.)	Corresponding Section of Operation Plan
requirements of Rule 62-701.530, F.A.C.; (62-701.500(9), F.A.C.)	
10. Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-710.400(9); (62-701.500(10), F.A.C.)	Section 10
11. Equipment and operation feature requirements; (62-701.500(11), F.A.C.)	Section 11.1
a. Sufficient equipment for excavating, spreading, compacting and covering waste;	Section 11.2
b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;	Section 11.3 Section 11.4
c. Communications equipment;	Section 11.5
d. Dust control methods;	
e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;	Section 11.6 Section 11.7
f. Litter control devices;	
g. Signs indicating operating authority, traffic flow, hours of operation, disposal restrictions.	Section 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; (62-701.500(12), F.A.C.)	
13. Additional record keeping and reporting requirements: (62-701.500(13), F.A.C.)	Section 13.1
a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;	Section 13.2
b. Monitoring information, calibration and maintenance records, copies of reports required by permit maintained for at least 10 years;	Section 13.3

TABLE 1-1 CROSS REFERENCE OF FDEP PERMIT APPLICATION, PART L REQUIREMENTS	
Part L Landfill Operation Requirements (Rule 62-701.500, F.A.C.)	**Corresponding Section of Operation Plan**
c. Maintain annual estimates of remaining life of constructed landfills and or other permitted areas not yet constructed and submit this estimate annually to the Department; d. Procedures for archiving and retrieving records which are more than five year old.	Section 13.4

Current Operating Conditions

The Citrus County Landfill is owned and operated by the Citrus County Board of County Commissioners. Vehicles access the Citrus County Landfill via State Road 44. The County disposes of its solid waste in an 80-acre area that is subdivided into smaller areas referred to as phases. A site plan of the Citrus County landfill, including the Phase 3 disposal area, is included as Figure 1-1.

All waste arriving at the Citrus County landfill is weighed at the scale house. The scale house attendant directs vehicles carrying waste to the areas where the wastes are unloaded. Commercial customers are directed to the landfill if they are disposing of Class I waste or to the materials management area for all other materials. The materials management area provides temporary storage for recyclable materials such as tires, oil, fluorescent bulbs, metal, and yard waste. The County refers to this area as the Citizen's Service Area. In addition, the materials management area provides a facility for citizens to unload their solid waste. Hazardous wastes are temporarily placed in the Hazardous Waste Collection and Storage Facility. Locations for the Citizen's Service Area, Citizens' Solid Waste Drop-Off Facility and the Hazardous Waste Collection and Storage Facility are shown on Figure 1-1.

A ramp to and from the filling area provides access to the working face of the landfill from the west side of the Class I landfill via the central access road. Waste is spread over the working face area of the landfill, placed in 2-foot layers, compacted by a compactor, and covered at the end of the working day.

Leachate generated from the landfill is either pumped to the leachate storage facility prior to treatment in the onsite leachate treatment plant or used as irrigation on the Phases 2 and 3 (a maximum of 4,633 gal per day can be recirculated in those cells and during non rainfall events). The leachate storage facility is located on the southwest side of the Class I Landfill and the leachate treatment facility is located on the northwest side of the Class I Landfill. The facility's leachate system is self-contained. Effluent from the leachate treatment plant is disposed of in one of two on-site percolation ponds. Dried solids generated from the leachate treatment plant

are disposed of in the landfill. If leachate cannot be treated at the on-site treatment plant, the leachate is transported to one of several Citrus County wastewater treatment plants.

Stormwater run-off is directed away from open areas on the active face of the landfill by a means of berms and swales along the side slopes of the landfill. The swales outside the disposal area divert stormwater into the perimeter ditches that are located outside the lined berms and, therefore, isolated from the leachate and solid waste. Within the landfill disposal area, stormwater run-off that has not contacted waste or mixed with leachate is pumped to the stormwater management system. Stormwater run-off which contacts waste or mixes with leachate is treated as leachate.

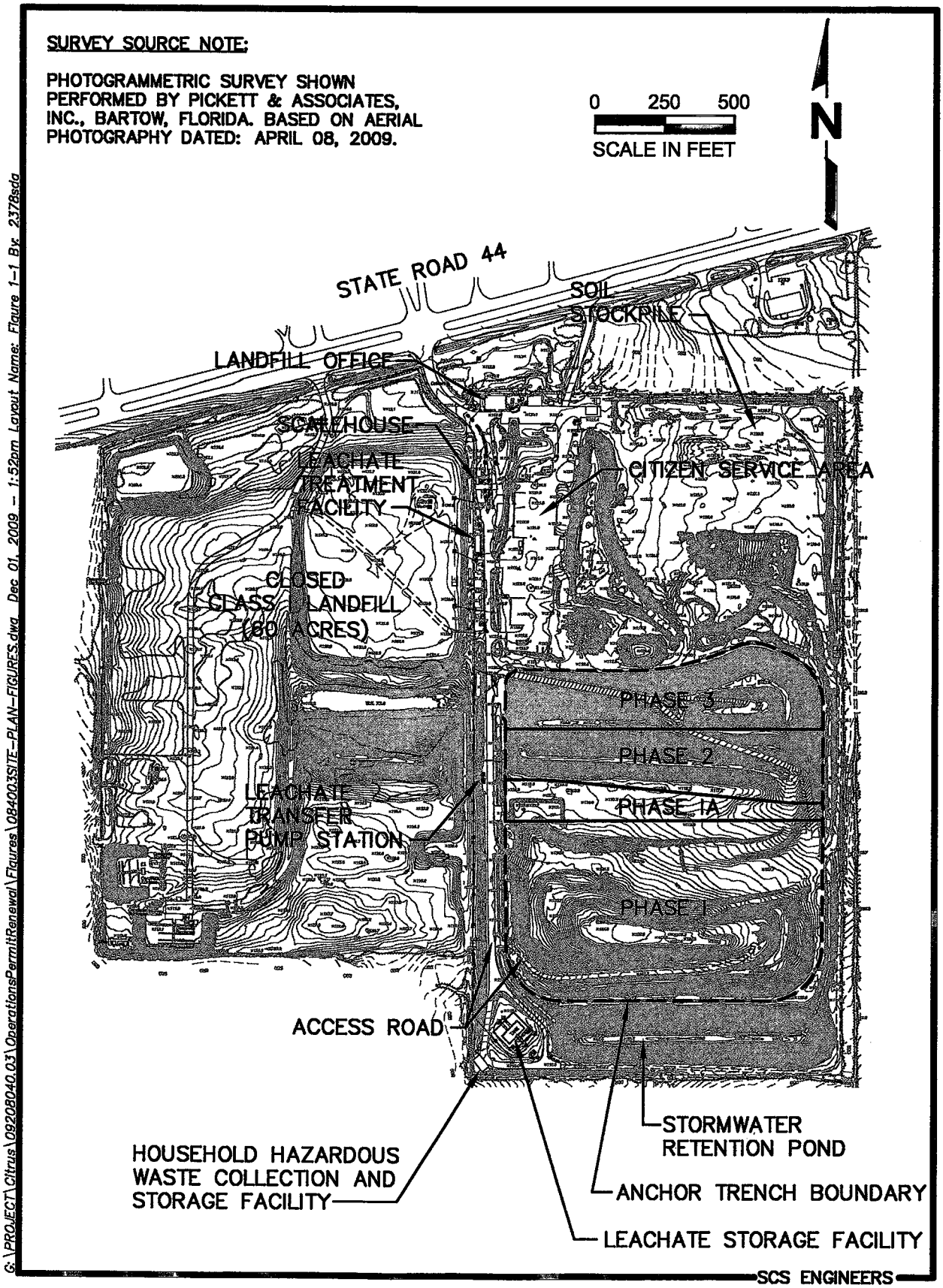


Figure 1–1. Site Plan, Citrus County Central Landfill

SECTION 2

LANDFILL OPERATIONS AND MAINTENANCE (RULE 62-701.500(2), F.A.C.)

Figure 2-1 is a site plan of the active area of the landfill including Phase 3.

2.1 TRAINING AND CERTIFICATION OF OPERATORS AND SPOTTERS (Rule 62-701.500(1), F.A.C.)

In accordance with Rule 62-701.500(1), F.A.C., at least one trained operator will be on duty at the Citrus County Central Landfill whenever waste is received at the facility. In addition, at least one trained spotter will be present at each landfill active face when waste is received. Operator and spotter training will comply with Rule 62-701.320(15), F.A.C., as adopted May 27, 2001. Operators at the Citrus County Central Landfill shall participate in at least 24 hours of initial training. Every three years landfill operators shall participate in continuing education courses totaling 16 hours. All Operators training will consist of courses conducted by the University of Florida TREEO Center, or other courses presented by other providers that have been approved by the Florida Solid Waste Management Training Committee (SWMTC).

In accordance with Rule 62-701.320.15, F.A.C., Spotters shall participate in 8 hours of initial training that shall include Spotting at Construction and Demolition Sites, Landfills, and Transfer Stations (SWMTC 8 hours) and/or Waste Screening and Identification for Landfill Operators and Spotters (SWMTC 8 hours) conducted by the University of Florida TREEO Center or other SWMTC approved providers. Every three years landfill operators shall participate in continuing education courses totaling four hours. The compactor operator will be responsible for evaluating each load visually as it is dumped and serve as the spotter at the working face of the facility. Refer to Appendix E for the Training Certificates.

2.2 DESIGNATION OF PERSONS RESPONSIBLE FOR OPERATION AND MAINTENANCE (Rule 62-701.500(2)(a), F.A.C.)

The persons directly responsible for major components of the landfill follow:

Component	Responsible Party
Operations	Field Crew Leader or Customer Service Crew Leader
Repair and Maintenance	Solid Waste Management Division Director
Permitting Requirements	Solid Waste Management Division Director
Water Quality and Leachate Testing	Solid Waste Management Division Director

The landfill Field Crew Leader or Customer Service Crew Leader has overall responsibility for the operation of the landfill. The landfill Field Crew Leader or Customer Service Crew Leader is responsible for the day-to- day implementation of the Operations Plan and, along with the Solid Waste Management Division (SWMD) Director, is responsible for environmentally safe

operations in accordance with state and federal regulations.

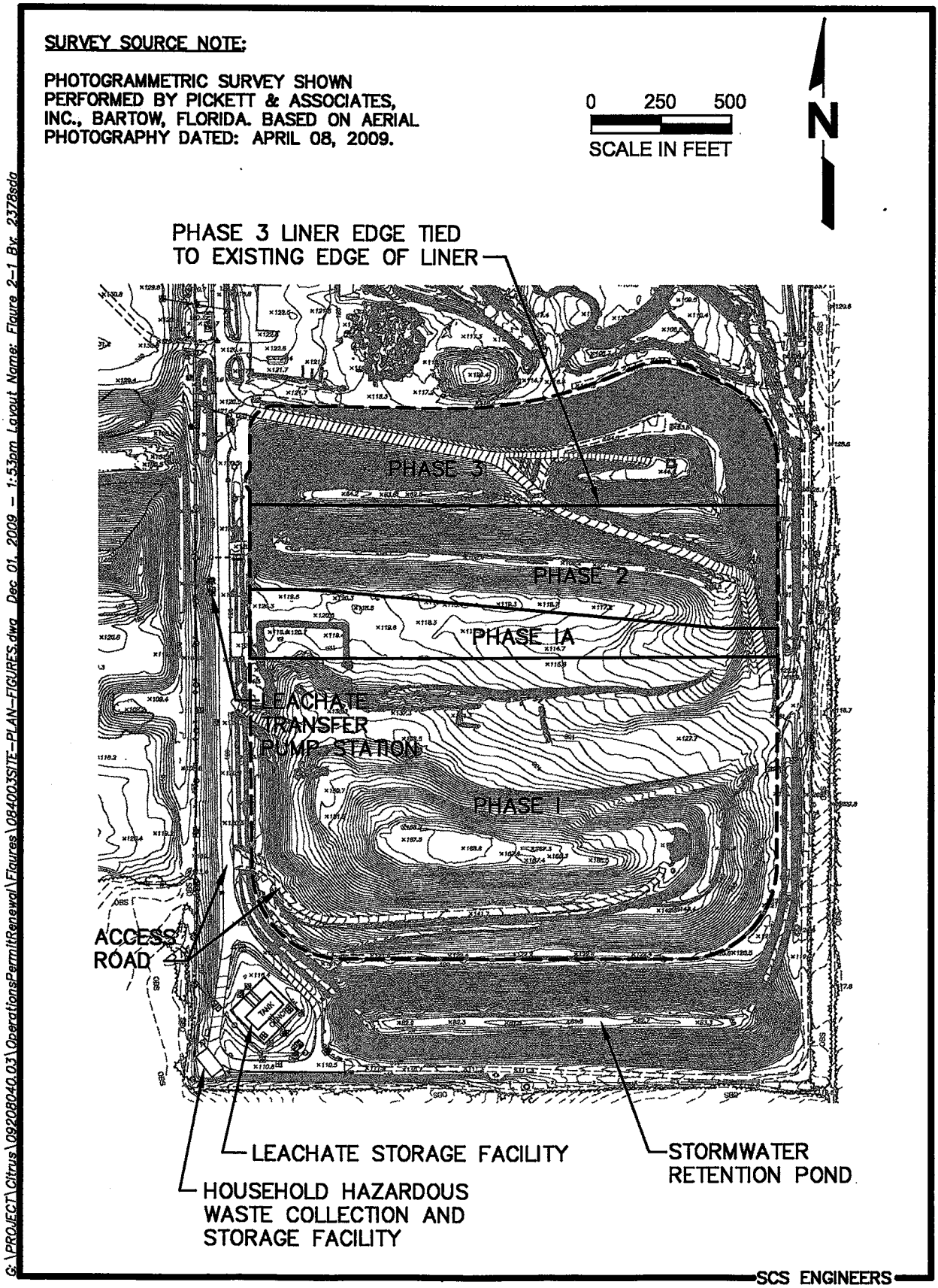


Figure 2–1. Active Area Site Plan, Citrus County Central Landfill

2.3 CONTINGENCY OPERATIONS FOR EMERGENCIES (Rule 62-701.500(2)(b), F.A.C.)

The contingency plan for the facility addresses the following five potential emergencies:

- Equipment failure
- Unusual operating conditions resulting from poor weather conditions
- Accidents
- Fire
- Unavailable landfill capacity

2.3.1 Emergency Incidents Plan

Citrus County has developed a site specific Emergency Incidents Plan which is included in Appendix B. This plan includes additional detail for responding to emergency incidents at the Central Landfill.

2.3.2 Equipment Failure

Sufficient back-up equipment will be provided on-site for equipment breakdowns and for downtime because of normal routine equipment maintenance. In the case of a major equipment failure, the following procedures will be followed:

- Maintain duplicate equipment capability

- Contact contractors and rental equipment dealers as pre-arranged, to furnish equipment on short-term notice (within 24 hours)

In the event of equipment failure, the Field Crew Leader will contact the Landfill Maintenance Coordinator. Within 24 hours of notification of the Landfill Maintenance Coordinator, the equipment will be replaced with back-up capability if necessary, or repaired and placed back in operating condition.

All equipment maintenance will either be performed by Citrus County or will be contracted by Citrus County to a maintenance contractor.

Redundant pumping systems are provided for both the leachate and stormwater transfer system.

An emergency power generator is available for stormwater and leachate facilities.

2.3.3 Poor Weather Conditions and Natural Disasters

Unusual operating conditions could result from excessive rainfall and electrical storms. The type and volume of materials to be disposed of after a hurricane or excessive storms will change normal landfill operations. During extremely high wind conditions or electrical storms, disposal

operations will be temporarily suspended to protect the workers. Disposal operations will be suspended immediately before and during a hurricane or tornado.

During rainy weather, access to the working face along on-site roads must be maintained. It may be necessary to grade out ruts more frequently than during normal operations, or it may be necessary to apply additional material to the on-site access roads to counteract the effects of rain.

2.3.4 Fire

Waste loads that arrive at the landfill on fire will not be deposited at the working face. They will be deposited away from the working face on an area that has previously been covered with daily soil cover. The load will then be spread out and covered with daily cover soil cover to extinguish the fire. If a fire does occur at the landfill working face, a temporary area will be identified as far away from the fire as possible but still within the limits of the lined disposal area where daily soil cover has previously been placed. Berms will be constructed around the temporary area using on-site equipment and soil materials from the on-site stockpile. Solid waste entering the facility will be placed in the temporary area until the fire is extinguished. Then the waste will be transported from the temporary area to the working face using on-site equipment. The soil berms around the temporary area will then be leveled and spread out over the surface at the temporary area.

2.3.5 Temporary Transfer Station

Citrus County will implement a temporary transfer station if any condition prevents normal disposal operations at the landfill for more than 48 hours. This temporary transfer station will be located on top of the existing lined landfill. The transfer station will be constructed as a split-grade facility. Waste collection trucks will unload on the upper level. A front loader will lift the off-loaded waste and place into transfer vehicle located on the lower level. The transfer trucks will be weighed prior to leaving the site to ensure that they are legal for over-the-road transport. Crushed concrete and asphalt will be used as an operating surface. This provides an area for trucks to unload. Sloping the area away from the tipping area to a perimeter berm will provide drainage. This liquid will either be allowed to percolate into waste or be collected. Collected liquid will be pumped to the leachate storage tank. Precipitation that falls outside the perimeter berm will be managed as stormwater. Litter fences will be placed around the facility to reduce the potential for blowing litter. The temporary transfer station will not be operated for more than 30 days unless additional approval is granted from FDEP.

2.4 CONTROL/INSPECTION OF INCOMING WASTE (Rule 62-701.500(2)(c), F.A.C.)

All solid waste arriving at the landfill is routed through the scale house. Scale house attendants screen visible loads for unacceptable materials including recyclables, hazardous waste, and medical waste. From the scale house, it is directed to either the Class I disposal area or to the citizen waste drop off management area. The Citizen's Service Area provides temporary storage for recyclable material, waste oils, yard waste, white goods, batteries, and tires. A spotter will be located at the Citizen's Service Area and at the landfill working face to observe the types of

waste actually deposited. If prohibited wastes are discovered, the spotter will direct the vehicle back to the office. If the waste has not yet been unloaded, the person responsible for shipping the waste will be notified. If the waste has been deposited, the area of the waste load should be blocked from public access until the generator or hauler of the waste cleans up the waste. If the generator or hauler of the waste cannot be identified or is unable to remove the waste, Citrus County will be responsible for cleanup, transportation, and disposal of the waste at an appropriate waste management facility.

Special waste shall be managed as follows:

- Used oil and antifreeze is placed at the household hazardous waste (HHW) facility and collected by a contractor.
- Lawn debris is placed within the registered yard waste processing facility for management.
- Tires are placed into the permitted used tire facility for management.
- Appliances - all freon containing appliances shall have the freon removed by County personnel and then placed within the scrap metal recycling container which is collected daily by a contractor.
- Lead acid batteries are placed on pallets and collected by a recycling contractor once several pallets are loaded. (Collections will occur at a minimum of once per month)

The landfill has a permanent household hazardous waste collection and storage facility located at the southwest corner of the existing landfill site as shown in Figure 1-1. The facility is used for the collection and storage of household hazardous waste and Conditionally Exempt Small Quantity Generator (CESQG) waste. The building is engineered to comply with EPA, NFPA, and OSHA standards and regulations for storing hazardous chemicals and wastes. The household hazardous waste collection/storage ("HHW C/S") will be operated in accordance with the guidelines outlined in the Citrus County Hazardous Waste Collection and Storage Facility (2004), which is on file at the landfill office. The current schedule allows for periodic program days for HHW collection. The following is a summary of some HHW C/S guidelines:

- HHW received at the Citizen Drop-off area shall be identified and relocated for storage within the containment area of the HHW C/S Facility at the end of each collection day.
- Spillage shall be removed and properly packaged for disposal. Soils that have been contaminated by spills shall be removed and packaged for proper disposal on the same day as the spill occurred.
- Liquids, including contaminated rainwater, shall not be discharged outside of the containment structures.

- Non-latex paints shall not be air dried.
- Waste received at the HHW C/S Facility shall be stored within containment areas at all times.
- Records on the quantities of HHW collected and removed for disposal shall be compiled monthly and maintained at the facility for Department review upon request.

The specific waste handling procedures for this facility is described in the Facility Standards for the Citrus County Hazardous Waste Collection and Storage Facility, 2004, which is on file in the landfill office.

2.5 WEIGHING OF INCOMING WASTES (RULE 62-701.500(2)(D), F.A.C.)

Weighing of incoming wastes will be performed at the scale house. Each customer receives a receipt made out by an automatic cash register showing the type of refuse, amount, and fee. These receipts are utilized for financial accountability and to complete the necessary daily, weekly, monthly, and annual activities/materials reports required by the Florida Department of Environmental Protection (FDEP) and Citrus County.

2.6 VEHICLE TRAFFIC CONTROL AND UNLOADING (Rule 62-701.500(2)(e), F.A.C.)

All traffic entering the landfill must pass though the scale house. Vehicle traffic control and unloading is directed by color-coded signage for unloading areas and the attendant in the scale house. The attendant will direct the vehicle to the point of unloading compatible with the waste. Additional traffic directions will be provided, when needed, by the equipment operator or spotters.

2.7 METHOD AND SEQUENCING OF FILLING WASTES (Rule 62-701.500(2)(F), F.A.C.)

The Citrus County Landfill will be operated using the area fill method. Waste delivered to landfill will be directed to the working face area of the landfill for unloading. Once unloaded, waste will be spread in layers approximately 2-feet in thickness and compacted to approximately 1 foot in thickness. Refer to Appendix A for the fill sequencing plans for the remainder of Phase 1/1A, Phase 2, and Phase 3.

2.8 WASTE COMPACTION AND APPLICATION OF COVER (Rule 62-701.50(2)(g), F.A.C.)

2.8.1 Method of Filling Wastes/Compaction

The procedure for filling and compacting of the initial waste lifts over areas of exposed liner will be as follows:

- To protect the integrity of the leachate collection system and liner, driving vehicles directly over the liner will be prohibited.

- The liner will be covered with a minimum of 2 feet of protective soil at least one week prior to the placement of waste.

- The protective soil layer is placed on the liner using low ground pressure tracked dozer approximately 1 week prior to the placement of waste. The equipment operator is directed by a spotter to ensure that the soil is placed correctly and that the equipment does not come in contact with the liner. The 2-foot minimum in-place thickness of the protective soil layer is verified by the landfill operator.

- The landfill spotter directs equipment away from the side slope liner during normal operations.

- The initial lift of waste will be 4 feet thick and selected for material that will not cause damage to the liner. The initial lift of waste will be spread with equipment that will preserve the integrity of the liner system.

The procedures for filling and compacting all waste will be as follows:

- Waste will be placed against the working face of the previous days waste, so that the first row will act as a means of access and a berm to guide the placement of waste material for the remaining rows.

- The waste will be spread and completed in 2-foot layers and compacted to approximately 1 foot in thickness by a minimum of five passes using a landfill compactor.

2.8.2 Daily and Intermediate Cover

Cover material will be utilized to minimize vector breeding, animal attraction, and fire potential, as well as to prevent blowing litter and control odors. Daily cover will be composed of soil from the on-site stockpile, a 50/50 mixture of yard waste mulch and soil, synthetic materials such as tarps and geomembranes, or approved ADC material consisting of a spray on slurry of polymer and recycled paper fibers. Daily soil cover will be placed and compacted to a minimum thickness of 6 inches; spray on daily cover will be applied per manufacturer specifications and shall not be used in the rain. The intermediate cover will be comprised of soil from the on-site stockpile or a 50/50 mixture of yard waste mulch and soil. The intermediate soil cover will be placed and compacted to a minimum thickness of 12 inches. Mulch is from on-site recycled yard waste.

2.8.3 Final Cover

The final cover system will be designed in accordance with Rule 62-701.600(5), F.A.C. The final cover will be placed on the intermediate cover as phases of the facility are closed. The

conceptual final cover system for landfill closure, from top to bottom includes the following:

- 24-inch soil layer with the upper surface capable of supporting vegetative growth
- Composite drainage net layer (geosynthetic filter fabric with drainage net)
- 40-mil textured geomembrane

2.9 OPERATION OF GAS, LEACHATE, AND STORMWATER CONTROLS (Rule 62-701.500(2)(h), F.A.C.)

2.9.1 Landfill Gas Controls

The landfill gas (LFG) management system at the site currently consists of passive vents in the old closed 60-acre landfill, which serves to minimize the potential for off-site migration of LFG. A landfill gas collection and control (GCCS) system has also been permitted in the Class I landfill (Phase 1/1A and Phase 2) that includes the installation of vertical extraction wells and tie-ins to the existing leachate collection and removal system (LCRS). The LFG will be routed via a header/lateral system to a blower flare station where the gas will be combusted in a candlestick flare. The GCCS proposed for the Class I landfill is a voluntary active LFG collection and control system that is being installed to proactively reduce methane emissions to the atmosphere. This system is not required by the Federal New Source Performance Standards (NSPS).

2.9.2 Leachate Controls

Leachate is collected by a leachate collection and transfer system. The leachate is conveyed by gravity to a leachate sump located as shown in the Citrus County Central Landfill Phase 3 Expansion Construction Plan Sets. Collected leachate is pumped from the leachate sump in the landfill to an existing leachate storage tank. Additional information is provided in Section 8.0 of this Operations Plan.

Leachate generation will be minimized by only operating a single working face and keeping the working face as small as possible. During special events, such as during initial lift filling of the new cell, more than one working face may be operated. Daily and/or intermediate cover will be placed with slopes to promote stormwater runoff. The mixing of stormwater with leachate will be minimized by grading the daily and/or intermediate cover away from the working face and by using soil berms to direct stormwater runoff away from the working face. Gutters and lined conveyance ditches will also be used to collect and transport stormwater to stormwater management facilities.

2.9.3 Stormwater Controls

Operation of the existing stormwater system is discussed in Section 10.0 of this Operations Plan. The stormwater system will be managed as required by Rule 62-701.500(10), F.A.C., to meet applicable standards for Rule 62-302, F.A.C., and Rule 62-330, F.A.C. The system shall minimize stormwater from entering waste filled areas and avoid the mixing of stormwater with leachate. All stormwater conveyances shall be inspected at least weekly to verify adequate

performance. Conveyances not performing adequately will be repaired within 3 working days. Documentation of all inspections and repairs will be kept on file at the landfill office.

2.10 WATER QUALITY MONITORING (Rule 62-701.500(2)(i), F.A.C.)

Groundwater and leachate monitoring will be conducted as described in the Citrus County Central Landfill Groundwater Monitoring Plan. The latest version of the plan was submitted and approved as part of the minor operation permit modification (Permit Number 21375-012-SO/MM) submitted by Jones Edmunds and Associates (JE&A) and approved by FDEP November 2008. This document will be updated periodically based on current operation permit requirements with a current copy held in the solid waste administration offices at the landfill.

2.11 MAINTAINING AND CLEANING THE LEACHATE COLLECTION SYSTEM (Rule 62-701.500(2)(j), F.A.C.)

The leachate system at the landfill consists of collection, storage, treatment, and disposal facilities for the closed portion and Phases 1/1A, 2, and 3 active portions of the landfill. Maintenance of the leachate system facilities is performed as specified in the manufacturer's manuals kept on file in the landfill office. See Section 8.2 for a description of the operation and maintenance procedures. Inspection and cleaning of the system will be performed every *5* years (at the time of permit renewal). Inspection of storage and treatment tanks will be performed every 3 years.

SECTION 3

OPERATING RECORDS
(RULE 62-701.500(3), F.A.C.)

The operating record will consist of all records, reports, analytical results, and all notifications as required by Rule 62-701, F.A.C. These records are considered an integral part of the operations plan and will be kept at or near the facility. The operating records will be available for inspection at reasonable times upon request by FDEP personnel.

The Citrus County Solid Waste Management Division Director will be responsible for the storage and filing of all operational records. The minimum records to be kept as part of the official operating record include the following:

- Current permits and applications
- Monthly waste disposal records (volume, weight, or truckloads)
- Random load checking records
- Leachate quantities, sampling, and analysis
- On-site rain gauge data
- Monthly leachate operating reports (FDEP monthly facility report)
- Annual estimates of remaining capacity (permitted disposal) in cubic yards
- Regulatory agency inspection reports
- Groundwater and leachate sampling plan, including well construction information, sampling locations, and water quality sampling results
- All official notifications to or from FDEP regarding the facility
- Training verifications/certifications
- Landfill Operations Plan, including all supplementary material incorporated by reference
- Leachate tank inspection records
- Gas monitoring records
- Maintenance summary forms

SECTION 4

WASTE RECORDS
(RULE 62-701.500(4), F.A.C.)

Each month, a report of the amount of waste received, in tons, will be compiled. The report will also include estimates of the amounts of the following waste types:

- Household waste
- Commercial waste
- Ash residue
- Incinerator by-pass waste
- Construction and demolition debris
- Treated biomedical waste
- Agricultural waste
- Industrial waste
- Yard trash
- Sewage sludge
- Industrial sludge
- Water/air treatment sludge
- Waste tires

Reports are compiled monthly and maintained and are made available to FDEP on request.

SECTION 5

ACCESS CONTROL
(RULE 62-701.500(5), F.A.C.)

The entire Citrus County Landfill facility is fenced, and access is gate controlled at all times. Figure 1-1 is a site plan of the entire landfill and illustrates the landfill access control facilities. The landfill operates and accepts waste from commercial haulers Monday through Saturday, as follows:

Monday - Friday: 6:30 a.m. to 5:00 p.m.

Holidays and Saturday: 6:30 a.m. to 3:00 p.m.

During periods with inadequate daylight after 6:30 am, the County uses portable light plants to illuminate the working face. The facility does not accept waste from citizens until 8:00 am. During Holiday periods, the operating hours may be adjusted.

SECTION 6

WASTE MONITORING
(RULE 62-701.500(6), F.A.C.)

6.1 WASTE INSPECTION (Rule 62-701.500(6)(a), F.A.C.)

Citrus County has implemented a load checking program to detect and discourage attempts to dispose of unauthorized wastes at the landfill. This program includes at least three random checks by landfill personnel each week and inspection of suspicious loads, which are vehicles that have previously been determined to have delivered unauthorized waste, or loads that have unusually physical characteristics.

If any regulated hazardous wastes are identified during load checking the waste will be immediately placed in the household hazardous waste collection and storage facility for sorting and storage. Following is a summary of the load inspection program. The complete load inspection plan is kept on file in the landfill office.

1. Disposal area personnel will direct a minimum of 3 vehicles per week to a separate area within the working disposal area.

2. The driver of the vehicle will be asked the source of the waste by the inspector. The load will be completely discharged and spread uniformly so that all waste is visible.

3. The inspector will proceed to inspect the load for unauthorized waste. These shall include, but are not limited to the following:

   - Restricted materials (tires, yard waste, etc)
   - Regulated hazardous waste
   - Biomedical waste
   - Containers of liquids
   - Compressed gas cylinders
   - PCB wastes (Transformers)
   - Large quantity of household type hazardous waste (Indication of business source)

4. If any restricted items are observed, the waste will be relocated by the County to the appropriate disposal/management area. The collection company will be contacted to send a representative to verify the contents of the load with the inspector and the Crew Leader. The payment for disposal of the waste will be the sole responsibility of the person responsible for shipping the waste.

5. The person responsible for shipping the waste will provide a manifest documenting the proper disposal of the unauthorized waste found during inspection. The manifest must indicate the corresponding identification number assigned to the waste during

inspection.

6. If any regulated hazardous waste or biomedical waste is observed, the Crew Leader will implement the Solid Waste Management Operations Emergency Response Plan for the Identification of Regulated Hazardous Waste. This plan is provided in Appendix B. This plan includes notifying FDEP, persons responsible for shipping the wastes, and the generator of the wastes.

7. Landfill personnel will relocate all special wastes such as tires, appliances, lead acid batteries, and lawn debris to the proper disposal areas. A separate invoice will be issued to the persons responsible for shipping the waste and made part of the inspection report. See Section 2.4 for procedures for handling special wastes.

8. If any large quantities of household hazardous waste are identified, it will be relocated to the household hazardous waste storage facility.

9. Copies of all completed inspection reports will be forwarded to the Administrative Office for the Division of Solid Waste Management, the persons responsible for shipping the waste, and the Citrus County Special Operations Section. These records will be maintained for the life of the landfill.

10. Vehicles that have previously been determined to have delivered unauthorized waste will be considered suspicious and may be subjected to inspection at any time and in the same manner as the random inspections.

6.2 HAZARDOUS WASTES AND HANDLING PROCEDURES (Rule 62-701.500(6)(b), F.A.C.)

No hazardous wastes will be accepted at the landfill for disposal. Hazardous waste identified during the load checking program will temporarily be stored in the household hazardous waste collection and storage facility, and all handling procedures must follow the Household Hazardous Waste Operations Plan, which is on file in the landfill office.

If unauthorized material is transported to the facility, the Crew Leader or Division Director will be notified immediately and appropriate actions taken to remove any unauthorized materials or wastes from the facility. Special wastes such as waste tires and batteries that are discovered will be removed from the landfill and placed in the on-site temporary storage area for recyclable material. The Citrus County Special Operations response team is notified for handling and storage of hazardous materials for disposal in an appropriate off-site facility.

6.3 RECORDING INSPECTION RESULTS (Rule 62-701.500(6)(c), F.A.C.)

Results of the load checking inspections described in Section 6.1 of this document will be recorded in writing and retained at the landfill. This information will include date and time of inspection, name of hauling firm, vehicle identification number, and observations made by landfill personnel during the inspection. In addition, an effort will be made to record the name of

the driver, license plate number, and source of waste as stated by the driver. The inspector will sign the written record. A sample form used to document the inspection results is provided in Appendix C.

SECTION 7

WASTE HANDLING REQUIREMENTS
(Rule 62-701.500(7), F.A.C.)

The following description represents waste handling requirements as required by Rule 62-701.500(7), F.A.C. Citrus County will meet or exceed the requirements at all times to minimize the potential adverse impacts to employees or public health or safety.

7.1 WASTE THICKNESS AND COMPACTION FREQUENCIES (Rule 62-701.500(7)(a), F.A.C.)

The waste material will be spread in layers of approximately two feet in thickness and compacted to approximately one foot in thickness, or as thin as practical, by a landfill compactor before the next layer is applied.

7.2 FIRST LAYER OF WASTE (Rule 62-701.500(7)(b), F.A.C.)

The first lift of waste placed above the liner and leachate collection system will be a minimum of four feet in compacted thickness. Waste loads in this first lift will be screened for any large, rigid objects or other materials that would damage the liner or leachate collection system.

7.3 SLOPES OF WORKING FACE (Rule 62-701.500(7)(c), F.A.C.)

The working face and side grades above land surface will be sloped at a maximum of 3 feet horizontal to one-foot vertical rise. The lift depth will typically be a maximum of 10 feet. Lift depths may be deeper than 10 feet depending on specific operations, daily waste volumes, width of the working face, and good safety practices.

7.4 WIDTH OF WORKING FACE (Rule 62-701.500(7)(d), F.A.C.)

The working face will be wide enough to safely accommodate vehicles, unloading materials, and compacting equipment. Since the waste requires daily cover, the width of the working face will be minimized.

7.5 INITIAL/DAILY COVER (Rule 62-701.500(7)(e), F.A.C.)

Daily cover will be placed over the waste at the end of each working day. Daily cover will consist of six inches of compacted soils, a yard waste/soil mix, synthetic material such as tarps and geomembranes, or a spray on slurry of polymer and recycled paper fibers, as approved by the FDEP.

7.6 INTERMEDIATE COVER (Rule 62-701.500(7)(f), F.A.C.)

If additional solid waste will not be deposited in a location within 180 days of daily cover

placement, a 12-inch compacted 50/50 mixture of soil and mulch intermediate cover will be placed within 7 days of daily cover placement.

7.7 FINAL COVER (Rule 62-701.500(7)(g), F.A.C.)

Areas that have been filled to design dimensions will receive final cover within 180 days after attaining final elevation in accordance with the Closure Plan for the Citrus County Central Landfill. A description of the final cover can be found in Section 2.8.3 of this plan.

7.8 SCAVENGING AND SALVAGING CONTROL (Rule 62-701.500(7)(i), F.A.C.)

Scavenging will be strictly prohibited at the working face of the landfill.

7.9 LITTER POLICING METHODS (Rule 62-701.500(7)(i), F.A.C.)

If any litter escapes the litter controls employed in the working area, such litter will be picked up as soon as possible.

7.10 EROSION CONTROL (Rule 62-701.500(7)(j), F.A.C.)

Soil cover erosion control measures will be integrated into landfill operations to collect and transport stormwater without exposing solid waste and creating leachate. These measures are identified and discussed as follows:

- Intermediate soil cover configured to collect and transport stormwater
- 4"-5" of mulch soil cover to prevent erosion
- Regular inspection of intermediate soil cover
- Benches and lined ditches to transport concentrated volumes of stormwater runoff

7.10.1 Intermediate Soil Cover

Temporary berms to direct stormwater away from solid waste placement and compaction activities will surround the active areas of the landfill. Inactive areas will be covered with intermediate soil cover with a minimum thickness of 1 foot. The intermediate soil cover will be sloped to promote run-off and decrease infiltration of stormwater.

Intermediately covered areas subject to erosion will be mulched or seeded with grass appropriate to the season as needed to control erosion.

7.10.2 Down Drains

Stormwater collected in swales and benches will be directed to lined ditches and/or temporary piping. The lined ditches and/or temporary piping will be installed to transport the collected stormwater to the stormwater management system without damaging the intermediate soil cover. Lightweight reinforced polyethylene will be used to line the ditches.

7.10.3 Inspections

The intermediate soil cover will be regularly inspected for erosion damage. Any damage that is discovered will be repaired within 3 days.

SECTION 8

LEACHATE MANAGEMENT
(RULE 62-701.500(8), F.A.C.)

The design of the leachate management system includes a system of collection pipes that lead to a side slope sump. The side slope sump is located at the low-point on the west side of each cell. The low-point acts as the sump for both the collection and detection systems. For leachate removal, the collection riser and the leak detection riser will include submersible pumps. Leachate from Phases 1/1A and from the 7-acre closed area will be first pumped to the existing master pump station (MPS) then pumped to the leachate storage tank. Leachate is also pumped from Phases 2 and 3 to the leachate storage tank. Effluent from the leachate storage tank will either be treated in an on-site leachate treatment plant or used as irrigation on the Phases 2 and 3. The leachate will be applied in small quantities within the bermed working face area from a spray bar mounted on the rear of a tank truck. Leachate will not be applied during active precipitation, in the presence of ponding or in quantities that may cause runoff, surface seeps, wind-blown spray, or exceedance of limits as the amounts described below:

- A maximum of 4,663 gal/day can be recirculated in Phase 3. Leachate recirculation will only be applied within the bermed working face area. If this area is already wet due to rainfall, leachate recirculation will not be applied. Leachate recirculation will not occur during active rainfall or where any standing water is observed within the bermed working face area.

- A maximum of 4,663 gal/day can be recirculated in Phase 2. Leachate recirculation will only be applied within the bermed working face area. If this area is already wet due to rainfall, leachate recirculation will not be applied. Leachate recirculation will not occur during active rainfall or where any standing water is observed within the bermed working face area.

The main components of Phases 1/1A, 2 and 3 leachate management systems include the following:

- Rock filled leachate collection trenches with perforated pipes leading to the sump.

- Collection sump system including collection riser, leak detection riser, and submersible pumps for leachate removal.

- Control panel including pump controls and remote flow meter head.

- Connection to influent line to the existing leachate storage tank.

8.1 MONITORING, SAMPLING, AND ANALYSIS OF LEACHATE (Rule 62-701.500(8)(a), F.A.C.)

The Division Director is responsible for leachate monitoring, sampling, and analysis, and for providing copies of the leachate analysis to FDEP. Leachate sampling and analysis is addressed in the Citrus County Central Landfill Groundwater Monitoring Plan Evaluation. Sampling and analysis will be conducted by qualified contractors and will meet applicable FDEP requirements.

The depth of leachate over the liner is monitored with level transducers on the leachate removal pumps. In addition, the leachate pump side slope risers and leachate collection pipe clean out side slope risers provide a mechanism to observe leachate levels through physical measurements. Complete details of the pumps and side slope risers are provided in the Phase 3 Construction Plans.

8.2 OPERATION AND MAINTENANCE OF LEACHATE COLLECTION SYSTEM (Rule 62-701 .500(8)(b), F.A.C.)

The Utility Operator will be responsible for maintenance of the leachate systems, including the piping, pump stations, and piping to the leachate storage tank and treatment plant. A schematic diagram of the leachating pumping and treatment system is shown in Figure 8-1. The equipment manufacturer will provide operation and maintenance manuals for each of the system components. Maintenance of each component will be performed in accordance with manufacturer specifications and documented on a Maintenance Summary Form, included in Appendix D. Maintenance documentation may also include a video of the cleaning procedures. Operation and maintenance manuals include the following:

- Description of unit and component parts, including normal operating characteristics and limiting conditions
- Operating procedures
- Maintenance and overhaul procedures
- Installation instructions
- Original manufacturer's parts list, illustrations, and detailed assembly drawings
- Spare parts ordering instructions
- Manufacturer's printed operating and maintenance instructions

Stormwater that is collected and retained within the working face area will be pumped to the leachate storage tank using the County's hydraulic pump.

Flow will be monitored from the leachate pumps. Facility personnel will record leachate flows daily. This will allow determination of leachate production as a function of rainfall and provide

information to assess the efficiency of leachate and stormwater management practices. Leachate flow will be reported with the quarterly facility monitoring report. Leachate generation/flow records will be kept at the facility as part of the official operation record.

Daily maintenance on each leachate pump station will also include reading flow meters and making sure each pump is operational. Pumping rates and electrical draw will be confirmed semiannually. If these tests indicate significantly reduced performance, the pumps will be pulled for inspection and repair. A replacement pump will be installed while the repairs are being made.

If leachate flow volume is noticeably decreased, the leachate collection system will be inspected. Possible reasons for low or no flow are pump and/or level transducer malfunction or collection pipe collapse or blockage. If pipe blockage is identified, the collection pipe will be power jetted to remove sediment buildup. Power jetting or rodding will be done from either or both ends of the header.

The GCCS is designed to provide a means of relieving internal gas pressures within the landfill and prevent fugitive emissions of LFG to the atmosphere through the cover soils and the subsurface migration of LFG to the surrounding areas.

The proposed GCCS for Phases 1/1A and 2 include the following features:

- LFG extraction wells composed of 6-inch PVC pipe, installed in a 30-inch borehole and backfilled with FDOT No. 4 stone. The borehole will be sealed with a hydrated bentonite plug and backfilled to grade with clean soil backfill.

- Tie-ins will be made to the existing LCRS risers and these will be connected to the header/lateral system, routing LFG to the blower/flare station.

- A below grade header/lateral network will be installed. All piping will be HDPE SDR 17.

- A 2" HDPE SDR 9 air supply line will be installed at the blower/flare and compressor location to CS-1 on the east side of the Class I cells.

- A condensate sump with a pneumatic pump will be installed at the blower/flare station. An O&M manual for the pneumatic pump will be submitted to the FDEP with the report of construction completion.

- Self-draining condensate traps will be located at engineered low points in the header system for the collection of condensate. The traps will allow for the drainage of condensate from the header and lateral system back into the landfill.

- Collected LFG will be routed to the blower/flare station for combustion via the candlestick flare.

If it is necessary to perform video inspection or cleanout the LCRS via these risers, this can be accomplished by closing the 2-inch wellhead gate valve, disconnecting the flexible hose, and removing the quick release caps or flanged lids and associated piping.

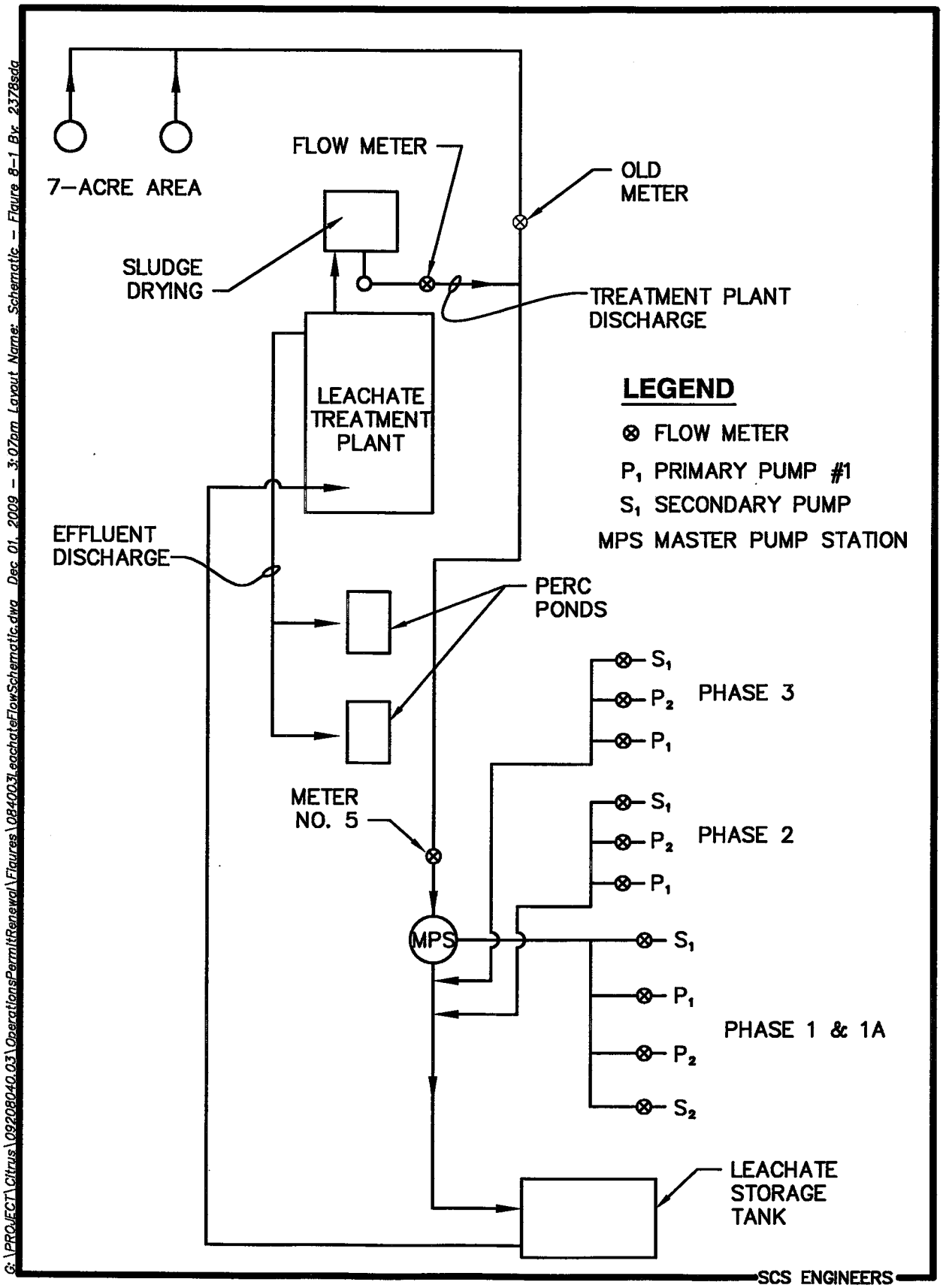


Figure 8-1. Leachate Flow Schematic, Citrus County Central Landfill

8.3 LEACHATE HANDLING (IF REGULATED AS HAZARDOUS WASTE (Rule 62-701 .500(8)(b), F.A.C.)

If, in the future, the leachate becomes classified as a hazardous waste, it will be managed in accordance with Rule 62-730, F.A.C., or other rules as may be applicable at the time.

8.4 OFF-SITE TREATMENT (Rule 62-701.500(8)(c), F.A.C.)

Leachate is normally treated and disposed of on site. If off site treatment and disposal is necessary, leachate will be transported to one of several Citrus County Utilities wastewater treatment plants. No written agreement exists with Citrus County Utilities because it is a division of this department.

8.5 ON-SITE TREATMENT (Rule 62-701.500(8)(d), F.A.C.)

Leachate will be treated onsite. A powdered activated carbon enhanced, activated sludge plant treats all leachate generated at the landfill. This plant, manufactured by ZIMPRO, provides sequential batch treatment in two stages. There are two first stage reactors and one-second stage reactor. The first stage is aerobic for nitrification of the ammonia in the leachate, and the second is an anoxic treatment process for denitrification. The second stage is supplemented with methanol to support the microorganisms due to low influent nutrients. Carbon provides removal of metals, complex organics and serves as microbial attachment medium. Mobile dissolved ions are not removed. After filtration and chlorination, the effluent is ready for on-site disposal. Sludge from the treatment process is dewatered and disposed in the landfill. The Leachate System Operation Process and Instrumentation Diagram (P&ID) is filed in the landfill office and provides further information on the operation of the leachate collection and treatment system.

The leachate is initially pumped to the on-site leachate storage tank prior to treatment. Liquid levels will be measured daily in the leachate storage tank units. The tank exterior will be visually inspected weekly. The tank interior will be inspected at least every three years and more frequently if it is drained. At the time of draining, accumulated sediment will be removed and interior maintenance will be performed. If failures are detected, repairs will be made as soon as possible and before tank is brought back into operation. Electrical and mechanical equipment maintenance will follow manufacturer's recommendations. Inspection reports will be kept in the landfill office.

The leachate treatment system is permitted to treat up to 30,000 gallons per day (gpd) of raw leachate. Presently, with the operation of the 7-acre closed areas, Phases 1/1A and Phase 2, the system treats about 8,500 gpd on an annual average. The system has treated up to 14,300 gpd.

With the addition of Phase 3 landfilling operations hydrogeological modeling of the early operations sequence indicates an average flow of 3,000 gpd of leachate will be generated in addition to the leachate generated from the other areas. Using the historical leachate generation quantities for Phase 1/1A is considered conservative because as landfilling in these areas reaches higher elevations larger areas will be subject to steeper slopes thus less leachate should be

generated.

Based on the assumptions listed above, it is expected that total average daily leachate generation from all areas should be less than 12,000 gpd. This results in a capacity excess of over 50% when compared to the permitted treatment capacity of the leachate treatment system.

Based on the operating record of the leachate treatment system, reports of influent and effluent quality and groundwater monitoring at the effluent disposal ponds, the leachate treatment system is performing adequately.

8.6 CONTINGENCY PLAN FOR MANAGING LEACHATE (Rule 62-701.500(8)(e), F.A.C.)

If on site leachate treatment is interrupted, leachate will be transported to one of several Citrus County Utilities wastewater treatment plants. Because multiple wastewater treatment plants are available for leachate disposal, complete interruption of offsite disposal ability is not anticipated.

8.7 RECORDING LEACHATE QUANTITIES (Rule 62-701.500(8)(f), F.A.C.)

Quantities of leachate collected by the leachate collection and removal system are recorded in gallons per day from the leachate flow observations. Utilities staff record daily flow amounts on a standard form. Completed forms are compiled monthly with the compiled form sent to the facility manager to be filed in the facility's operating record.

Citrus County uses a number of metering points to measure leachate generation (See Figure 8-1). The flows generated from each landfill phase of the newer 80-acre area are measured directly by flow meters within the discharge line of each pump flows from the closed 7-acre area have been measured in the past with an older mechanical flow meter. It is suspected that this meter is not providing accurate readings due to repeated malfunctions. The County has calibrated flow from the 7-acre pumps against the elapsed time meters (ETMs) for each pump. The ETM readings are now taken and converted to flow in gallons in a spreadsheet. The older meter shown on Figure 8-1 is no longer being used.

The flow meter located at the discharge location for the treatment plant discharge recirculates back to the master pump station (MPS). Flow meter number 5 records the flow coming from the 7-acre closed area and the treatment plant. By subtracting the metered flow from the treatment plant, the County will have a detonative volume for flow coming from the 7-acre closed area.

8.8 RECORDING PRECIPITATION (Rule 62-701.500(8)(g), F.A.C.)

A rain gauge has been installed and is operated and maintained by Citrus County personnel to record precipitation at the disposal facility. Precipitation records will be maintained in the facility's operating record and will be compared with leachate generation rates.

8.9 INSPECTION AND CLEANING (Rule 62-101.500(8)(h), F.A.C.)

The new leachate collection system for Phase 3 will be pressure cleaned and inspected by video recording after construction and prior to the initial placement of waste in Phase 3. Thereafter, existing leachate collection systems at the Citrus County Landfill will be pressure cleaned or inspected by video at the time of permit renewal. Results of the cleanings and inspections are kept on file in the landfill office. A copy of the most recent Inspection Report is included as Appendix F.

SECTION 9

LANDFILL GAS MONITORING
(RULE 62-701.500(9), F.A.C.)

This LFG monitoring program for the Central Landfill has been prepared in accordance with Rule 62-701.530, F.A.C. As described below, the plan includes monitoring for subsurface LFG migration at the facility property boundary adjacent to the active landfill (Phases 1/1A and 2) and the closed 60-acre landfill, and in on-site structures. The LFG monitoring program is designed to confirm compliance with the requirements of Rule 62-701.530(1)(a)1, F.A.C., which requires the following:

- The methane concentration in on- or off-site structures may not exceed 25 percent of the lower explosive limit (LEL). The LEL for methane is five percent by volume in air. Therefore, the maximum allowable concentration in on- or off-site structures is 1.25 percent methane by volume.

- The methane concentration at or beyond the landfill property boundary may not exceed the LEL (i.e., five percent methane by volume).

As explained below, the monitoring plan was prepared based on site-specific conditions.

9.1 BACKGROUND INFORMATION

In November and December of 2005, eighteen permanent monitoring probes were installed along the new property boundary of the site. A new property boundary agreement has been established with the Florida Division of Forestry and Florida Department of Environmental Protection (FDEP), the 19 monitoring probes are now the only LFG compliance points at the site; the remaining 62 permanent LFG probes and 13 interim probes have been abandoned in place. Attachment 9-1 is a site map showing the LFG monitoring probe locations and Attachment 9-2 Show a detail of the gas probes.

9.1.1 Landfill Areas

The landfill areas on site include the closed 60-acre landfill and the active Phase 1/1A, Phase 2, and Phase 3 landfill cells. The closed 60-acre landfill is an unlined landfill that has been capped with a geosynthetic membrane and protective soil cover. The depth of waste in the closed 60-acre landfill is approximately 40 feet below ground surface. The Phase 1/1A and Phase 2 landfill areas have a geomembrane bottom liner system, and the bottom depth of refuse is approximately 80 feet below ground surface. Groundwater is present approximately 110 feet below ground surface, and the soil at the site is primarily silty and clayey sand. The proposed Phase 3 expansion area liner profile is similar to that of Phase 2, GCL (as opposed to clay) and a double sided bi-planar geocomposite (as opposed to a triplanar geocomposite) for the secondary leachate collection system are the only differences from Phase 2. Geo-grid will be added to the bottom liner sequence on the side slopes

9.2 MONITORING OF ON-SITE STRUCTURES

In order to ensure the safety of workers inside and around permanent structures on site, ambient air will be monitored on a quarterly basis in on-site structures in accordance with the requirements of Rule 62-701.530(2)(a), F.A.C. As stated above, and in Rule 62-701.530(1)(a), F.A.C., the methane concentration in on- or off-site structures may not exceed 25 percent of the LEL, or 1.25 percent methane by volume. The following gas monitoring will be performed in structures at the facility.

- Explosive gas alarms located in the scale house building and leachate treatment plant electrical room will provide continuous monitoring for unacceptable concentrations of explosive gas. These monitors are designed to sound an alarm when methane concentrations exceed 25 percent of the LEL. The signal remains on as long as gas is present, and a red alarm light stays on after an alarm condition in order to alert personnel that methane was detected during their absence. Log sheets will be kept at each location to record when the alarm has been triggered, and each alarm will be calibrated or replaced on a regular basis according to the schedule recommended by the manufacturer.

- On a quarterly basis the following structures will be monitored:

  - Administration building
  - Scale house
  - Leachate treatment plant
  - Gun ranges

  Monitoring will consist of using handheld instruments to monitor for combustible gases at all slab penetrations, floor drains, cracks in the slabs, along baseboards, in electrical boxes and outlets, and in enclosed spaces such as closets and ground-level cabinets.

  Attachments 9-2 and 9-3 show floor plans for the Administration and scale house buildings, respectively

9.3 GAS MONITORING PROCEDURES

9.3.1 Monitoring Procedures for Probes

Each probe will be monitored on a quarterly basis for static pressure and methane concentration, or combustible gases using an instrument calibrated to methane. Methane will be measured and recorded in terms of a percent by volume in air or as a percentage of the LEL. The monitoring equipment will be calibrated each day prior to the monitoring.

The general procedure for monitoring at each probe will be as follows:

1. Record meteorological conditions including ambient temperature and barometric pressure.

2. Calibrate the methane monitoring equipment.

3. Purge any calibration gas or gas from previous probes from the methane monitoring instrument.

4. Zero the pressure gauge.

5. Prior to monitoring, note any damage to the probe, and repair if necessary. Failure to repair damage to the above ground casing, cap, or monitoring probe can affect the validity of the monitoring results.

6. Attach the sampling hose to the pressure meter and the labcock valve on the monitoring probe.

7. Record the time of monitoring for the probe.

8. Open the labcock valve.

9. Measure and record the pressure in the probe.

10. Close the labcock valve.

11. Connect the methane monitoring instrument to the sampling hose.

12. Open the labcock valve.

13. Turn on the meter and observe the gas concentration readings, noting any spikes in concentration.

14. After the gas concentration readings stabilize, record the steady-state reading, making note of any spike that occurred prior to reaching a steady-state reading. Note that per Rule 62-701.530(2)(b), F.A.C., purging of the probe is not allowed.

15. Remove the instrument and hose, and close the labcock valve.

16. Repeat steps 3 through 15 for each probe.

Any problems encountered during monitoring, observations, or other pertinent information that could impact the interpretation of the data shall be recorded.

9.3.2 Monitoring Procedures for On-Site Structures

The following on-site structures will be monitored for methane or combustible gas on a quarterly basis using handheld field instruments in accordance with Rule 62-701.530(2)(a), F.A.C.:

- Administration building
- Scale house
- Leachate treatment plant

- Gun ranges

Methane will be monitored and recorded in terms of the percent by volume in air or as a percentage of the LEL, and the monitoring equipment will be calibrated each day prior to the monitoring.

The general locations for monitoring at each structure will be as described below.

9.3.2.1 Administration Building--

A handheld meter will be used to monitor for methane at each of the following locations:

- Along the baseboards in each of the rooms, closets, and hallways
- In all ground-level cabinets
- At the floor drains in the bathrooms
- At all electrical outlets in each room and hallway
- At electrical panels inside and outside the building
- At outdoor electrical outlets

9.3.2.2 Scale House--

A handheld meter will be used to monitor for methane in the scale house at each of the following locations:

- Along the baseboards
- At any cracks in the concrete slab or flooring
- In all ground-level cabinets
- At all electrical outlets inside and outside of the building
- At electrical panels inside and outside the building

9.3.2.3 Leachate Treatment Plant--

Methane concentration will be checked at the following locations at the leachate treatment plant:

- At any cracks in the concrete slab or flooring
- In any ground-level cabinets
- At all electrical outlets inside and outside of the building
- At electrical panels inside and outside the building

9.3.2.4 Gun Ranges--

There are two gun ranges on site that are operated by the Withlacoochee Technical Institute on the closed 60-acre landfill. At both gun ranges, the following locations will be monitored for methane.

- At cracks in the concrete slabs
- At all electrical outlets and switches

- At all slab penetrations, such as support posts for the roofs of the firing platforms

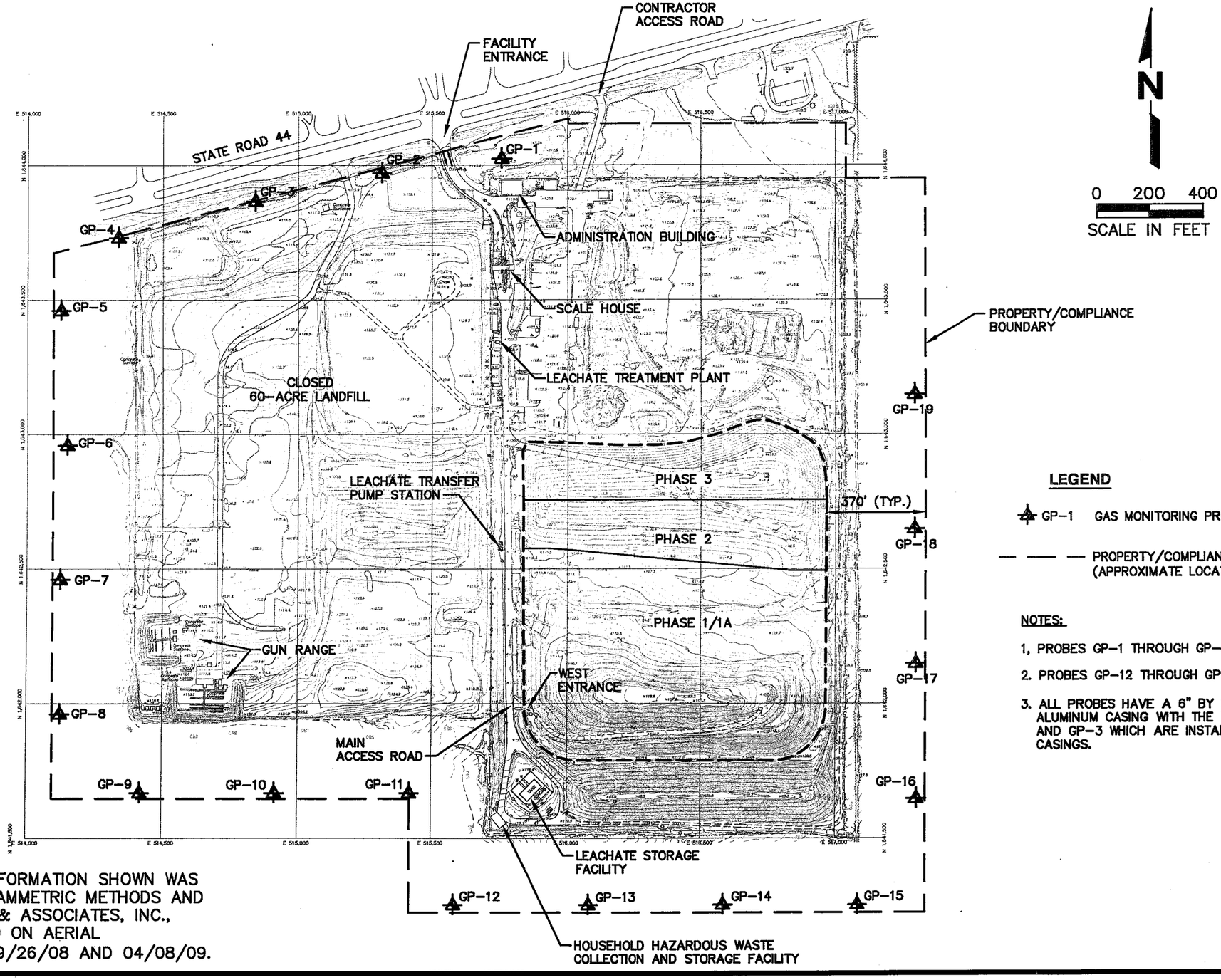
9.4 REPORTING

Results of the monitoring will be reported to FDEP quarterly. A copy of the monitoring form is included as Attachment 9-4 to this plan.

If the results of the monitoring show that combustible gas concentrations exceed the limits specified in Rule 620710.530(1)(a), F.A.C., Citrus County will take the following actions:

- Immediately take all necessary steps to ensure protection of human health and notify FDEP of the exceedances.

- Within seven days of the detections, submit to FDEP for approval a gas remediation plan. The gas remediation plan must describe the nature and extent of the problem and the proposed remedy. The remedy must be completed within 60 days of detection unless otherwise approved by FDEP.



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SCALE IN FEET

LEGEND

GP-1 GAS MONITORING PROBE

— — — PROPERTY/COMPLIANCE BOUNDARY (APPROXIMATE LOCATION)

NOTES:

1. PROBES GP-1 THROUGH GP-11 ARE 40 FEET DEEP.
2. PROBES GP-12 THROUGH GP-18 ARE 80 FEET DEEP.
3. ALL PROBES HAVE A 6" BY 6" ABOVE GROUND ALUMINUM CASING WITH THE EXCEPTION OF GP-2 AND GP-3 WHICH ARE INSTALLED IN BELOW GRADE CASINGS.

SURVEY SOURCE NOTE:

TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS DEVELOPED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY PICKETT & ASSOCIATES, INC., BARTOW, FLORIDA. BASED ON AERIAL PHOTOGRAPHY DATED: 09/26/08 AND 04/08/09.

SCS ENGINEERS

G:\PROJECT\Citrus\09208040.03\OperationsPermitRenewal\Figures\0840031FG-Gas-Mon-Probe-Site-Plan.dwg Dec 02, 2009 - 5:20pm Layout Name: GasMonPlan Byr 2378sda

Figure 9-1. Landfill Gas Monitoring Probe Locations, Citrus County Central Landfill

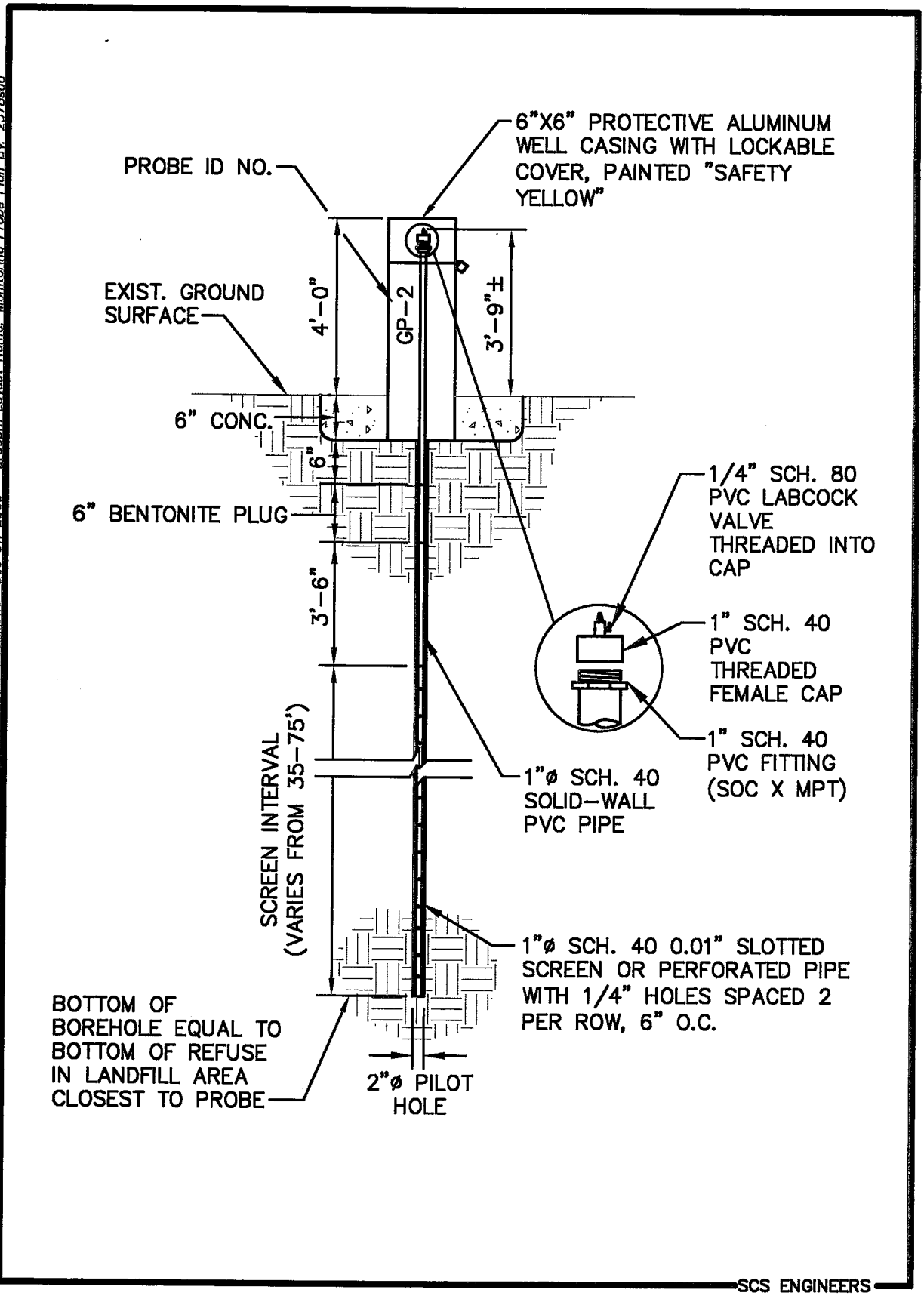

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Figure 9-2. LFG Monitoring Probe Detail, Citrus County Central Landfill

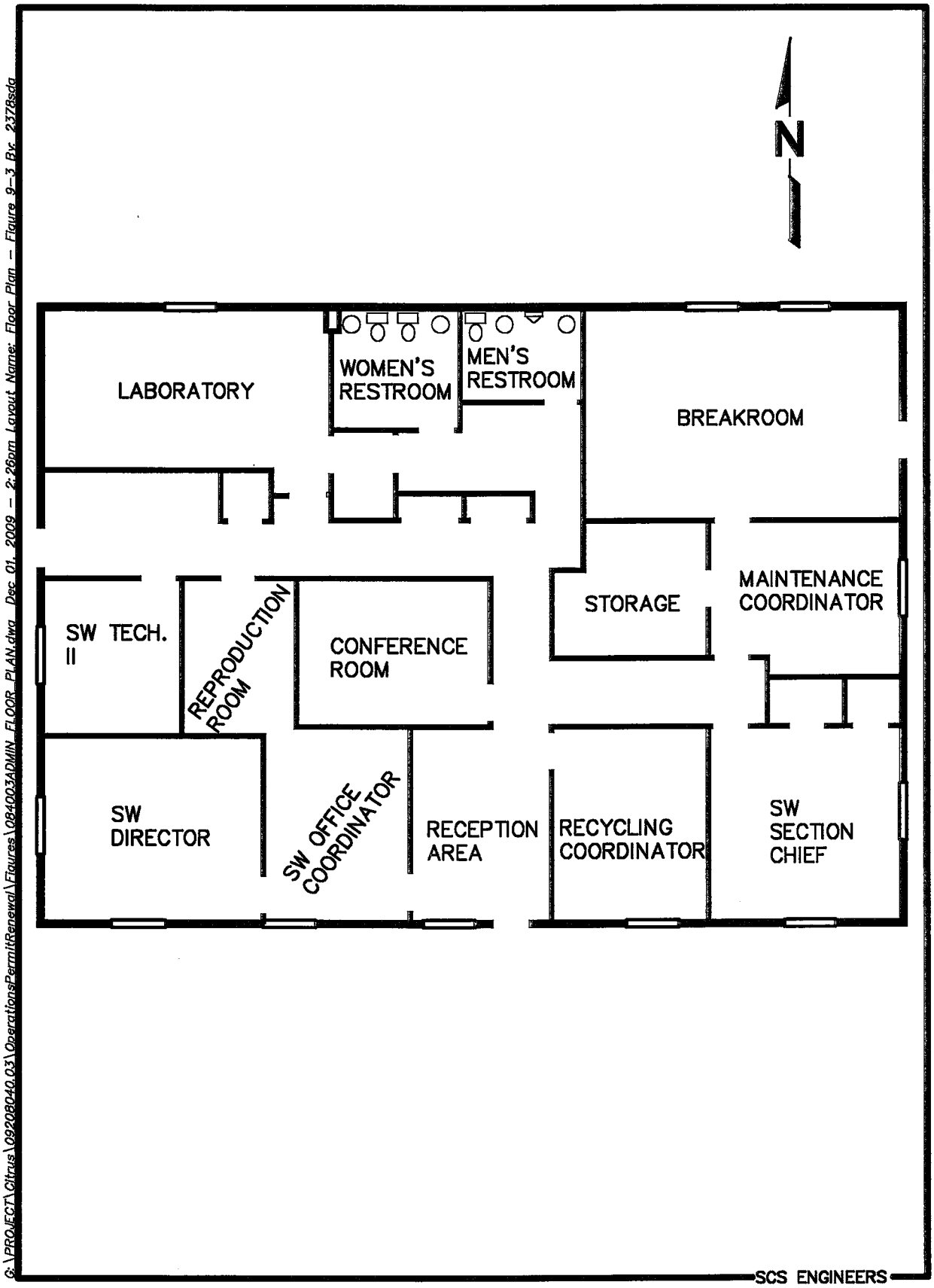


Figure 9–3. Administration Building Floor Plan, Citrus County Central Landfill

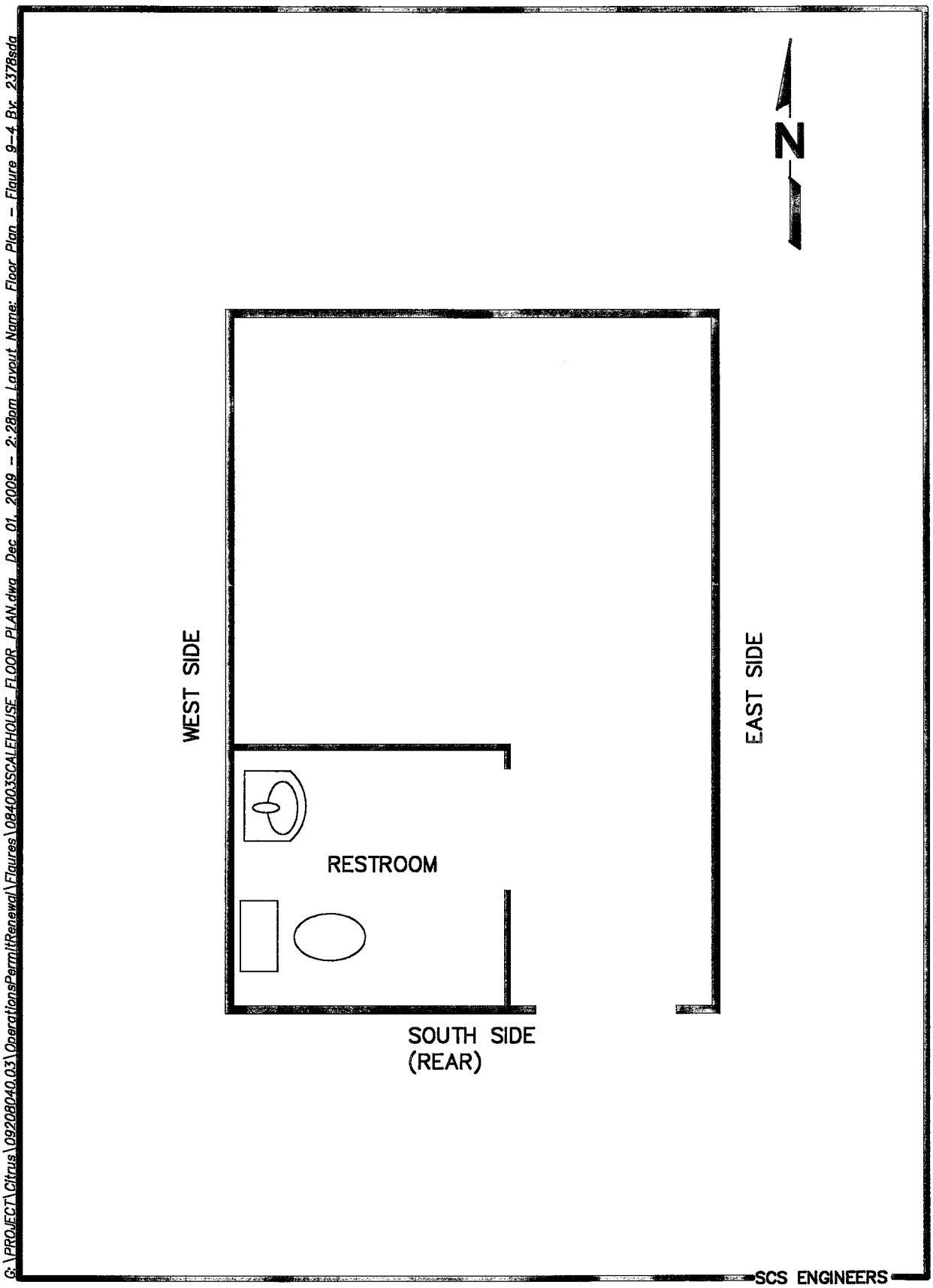


Figure 9–4. Scalehouse Floor Plan, Citrus County Central Landfill

SECTION 10

STORMWATER MANAGEMENT SYSTEM AND MAINTENANCE (Rule 62-701.500(10), F.A.C.)

The Stormwater Management System will be operated and maintained as necessary to meet the requirements of Rule 62-701.400(9), F.A.C.

10.1 STORMWATER BEST MANAGEMENT PRACTICES

The landfill will use the following stormwater best management practices (BMPs):

- Sideswales
- Grass
- Sod
- Downdrains
- Benches
- Dry retention stormwater ponds
- Pumps to transport stormwater
- Lined ditches

Many of these stormwater management systems were constructed during Phase 1 development of the Citrus County Central Landfill. Plans and cross sections of these systems, including as-built drawings and modifications, are on file with the FDEP Southwest District office. Additional stormwater management systems were installed as part of the Phase 2 expansion. Record drawings of the Phase 2 expansion was submitted with the construction certification upon completion of the project. Additional stormwater management systems will be installed as part of the Phase 3 expansion. Complete plans and cross sections of these systems are included in the Phase 3 Expansion Permit Application Construction Plans, which are also on file at the FDEP Southwest District office. Record drawings of the Phase 3 expansion will be provided with the construction certification upon completion of the project.

10.2 STORMWATER MAINTENANCE PROCEDURES

The stormwater management system operation and maintenance will include the following:

- All stormwater conveyance systems will be inspected periodically or after major storm events
- Any damaged systems will be repaired
- Accumulated sediment will be removed as necessary
- All stormwater pumps will be serviced as specified by the pump manufacturer

10.3 SURFACE DRAINAGE STRUCTURES

During the operation of the facility the County will install portions of the stormwater drainage features as shown on the Operations Drawings, as interim drainage control measures. The interim control measures shall include piping, inlet structures and energy dissipators as identified on the Operations Drawings. The piping and inlet boxes will be removed and reinstalled as part of final closure construction. The timing for the installation of interim drainage measures shall be as shown on the Filling Sequence Plan of the Operations Drawings.

SECTION 11

EQUIPMENT AND OPERATION FEATURES (RULE 62-701.500(11), F.A.C.)

11.1 EQUIPMENT (Rule 62-701.500(11)(a), F.A.C.)

Citrus County owns a diverse mix of equipment to spread, compact, and cover the waste in the landfill. While the actual equipment at the landfill may vary, sufficient equipment will be maintained at the site to ensure proper operation of the landfill. A current list of equipment is as follows:

- Two landfill compactors
- One self-loading scraper
- One bulldozer
- Two wheel loaders
- One water truck
- One fuel truck
- One water trailer
- Two dump trucks

In addition the site will have auxiliary vehicles including:

- One roll-off truck
- Several pickup trucks
- Several utility vehicles
- Several trailers

Normal maintenance will be performed on site. Major maintenance item repairs (e.g., engine, transmissions, auxiliary drives) will be handled either at the maintenance facilities or at off-site service facilities.

11.2 BACKUP EQUIPMENT (Rule 62-701.500(11)(b), F.A.C.)

There is sufficient redundancy in major equipment to maintain normal operations even during emergency operating conditions. Arrangements will be made with suppliers to obtain reserve equipment within 24 hours of equipment breakdown if sufficient equipment is not available to properly operate the landfill.

11.3 COMMUNICATION EQUIPMENT (Rule 62-701.500(11)(c), F.A.C.)

Landfill employees will be able to communicate by two-way radios, and a telephone is located at the scale house and administrative office.

11.4 DUST CONTROL (Rule 62-701.500(11)(d), F.A.C.)

Control of dust will be maintained by wetting roads as necessary with a 1,200-gallon water tank truck.

11.5 FIRE PROTECTION AND FIRE FIGHTING CAPABILITIES (Rule 62-701.500(11)(e), F.A.C.)

The daily soil cover aids in fire prevention at the landfill. The main method of fire extinguishing is to apply soil to the burning waste using a dozer. Ample soil is stockpiled on site if needed for fire extinguishing purposes. The facility is surrounded by a drainage ditch and road that would act as a firebreak protecting the adjacent forest. In addition to soil stockpiles two fire hydrants are located at the site, one in the citizen drop-off area and one near the fill area.

All equipment and vehicles at the landfill will be equipped with fire extinguishers, and all personnel will be trained in their use. All extinguishers will be inspected regularly and repaired or replaced as needed.

Emergency services are notified telephonically using 911.

11.6 LITTER CONTROL DEVICES (Rule 62-701.500(11)(f), F.A.C.)

Daily cover will provide the main litter control. When the active area of the landfill is below the ground surface, litter is not expected to be a problem. When the active area is above the ground surface, the perimeter ditch and fence will provide a barrier to blowing litter. In addition, portable and/or temporary litter fences will be located adjacent to the working face to prevent litter from being blown away from the working area.

11.7 SIGNS (Rule 62-701.500 (11)(g), F.A.C.)

Appropriate signs will be utilized and maintained to ensure maximum safety, efficiency, and general information. Signage will include, at a minimum, facility name and operating authority, traffic flow, hours of operation, disposal rates, and restrictions or conditions of disposal.

SECTION 12

ROADS
(RULE 62-701.500(12), F.A.C.)

12.1 ALL-WEATHER ROADS (Rule 62-701.500(12)(a), F.A.C.)

All-weather roads, passable and safe under normal operating conditions, will be maintained to prevent dust, rutting or loss of traction. The facility access roads are surfaced with asphaltic concrete. Figure 1-1 shows the locations of the access and perimeter site roads.

12.2 PERIMETER AND OTHER ON-SITE ROADS (Rule 62-701.500(12)(b), F.A.C.)

Some perimeter roads and internal roads will be constructed of limerock and/or stabilized soils. These roads will be inspected daily and repairs will be made in a timely manner. Limerock roads will be scraped and smoothed with a road grader or dozer as necessary. When needed, roadways will be wetted to control dust and to ensure high visibility. On-site roads will be maintained to allow access to monitoring devices and stormwater controls, for landfill inspections and fire fighting.

SECTION 13

RECORDKEEPING
(RULE 62-701.500(13), F.A.C.)

13.1 PERMIT APPLICATION DOCUMENTATION (Rule 62 -701 .500(13)(a), F.A.C.)

Records of all information used to develop or support the permit applications and any supplemental information submitted to comply with Rule 62-701, F.A.C., pertaining to construction of the facility will be kept throughout the life of the facility. Records pertaining to the operation of the landfill will be kept for the life of the facility.

13.2 MONITORING INFORMATION (Rule 62-701.500(13)(b), F.A.C.)

Records of all monitoring information, including calibration and maintenance records and copies of all reports required by permit, will be retained for at least 10 years. Background water quality records will be kept for the life of the facility.

13.3 REMAINING LIFE AND CAPACITY ESTIMATE (Rule 62-701.500(13)(c), F.A.C.)

The landfill will maintain an annual estimate of the remaining life and capacity (in cubic yards) of the existing constructed landfill and the remaining capacity and site life of other permitted areas not yet constructed. The annual estimate will be based on a summary of the heights, lengths, and widths of solid waste disposal units. The estimate will be made and reported annually to the FDEP as part of the annual update to the closure and long-term care cost estimates.

13.4 ARCHIVED RECORDS (Rule 62-701.500(13)(d), F.A.C.)

The landfill may archive records that are more than five years, if necessary. Archived records will be available for inspection within seven days of the receipt of the request.

APPENDIX A

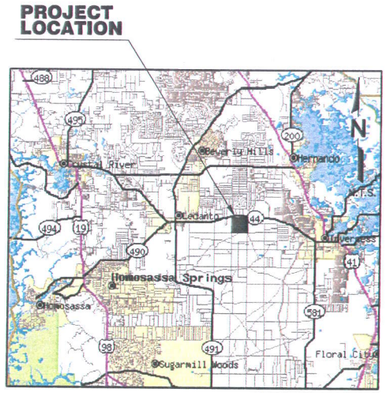
OPERATIONS DRAWINGS (REDUCED SIZE)

CITRUS COUNTY
SOLID WASTE MANAGEMENT DIVISION

CENTRAL LANDFILL
OPERATIONS PERMIT RENEWAL DRAWINGS

CITRUS COUNTY, FLORIDA

FEBRUARY 2010



LOCATION MAP

BOARD OF COUNTY COMMISSIONERS

Dennis Damato, Commissioner, District 1
Gary Bartell, Commissioner, District 2
Joe Meek, Commissioner. District 3
John Thrumston, Commissioner, District 4
Winn Webb, Commissioner, District 5

COUNTY ADMINISTRATOR

Anthony J. Schembri

PUBLIC WORKS DEPARTMENT

Glenn W. McCracken, Director

SOLID WASTE MANAGEMENT DIRECTOR

CASEY STEPHENS

DRAWING INDEX

DRAWING NO.		DRAWING TITLE
1	-	COVER SHEET
2	-	1-MILE AERIAL PHOTOGRAPH
3	-	EXISTING FACILITY SITE PLAN (TOPOGRAPHIC SURVEY DATE 04/08/09)
4	-	FINAL CLOSURE PLAN
5	-	PHASE 1, 2, AND 3 FILL SEQUENCE CLOSURE PLAN
6	-	SECTIONS
7	-	DETAILS
8	-	DRAINAGE DETAILS - 1
9	-	DRAINAGE DETAILS - 2

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100
TAMPA, FLORIDA 33610
PH (813) 621-0080 FAX NO. (813) 623-6757
WWW.SCSENGINEERS.COM
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

SCS PROJECT NO. 09208040.03

DOMINIQUE H. BRAMLETT, P.E.
LICENSE NO. 61829

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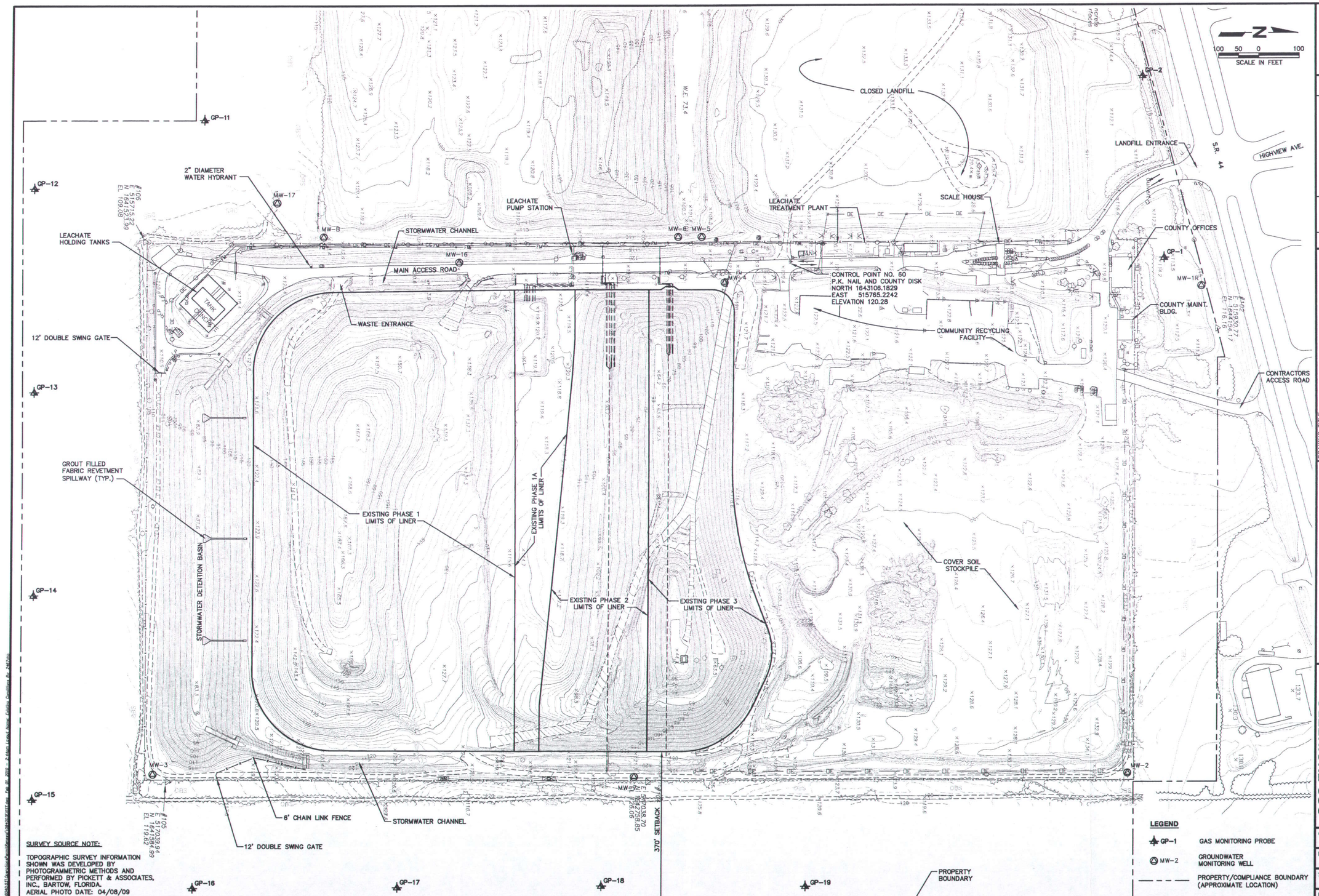

SURVEY SOURCE NOTE:

TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS DEVELOPED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY PICKETT & ASSOCIATES, INC., BARTOW, FLORIDA. AERIAL PHOTO DATE: 04/08/09

REV	DATE	DESCRIPTION	BY

DOMINQUE H. BRAMLETT, P.E.
LICENSE NO. 61829

DRAWING TITLE
EXISTING FACILITY SITE PLAN (TOPOGRAPHIC SURVEY DATE 04/08/09)

PROJECT TITLE
CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS

CLIENT
CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
04708 CENTURY BLVD, SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO.	DWN. BY:	CHK. BY:	D/A RVW. BY:	APP. BY:
09208040.03	CTN	DHB	DHB	CEH
DSGN. BY: DHB				

CADD FILE: 084003EXIST

DATE: FEBRUARY 2010

SCALE: AS SHOWN

DRAWING NO.
3 of 9

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SURVEY SOURCE NOTE:

TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS DEVELOPED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY PICKETT & ASSOCIATES, INC., BARTOW, FLORIDA. AERIAL PHOTO DATE: 04/08/09

#104
E 517038.70
N 1642759.85
EL 126.19

#105
E 517039.94
N 1641584.99
EL 119.82

12' DOUBLE SWING GATE

6' CHAIN LINK FENCE

N

60 30 0 60
SCALE IN FEET

ACCESS ROAD SWALE CENTERLINE (TYP.)

PERIMETER SWALE INVERT HIGH POINT ELEVATION= 118.5

TYPICAL DOWNCHUTE SEE DETAIL 1/4|8

30" DROP INLET NYOPLAST WITH 36" STANDARD GRATE

GROUT FILLED FABRIC REVETMENT SPILLWAY (TYP.)

OVERFLOW SWALE

12' DOUBLE SWING GATE

EXISTING 18" CMP PIPE

EXISTING CURB INLET
INLET ELEV.=±110.50
W. INV. ELEV.=106.30
E. INV. ELEV.=106.04

EXISTING 18" HDPE STORM PIPE

EXISTING CURB INLET
INLET ELEV.=110.00
E. & W. INV. ELEV.=106.69

EXISTING 18" HDPE STORM PIPE

EXISTING CURB INLET
INLET ELEV.=109.50
E. INV. ELEV.=107.01

#106
S 515715.22
N 1641523.95
EL 109.08

3'x10' BOX CULVERT SEE DETAIL 2/4|7

TYPICAL DOWNCHUTE SEE DETAIL 2/4|8

U-TYPE CONCRETE ENDWALL FDOT INDEX NO. 261 (TYP.)

CURB CUTOUT (TYP.) SEE DETAIL 3/4|7

LEGEND

- 90 — EXISTING ELEVATIONAL CONTOUR (5 FOOT INTERVAL) 04/08/09 SURVEY
- EXISTING ELEVATIONAL CONTOUR (1 FOOT INTERVAL) 04/08/09 SURVEY
- 117.58 × EXISTING SPOT ELEVATION – 04/08/09 SURVEY
- 90 — FINAL CLOSURE ELEVATIONAL CONTOUR (5 FOOT INTERVAL)
- FINAL CLOSURE ELEVATIONAL CONTOUR (1 FOOT INTERVAL)
- 122.0 × FINAL CLOSURE SPOT ELEVATION
- UNPAVED PERIMETER BERM AND ACCESS ROAD (COMPACTED LIMEROCK)
- SURFACE WATER FLOW DIRECTION
- STORMWATER PERIMETER SWALE CENTERLINE
- ADS STORMWATER PIPE
- STORMWATER INLET
- U-TYPE CONCRETE ENDWALL (FDOT INDEX NO. 261)
- GROUT FILLED FABRIC REVETMENT
- CURB LOCATION
- LIMITS OF BENCH
- 12 ADS N-12 PIPE SIZE DIAMETER

NOTES:

1. CURRENT ACCESS THROUGH PERIMETER DITCH SECTION TO BE REMOVED AND DITCH RESTORED PRIOR TO CLOSURE CONSTRUCTION.
2. ALL BENCH SWALES TO BE SLOPED A MINIMUM OF 0.5%.
3. SWALE NEXT TO ACCESS RAMP TO HAVE SLOPE OF 10% (MAX) TO 2% (MIN).

SECTION AND DETAIL DESIGNATION

DESIGNATION LETTER INDICATES SECTION, NUMBER INDICATES DETAIL OR ELEVATION

INDICATES DIRECTION OF CUTTING PLANE

SHEET NUMBER WHERE SECTION IS TAKEN

SHEET NUMBER WHERE SECTION IS SHOWN

DOMINIQUE H. BRAMLETT, P.E.
LICENSE NO. 61829

REV	DATE	DESCRIPTION	BY

DRAWING TITLE: FINAL CLOSURE PLAN

PROJECT TITLE: CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS

CLIENT: CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813-621-0080 CERTIFICATE OF AUTHORIZATION NO. 00004892
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 27911

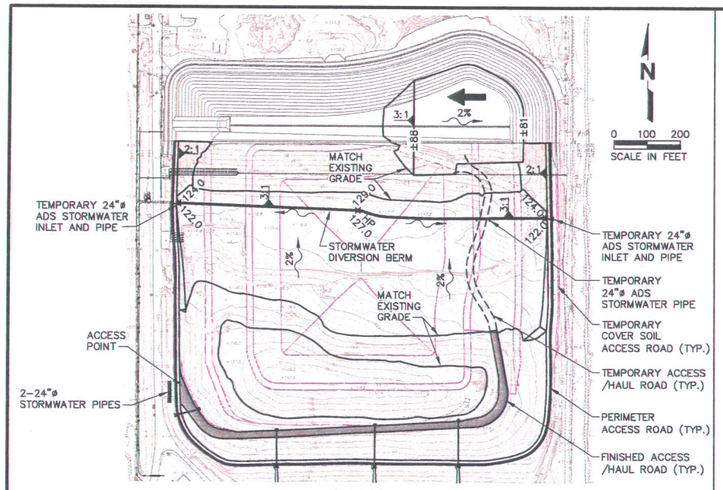
PROJ. NO.	DSN. BY	CHK. BY	QA/QC BY
09208040.03	DHB	CTN	DHB
DSN. BY	DSC. BY		APP. BY
DHB	DHB		CEH

CADD FILE: 084003CLOSURE

DATE: FEBRUARY 2010

SCALE: AS SHOWN

DRAWING NO. 4 of 9



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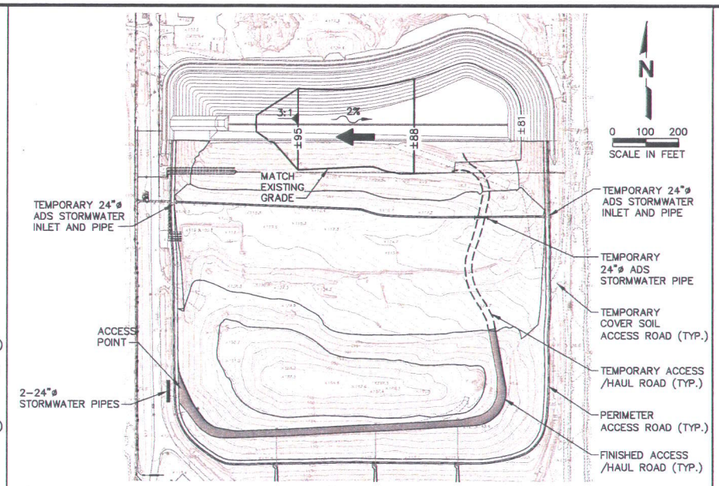

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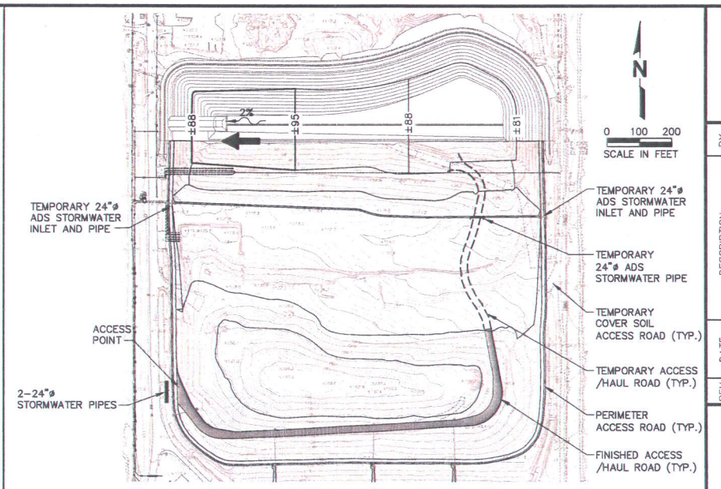

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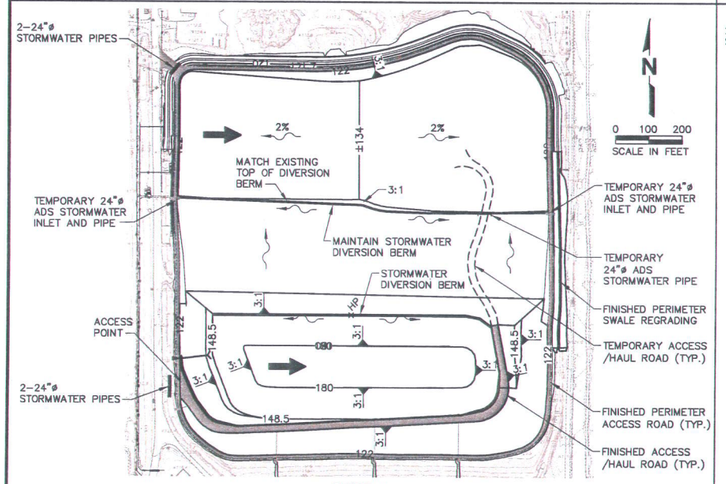

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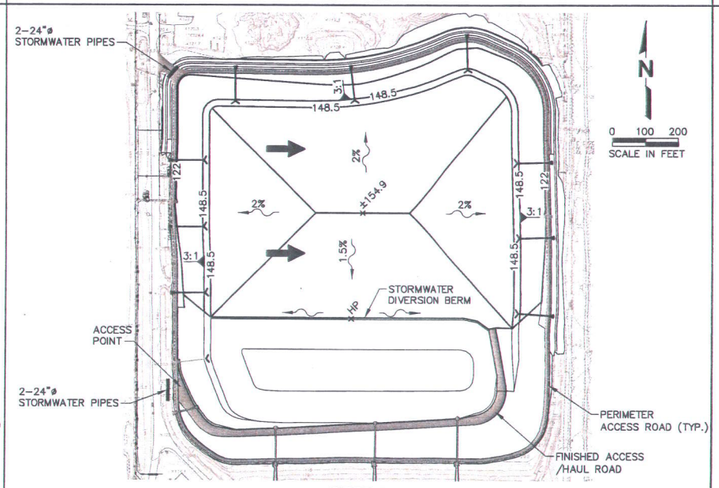

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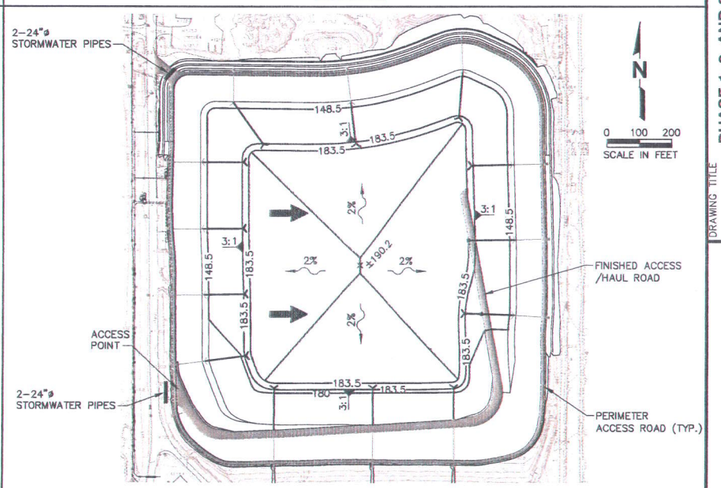

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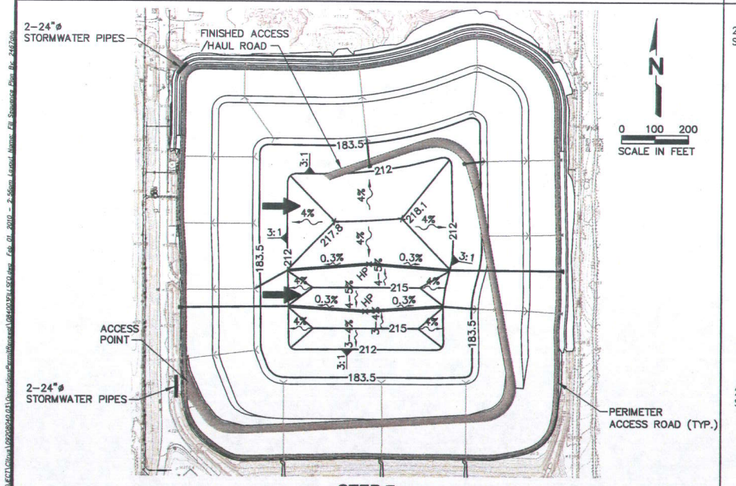
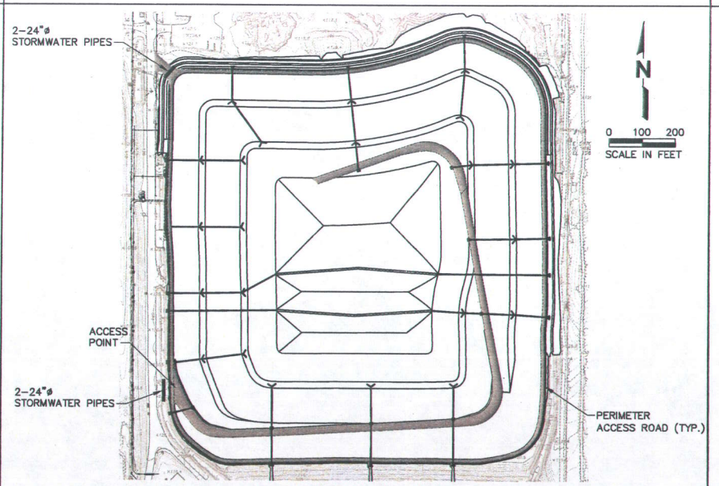


STEP 7



STEP 8/FINAL CLOSURE

LEGEND

- EXISTING ELEVATIONAL CONTOUR (5 FOOT INTERVAL) 04/08/09 SURVEY
- EXISTING ELEVATIONAL CONTOUR (1 FOOT INTERVAL) 04/08/09 SURVEY
- EXISTING SPOT ELEVATION 04/08/09 SURVEY
- SURFACE WATER FLOW DIRECTION
- ADS STORMWATER PIPE
- STORMWATER INLET
- U-TYPE CONCRETE ENDWALL (FDOT INDEX NO. 261)
- LIMIT OF FILL AREA CELL
- TEMPORARY ACCESS/HAUL ROAD (APPROX. LOCATION)
- PERMANENT ACCESS/HAUL ROAD (APPROX. LOCATION)
- GENERAL DIRECTION OF FILLING

NOTES

1. FINAL CONSTRUCTION GRADES SHOWN REPRESENT THE TOP OF FINAL COVER/CLOSURE CAP.
2. FUTURE PHASE 3 BOTTOM GRADES SHOWN IN STEPS 1, 2, AND 3 REPRESENT THE APPROXIMATE TOP OF LINER SYSTEM.
3. TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS DEVELOPED BY PHOTOGRAMMETRIC METHODS AND PERFORMED BY PICKETT & ASSOCIATES, INC., BARTOW, FLORIDA.

GENERAL FILL SEQUENCE

STEP 1 – CONTINUE FILLING OPERATIONS IN PHASE 2 UNTIL ALL AREAS HAVE RECEIVED INTERMEDIATE COVER, AND STORMWATER RUNOFF CAN BE DIRECTED TO THE PERIMETER DITCHES. BEGIN FILLING EAST THIRD OF PHASE 3 IN TWO TEN FOOT LIFTS TO PROMOTE STORMWATER RUNOFF TO THE EAST END. A MINIMUM OF 2 PERCENT SLOPE WILL BE PROVIDED FROM WEST TO EAST.

STEP 2 – FILL NEXT THIRD OF THE CELL OF PHASE 3 AREA TO PROMOTE STORMWATER TO THE EAST END. A MINIMUM OF 2 PERCENT SLOPE WILL BE PROVIDED FROM WEST TO EAST.

STEP 3 – FILL LAST THIRD OF THE CELL OF PHASE 3 TO PROMOTE STORMWATER TO THE WEST END. A MINIMUM OF 2 PERCENT SLOPE WILL BE PROVIDED FROM EAST TO WEST (FOR THIS THIRD ONLY).

STEP 4 – FILL UP TO ELEVATION ± 134. FILL PHASE 1 AND 1A TO ELEVATION 180.

STEP 5 – FILL FROM ELEVATION ± 134 TO BENCH AT ELEVATION 148.5 AND COMPLETE CROWN TO ELEVATION ± 154.9.

STEP 6 – CONTINUE FILL TO NEXT BENCH AT ELEVATION 183.5 AND COMPLETE CROWN TO ELEVATION ± 190.2 WITH 2% MIN. SLOPE.

STEP 7 – FILL FROM BENCH AT ELEVATION 183.5 TO TOP OF SLOPE ELEVATION 212 AND COMPLETE CROWN TO ELEVATION 218.1 WITH SLOPES AS SHOWN.

DOMINIQUE H. BRAILLETT, P.E.
LICENSE NO. 61829

REV	DATE	DESCRIPTION	BY

DRAWING TITLE: PHASE 1, 2, AND 3 FILL SEQUENCE CLOSURE PLAN

PROJECT TITLE: CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS

CLIENT: CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 150, TAMPA, FL 33610
PH (813) 621-0080 FAX NO. (813) 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00000692

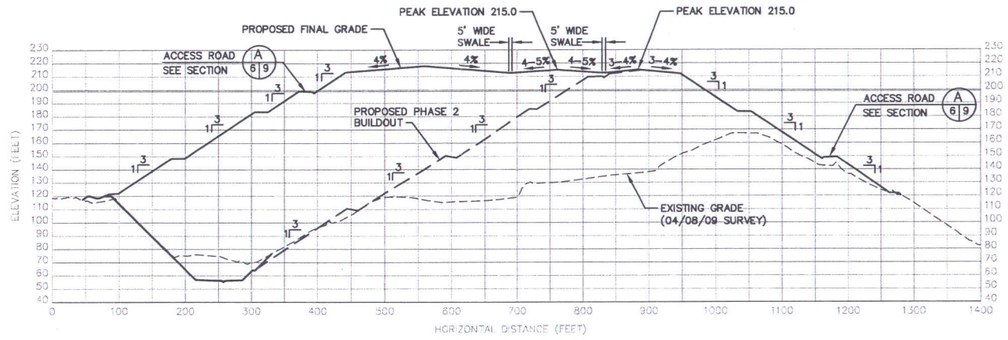
PROJ. NO.	DWN. BY:	Q/A REVW BY:
09080040.03	CTN	DHB
DSN. BY: DHB	CHK. BY: DHB	APP. BY: CEH

CADD FILE: 084003FILLSEQ

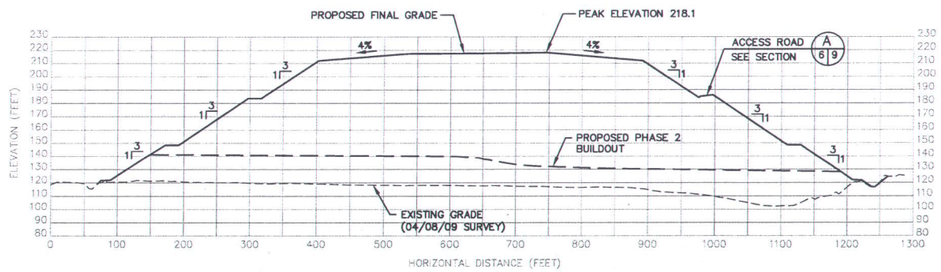
DATE: FEBRUARY 2010

SCALE: AS SHOWN

DRAWING NO. 5 of 9



SECTION A 4|6
SCALE: 1" = 100' HORIZ.
1" = 50' VERT.



SECTION B 4|6
SCALE: 1" = 100' HORIZ.
1" = 50' VERT.

REV	DATE	DESCRIPTION	BY

DOMINIQUE H. BRAMLETT, P.E.
LICENSE NO. 61629

DRAWING TITLE: **SECTIONS**

PROJECT TITLE: **CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS**

CLIENT: **CITRUS COUNTY**
SOLID WASTE MANAGEMENT DIVISION
CITRUS COUNTY, FLORIDA

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 882-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO.: 09209040.03
DSN. BY: DHB
DWN. BY: CTN
CHK. BY: DHB
Q/A REVIEW BY: DHB
APP. BY: CEH

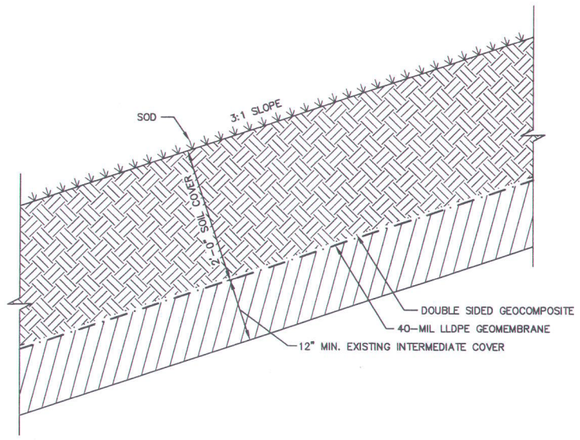
CADD FILE: 084003SECTIONS

DATE: FEBRUARY 2010

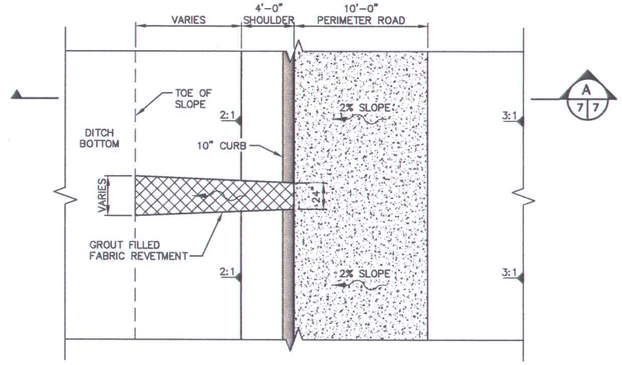
SCALE: AS SHOWN

DRAWING NO.: **6** of 9

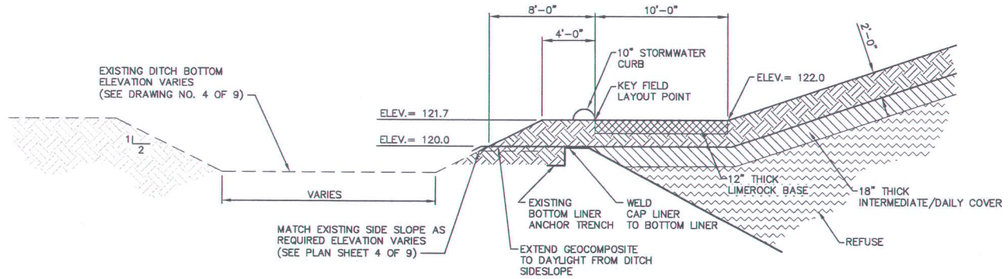
A land of Opportunity for Citrus County (2009 - 2040) Permit Renewal Application\Drawings\Sections.dwg, Fri, 19 Feb 2010 - 2:45pm, Thomas Nolte, Sections By: 4470



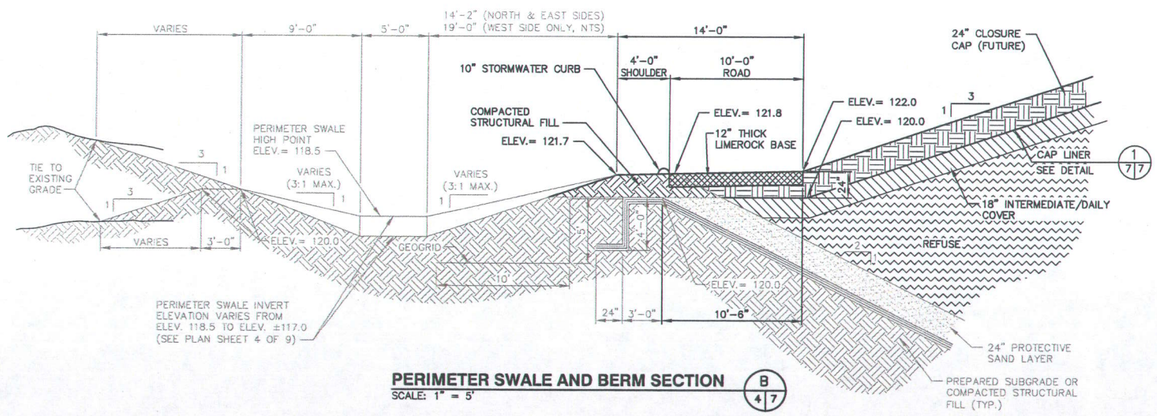
TYPICAL GEOSYNTHETIC CAP SYSTEM DETAIL 1/7
SCALE: 1" = 1'



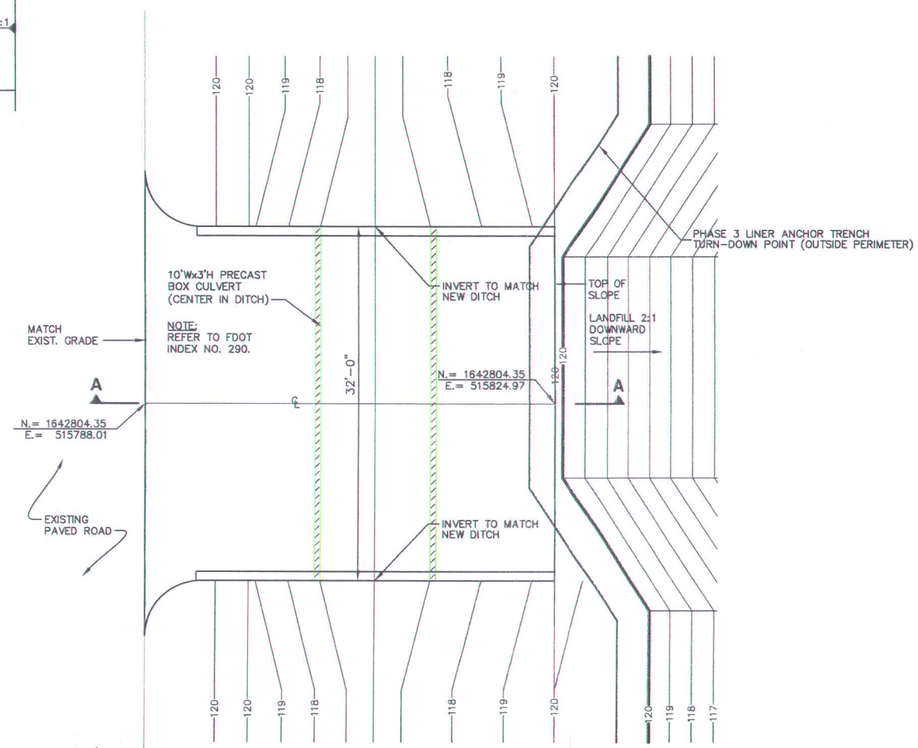
CURB CUTOUT (TYPICAL) DETAIL 3/4/7
SCALE: 1" = 5'



PERIMETER ROAD AND CURB SECTION A/7/7
SCALE: 1" = 5'



PERIMETER SWALE AND BERM SECTION B/4/7
SCALE: 1" = 5'



NOTE:

1. CONTRACTOR SHALL VERIFY EXISTING GRADES AND MAKE ADJUSTMENT AS NEEDED IN FILL PLACEMENT AND APPLICATION OF PAVEMENT SO THAT TRANSITION FROM NEW SURFACE TO EXISTING SURFACE IS FLUSH.

* CULVERT PAVEMENT GUIDE
A = 2" ASPHALT ONLY
B = 2" ASPHALT OVER 8" LIMEROCK BASE

BOX CULVERT DETAIL 2/4/7
NOT TO SCALE

DOMINIQUE H. BRAMLETT, P.E.
LICENSE NO. 61829

REV	DATE	DESCRIPTION	BY

DRAWING TITLE: **DETAILS**

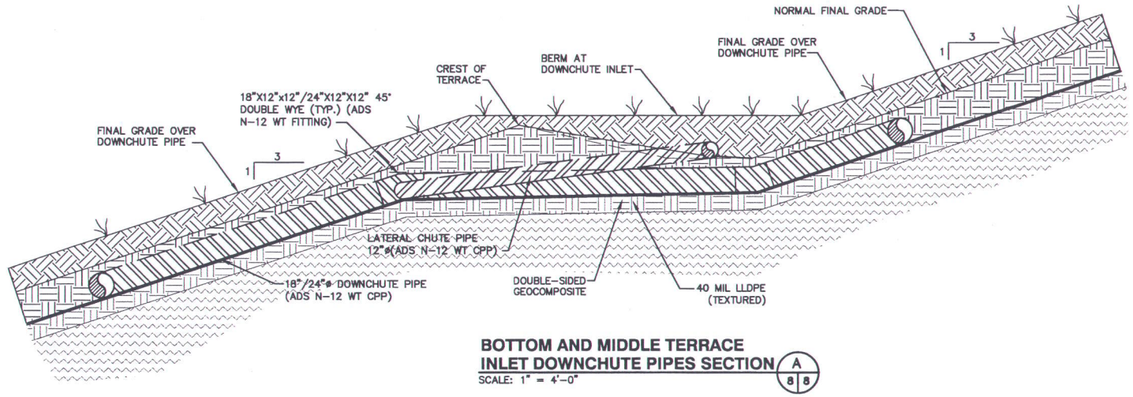
PROJECT TITLE: **CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS**

CLIENT: **CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA**

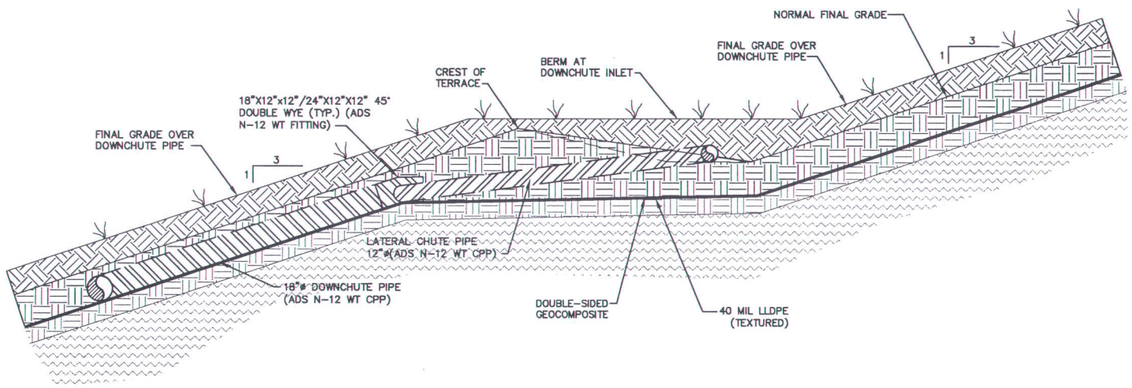
SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO: 01209040.03
DSN. BY: DHB
DRN. BY: CTN
CHK. BY: DHB
O/A RVW BY: DHB
APP. BY: CEH

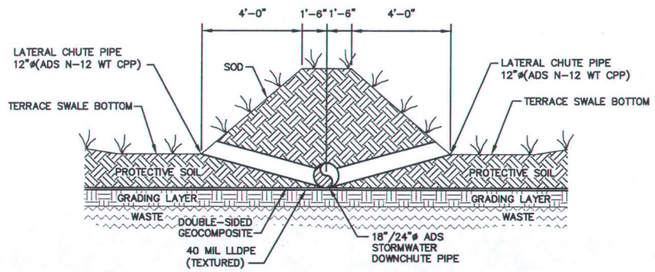
CADD FILE: 084003DETL
DATE: FEBRUARY 2010
SCALE: AS SHOWN
DRAWING NO. **7** of 9



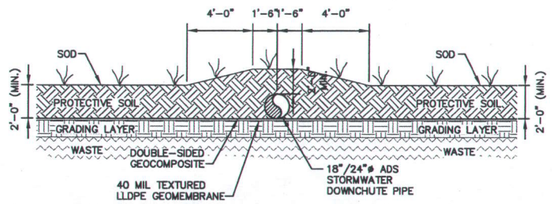
BOTTOM AND MIDDLE TERRACE INLET DOWNCHUTE PIPES SECTION (A | 8 | 8)
SCALE: 1" = 4'-0"



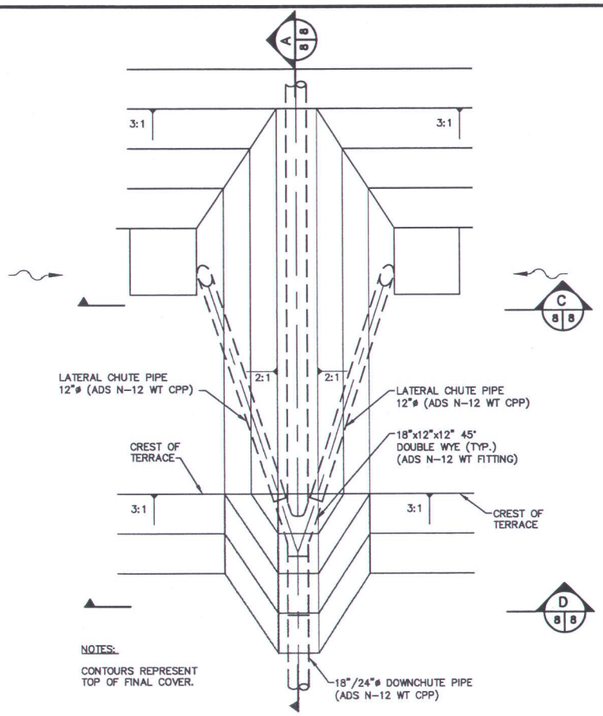
TOP TERRACE INLET AND DOWNCHUTE PIPES SECTION (B | 8 | 8)
SCALE: 1" = 4'-0"



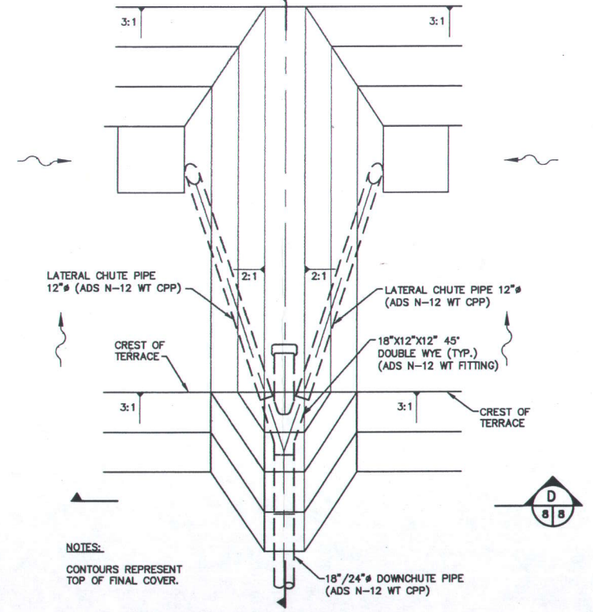
DOWNCHUTE INLET AND DOWNCHUTE PIPE SECTIONS (C | 8 | 8)
SCALE: 1" = 2'-0"



DOWNCHUTE INLET AND DOWNCHUTE PIPE SECTIONS (D | 8 | 8)
SCALE: 1" = 2'-0"



BOTTOM AND MIDDLE TERRACE INLET DOWNCHUTE PIPES (1 | 4 | 8)
SCALE: 1" = 4'-0"



TOP TERRACE INLET AND DOWNCHUTE PIPES (2 | 4 | 8)
SCALE: 1" = 4'-0"

DOMINIQUE H. BRAMLETT, P.E. LICENSE NO. 61829

REV	DATE	DESCRIPTION	BY

DRAWING TITLE: **DRAINAGE DETAILS - 1**

PROJECT TITLE: **CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS**

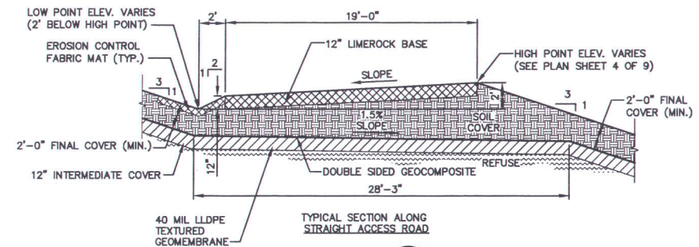
CLIENT: **CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA**

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 MACDILL AVE, SUITE 450, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

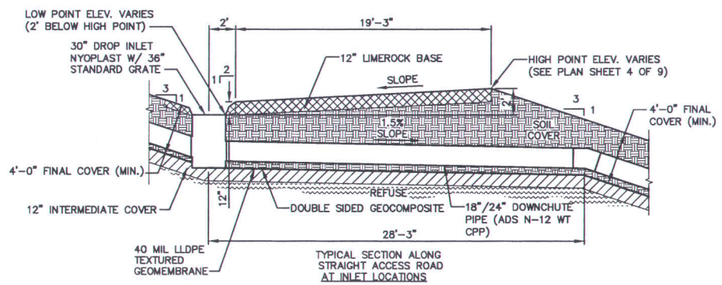
PROJ. NO. 09209540.03
TASK NO. DHB
DWN. BY: CTN
DSN. BY: DHB
C/A RVW BY: DHB
APP. BY: CEH

CADD FILE: 084003DRNDETL1
DATE: FEBRUARY 2010
SCALE: AS SHOWN
DRAWING NO. **8** of 9

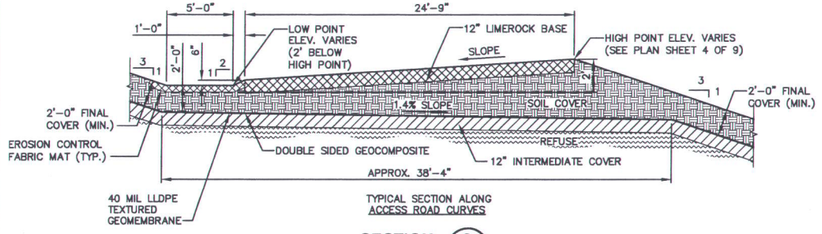
P:\209\Fcl\Close\09209540.03\working\Permit\Renewal\084003DRNDETL1.dwg, Feb 01, 2010 - 3:03pm, Leonel Nuno, DETAILS Plt: 24.0 pts



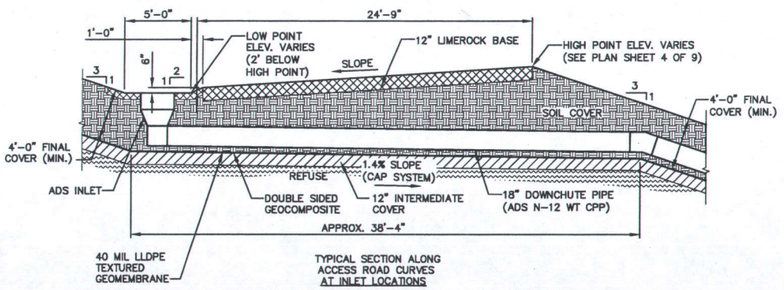
SECTION A
SCALE: 1" = 5'



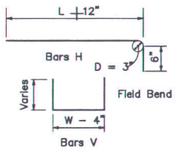
SECTION B
SCALE: 1" = 5'



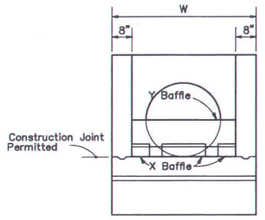
SECTION C
SCALE: 1" = 5'



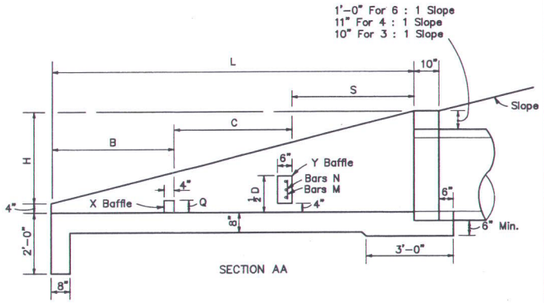
SECTION D
SCALE: 1" = 5'



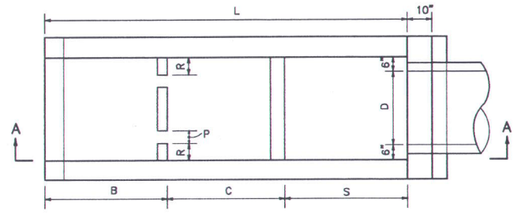
BENDING DIAGRAM



END VIEW

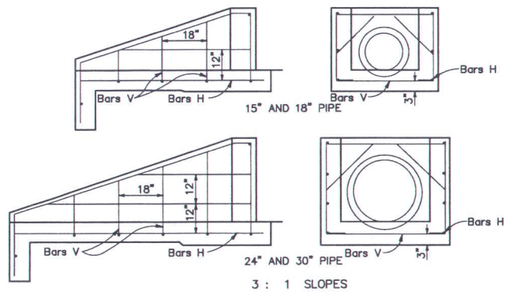


SECTION AA



PLAN

DIMENSIONAL DETAILS



SIDE VIEWS AND BACKWALL SECTIONS
REINFORCING DETAILS

DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL

Rate Of Slope	Pipe Size D	Pipe Size Area Sq. Ft.	L	H	W	Baffle Locations (When Required) S	B	C	Concrete Class ~ Cu. Yd.	Reinf. Steel Lbs.
3 : 1	15"	1.23	5'-3"	1'-9"	3'-7"	1'-9"	1'-9"	1'-9"	1.19	51
	18"	1.77	6'-0"	2'-0"	3'-10"	2'-0"	2'-0"	2'-0"	1.42	56
	24"	3.14	7'-6"	2'-6"	4'-4"	2'-6"	2'-6"	2'-6"	1.94	77
	30"	4.91	9'-0"	3'-0"	4'-10"	3'-0"	3'-0"	3'-0"	2.54	98
4 : 1	15"	1.23	7'-4"	1'-10"	3'-7"	2'-6"	2'-6"	2'-4"	1.54	64
	18"	1.77	8'-4"	2'-1"	3'-10"	2'-10"	2'-10"	2'-8"	1.84	71
	24"	3.14	10'-4"	2'-7"	4'-4"	3'-6"	3'-6"	3'-4"	2.53	92
	30"	4.91	12'-4"	3'-1"	4'-10"	4'-2"	4'-2"	4'-0"	3.34	124
6 : 1	15"	1.23	11'-6"	1'-11"	3'-7"	3'-10"	3'-10"	3'-10"	2.19	89
	18"	1.77	13'-0"	2'-2"	3'-10"	4'-4"	4'-4"	4'-4"	2.63	103
	24"	3.14	16'-0"	2'-8"	4'-4"	5'-4"	5'-4"	5'-4"	3.59	143
	30"	4.91	19'-0"	3'-2"	4'-10"	6'-4"	6'-4"	6'-4"	4.81	180

DIMENSIONS AND QUANTITIES FOR BAFFLES

Pipe Size D	X Baffle P Width	X Baffle Q Height	X Baffle R Length	Y Baffle Reinf. Steel Bar M	Y Baffle Reinf. Steel Bar N	Concrete Class ~ Cu. Yd.	Reinf. Steel Lbs.
15"	4"	4"	4"	2-# 4	1-# 4	0.10	4
18"	4"	4"	5"	3-# 4	2-# 4		8
24"	5"	5"	6"	4-# 4	3-# 4		12
30"	5"	5"	7"	4-# 4	4-# 4		16

ENDWALLS WITH AND WITHOUT BAFFLES FOR 3 : 1, 4 : 1 AND 6 : 1 SLOPES

U-TYPE CONCRETE ENDWALLS
BAFFLES AND GRATE OPTIONAL
15" TO 30" PIPE

FDOT INDEX NO. 261

DOMINIQUE H. BRAMLETT, P.E.
LICENSE NO. 61529

REV	DATE	DESCRIPTION	BY

DRAWING TITLE: DRAINAGE DETAILS - 2

PROJECT TITLE: CENTRAL LANDFILL OPERATIONS PERMIT RENEWAL DRAWINGS

CLIENT: CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD, SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO. 09208040.03
DWN. BY: CTN
CHK. BY: DHB
QA/A RVW BY: DHB
APP. BY: CEH

CADD FILE: 084003DRNDETL2

DATE: FEBRUARY 2010

SCALE: AS SHOWN

DRAWING NO. 9 of 9

P:\Jobs\CAT\Citrus\09208040.01\Drawings\Permit\Renewal\084003DRNDETL2.dgn - Feb 01, 2010 - 3:09pm - Layout: Name: Dominic Bramlett, P.E. - 24576

APPENDIX B

EMERGENCY INCIDENTS PLAN

EMERGENCY INCIDENTS PLAN

For

THE CENTRAL LANDFILL

And

RELATED FACILITIES

For

CITRUS COUNTY, FLORIDA

COMMISSIONERS
Dennis Damato, County Commission District 1
Gary Bartell, County Commission District 2
Joe Meek, County Commission District 3
John Thrumston, County Commission District 4
Winn Webb, County Commission District 5

ADMINISTRATION
Brad Thorpe, County Administrator

COUNTY ATTORNEY
Robert Battista

DEPARTMENT OF PUBLIC WORKS
Glenn McCracken, Public Works Director

DIVISION OF SOLID WASTE MANAGEMENT
T. Casey Stephens, Director
Citrus County Division of Solid Waste Management
Citrus County Central Landfill
230 West Gulf to Lake Highway
Lecanto, Florida 34461
(352)527-7670

Revised October, 2009

EMERGENCY INCIDENTS PLAN

Citrus County Division of Solid Waste Management:
Citrus County Central Landfill Active 80 Acre Site
Citrus County Central Landfill Closed 60 Acre Site
Citrus County Leachate Treatment Facility
Citrus County Operations Maintenance Building / Diesel Fuel Facility
Citrus County Waste Separation Facility - "Citizen Service Area"
Citrus County Hazardous Waste Collection Center and Storage Facility

A. Purpose and Scope
B. Preparedness
C. Emergency Supplies List
D. Site Layout
E. Emergency Response Coordinators
Emergency Response Team
F. Prevention of Emergency Incidents
G. Identification of Emergency Incidents
H. Emergency Procedures
I. Evacuation
J. Notification
K. Follow-Up Reporting
L. Cleanup/Decontamination

Appendix One:	Leachate Treatment Facility: Chemical Listing and Quantities
Appendix Two:	Operations Maintenance Building and Diesel Fuel Facility: Material Listing and Quantities
Appendix Three:	Citizen Service Area: Material and Maximum site capacity
Appendix Four:	Methane Gas: Hazard Data/Management Summary
Appendix Five	HHW Hazards; Materials & Capacity

SECTION II: Facility Standards and Emergency Incidents Plan for the Hazardous Waste Collection and Storage Facility

Citrus County Division of Solid Waste Management
Citrus County Central Landfill
230 West Gulf to Lake Highway
Lecanto, Florida 34461
(352)527-7670

EMERGENCY INCIDENTS PLAN

A. PURPOSE AND SCOPE

The purpose of this plan is to provide information and guidance for responses to emergency incidents at the Citrus County Central Landfill Site(s) and Related Facilities.

B. PREPAREDNESS

Local authorities have been notified, and will be kept apprised, of the operations at the Citrus County Central Landfill Sites, located at 230 West Gulf to Lake Highway, Lecanto, Florida. A site diagram will be provided as well as a copy of the contingency plan for all revisions.

A current copy of this plan will be maintained at the Central Landfill Administrative Office. The Citrus County Fire Services/Special Operations Section, the Department of Public Works and the Sheriff's Office have access to the SWM facilities.

Agencies Notified:

Hospital:	Citrus Memorial Hospital 502 West Highland Boulevard Inverness, Florida 34453	(352) 726-1551
Law Enforcement:	Citrus County Sheriff's Office 1 South Park Avenue Inverness, Florida 34453	(352) 726-4488
Emergency:	Emergency Response - 911 3425 West Southern Street Lecanto, Florida 34461	911
Fire and Hazardous:	Citrus County Department of Public Safety 3600 W. Sovereign Path, Suite 291 Lecanto, Fl. 34461	(352) 527-5406

EMERGENCY INCIDENTS PLAN

Agencies Notified: (continued)

Emergency Medical:	Nature Coast EMS 3380 E. Gulf to Lake Highway Lecanto, Fl 34461	(352) 637-4121
Environmental:	Department of Agriculture and Consumer Services Division of Forestry 15019 Broad Street Brooksville, Florida 33512	(352) 796-5650
	Department of Environmental Protection Division of Waste Management 13051 North Telecom Parkway Temple Terrace, Florida 33637-0926	(813) 632-7600

Every effort shall be made to operate the facilities in a safe manner. All necessary materials to contain small spills, fires or releases shall be maintained on site as outlined in the emergency supplies list. The ability to clean up all residues thereof will also be available. These supplies shall also be used to contain and cleanup any de minimus releases during normal operation. Good housekeeping will support a safer work environment.

EMERGENCY INCIDENTS PLAN

C. EMERGENCY SUPPLIES LIST (HHW COLLECTION CENTER)

Equipment:

Shovels
Brooms
Squeegee
ABC Fire extinguishers
Bung Wrench
Hand Tools & Wrenches
First Aid Kit
PVC Hand Drum Pump (water & corrosives)
Rotary Drum Pump (ignitable solvent pump)
pH Testing Tape
H_2O Testing Tape

Poly, 65 Gal. Overpack Drum
Poly, 30 Gal. Overpack Drum
Metal, 55 Gal. Drums
Poly, 55 Gal. Drums
Poly, 5 Gal. Pails
Duct Tape
Scrub Bushes
Poly Sheeting
Emergency Eye Wash & Shower Station
Drum Wrenches
Drum Placard Labeling Materials

MSA Passport Gas Meter measures –

Lower Explosive Limits	(LEL)	ignitables
Carbon Monoxide	(CO)	combustion
Oxygen	(O_2)	low or super
Hydrogen Sulfide	(H_2S)	corrosion

Materials:

Mercury Absorbent
Vermiculite, Bagged Absorbent
Abzorbit, Bagged Absorbent

Absorbent Pads
Absorbent Socks
Sodium Bicarbonate neutralizer

Personal Protection Equipment (PPE)

Chemical Resistant Aprons
Chemical Resistant Coveralls
Chemical Resistant Shoe Covers
Chemical Resistant Smocks
Hardhats

Personal Respirator
Face Shields
Both Neoprene and Nitrile Gloves
Leather Work Gloves
Clear & Sunglass Safety glasses

EMERGENCY INCIDENTS PLAN

EMERGENCY SUPPLIES LIST (EQUIPMENT LOCATED ON THE SWM SITE)

Bulldozer, Caterpillar D6

Compactor, Caterpillar 826 G

Compactor, Caterpillar 826 H

Self-Loading Scraper (Pan), Caterpillar 623F, 23 Yard

(2) Front-End Loader(s), John Deere, 644J, w/ 4 cu yard multi-purpose bucket

Fuel Truck, Ford F350 – with 400 gallon diesel fuel tank and air compressor

Water Truck, Ford 700, w/2000 gallon water tank & 100 g.p.m. pump (8 H.P. B&S)

(2) Dump Trucks, Ford, Tandem Axle

Roll-off truck with 30 cu yd box

Tractor, medium duty, John Deere 2552, w/ front-end loader

(2) Lite Sets, Alamand, with 6kw generator (located in disposal cell and in CSA)

Dump Trailer, 6' x 12', Hydraulic

Fork Lift, Caterpillar, Diesel

Grabber Attachment for 55 Gal. Drums, Attached to the Fork Lift

Generator, 150 Kw Caterpillar (Olympian), Trailer mounted,

Water Pump on Construction Trailer, 100 g.p.m., with 1000 gallon water capacity

Water Transfer Pump, 4" outlet, Mack, Hydraulic drive

Water Transfer Pump, 4" outlet, Acme

Hand Tools and Mechanics Tools, at both the Maintenance Building and HHWCC

EMERGENCY INCIDENTS PLAN

D. SITE LAYOUT

(A) Citrus County Central Landfill

(1) Administrative Office

(2) Operations Maintenance Building

(3) Diesel Fuel Facility

(2) Scalehouse Complex

(3) Leachate Treatment Facility

(4) Citizen Service Area

(5) Electronics Storage Facility

(6) Hazardous Waste Collection and Storage Facility

(7) Garbage Disposal Area

(8) Withlacoochee Technical Institute Shooting Range

E. EMERGENCY RESPONSE COORDINATORS/EMERGENCY RESPONSE TEAM

Primary: **T. Casey Stephens - Director - Solid Waste Management**

Address: 780 S.Suncoast Blvd.
Homosassa, FL 34448

Phone:
(Work) (352) 527-7670
(Direct) (352) 527-7673
(Home) (419) 367-1409
(Cell) (352) 302-6980

Secondary: **Carmen Bruno – Customer Service Crew Leader**

Address: 5360 North Tumblewood Drive
Crystal River, FL 34428

Phone:
(Work) (352) 527-7670
(Direct) (352) 527-7679
(Home) (352) 564-4213
(Cell) (352) 400-0674

Secondary: Operations **Prime DeVaughn – Field Crew Leader - Landfill**

Address: 1366 South Rock Crusher Road
Crystal River, Florida 34446

Phone:
(Work) (352) 527-7670
(Home) (352) 628-7591
(Cell) (352) 400-1646

Emergency Response Coordinator Operations: In the event that local emergency response agencies are called, the first arriving company shall establish Incident Command. The command structure for that responding agency shall then be put into effect. The Solid Waste Management (SWM) Emergency Response Coordinator and response team shall be directed by the Incident Commander. During large operations, the SWM Emergency Response Coordinator may serve as or assign an individual to serve as part of a Unified Command Staff.

EMERGENCY INCIDENTS PLAN

Chain of Command:

Department of Public Works, Division of Solid Waste Management

Department Director	Glenn McCracken	(Cell) (352) 400-0650

Solid Waste Management - Landfill Operations:

Division Director	Casey Stephens
Customer Service Crew Leader	Carmen Bruno
Field Crew Leader	Prime DeVaughn

In the event that the local emergency response authorities are called in, they will be tasked with establishing incident command.

The Solid Waste Management response team shall follow the response authority's direction.

EMERGENCY INCIDENTS PLAN

Solid Waste Management Staff Listing:

Administration:

Casey Stephens,	Director
Claire Smith,	Office Coordinator
Cathy Winter,	Contract Services Specialist
Aaron Lake,	Equipment Maintenance Coordinator
Sue Schulze,	Accounts Receivable Clerk II
Donna Yarborough,	Customer Service Representative

Customer Service:

Carmen Bruno,	Customer Service Crew Leader
Owen Carney,	Recycling Coordinator

Citizen Service Area:

Chris Dozier,	Medium Equipment Operator
Joseph Markey,	Medium Equipment Operator
Sue Heglund,	Solid Waste Technician
Vacant,	Solid Waste Technician

Household Hazardous Waste:

Paul Davis,	Household Hazardous Waste Coordinator
Daniel Sherlock,	Hazardous Waste Specialist

Scalehouse Facility:

William Gilmore	Solid Waste Technician, Lead
Vacant,	Solid Waste Technician
Judy Laubert,	Solid Waste Technician
Jean Poore,	Solid Waste Technician
Ronnie Weinman,	Solid Waste Technician

Landfill Operations:

Prime DeVaughn,	Field Crew Leader
Scott Palmer,	Heavy Equipment Operator, Lead
Eric Heath,	Heavy Equipment Operator
Rich Martone,	Heavy Equipment Operator
Harold Gravely,	Heavy Equipment Operator
Mike Holst,	Heavy Equipment Operator
Vacant	Maintenance Worker
Vacant	Maintenance Worker

Leachate Treatment Plant: (contracted through the County's Utilities Division)

Gary Loggins	Chief Plant Manager
Jerry Nusbaum	Utilities Operator II

F. PREVENTION OF EMERGENCY SITUATIONS

Operations shall be conducted at the Central Landfill Facilities in a manner, which maximizes worker and environmental safety. No smoking shall be permitted in the facility's designated compound areas and access will be restricted to authorized personnel in some areas as needed. NO SMOKING signs shall be posted in areas around the facilities. Safety and operation plans shall be followed at all times.

(1) Leachate Treatment Facility / Scalehouse Operation Facility

The enclosed portion of the facilities is outfitted with oxygen and combustible gas alarms. In the event of an alarm, the Emergency Response Coordinator will be contacted. See Appendix One for chemical listing and quantity at the Leachate Treatment Facility.

(2) Maintenance Building / Diesel Fuel Facility

Fire extinguishers are located at both facilities. See Appendix Two for material listing and quantities.

(3) Waste Separation Facility - "Citizen Service Area"

Fire extinguishers are located at the waste tire site and oil collection site, which is in close proximity to the wood waste storage site. See Appendix Three for materials and maximum site capacity.

(4) Hazardous Waste Collection and Storage Facility

The Hazardous Waste Collection Center and Storage Facility is outfitted with fire detection systems, portable ABC extinguishers, and automated fire suppression systems.

The Facility is also outfitted with an emergency shower and eye wash station.

See Section II for the *HHW Facility Standards and Emergency Incidents Plan, revised July, 2008,* for details

G. IDENTIFICATION OF EMERGENCY SITUATIONS

The following situations will be considered emergencies:

(1) Fire or smoke is detected

(2) An explosion occurs

(3) A serious leak or spill is detected

(4) Personal injury has occurred

(5) Any other incident transpires which needs immediate attention, such as, but not limited to:

(a) Vehicle accident
(b) Helicopter accident, or
(c) Other incidents not covered above

H. EMERGENCY PROCEDURES

Whenever there is a perceived or actual emergency situation, the person who recognizes the emergency will notify the Administrative Office, via radio / cell phone, who will advise the Emergency Response Coordinator. The Emergency Response Coordinator shall take responsibility for implementing the contingency plan. If necessary the Emergency Response Coordinator shall notify all facility personnel and provide for their evacuation. If necessary, the notification plan must be implemented. The Emergency Response Coordinator shall direct facility staff in response procedures as the situation dictates.

Also, the Emergency Response Coordinator must assess possible hazards to human health or the environment that may result from the release, fire or explosion. This assessment must consider both direct and indirect effects.

During an emergency, the Emergency Response Coordinator must take all reasonable measures necessary to ensure that fire, explosions, and releases do not occur, reoccur or spread to other parts of the facility.

EMERGENCY INCIDENTS PLAN

1. Emergency Procedure, Fire

The person who recognizes the emergency will also notify the Administrative Office, via radio / cell phone, who will advise the Emergency Response Coordinator. The Emergency Response Coordinator shall determine if outside agencies need to be contacted and if the facility should be evacuated.

In the event of a small fire, the personnel discovering the fire should determine if it could be extinguished safely and quickly with the available fire extinguishers. First consideration must be given to the safety of all people within the facility.

In the event of a fire within the chemical holding area of the Leachate Treatment Facility or the storage building at the Hazardous Waste Collection and Storage Facility, initial determination should be made concerning the safety of response actions. **The doors of the buildings should not be opened.**

2. Emergency Procedure, Explosion

If an explosion occurs, the person who recognizes the emergency will also notify the Administrative Office, via radio / cell phone, who will advise the Emergency Response Coordinator.

The Emergency Response Coordinator shall contact outside agencies and determine if the facility should be evacuated.

The incident shall be investigated and the appropriate response as outlined herein shall be taken. Under no circumstances shall life or property be put in deliberate peril in attempting to handle explosions.

3. Uncontrolled Leaks or Spills

In the event of an uncontrolled leak or spill, the personnel discovering the leak or spill should take the following actions, only if it is safe to do so:

- Notify the Administrative Office, via radio / cell phone, who will advise the Emergency Response Coordinator.
- Ensure safety of personnel in area, as necessary
- Eliminate sources of ignition
- Stop flow at the source
- Contain the leak or spill

The Emergency Response Coordinator shall direct facility staff in response procedures as the situation dictates. Actions may include, but not limited to:

- Evacuate area, if necessary
- Confirm identification of spilled material and check the Material Safety Data Sheets (MSDS) emergency procedures
- Confirm that additional personnel have been assigned to stop the flow of spilling product and secure leaks, if it can be done safely
- Assess the spill threat, site safety, and parameters such as spill volume, extent and direction of movement
- Follow up containment efforts
- Establish a Hot Zone and Safe Work Area
- Initiate clean up actions, if it can be done safely
- Initiate actions to notify local authorities, emergency response agency, and government agencies, as necessary
- Follow Clean / Decontamination procedures outlined in Item L. of this document.

4. Personal Injury

The personnel discovering the injured party should take the following actions:

- Notify the Administrative Office, via radio / cell phone, who will advise the Emergency Response Coordinator.
- Determine if the injured party needs assistance
- Apply First Aid in accordance with the care-giver's level of training

5. Other Miscellaneous Emergency Incidents

For any other perceived, imminent or actual emergency situation, the person who recognizes the emergency will notify the Administrative Office, via radio or cell phone, who will advise the Emergency Response Coordinator. The Emergency Response Coordinator shall take responsibility for implementing the contingency plan. If necessary the Emergency Response Coordinator shall notify all facility personnel and provide for their evacuation and the notification plan must be implemented. The Emergency Response Coordinator shall their staff in response procedures, as the situation dictates.

Also, the Emergency Response Coordinator must assess possible hazards to human health or the environment that may result from any release, fire or explosion. This assessment must consider both direct and indirect effects.

During an emergency, the Emergency Response Coordinator must take all reasonable measures necessary to ensure that fire, explosions, and releases do not occur, reoccur or spread to other parts of the facility.

I. EVACUATION

In the event that the facility needs to be evacuated, the Emergency Response Coordinator shall notify County personnel by portable radio and the contingency and notification plan will be implemented. Due to the nature and location of the emergency, the Emergency Response Coordinator shall advise County personnel which evacuation route and plan to implement. Operations staff shall proceed to inform all non-county personnel on site and assist with their safe exit.

Traffic on roads into the facility will be stopped and re-routed as necessary by Scalehouse personnel. Clear access by response personnel and vehicles to the emergency shall be maintained at all times by County personnel.

Upon completion of evacuation of the facility, all personnel are to proceed directly to the staging area designated by the Emergency Response Coordinator.

Primary Staging Area: Administrative Office.

Secondary Staging Area: Electronics Recycling Building

EMERGENCY INCIDENTS PLAN

J. NOTIFICATION

Whenever there is an imminent or actual emergency situation, the person who recognizes the emergency will notify the Administrative Office, via radio / cell phone, who will advise the Emergency Response Coordinator. The Emergency Response Coordinator shall take responsibility for implementing the contingency plan. If necessary the Emergency Response Coordinator shall notify all facility personnel and provide for their evacuation. Generally, the most expedient method of notification shall be by two-way radio. The Emergency Response Coordinator shall direct facility their staff in response procedures, staging areas or evacuation routes, as the situation dictates.

K. FOLLOW UP REPORTING

1. Initially, whenever there is an imminent or actual emergency situation, the Emergency Response Coordinator (or their designee when the Emergency Response Coordinator is on call) should immediately:

   a. Activate internal facility alarms or communication systems, where applicable, to notify all facility alarms or communication systems.
   b. Notify appropriate state or local, emergency response agencies with designated response roles, if their help is needed.

2. In addition, whenever there is a release, fire, or explosion, the Emergency Response Coordinator should immediately identify the character, exact source, amount, and the extent of any released materials. He or she may do this by observation or review of facility records, or if necessary, by chemical analysis.

3. Concurrently, the Emergency Response Coordinator should assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment should consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire, or heat-induced explosions).

4. If the Emergency Response Coordinator determines that the facility has had a release, fire, or explosion, which could threaten human health, or the environment, outside the facility, he should report his findings as follows:

   a. If his assessment indicates that evacuation of local areas may be advisable, he should immediately notify appropriate local authorities. The Emergency Response Coordinator should be available to help appropriate officials decide whether local areas should be evacuated; and

b. He/she should immediately notify either the government official designated as the on-scene coordinator for the area or the State Warning Point (using their 24-hour number 904/488-1320). The report should include:

i. Name and telephone number of person reporting;
ii. Name and address of facility;
iii. Time and type of incident (e.g., release, fire);
iv. Name and quantity of material(s) involved, to the extent known;
v. The extent of injuries, if any; and
vi. The possible hazards to human health, or the environment, outside the facility.

5. During the emergency, the Emergency Response Coordinator should take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other areas of the facility. These measures should include where applicable, stopping processes and operations, collecting and containing release waste, and release waste, and removing or isolating containers.

6. During an emergency, the Emergency Response Coordinator should monitor for leaks, pressure buildup, gas generation, or ruptures in containers and/or equipment, wherever this is appropriate.

7. Immediately after an emergency, the Emergency Response Coordinator should provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material contaminated by a release, fire, or explosion at the facility.

8. The Emergency Response Coordinator should ensure that, in the affected area(s) of the facility;

a. No waste that may be incompatible with the released material is stored or handled until cleanup procedures are complete; and
b. All emergency equipment listed in the Emergency Incidents Plan is cleaned and fit for its intended use before operations are resumed.

9. The owner or operator should notify appropriate State and local authorities, in writing, that the facility is once again functional before operations are resumed in the affected area(s) of the facility.

EMERGENCY INCIDENTS PLAN

10. The owner or operator should note, in the operating record, the time, date, and details of any incident that requires implementation of the Emergency Incidents Plan. Within 24 hours after the incident, the situation shall be reported to the Department of Environmental Protection (District Office Hazardous Waste Supervisor), and a written report on the incident should be submitted within 15 days. The report should include:

    a. Name, address, and telephone number of the owner or operator;
    b. Name, address, and telephone number of the facility;
    c. Date, time and type of incident (e.g., fire, explosion);
    d. Name and quantity of material(s) involved;
    e. The extent of injuries, if any;
    f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
    g. Estimated quantity and disposition of recovered material that resulted from the incident.

L. CLEANUP/DECONTAMINATION

All residues from a release, fire or explosion shall be contained and cleaned up in a manner consistent with the emergency spill procedure.

Immediately after the emergency, the Emergency Response Coordinator shall provide for treating, storing or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire or explosion at the facility.

The Emergency Response Coordinator must ensure that in the affected areas of the facilities:

(1) No waste that may be incompatible with the released material is treated, stored or disposed of until clean up procedure are completed; and

(2) All emergency equipment listed in this contingency plan is cleaned and fit for its intended use before operations are resumed.

Any contaminated equipment shall either be cleaned with a suitable solvent, and the discarded solutions handled in an appropriate manner, or discarded with the spill clean up material.

Decontamination shall be conducted in accordance with an appropriate decontamination program.

APPENDIX ONE

Leachate Treatment Facility

Chemical Listing and Quantities

LEACHATE TREATMENT FACILITY

Chemical Listing	Maximum Quantities on Site
Chlorine - liquid (Sodium Hypochlorite)	3 - 55 gallon drums (Approx. 1,400 lbs.)
40% Phosphoric Acid (Phosphoric Acid and Chlorinated Hydrocarbon)	2 - 55 gallon drums (Approx. 880 lbs.)
Polymer (Percol 788-N)	5 - 5 gallon containers (Approx. 200 lbs.)
Powdered Activated Carbon (Hydrodarco C)	360 - 50 lb. Bags (Max.)
Liquid Methanol	7,000 gallon tank
Muratic Acid	8 – 55 gallon drums (Approx. 3,520 lbs.)

APPENDIX TWO

Operations Maintenance Building

and Diesel Fuel Facility

"OPERATIONS"
MAINTENANCE BUILDING
AND
DIESEL FUEL FACILITY

Chemical Listing	Maximum Quantities on Site
Maintenance Building:	
Cans of Gasoline	8 – 5 gallon cans
Oil	2 – 55 gallon drum
Hydraulic Oil	2 – 55 gallon drum
Grease	2 – 120 pound drums
Adhesive for plastics	5 – 5 gallon containers
Fuel Truck (parked in building at night)	450 gallons diesel fuel
Diesel Fuel Facility:	
Diesel fuel	4 – 500 gallon tanks

APPENDIX THREE

Citizen Service Area (CSA)

Material and Maximum site capacity

CITIZEN SERVICE AREA (CSA)

Material	Maximum Capacity
Household Garbage & Trash	10 – 30 yd Dumpsters
Recycable Materials	1 – 30 yd container of newspaper 1 – 30 yd container of glass & aluminum / steel 1 – 30 yd container Plastic 1 – 30 yd container Cardboard 1 – 20 yd container flower pots
Waste Oil Site	3 - 450 gallon containers
Anti-Freeze	1 - 450 gallon tank
Waste Tires	115 tons
Scrap Metal	50 tons
Wood Waste	Unprocessed 800 tons Processed 2,000 tons
Lead Acid Batteries	1 – 2 Pallets (50 – 75 batteries per pallet)
Propane Tanks	1 – 20 yd container

APPENDIX FOUR

Methane Gas

Hazard Data and Management Summary

TOMES (R) HAZARD MANAGEMENT

TOPIC: METHANE GAS

HAZARD DATA/MANAGEMENT Reference AAR, 1987; CHRIS, 1985)

SUMMARY

Methane is extremely flammable and may be easily ignited by flames, sparks, or heat.

All possible sources of ignition, including sparks, flares, flames and smoking should be kept away from this material.

All sources of possible ignition should be shut off.

EXPLOSION HAZARD

Methane forms explosive mixtures with air; a mixture of 1 part methane to 10 parts air is particularly explosive.

When the concentration of methane is less than 5.53 percent, it will not longer explode.

When the methane concentration reaches 14 percent or more, it burns without an explosive noise.

Methane may explode if it is ignited in an enclosed space.

Methane reacts with chlorine and bromine in light, and explosively in bright sunlight.

Vapors may travel a considerable distance to an ignition source and flash back over the vapor trail.

Vapor explosion hazard indoors, outdoors or in sewers / wells.

Methane Gas

EMERGENCY ACTION-CALL EMERGENCY RESPONSE 911

Keep unnecessary people away; isolate hazard area and deny entry.

Stay upwind, out of low areas and ventilate closed spaces before entering.

Possible pressure self-contained breathing apparatus and structural firefighters' protective clothing will provide limited protection.

Fires involving methane should not be extinguished unless the flow of leaking material can be stopped.

Containers that are exposed to the heat of a fire should be cooled from the side with flooding amounts of water until well after the fire is extinguished.

Water should be applied from as far away as possible.

Containers should be moved from the area of the fire and leaks stopped if this can be done without undue risk.

Water spray may be used to protect personnel attempting to move containers and stop leaks.

DUST/VAPOR HEALTH HAZARD

May be poisonous if inhaled.

Contact may cause burns to skin and eyes.

Vapors may cause dizziness or suffocation.

Contact with liquid may cause frostbite.

Fire may produce irritating or poisonous gases.

Methane Gas

LIFE SUPPORT TREATMENT

RESCUERS SHOULD WEAR APPROPRIATE RESPIRATORY PROTECTION:

BE AWARE OF THE SERIOUS FIRE AND EXPLOSION HAZARD PRESENTED BY METHANE DURING RESCUE ATTEMPTS:

Remove victims of inhalation exposure from the toxic environment and administer 100 percent humidified supplemental oxygen with assisted ventilation as required;

Airway protection and maintenance may be required;

Copiously flush exposed eyes or skin with water;

If not breathing, give artificial respiration;

DECONTAMINATION

Monitor for respiratory distress. If cough of difficulty in breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer 100 percent humidified supplemental oxygen with assisted ventilation as required.

Carefully observe patients with inhalation exposure for the development of any systemic signs or symptoms and administer symptomatic treatment as necessary.

Monitor arterial blood gases and chest x-ray in cases with significant exposure.

APPENDIX FIVE

Household Hazardous Waste Hazards

Stored Materials, UN ID Number, and Quantities Stored

HOUSEHOLD HAZARDOUS WASTE COLLECTION CENTER
MATERIAL LISTING AND QUANTITIES STORED

Stored Waste Materials	UN ID Number	Maximum Quantities Stored
Flammable Liquid, n.o.s.	UN 1993	(5) 55 Gal. Drums
Bulk, Oil Based Paint	UN 1263	(4) – 55 Gal. Drums
Containers, Oil Based Paint	UN 1263	(1) Gaylord Box @ 700 lbs.
Solvent Tars & Adhesives	UN 1999	(2) Gaylord Box @ 700 lbs.
Small Flammable Solids	UN 3175	(3) – 55 Gal. Drums
Mixed Aerosols	UN 1950	(3) – 55 Gal. Drums
Motor Oil	Unregulated	(1) – 55 Gal. Drum
Corrosive Solid, Basic, Inorganic, n.o.s.	UN 3262	100 lbs.
Corrosive Liquid, Acid, Inorganic, n.o.s.	UN 3264	250 lbs.
Corrosive Liquid, Acid, Organic, n.o.s.	UN 3265	100 lbs.
Corrosive Liquid, Basic, Inorganic, n.o.s.	UN 3266	200 lbs.
Corrosive Liquid, Basic, Organic, n.o.s.	UN 3267	250 lbs.
Toxic Pesticides Liquids	UN 3021	400 lbs.
Toxic Pesticides Solids	UN 2930	800 lbs.
Oxidizing Liquid, n.o.s.	UN 3139	200 lbs.
Oxidizing Solid, n.o.s.	UN 1479	100 lbs.
P.C.B.s in Electronic Parts	UN 2315	100 lbs.
Flares, Fuses, Fireworks	Class 1.4	50 lbs.
Small Arms Ammunition	Class 1.4	100 lbs.

SECTION II

FACILITY STANDARDS

And

EMERGENCY INCIDENTS PLAN

For the

CITRUS COUNTY

HAZARDOUS WASTE COLLECTION AND STORAGE FACILITY

Located at the

Citrus County Central Landfill
230 West Gulf to Lake Highway
Lecanto, Fl

Prepared by

Department of Public Works
Division of Solid Waste Management

Updated July, 2008

CITRUS COUNTY

HAZARDOUS WASTE COLLECTION AND STORAGE FACILITY

HISTORY

The Citrus County Board of County Commissioners has sponsored the Household Hazardous Waste (HHW) collection program since the late 1980's. The Florida Department of Environmental Protection assisted Citrus County by initiating Household Hazardous Waste "Amnesty Days", two times per year, utilizing a newly purchased collection and storage facility. The metal, Model 22, storage building was purchased from Safety Storage, Inc., Cupertino, California, including options for forced air ventilation, dry chemical fire suppression, and two metal bulkheads creating three separate storage spaces. The building was engineered to comply with EPA, NFPA, and OSHA standards and regulations for storing hazardous chemicals and wastes. The building is also corrosion resistant and features interior, secondary containment for the prevention of spills or leaks.

In December of 1991, the facility was relocated from the 60 Acre Central Landfill Site to the 80 Acre Expansion Site. Access to the Household Hazardous Waste Collection Center was provided from the main paved road along the west boundary of the Central Landfill facility. The HHW building was sighted in the southwest portion of the Landfill Facility which had existing groundwater monitoring wells, sampled quarterly for contamination detection. The building was constructed on top of a 12" compacted sub grade and 6 mill vapor barrier. The storage building rests on a 45.5' x 14' transfer / containment slab with a 3% center drain. The transfer / containment slab received a hardener surface treatment of "Lapidolith", or equal upon completion of construction. The transfer / containment slab is sheltered by a 53' x 30' open shed roof, which was added in 1997. Added at the same time was an overhead dry chemical fire suppression system, over the flammable bulking / drum storage area. In the late 1990's, personnel within the Citrus County Hazardous Material Team were used to oversee the HHW and CESQG programs. In 2008, the Citrus County Board of Commissioners hired a Hazardous Waste Coordinator to oversee the HHW and CESQG programs and a Hazardous Waste Specialist to assist the Coordinator and to operate the County CESQG program.

The Citrus County Hazardous Waste Collection Center currently accepts flammable liquids, flammable solids, oxidizers, corrosives, poisonous hazardous waste and a limited amount of Class 1, Division 1.4 materials from households and specific, known, and stable business wastes from Conditionally Exempt Small Quantity Generators which are licensed and situated within Citrus County.

HHW Facility Standards and Emergency Incidents Plan

INTRODUCTION

Citrus County has a permanent Household Hazardous Waste (HHW) program and Conditionally Exempt Small Quantity Generator (CESQG) program for the collection of waste materials at the Household Hazardous Waste Collection Center. Due to the origin of these materials, by statute, they are exempt from many Federal and State Regulations.

Citrus County has adapted/modified the proposed HHW Facility Standards (draft 3 – July 1996), as prepared by Committee Members, State of Florida County Household Hazardous Waste Project Managers, as guidance to a site specific guideline for Citrus County personnel utilization for facility operations, in accordance with section "Applicability".

"The standards were proposed for facilities which collect HHW with in-house staff, and;

1. also bulk, neutralize or otherwise treat waste; or
2. also collect CESQG waste with in-house staff; or
3. both 1 and 2 above."

The Citrus County Division of Solid Waste Management, through its Household Hazardous Waste Collection Center, performs both operations 1 and 2 above.

HHW Facility Standards and Emergency Incidents Plan

I. FACILITY PERSONNEL

1. Facility Manager shall be the Director for the Division of Solid Waste Management, Department of Public Works. ;

2. Facility Site Supervisor shall be the Household Hazardous Waste Coordinator, Division of Solid Waste Management, and/or his/her assignee;

3 Facility Site Assistant shall be the Hazardous Waste Specialist, Division of Solid Waste Management, and/or his/her assignee;

4. Facility Staff Spotter shall be Solid Waste Management personnel trained in the facility operational and spotting requirements.

5. Facility Site Staff, during times of program operation, shall be personnel trained in the facility operational requirements.

HHW AND CESQG OPERATIONAL CHAIN OF COMMAND:

Division Director	T. Casey Stephens
Customer Service Crew Leader	Carmen Bruno
Household Hazardous Waste Coordinator	Paul Davis
Hazardous Waste Specialist	Daniel Sherlock

II. PHYSICAL FACILITY - MINIMUM STANDARDS

A. Containment

1. All waste shall be stored in either the HHW storage building, in drums or on the secondary containment pallets at the facility.

2. All liquid waste shall be stored within secondary containment structures capable of containing 110% of the largest 2 containers in storage.

3. Containers holding liquid shall be placed so that material escaping from a small leak in a non-pressurized container will not fall outside the containment structure.

4. All non-liquid waste shall be stored within secondary containment structures capable of containing all stormwater reasonably expected to fall or run onto the structure in a 25 year flood or on a paved and sheltered surface which would be substantially unaffected by a 25 year flood.

5. Stormwater shall be prevented from accumulating within in-service containment structures in amounts in excess of 10% of their volume.

6. Containers shall be protected from deterioration due to excessive exposure to stormwater or condensation.

B. Required Equipment

During hours of operation the facility is equipped with the following, unless none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

1. Voice communication from the site supervisor shall be utilized to provide immediate emergency instruction to facility personnel;

2. A device, such as a portable telephone available at the scene of operation, or a hand-held two-way radio, capable of summoning emergency assistance from local police department, fire department, or State or local emergency response teams;

3. Portable, Class ABC fire extinguishers

4. Spill control, absorbent pads, socks, materials and equipment, including all necessary and appropriate personal protective equipment (PPE) and clothing and decontamination equipment

5. If needed, there is equipment at the Landfill capable of providing water at adequate volume and pressure to supply water hose streams, or water spray systems for fire suppression and/or decontamination.

6. Emergency shower and eyewash station.

III. WASTE ACCEPTANCE CRITERIA

A. Household Waste

The facility shall only accept household hazardous waste if:

1. It is acceptable material for disposal with the County's Hazardous Waste Contractor;

2. If it is generated from a Citrus County residence; and

3. If it can be safely stored prior to disposal.

B. CESQG Waste

Facility personnel will enforce the following additional criteria with respect to any CESQG waste that they accept. (This section applies to wastes that the facility accepts, not to waste accepted directly by the disposal contractor):

1. They verify that the source is Citrus County generated and Conditionally Exempt;

2. It is acceptable material for disposal with the County's Hazardous Waste Contractor;

3. They do not accept unknown chemicals or compounds from CESQG's. The generator is required to identify the process generating the waste and all materials that were used in the process. From that information, the generator or the facility supervisor should be able to determine which EPA waste codes are applicable to that waste;

4. They only accept waste if they can verify that it is what the generator says it is; and

5. If it can be safely stored prior to disposal.

6. Whenever possible, businesses needing to dispose of their CESQG waste will be directed to and provided a listing of the various, available, hazardous waste collection contractors serving the Citrus County area.

C. Acceptance of Materials during Normal Operating Hours:

1. Household Hazardous Waste shall be accepted from county residents on Tuesday, Thursday, and Friday, from 9:00 am till 1:00 pm.

2. Upon arrival at the HHW Collection Center (HHWCC), participants will be informed of the NO SMOKING requirement, if necessary, and asked to unload their vehicle and place items on the carts (staff will assist, as needed).

3. HHWCC staff, wearing appropriate PPE, will unload and process the participants' waste, as follows:

    - Identifies chemicals by label information and/or inquiries of the participant.
    - Verifies acceptability of chemicals using acceptable and non-acceptable materials charts and standards.
    - Refers participant for disposal of non-acceptable materials
    - Directs and assists in removing materials from vehicle.
    - Upon removal of leaking or open containers, places such into poly bags or over-packs, in appropriate containers, using absorbent
    - Places materials onto cart(s)
    - Labels any materials which are insufficiently labeled
    - Assists participant on exiting the site
    - Following segregation procedures, sorts and segregates materials by:
        1. DOT Hazard Class
        2. Chemical compatibility

D. Acceptance of Materials Outside of Normal Collection Hours:

1. If the resident is unable to be at the HHW Collection Center during normal collection periods, household hazardous waste may be accepted from Citrus County residents, preferably, by appointment only.

2. The Scalehouse operator will first screen incoming waste. If a citizen cannot dispose of their HHW during normal acceptance times, the Scalehouse operator shall direct the participant to a Citizen Service Area staff spotter. Before taking possession of the waste, the CSA staff spotter shall question the person delivering the hazardous waste, to ascertain that it is only from a residential source and to the exact nature of its contents.

3. If the material is paint or a paint related material, staff will ascertain whether or not the can is empty and shall dispose of empty containers as solid waste. If the material is a latex and solid, staff may dispose of the container as solid waste.

4. All paint-related wastes collected in this manner will be relocated daily to the HHW Collection Center. Whenever the materials are being relocated to the HHW Collection Center area, staff shall be equipped with a two-way radio.

5. At the end of every work day, the Citizen Service Area staff spotter will check the used oil collection site, anti-freeze / battery collection site, and the citizen's service area drop-off site for any household hazardous waste that may have been left. If the CSA staff spotter discovers questionable, unknown or non-paint material, the Household Hazardous Waste Coordinator or their designee shall be contacted for guidance and for disposal assistance.

IV. PERSONNEL

A. Training

HHW facility personnel and staff spotter(s) shall successfully complete training program(s) that teach them to perform their duties in a way that ensures the facility is operated in a manner that protects them and the public from potential health and safety hazards at the site and is protective of the environment.

1. Each individual involved with the HHW program shall receive training and certification according to their job description and scope of responsibility. Each training program shall be taught by a person who is certified to train others in hazardous waste management procedures, including instruction in regard to personnel hazardous waste management procedures. The person providing the training shall have no less than 40 hours training in appropriate aspects of hazardous waste/material management including selection of protective clothing and equipment and emergency response.

2. At a minimum, the initial training program is designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with HHW material acceptance procedures, emergency procedures, including Emergency Incidents Plan implementation, emergency equipment, and emergency systems, including where applicable:

   a. Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
   b. Communications or alarm systems;
   c. Response to fires or explosions;
   d. Response to discharges to the land surface; incidents; and
   e. Shutdown of operations.

3. All personnel who handle hazardous waste (or items, which would be hazardous waste if regulated) are trained in sorting materials by hazard class and compatibility group.

4. Facility personnel shall successfully complete their initial training program within six months after the date of their employment or assignment to a facility. New employees shall not work in unsupervised positions until they have completed the training requirements.

5. The Hazardous Waste Coordinator shall perform an annual review of the minimum, initial training requirement and of each member's needs and progress toward achieving such training.

6. Facility personnel who receive CESQG waste, bulks or otherwise treats any waste material, should have on staff and on duty, at least one person who has no less than 40 hours training in appropriate aspects of hazardous waste/material management including selection of protective clothing and equipment and emergency response.

B. Personnel Records

The following documents and records shall be maintained at the facility manager's office:

1. The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

2. A written job description for each position. This description may be consistent in its degree of specificity with descriptions for other similar positions at the same site, but should include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;

3. A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position; and

4. Record that documents that the training or job experience required for each position has been completed by facility personnel.

V. OPERATIONS

A. Maintenance and Operation of HHW Facility

1. The facility shall be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment.

2. All facility communications or alarm system, fire protection equipment, spill control equipment, and decontamination equipment, where required, shall be tested and maintained in accordance with manufacturer's recommendations and as necessary to assure its proper operation in time of emergency.

3. Facility personnel shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

4. Whenever hazardous waste is being poured, mixed, bulked, or otherwise handled, all personnel involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not necessary.

5. Normal operational procedures requires two personnel on site at all times, but, if there is ever just one employee on the premises while the facility is in operation, he shall have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning emergency assistance. (Telephones and radios shall not be placed in areas where the atmosphere may become explosive due to the presence of flammable vapors, dusts, or gases.)

B. Accumulation Time

1. The HHW collection facility will be accumulating household hazardous waste and CESQG waste on-site, and shall store the material as follows:

   a. The waste will be placed in containers; a container may be considered a storage building or a DOT approved drum.
   b. The amount of waste accumulated will not place the facility in violation of any part of section II.A, V.D, or V.E; and
   c. While being accumulated on-site, each container is labeled with the appropriate DOT label and a description of the contents. A proper label on the storage building door describes the hazardous properties of the materials stored inside.

2. The household hazardous waste and CESQC waste collected for treatment or disposal shall not be accumulated on site for more than 210 days. Once the capacity limit or accumulation time limit is reached, all hazardous waste collected shall be shipped to a permitted hazardous waste facility for treatment or disposal. The operator may request DEP approval of a longer accumulation time period for specific wastes which are accumulated slowly.

C. Management of Containers

1. If a container holding hazardous waste is not in good condition or if it begins to leak, the operator shall pack the container and its contents in a larger container that is in good condition, or manage the waste in some other way that complies with the requirements of this part.

2. The operator shall use containers made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired and is in compliance with that material's packing code.

3. A container holding hazardous waste should always be closed during storage, except when it is necessary to add or remove waste.

4. A container holding hazardous waste should not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

5. HHW staff shall inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors. The operator shall keep records and results of these weekly inspections.

D. Special Requirements for Ignitable or Reactive Waste

1. Containers holding ignitable or reactive waste shall be located within the transfer/containment slab, within a secondary containment area and grounded to minimize static electricity.

2. HHW staff shall take precautions to prevent accidental ignition of ignitable waste. This waste will be separated and protected from sources of ignition including but not limited to: open flames, smoking, cutting and welding, hot surfaces frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable waste is being handled, the owner or operator should confine smoking and open flame to a specially designated location. "No Smoking" signs are conspicuously placed wherever there is a hazard from ignitable waste.

3. Reactive wastes shall receive such special handling and storage as needed to prevent unintentional reactions.

E. Special Requirements for Incompatible Wastes

The following are guidelines for prevention of fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible waste or if a container breaks or leaks.

1. Incompatible waste, or incompatible waste and materials should not be placed in the same container;

2. Hazardous waste should not be placed in an unwashed container that previously held an incompatible waste or material; and

3. Incompatible wastes should be stored separately. They should be separated by a minimum of two impervious barriers such that, should any one container fail, no waste or vapors will come into contact with incompatible material or containers.

F. Handling Requirements for Ignitable, Reactive, or Incompatible Wastes

Repackaging or treatment, including bulking, or neutralizing of ignitable, reactive, or incompatible waste, shall be conducted so that it does not:

1. Generate extreme heat or pressure, fire or explosion, or violent reaction;

2. Produce uncontrolled toxic vapors, dusts, or gases in sufficient quantities to threaten human health;

3. Produce uncontrolled flammable vapors, dusts, or gases in sufficient quantities to pose a risk of fire or explosion;

4. Damage the structural integrity of the device or facility containing the waste; or

5. Threaten human health or the environment.

VI. PREPAREDNESS AND PREVENTION

A. Arrangements with Local Authorities

1. The Facility Manager shall make the following arrangements, through distribution of an Emergency Incidents Plan, outlining the type of waste handled at the facility and the potential need for the services of these organizations:

   a. Arrangements to familiarize police, fire department, and emergency response teams with the layout of the facility, properties of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

   b. Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any other to provide support to the primary emergency authority;

   c. Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

   d. Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses that could result from fires, explosions, or release at the facility.

B. HHW COLLECTION CENTER EMERGENCY EQUIPMENT LIST

Equipment:

Shovels
Brooms
Squeegee
ABC Fire extinguishers
Bung Wrench
Hand Tools & Wrenches
First Aid Kit
PVC Hand Drum Pump (water & corrosives)
Rotary Drum Pump (ignitable solvent pump)
pH Testing Tape
H_2O Testing Tape

Poly, 65 Gal. Overpack Drum
Poly, 30 Gal. Overpack Drum
Metal, 55 Gal. Drums
Poly, 55 Gal. Drums
Poly, 5 Gal. Pails
Duct Tape
Scrub Bushes
Poly Sheeting
Emergency Eye Wash & Shower Station
Drum Wrenches
Drum Placard Labeling Materials

MSA Passport Gas Meter measures –

Lower Explosive Limits	(LEL)	ignitables
Carbon Monoxide	(CO)	combustion
Oxygen	(O_2)	low or super
Hydrogen Sulfide	(H_2S)	corrosion

Materials:

Mercury Absorbent
Vermiculite, Bagged Absorbent
Abzorbit, Bagged Absorbent

Absorbent Pads
Absorbent Socks
Sodium Bicarbonate neutralizer

Personal Protection Equipment (PPE) – located at the HHW Collection Center:

Chemical Resistant Aprons
Chemical Resistant Coveralls
Chemical Resistant Shoe Covers
Chemical Resistant Smocks
Hardhats

Personal Respirator
Face Shields
Both Neoprene and Nitrile Gloves
Leather Work Gloves
Clear & Sunglass Safety glasses

C. ADJUNCT EQUIPMENT AVAILABLE ON SWM SITE

Bulldozer, Caterpillar D6

Compactor, Caterpillar 826 G

Compactor, Caterpillar 826 H

Self-Loading Scraper (Pan), Caterpillar 623F, 23 Yard

(2) Front-End Loader(s), John Deere, 644J, w/ 4 cu yard multi-purpose bucket

Fuel Truck, Ford F350 – with 400 gallon diesel fuel tank and air compressor

Water Truck, Ford 700, w/2000 gallon water tank & 100 g.p.m. pump (8 H.P. B&S)

(2) Dump Trucks, Ford, Tandem Axle

Roll-off truck with 30 cu yd box

Tractor, medium duty, John Deere 2552, w/ front-end loader

(2) Lite Sets, Alamand, with 6kw generator (located in disposal cell and in CSA)

Dump Trailer, 6' x 12', Hydraulic

Fork Lift, Caterpillar, Diesel

Grabber Attachment for 55 Gal. Drums, Attached to the Fork Lift

Generator, 150 Kw Caterpillar (Olympian), Trailer mounted,

Water Pump on Construction Trailer, 100 g.p.m., with 1000 gallon water capacity

Water Transfer Pump, 4" outlet, Mack, Hydraulic drive

Water Transfer Pump, 4" outlet, Acme

Hand Tools and Mechanics Tools, at both the Maintenance Building and HHWCC

VII. EMERGENCY INCIDENTS PLAN AND PROCEDURES

A. EMERGENCY RESPONSE COORDINATOR

Primary: **Casey Stephens - Director - Solid Waste Management**

Address: 780 S. Suncoast Blvd.
Homosassa, FL 34448

Phone:
(Work) (352) 527-7670
(Direct) (352) 527-7671
(Home) (419) 367-1409
(Cell) (352) 302-6980

Secondary: **Carmen Bruno – Customer Service Crew Leader**

Address: 5360 North Tumblewood Drive
Crystal River, FL 34428

Phone:
(Work) (352) 527-7670
(Direct) (352) 527-7679
(Home) (352) 564-4213
(Cell) (352) 400-0674

Secondary: Operations **Prime DeVaughn – Field Crew Leader - Landfill**

Address: 1366 South Rock Crusher Road
Crystal River, Florida 34446

Phone:
(Work) (352) 527-7670
(Home) (352) 628-7591
(Cell) (352) 400-1646

Emergency Response Coordinator Operations: In the event that local emergency response agencies are called, the first arriving company shall establish Incident Command. The command structure for that responding agency shall then be put into effect. The Solid Waste Management (SWM) Emergency Response Coordinator and response team shall follow the Incident Commander's direction. In large operations, the SWM Emergency Response Coordinator may serve as or assign an individual to serve as part of a Unified Command Staff.

B. EMERGENCY RESPONSE PROCEDURES

1. Whenever there is a perceived, imminent or actual emergency situation, the Emergency Response Coordinator (or their designee when the Emergency Response Coordinator is on call) should immediately:

   a. Activate internal facility alarms or communication systems, where applicable, to notify all facility staff personnel.
   b. Notify appropriate state or local emergency response agencies with designated response roles if their help is needed.

2. Whenever there is a release, fire, or explosion, the Emergency Response Coordinator should immediately identify the character, exact source, amount, and the extent of any released materials. He or she may do this by observation or review of facility records, or if necessary, by chemical analysis.

3. Concurrently, the Emergency Response Coordinator should assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment should consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire, or heat-induced explosions).

4. If the Emergency Response Coordinator determines that the facility has had a release, fire, or explosion, which could threaten human health, or the environment, outside the facility, he should report his findings as follows:

   a. If his assessment indicates that evacuation of local areas may be advisable, he should immediately notify appropriate local authorities. The Emergency Response Coordinator should be available to help appropriate officials decide whether local areas should be evacuated; and

b. He/she should immediately notify either the government official designated as the on-scene coordinator for the area or the State Warning Point (using their 24-hour number 904/488-1320). The report should include:

i. Name and telephone number of person reporting;
iii. Name and address of facility;
iii. Time and type of incident (e.g., release, fire);
iv. Name and quantity of material(s) involved, to the extent known;
v. The extent of injuries, if any; and
vi. The possible hazards to human health, or the environment, outside the facility.

5. During the emergency, the Emergency Response Coordinator should take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other areas of the facility. These measures should include where applicable, stopping processes and operations, collecting and containing release waste, and release waste, and removing or isolating containers.

6. During an emergency, the Emergency Response Coordinator should monitor for leaks, pressure buildup, gas generation, or ruptures in containers and/or equipment, wherever this is appropriate.

7. Immediately after an emergency, the Emergency Response Coordinator should provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material contaminated by a release, fire, or explosion at the facility.

8. The Emergency Response Coordinator should ensure that, in the affected area(s) of the facility;

a. No waste that may be incompatible with the released material is stored or handled until cleanup procedures are complete; and
b. All emergency equipment listed in the Emergency Incidents Plan is cleaned and fit for its intended use before operations are resumed.

9. The owner or operator should notify appropriate State and local authorities, in writing, that the facility is once again functional before operations are resumed in the affected area(s) of the facility.

10. The owner or operator should note in the operating record the time, date, and details of any incident that requires implementing the Emergency Incidents Plan. Within 24 hours after the incident, the situation shall be reported to the Department of Environmental Protection (District Office Hazardous Waste Supervisor), and a written report on the incident should be submitted within 15 days. The report should include:

    a. Name, address, and telephone number of the owner or operator;
    b. Name, address, and telephone number of the facility;
    c. Date, time and type of incident (e.g., fire, explosion);
    d. Name and quantity of material(s) involved;
    e. The extent of injuries, if any;
    f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
    h. Estimated quantity and disposition of recovered material that resulted from the incident.

APPENDIX C

SAMPLE LOAD CHECKING INSPECTION FORMS

CITRUS COUNTY CENTRAL LANDFILL

WEEKLY MONITORING OF WASTE – INSPECTION RESULTS

HAULING COMPANY: _____ DATE: _____ TIME: _____

DRIVER NAME: _____ CO. ID# OF VEHICLE: _____

SOURCE OF WASTE AS STATED BY DRIVER: _____

_____

OBSERVATIONS OF THE INSPECTOR INDICATES THE FOLLOWING RESTRICTED MATERIAL WAS LOCATED IN THE VEHICLE LOAD WHEN DISCHARGED INTO THE LANDFILL DISPOSAL AREA OR AT THE YARD WASTE FACILITY: _____ YES ( ) _____ NO ( ) _____

TIRES: _____ WHITE GOODS: _____ BAGGED LAWN DEBRIS: _____ LOOSE LAWN DEBRIS: _____

GARBAGE IN YARD WASTE AREA: _____ RED BAGS (BIOMEDICAL): _____

SLUDGE (WITH > 12% LIQUID): _____ DRUMS OVER 20 GAL WITHOUT HOLES: _____

TYPES:PAINTS: _____ PAINT RELATED – (THINNERS): _____ AEROSALS: _____

POISONS: _____ REACTIVES: _____ CORROSIVES: _____ FLAMMABLES: _____

OIL/FILTERS: _____ BATTERIES: _____ ACTION TAKEN FOR HW MATERIALS: _____

COMMENTS: _____

_____

INSPECTOR SIGNATURE AND TITLE

COMPLETED ACTION

PICTURE OF LOAD TAKEN YES( ) _____ NO( ) _____ BY: _____

SCALEHOUSE ADVISED TO ADD WRC: YES ( ) NO ( ) NUMBER OF CHARGES _____
(WRC= WASTE RELOCATE CHARGE @ $60 PER EVERY HOUR TO RELOCATE MATERIAL

ADM. FOLLOW-UP: WRC VERIFIED IN SYSTEM YES ( ) _____ NO ( ) _____ By: _____

ADM. FOLLOW-UP - PICTURE ATTACHED TO REPORT: _____

APPENDIX D

MAINTENANCE SUMMARY FORM

MAINTENANCE SUMMARY FORM

PROJECT: _____ CONTRACT NO.: _____

1. EQUIPMENT ITEM _____
2. MANUFACTURER _____
3. EQUIPMENT/TAG NUMBER(S) _____
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____
5. NAMEPLATE DATA (hp, voltage, speed, etc.) _____
6. MANUFACTURER'S LOCAL REPRESENTATIVE
   a. Name _____ Telephone No. _____
   b. Address _____
7. MAINTENANCE REQUIREMENTS

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant list required.

8. LUBRICANT LIST

Reference Symbol	Shell	Standard Oil	Gulf	Arco	Or Equal
List symbols used in No. 7 above.	List equivalent lubricants, as distributed by each manufacturer for the specific use recommended.				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Cost
Note: Identify parts provided by this Contract with two asterisks.				

Instructions for completing the Equipment Operator Service Report

It is the responsibility of each equipment operator to ensure that this form is correctly and completely filled out.
It is to be used by each operator to monitor the condition of the equipment.
It is designed to be used by atleast two operators a day but can be used by more if need be.
Information on this form is used to track data such as hours used, fuel usage, oil consumption and to notify the supervisor and other operators of the condition of the equipment.
Safety items must be reported immediately to the supervisor on duty

Explanation of entries to be made: Refer to the operators manual for further instructions.

Daily Walk Around Inspection:
Each operator will do a thorough walk around inspection as prescribed in the operators manual before operation.

Beginning Hours:
Record the hours that you started operating the equipment.

Refuel Hours:
Record the hours that you filled the fuel tank. This will differ depending on when fuel is added.

Ending Hours:
Record the hours when you leave the equipment.

Fuel Added, Gallons:
Record the total amount of fuel added to the fuel tank.

Check/Top-off Engine Oil:
Check the oil and if needed record the amount added.

Check Coolant Level:
Look at the sight glass, do not remove radiator cap if engine is hot.

Check Hydraulic Oil Level:
Check the oil and if needed record the amount added.

Check Transmission Oil Level:
Check the oil and if needed record the amount added.

Lubricate per Operators Manual:
Lubricate the points specified in the manual as prescribed in the manual.

Check Drive train for leaks:
Look under and around the equipment for leaks.

Remove debris:
Remove anything that is not part of the machine. Pay attention to pinch areas.

Drain Fuel Filter Water Separator:
Refer to operators manual for procedure.

Backup Alarm & Fire Extinguisher:
These are critical safety items and must be serviceable at all times.

Clean Windows and Cab Interior:
Wash the windows and sweep out the cab. Remove your trash.

Quick Coupler and Tire Pressure:
Ensure that the coupler has no obvious cracks and that the tire pressure is correct.

Check/Clean Cab fresh air filters:
Check and clean both external and internal cab fresh air filters.

Clean Primary Engine Air Cleaner
Clean when necessary. Observe indicator.

Initials:
Place you initials in the space provided to show that you completed the form

Operator Comments:
Space provided for comments relating to machine operation and safety issues.

This form needs to be turned-in to the field crew leader no later than 10:00 AM every Monday for the previous week. He then will review all entries for accuracy and corrective action if necessary.

CITRUS COUNTY SOLID WASTE MANAGEMENT
EQUIPMENT OPERA SERVICE REPORT

Equipment Number: Circle Machine Number	1040 Bomag	9314 Pan Scraper	20154 Roll-off Mileage	20186 Recycle Alley Loader
	9279 Dump Truck	20064 John Deere Dozer	20164 Caterpillar Compactor	20187 Cell Loader

OPERATOR DAILY CHECKS & SERVICES	WEEK OF:						TO:					
	Monday:		Tuesday:		Wed:		Thursday:		Friday:		Sat:	
Daily Walk Around Inspection												
Beginning Hours												
Refuel Hours												
Ending Hours												
Fuel Added, Gallons												
Check / Top-off Engine Oil												
Check Coolant Level												
Check Hydraulic Oil Level												
Check Transmission Oil Level												
Lubricate per Operator Manual												
Check Drivetrain For Leaks												
Remove Debris From Pinch Areas												
Drain Fuel Filter Water Seperator												
Backup Alarm & Fire Extinguisher												
Clean Windows and Cab Interior												
Quick Coulper and Tire Pressure												
Check / Clean Cab Fresh Air Filter												
Clean Primary Engine Air Cleaner												
Initials												

"Equipment failure is not an option"

Operator Comments:

Total Hours Operated		Next Service Due	
Total Fuel Used		Posted	
Gallons Per Hour			

Must be given to Prime

02/18/2 Updated

Problem Log

DATE	Nature Of Problem or Parts & Or Material Required	Date Corrected	Init

APPENDIX E

TRAINING CERTIFICATES

Florida DEP Solid Waste Management Facility Operator Courses

Bruno, Carmen C
Customer Service Crew Leader
Citrus County Solid Waste
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4693

Class I, II, III Landfill Operator

Status: **Current**

- Initial Date: 09/13/2002
- Current Period: 09/13/2008 - 09/12/2011 Hours Required: 16 Hours Needed: 8

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
			Total:	Prior
			Hours Needed:	

Period: **09/13/2002 - 09/12/2005 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
160	SWANA-Manager of Landfill Operations (MOLO) Course and Exam	University of Florida - TREEO	09/13/2002	Initial
267	FDEP DOT 4-Hour Awareness Training [5/5/03, 12/04]	Florida Department of Environmental Protection (SQG)	05/05/2003	2
226	FDEP Annual SQG Assessment, Notification & Verification Program Workshop [5/20-21/02]	Florida Department of Environmental Protection (SQG)	05/06/2003	5
265	FDEP HHW & Conditionally Exempt SQG [5/7-8/03]	Florida Department of Environmental Protection (SQG)	05/08/2003	5
268	FDEP HHW Facility Design [5/9/03]	Florida Department of Environmental Protection (SQG)	05/09/2003	4
125	Management of Leachate, Gas, Stormwater and Odor at Class I, II, and III Landfills	Kohl Consulting, Inc.	10/07/2003	8
13	Train-the-Trainer For Environmental Occupations	University of Florida - TREEO	12/19/2003	7
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	01/22/2004	8
348	Wood Waste Recycling Conference 2004	Recycle Florida Today, Inc	04/30/2004	6
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	10/25/2004	8
285	Chemical Compatibility and Storage	University of Florida - TREEO	10/26/2004	8
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	06/21/2005	4
385	SWANA-FL 2005 Summer Conference	Solid Waste Association of North America (SWANA - Florida Chapter)	06/29/2005	8
4	Instructor for a SWANA MOLO Course	University of Florida - TREEO	07/29/2005	7
			Total:	80
			Hours Needed:	0

Period: **09/13/2005 - 09/12/2008**

Course	Course Name	Provider	Completion Date	Hours

425	SWANA-FL 2006 Spring Tri-State Conference [4/2-5/06]	Solid Waste Association of North America (SWANA - Florida Chapter)	04/05/2006	7
434	FDEP Household Hazardous Waste Workshop [5/1-3/06]	Florida Department of Environmental Protection	05/03/2006	5
457	Disaster Debris Management	American Society of Civil Engineers	02/15/2007	6
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
480	SWANA-FL 2008 Senior Managers Conference [1/2008]	Solid Waste Association of North America (SWANA - Florida Chapter)	01/23/2008	9
			Total:	29
			Hours Needed:	0

Period: **09/13/2008 - 09/12/2011**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	06/08/2009	8
			Total:	8
			Hours Needed:	8

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Bruno, Carmen C
Customer Service Crew Leader
Citrus County Solid Waste
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4693

Construction and Demolition Debris Landfill Operator

Status: **Current**

- Initial Date: 09/13/2002
- Current Period: 09/13/2008 - 09/12/2011 Hours Required: 16 Hours Needed: 8

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
			Total:	Prior
			Hours Needed:	

Period: **09/13/2002 - 09/12/2005 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
[illegible]	SWANA-Manager of Landfill Operations (MOLO) Course and Exam	University of Florida - TREEO	09/13/2002	Initial
267	FDEP DOT 4-Hour Awareness Training [5/5/03, 12/04]	Florida Department of Environmental Protection (SQG)	05/05/2003	2
226	FDEP Annual SQG Assessment, Notification & Verification Program Workshop [5/20-21/02]	Florida Department of Environmental Protection (SQG)	05/06/2003	5
265	FDEP HHW & Conditionally Exempt SQG [5/7-8/03]	Florida Department of Environmental Protection (SQG)	05/08/2003	5
268	FDEP HHW Facility Design [5/9/03]	Florida Department of Environmental Protection (SQG)	05/09/2003	4
125	Management of Leachate, Gas, Stormwater and Odor at Class I, II, and III Landfills	Kohl Consulting, Inc.	10/07/2003	8
13	Train-the-Trainer For Environmental Occupations	University of Florida - TREEO	12/19/2003	7
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	01/22/2004	8
348	Wood Waste Recycling Conference 2004	Recycle Florida Today, Inc	04/30/2004	6
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	10/25/2004	8
285	Chemical Compatibility and Storage	University of Florida - TREEO	10/26/2004	8
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	06/21/2005	4
385	SWANA-FL 2005 Summer Conference	Solid Waste Association of North America (SWANA - Florida Chapter)	06/29/2005	5
			Total:	70
			Hours Needed:	0

Pe[illegible] **09/13/2005 - 09/12/2008**

Course	Course Name	Provider	Completion Date	Hours
425	SWANA-FL 2006 Spring Tri-State Conference [4/2-5/06]	Solid Waste Association of North America (SWANA - Florida	04/05/2006	7

		Chapter)		
434	FDEP Household Hazardous Waste Workshop [5/1-3/06]	Florida Department of Environmental Protection	05/03/2006	5
457	Disaster Debris Management	American Society of Civil Engineers	02/15/2007	6
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
480	SWANA-FL 2008 Senior Managers Conference [1/2008]	Solid Waste Association of North America (SWANA - Florida Chapter)	01/23/2008	9
			Total:	29
			Hours Needed:	0

Period: **09/13/2008 - 09/12/2011**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	06/08/2009	8
			Total:	8
			Hours Needed:	8

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Bruno, Carmen C
Customer Service Crew Leader
Citrus County Solid Waste
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4693

Spotter / Waste Screener

Status: **Current**

- Initial Date: 01/22/2004
- Current Period: 01/22/2007 - 01/21/2010 Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
160	SWANA-Manager of Landfill Operations (MOLO) Course and Exam	University of Florida - TREEO	09/13/2002	4
267	FDEP DOT 4-Hour Awareness Training [5/5/03, 12/04]	Florida Department of Environmental Protection (SQG)	05/05/2003	2
[redacted]	FDEP HHW & Conditionally Exempt SQG [5/7-8/03]	Florida Department of Environmental Protection (SQG)	05/08/2003	5
268	FDEP HHW Facility Design [5/9/03]	Florida Department of Environmental Protection (SQG)	05/09/2003	4
			Total:	Prior
			Hours Needed:	

Period: **01/22/2004 - 01/21/2007 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	01/22/2004	Initial
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	10/25/2004	8
285	Chemical Compatibility and Storage	University of Florida - TREEO	10/26/2004	4
385	SWANA-FL 2005 Summer Conference	Solid Waste Association of North America (SWANA - Florida Chapter)	06/29/2005	1
			Total:	13
			Hours Needed:	0

Period: **01/22/2007 - 01/21/2010**

Course	Course Name	Provider	Completion Date	Hours
457	Disaster Debris Management	American Society of Civil Engineers	02/15/2007	2
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	06/08/2009	8
			Total:	12
[redacted]			**Hours Needed:**	0

Status: **Current**

Transcripts Report

Florida DEP Solid Waste Management Facility Operator Courses

Carney, Owen D.
Recycling Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4692

Class I, II, III Landfill Operator

Status: **Current**

- Initial Date: 05/11/2007
- Current Period: 05/11/2007 - 05/10/2010 - (Initial Period) Hours Required: 16 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/19/2006	8
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	04/23/2007	8
			Total:	Prior
			Hours Needed:	

Period: **05/11/2007 - 05/10/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	Initial
443	Initial Training Course for Transfer Station Operators and Material Recovery Facilities - 16 Hour	University of Florida - TREEO	09/19/2007	12
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	11/20/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
512	Recycle Florida Today 2008 Annual Conference	Recycle Florida Today, Inc	06/04/2008	4
554	Recycle Florida Today Conference [June 2009]	Recycle Florida Today, Inc	06/09/2009	2
			Total:	30
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Carney, Owen D.
Recycling Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4692

Construction and Demolition Debris Landfill Operator

Status: Current

- Initial Date: 05/11/2007
- Current Period: 05/11/2007 - 05/10/2010 - (Initial Period) Hours Required: 16 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/19/2006	8
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	04/23/2007	8
			Total:	Prior
			Hours Needed:	

Period: **05/11/2007 - 05/10/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	Initial
443	Initial Training Course for Transfer Station Operators and Material Recovery Facilities - 16 Hour	University of Florida - TREEO	09/19/2007	12
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	11/20/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
512	Recycle Florida Today 2008 Annual Conference	Recycle Florida Today, Inc	06/04/2008	4
554	Recycle Florida Today Conference [June 2009]	Recycle Florida Today, Inc	06/09/2009	2
			Total:	30
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Carney, Owen D.
Recycling Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4692

Material Recovery Facility Operator

Status: **Current**

- Initial Date: 09/19/2007
- Current Period: 09/19/2007 - 09/18/2010 - (Initial Period) Hours Required: 8 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/19/2006	8
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	04/23/2007	8
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	8
			Total:	Prior
			Hours Needed:	

Period: **09/19/2007 - 09/18/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
443	Initial Training Course for Transfer Station Operators and Material Recovery Facilities - 16 Hour	University of Florida - TREEO	09/19/2007	Initial
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	11/20/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
512	Recycle Florida Today 2008 Annual Conference	Recycle Florida Today, Inc	06/04/2008	5
554	Recycle Florida Today Conference [June 2009]	Recycle Florida Today, Inc	06/09/2009	2
			Total:	19
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
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Florida DEP Solid Waste Management Facility Operator Courses

[redacted]

Carney, Owen D.
Recycling Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4692

Spotter / Waste Screener

Status: **Current**

- Initial Date: 10/19/2006
- Current Period: 10/19/2009 - 10/18/2012 Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **10/19/2006 - 10/18/2009 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/19/2006	Initial
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
[redacted]	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	04/23/2007	8
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	4
443	Initial Training Course for Transfer Station Operators and Material Recovery Facilities - 16 Hour	University of Florida - TREEO	09/19/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	26
			Hours Needed:	0

Period: **10/19/2009 - 10/18/2012**
No courses taken. Hours Needed: 4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- [redacted]u have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or

Florida DEP Solid Waste Management Facility Operator Courses

Carney, Owen D.
Recycling Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4692

Transfer Station Operator

Status: **Current**

- Initial Date: 09/19/2007
- Current Period: 09/19/2007 - 09/18/2010 - (Initial Period) Hours Required: 8 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/19/2006	8
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	04/23/2007	8
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	8
			Total:	Prior
			Hours Needed:	

Period: **09/19/2007 - 09/18/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
443	Initial Training Course for Transfer Station Operators and Material Recovery Facilities - 16 Hour	University of Florida - TREEO	09/19/2007	Initial
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	11/20/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
512	Recycle Florida Today 2008 Annual Conference	Recycle Florida Today, Inc	06/04/2008	4
554	Recycle Florida Today Conference [June 2009]	Recycle Florida Today, Inc	06/09/2009	2
			Total:	18
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Davis, Paul
Hazardous Waste Coordinator
Citrus County Solid Waste Mgt
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4686

Spotter / Waste Screener

Status: **Current**

- Initial Date: 03/15/2007
- Current Period: 03/15/2007 - 03/14/2010 - (Initial Period) Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
			Total:	Prior
			Hours Needed:	

Period: **03/15/2007 - 03/14/2010 - (Initial Period)**

C	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		03/15/2007	Initial
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	04/22/2008	8
285	Chemical Compatibility and Storage	University of Florida - TREEO	04/23/2008	4
367	FDEP/NAHMMA Identification of Unknowns and Chemistry for Non-Chemists Training [12/20/04]	Florida Department of Environmental Protection	05/30/2008	4
63	Hazardous Waste Regulations for Generators	University of Florida - TREEO	10/06/2009	4
			Total:	20
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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Florida DEP Solid Waste Management Facility Operator Courses

DeVaughn, Prime
Landfill Crew Leader
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Class I, II, III Landfill Operator

Status: **Current**

- Initial Date: 11/19/1993
- Current Period: 11/19/2008 - 11/18/2011 Hours Required: 16 Hours Needed: 16

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
21	Solid Waste Landfill Operator's Short School	Solid Waste Association of North America (SWANA - Florida Chapter)	11/16/1990	20
			Total:	Prior
			Hours Needed:	

Period: **11/19/1993 - 11/18/1996 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
21	Solid Waste Landfill Operator's Short School	University of Florida - TREEO	11/19/1993	Initial
50	Hazardous Materials Awareness Training [1/25/94]	Citrus County - Hazardous Material Section	01/25/1994	8
52	17-701 & 17-703 Update [6/17/94]	Solid Waste Association of North America	06/17/1994	4
39	Stormwater Management for Landfills		05/16/1995	8
			Total:	20
			Hours Needed:	0

Period: **11/19/1996 - 11/18/1999**

Course	Course Name	Provider	Completion Date	Hours
124	Landfill Compaction Training School	Caterpilla & Ringhaver Equipment	10/06/1998	5
128	Method of Erosion and Sedimentation Control for Construction Sites	University of Florida - TREEO	10/27/1998	6
49	Landfill Gas and Leachate Systems	University of Florida - TREEO	10/20/1999	8
			Total:	19
			Hours Needed:	0

Period: **11/19/1999 - 11/18/2002**

Course	Course Name	Provider	Completion Date	Hours
124	Landfill Compaction Training School	Caterpilla & Ringhaver Equipment	10/12/2000	5
0	Permit Required Confined Space Entry	University of Florida - TREEO	06/27/2002	8
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
223	Health and Safety Training for Landfill Operations OnLine	University of Florida - TREEO	10/02/2002	5
			Total:	22
			Hours Needed:	0

Period: **11/19/2002 - 11/18/2005**

Course	Course Name	Provider	Completion Date	Hours
125	Management of Leachate, Gas, Stormwater and Odor at Class I, II, and III Landfills	University of Florida - TREEO	10/07/2003	8
[redacted]	Landfill Gas and Leachate Systems	University of Florida - TREEO	11/20/2003	8
[redacted]	SWANA-FL 2004 Summer Conference [7/21-23/04]	Solid Waste Association of North America (SWANA - Florida Chapter)	07/23/2004	4
73	Wet Weather Operations	Kohl Consulting, Inc.	10/20/2004	4
49	Landfill Gas and Leachate Systems	SCS Engineers	11/20/2004	8
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	07/01/2005	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/16/2005	8
			Total:	44
			Hours Needed:	0

Period: **11/19/2005 - 11/18/2008**

Course	Course Name	Provider	Completion Date	Hours
426	SWANA-FL 2006 Summer Conference [7/23-26/06]	Solid Waste Association of North America (SWANA - Florida Chapter)	07/26/2006	7
225	19-Hour Initial Training Course for Transfer Station Operators and MRF Operators	Kohl Consulting, Inc.	07/28/2006	10
457	Disaster Debris Management	American Society of Civil Engineers	02/15/2007	6
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	33
			Hours Needed:	0

Period: **11/19/2008 - 11/18/2011**
[redacted]*rses taken.* Hours Needed: 16

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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[redacted]

Transcripts Report

Florida DEP Solid Waste Management Facility Operator Courses

DeVaughn, Prime
Landfill Crew Leader
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Material Recovery Facility Operator

Status: Current

- Initial Date: 07/28/2006
- Current Period: 07/28/2009 - 07/27/2012 Hours Required: 8 Hours Needed: 8

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
0	Permit Required Confined Space Entry	University of Florida - TREEO	06/27/2002	8
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
223	Health and Safety Training for Landfill Operations OnLine	University of Florida - TREEO	10/02/2002	5
353	SWANA-FL 2004 Summer Conference [7/21-23/04]	Solid Waste Association of North America (SWANA - Florida Chapter)	07/23/2004	2
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	07/01/2005	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/16/2005	8
426	SWANA-FL 2006 Summer Conference [7/23-26/06]	Solid Waste Association of North America (SWANA - Florida Chapter)	07/26/2006	4
			Total:	Prior
			Hours Needed:	

Period: **07/28/2006 - 07/27/2009 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
225	19-Hour Initial Training Course for Transfer Station Operators and MRF Operators	Kohl Consulting, Inc.	07/28/2006	Initial
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	8
			Hours Needed:	0

Period: **07/28/2009 - 07/27/2012**
No courses taken. Hours Needed: 8

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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Florida DEP Solid Waste Management Facility Operator Courses

[redacted]

DeVaughn, Prime
Landfill Crew Leader
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Transfer Station Operator

Status: **Current**

- Initial Date: 07/28/2006
- Current Period: 07/28/2009 - 07/27/2012 Hours Required: 8 Hours Needed: 8

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
0	Permit Required Confined Space Entry	University of Florida - TREEO	06/27/2002	8
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
223	Health and Safety Training for Landfill Operations OnLine	University of Florida - TREEO	10/02/2002	5
[redacted]	SWANA-FL 2004 Summer Conference [7/21-23/04]	Solid Waste Association of North America (SWANA - Florida Chapter)	07/23/2004	2
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	07/01/2005	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/16/2005	8
426	SWANA-FL 2006 Summer Conference [7/23-26/06]	Solid Waste Association of North America (SWANA - Florida Chapter)	07/26/2006	4
			Total:	Prior
			Hours Needed:	

Period: **07/28/2006 - 07/27/2009 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
225	19-Hour Initial Training Course for Transfer Station Operators and MRF Operators	Kohl Consulting, Inc.	07/28/2006	Initial
457	Disaster Debris Management	American Society of Civil Engineers	02/15/2007	6
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	14
			Hours Needed:	0

Period: **07/28/2009 - 07/27/2012**
No courses taken. Hours Needed: 8

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

[redacted]6 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

Florida DEP Solid Waste Management Facility Operator Courses

Dozier, Chris
Citrus County Solid Waste Management
P.O. Box 340
Lecanto, FL 34460-0340

Phone: 352 527-7670

Spotter / Waste Screener

Status: **Current**

- Initial Date: 07/25/2007
- Current Period: 07/25/2007 - 07/24/2010 - (Initial Period) Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **07/25/2007 - 07/24/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		07/25/2007	Initial
			Total:	0
			Hours Needed:	4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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Florida DEP Solid Waste Management Facility Operator Courses

Gilmore, William M.
Lead Solid Waste Technician
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Class I, II, III Landfill Operator

Status: **Current**

- Initial Date: 11/15/2007
- Current Period: 11/15/2007 - 11/14/2010 - (Initial Period) Hours Required: 16 Hours Needed: 8

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		07/25/2007	8
			Total:	Prior
			Hours Needed:	

Period: **11/15/2007 - 11/14/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
[redacted]5	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	University of Florida - TREEO	11/15/2007	Initial
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/25/2008	8
			Total:	8
			Hours Needed:	8

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Gilmore, William M.
Lead Solid Waste Technician
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Construction and Demolition Debris Landfill Operator

Status: Current

- Initial Date: 11/15/2007
- Current Period: 11/15/2007 - 11/14/2010 - (Initial Period) Hours Required: 16 Hours Needed: 8

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		07/25/2007	8
			Total:	Prior
			Hours Needed:	

Period: **11/15/2007 - 11/14/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
195	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	University of Florida - TREEO	11/15/2007	Initial
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/25/2008	8
			Total:	8
			Hours Needed:	8

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Gilmore, William M.
Lead Solid Waste Technician
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Spotter / Waste Screener

Status: **Current**

- Initial Date: 07/25/2007
- Current Period: 07/25/2007 - 07/24/2010 - (Initial Period) Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**
No courses taken.

Period: **07/25/2007 - 07/24/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		07/25/2007	Initial
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/25/2008	8
			Total:	8
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Gravely, Harold
Heavy Equipment Operator
Citrus County Solid Waste Management
P.O. Box 340
Lecanto, FL 34460-0340

Phone: 352 527-7670

Spotter / Waste Screener

Status: Current

- Initial Date: 09/25/2000
- Current Period: 09/25/2009 - 09/24/2012 Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **09/25/2000 - 09/24/2003 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
111	Landfill Operations and Waste Screening for Class I, II, III Sites	Kohl Consulting, Inc.	09/25/2000	Initial
256	Waste Screening & Identification for Landfill Operations and Spotters Refresher	Citrus County - Hazardous Material Section	08/29/2002	4
			Total:	4
			Hours Needed:	0

Period: **09/25/2003 - 09/24/2006**

Course	Course Name	Provider	Completion Date	Hours
295	Heavy Equipment Operator Training - 4 Hours	Fleet Solutions	04/16/2004	4
			Total:	4
			Hours Needed:	0

Period: **09/25/2006 - 09/24/2009**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		07/25/2007	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	04/05/2008	2
			Total:	10
			Hours Needed:	0

Period: **09/25/2009 - 09/24/2012**
No courses taken. Hours Needed: 4

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit wi given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

[redacted]

Heath, Eric M.
Heavy Equipment Operator
Citrus County Solid Waste Mgt.
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Class I, II, III Landfill Operator

Status: Current

- Initial Date: 07/15/2005
- Current Period: 07/15/2008 - 07/14/2011 Hours Required: 16 Hours Needed: 16

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	01/22/2004	8
295	Heavy Equipment Operator Training - 4 Hours	University of Florida - TREEO	04/16/2004	4
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/08/2005	2
			Total:	Prior
			Hours Needed:	

Period: **07/15/2005 - 07/14/2008 - (Initial Period)**

C[redacted]	Course Name	Provider	Completion Date	Hours
[redacted]	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	Kohl Consulting, Inc.	07/15/2005	Initial
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	03/24/2006	2
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/12/2007	2
49	Landfill Gas and Leachate Systems	University of Florida - TREEO	11/14/2007	8
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	22
			Hours Needed:	0

Period: **07/15/2008 - 07/14/2011**
No courses taken. Hours Needed: 16

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- [redacted]Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be [redacted]en for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Heath, Eric M.
Heavy Equipment Operator
Citrus County Solid Waste Mgt.
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Construction and Demolition Debris Landfill Operator

Status: Current

- Initial Date: 07/15/2005
- Current Period: 07/15/2008 - 07/14/2011 Hours Required: 16 Hours Needed: 16

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	01/22/2004	8
295	Heavy Equipment Operator Training - 4 Hours	University of Florida - TREEO	04/16/2004	4
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/08/2005	2
			Total:	Prior
			Hours Needed:	

Period: **07/15/2005 - 07/14/2008 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
195	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	Kohl Consulting, Inc.	07/15/2005	Initial
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	03/24/2006	2
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/12/2007	2
49	Landfill Gas and Leachate Systems	University of Florida - TREEO	11/14/2007	8
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	22
			Hours Needed:	0

Period: **07/15/2008 - 07/14/2011**
No courses taken. Hours Needed: 16

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

[redacted]

Heath, Eric M.
Heavy Equipment Operator
Citrus County Solid Waste Mgt.
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Spotter / Waste Screener

Status: Current

- Initial Date: 01/22/2004
- Current Period: 01/22/2007 - 01/21/2010 Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**
No courses taken.

Period: **01/22/2004 - 01/21/2007 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	01/22/2004	Initial
295	Heavy Equipment Operator Training - 4 Hours	University of Florida - TREEO	04/16/2004	4
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/08/2005	2
[redacted]	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	03/24/2006	2
			Total:	8
			Hours Needed:	0

Period: **01/22/2007 - 01/21/2010**

Course	Course Name	Provider	Completion Date	Hours
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/12/2007	2
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	12
			Hours Needed:	0

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- [redacted]Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Heglund, Susan
Solid Waste Technician
Citrus County Solid Waste
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Spotter / Waste Screener

Status: **Current**

- Initial Date: 11/29/2005
- Current Period: 11/29/2008 - 11/28/2011 Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **11/29/2005 - 11/28/2008 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	11/29/2005	Initial
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
463	4-Hour Refresher Course for Spotters at Landfills, C&D Sites and Transfer Stations	University of Florida - TREEO	11/20/2008	4
			Total:	6
			Hours Needed:	0

Period: **11/29/2008 - 11/28/2011**
No courses taken. Hours Needed: 4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Holst, Michael R.
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Spotter / Waste Screener

Status: **Current**

- Initial Date: 11/29/2005
- Current Period: 11/29/2008 - 11/28/2011 Hours Required: 4 Hours Needed: 2

Period: **Prior Courses**
No courses taken.

Period: **11/29/2005 - 11/28/2008 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	11/29/2005	Initial
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	03/24/2006	2
[redacted]	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/12/2007	2
			Total:	6
			Hours Needed:	0

Period: **11/29/2008 - 11/28/2011**

Course	Course Name	Provider	Completion Date	Hours
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/02/2009	2
			Total:	2
			Hours Needed:	2

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- [redacted]n Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE [redacted]edit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Lake, Aaron W.
Landfill Maintenance Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Class I, II, III Landfill Operator

Status: Current

- Initial Date: 05/11/2007
- Current Period: 05/11/2007 - 05/10/2010 - (Initial Period) Hours Required: 16 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	08/24/2004	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/08/2005	2
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
			Total:	Prior
			Hours Needed:	

Period: **05/11/2007 - 05/10/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	Initial
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	11/19/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
522	Spill Prevention Control and Countermeasure (SPCC) Training and Development Course	University of Florida - TREEO	12/04/2008	6
			Total:	18
			Hours Needed:	0

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
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Florida DEP Solid Waste Management Facility Operator Courses

Lake, Aaron W.
Landfill Maintenance Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Construction and Demolition Debris Landfill Operator

Status: **Current**

- Initial Date: 05/11/2007
- Current Period: 05/11/2007 - 05/10/2010 - (Initial Period) Hours Required: 16 Hours Needed: 0

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	08/24/2004	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/08/2005	2
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
			Total:	Prior
			Hours Needed:	

Period: **05/11/2007 - 05/10/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	Initial
424	National Incident Management System [NIMS] and Introduction IS-00700	Emergency Management Institute	11/19/2007	4
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
522	Spill Prevention Control and Countermeasure (SPCC) Training and Development Course	University of Florida - TREEO	12/04/2008	6
			Total:	18
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Lake, Aaron W.
Landfill Maintenance Coordinator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670

Spotter / Waste Screener

Status: **Current**

- Initial Date: 08/24/2004
- Current Period: 08/24/2007 - 08/23/2010 Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**
No courses taken.

Period: **08/24/2004 - 08/23/2007 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	08/24/2004	Initial
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/08/2005	2
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	05/11/2007	4
			Total:	8
			Hours Needed:	0

Period: **08/24/2007 - 08/23/2010**

Course	Course Name	Provider	Completion Date	Hours
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	12/13/2007	8
			Total:	8
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 230.

Florida DEP Solid Waste Management Facility Operator Courses

Markey, Joseph
Citrus County Solid Waste
PO Box 340
Lecanto, FL 33716

Phone: 352-793-3368

Spotter / Waste Screener

Status: **Current**

- Initial Date: 11/20/2008
- Current Period: 11/20/2008 - 11/19/2011 - (Initial Period) Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **11/20/2008 - 11/19/2011 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	11/20/2008	Initial
			Total:	0
			Hours Needed:	4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Martone, Richard
Citrus County Division of Solid Waste Management
PO Box 340
Lecanto, FL 34461

Spotter / Waste Screener

Status: **Current**

- Initial Date: 02/07/2008
- Current Period: 02/07/2008 - 02/06/2011 - (Initial Period) Hours Required: 4 Hours Needed: 2

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	02/02/2005	8
186	Pedestrian, Vehicles, and Equipment Safety in Landfills	University of Florida - TREEO	03/13/2007	2
			Total:	Prior
			Hours Needed:	

Period: **02/07/2008 - 02/06/2011 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	02/07/2008	Initial
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	04/05/2008	2
			Total:	2
			Hours Needed:	2

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

[redacted]

Palmer, James S.
Lead Heavy Equipment Operator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Class I, II, III Landfill Operator

Status: **Current**

- Initial Date: 11/15/2007
- Current Period: 11/15/2007 - 11/14/2010 - (Initial Period) Hours Required: 16 Hours Needed: 6

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	11/29/2005	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	University of Florida - TREEO	03/24/2006	2
			Total:	Prior
			Hours Needed:	

P[redacted]: **11/15/2007 - 11/14/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
195	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	University of Florida - TREEO	11/15/2007	Initial
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/25/2008	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/02/2009	2
			Total:	10
			Hours Needed:	6

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
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[redacted]

Transcripts Report

Florida DEP Solid Waste Management Facility Operator Courses

Palmer, James S.
Lead Heavy Equipment Operator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Construction and Demolition Debris Landfill Operator

Status: Current

- Initial Date: 11/15/2007
- Current Period: 11/15/2007 - 11/14/2010 - (Initial Period) Hours Required: 16 Hours Needed: 6

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	11/29/2005	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	University of Florida - TREEO	03/24/2006	2
			Total:	Prior
			Hours Needed:	

Period: **11/15/2007 - 11/14/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
195	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	University of Florida - TREEO	11/15/2007	Initial
281	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/25/2008	8
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/02/2009	2
			Total:	10
			Hours Needed:	6

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

[redacted]

Palmer, James S.
Lead Heavy Equipment Operator
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4690

Spotter / Waste Screener

Status: **Current**

- Initial Date: 11/29/2005
- Current Period: 11/29/2008 - 11/28/2011 Hours Required: 4 Hours Needed: 2

Period: **Prior Courses**
No courses taken.

Period: **11/29/2005 - 11/28/2008 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	11/29/2005	Initial
396	SWANA-FL Chapter Annual Road-e-o Safety Training	University of Florida - TREEO	03/24/2006	2
[redacted]	Health and Safety for Solid Waste Workers	University of Florida - TREEO	09/25/2008	8
			Total:	10
			Hours Needed:	0

Period: **11/29/2008 - 11/28/2011**

Course	Course Name	Provider	Completion Date	Hours
396	SWANA-FL Chapter Annual Road-e-o Safety Training	Solid Waste Association of North America (SWANA - Florida Chapter)	05/02/2009	2
			Total:	2
			Hours Needed:	2

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or [redacted]0.

Florida DEP Solid Waste Management Facility Operator Courses

Poore, Jean
Citrus County Solid Waste
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4693

Spotter / Waste Screener

Status: **Current**

- Initial Date: 07/25/2007
- Current Period: 07/25/2007 - 07/24/2010 - (Initial Period) Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **07/25/2007 - 07/24/2010 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities		07/25/2007	Initial
			Total:	0
			Hours Needed:	4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Sherlock, Dan Scott
Hazardous Waste Specialist
Citrus County Solid Waste Mgt
PO Box 340
Lecanto, FL 34460

Phone: (352) 527-7670 ext: 4682

Spotter / Waste Screener

Status: **Current**

- Initial Date: 02/07/2008
- Current Period: 02/07/2008 - 02/06/2011 - (Initial Period) Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**
No courses taken.

Period: **02/07/2008 - 02/06/2011 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	02/07/2008	Initial
286	Hazardous Materials Chemistry for the Non-Chemist	University of Florida - TREEO	03/12/2009	8
[illegible]	Chemical Compatibility and Storage	University of Florida - TREEO	03/13/2009	4
63	Hazardous Waste Regulations for Generators	University of Florida - TREEO	10/06/2009	4
			Total:	16
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
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Florida DEP Solid Waste Management Facility Operator Courses

Stephens, Thomas C.
Director
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460-0340

Phone: (352) 527-7670

Class I, II, III Landfill Operator

Status: **Current**

- Initial Date: 11/20/2009
- Current Period: 11/20/2009 - 11/19/2012 - (Initial Period) Hours Required: 16 Hours Needed: 16

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/07/2009	8
			Total:	Prior
			Hours Needed:	

Period: **11/20/2009 - 11/19/2012 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	11/20/2009	Initial
			Total:	0
			Hours Needed:	16

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
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Florida DEP Solid Waste Management Facility Operator Courses

Stephens, Thomas C.
Director
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460-0340

Phone: (352) 527-7670

Construction and Demolition Debris Landfill Operator

Status: Current

- Initial Date: 11/20/2009
- Current Period: 11/20/2009 - 11/19/2012 - (Initial Period) Hours Required: 16 Hours Needed: 16

Period: **Prior Courses**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/07/2009	8
			Total:	Prior
			Hours Needed:	

Period: **11/20/2009 - 11/19/2012 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	11/20/2009	Initial
			Total:	0
			Hours Needed:	16

Status: Current

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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Florida DEP Solid Waste Management Facility Operator Courses

Stephens, Thomas C.
Director
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460-0340

Phone: (352) 527-7670

Spotter / Waste Screener

Status: **Current**

- Initial Date: 10/07/2009
- Current Period: 10/07/2009 - 10/06/2012 - (Initial Period) Hours Required: 4 Hours Needed: 0

Period: **Prior Courses**
No courses taken.

Period: **10/07/2009 - 10/06/2012 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	10/07/2009	Initial
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	University of Florida - TREEO	11/20/2009	4
			Total:	4
			Hours Needed:	0

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Weinman, Ronald
Citrus County Solid Waste Management
PO Box 340
Lecanto, FL 34460-0340

Phone: (352) 527-7670

Spotter / Waste Screener

Status: **Current**

- Initial Date: 05/12/2008
- Current Period: 05/12/2008 - 05/11/2011 - (Initial Period) Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **05/12/2008 - 05/11/2011 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
248	Spotter Training for Solid Waste Facilities	University of Florida - TREEO	05/12/2008	Initial
			Total:	0
			Hours Needed:	4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
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- An Initial course can be taken as a continuing education course only if it was not taken as the operator's or spotter's initial training. No CE credit will be given for the same course taken within the same 3-year period.
- If you have any questions, please contact djenkins@treeo.ufl.edu or mkeilhauer@treeo.ufl.edu or call (352) 392-9570 extensions 227 or 230.

Florida DEP Solid Waste Management Facility Operator Courses

Yarborough, Donna
Citrus County Solid Waste
PO Box 340
Saint Petersburg, FL 33716

Phone: (352) 527-7670 ext 4693

Spotter / Waste Screener

Status: **Current**

- Initial Date: 02/23/2009
- Current Period: 02/23/2009 - 02/22/2012 - (Initial Period) Hours Required: 4 Hours Needed: 4

Period: **Prior Courses**
No courses taken.

Period: **02/23/2009 - 02/22/2012 - (Initial Period)**

Course	Course Name	Provider	Completion Date	Hours
462	8-Hour Training Course for Spotters at Landfills, C&D Sites and Transfer Stations	University of Florida - TREEO	02/23/2009	Initial
			Total:	0
			Hours Needed:	4

Status: **Current**

- Continuing Education (CE) Minimum 3 Year Requirements:

16 hours	Class I II III Landfill / Construction and Demolition Debris
8 hours	Transfer Station / Material Recovery Facility
4 hours	Spotter

- **Expired:** If you have exceeded the 3 year training period without achieving the minimum continuing education, you must start over by taking an approved initial course and pass exam. There is not a grace period.
- Initial hours are not counted toward continuing education.
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APPENDIX F

LEACHATE COLLECTION SYSTEM INSPECTION REPORT

ATTENTION

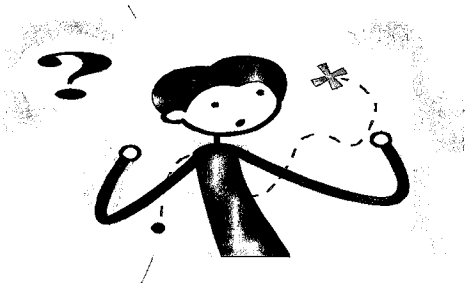
ATTACHMENT L

VIDEO INSPECTION IS AVAILABLE ON DVD:

- To view the disks please contact:

State of Florida
Department of Environmental Protection
Solid Waste Program
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926
Phone: (813) 632-7600

ATTENTION



OVERSIZED MAPS HAVE BEEN SCANNED SEPARATELY PLEASE SEE:

- 21375-018-SO/01 CITRUS CENTRAL CLASS I LF OP. RENEWAL APP. APPENDIX L-GAMMA LOG VENT

- 21375-018-SO/01 CITRUS CENTRAL CLASS I LF OP. RENEWAL APP. APPENDIX L-GAMMA LOG-SECONDARY #1

Board of County Commissioners
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE MANAGEMENT DIVISION
P.O. Box 340, Lecanto, Florida 34460
Telephone: (352) 527-7670 FAX: (352) 527-7672
email: landfillinfo@bocc.citrus.fl.us
TDD Telephone: (352) 527-5303
Citrus Springs/Dunnellon/Inglis/Yankeetown area Toll Free (352) 489-2120

July 15, 2009

Susan J. Pelz, P.E.
Solid Waste Section
Florida Department of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926

Re: Citrus County Central Landfill
Permit No. 21375-008-SO/01
Leachate Collection System, Phase 1/1A

Dear Ms. Pelz:

The attached report summarizes the investigation to date related to the leachate collection system for Phase 1/1A, which was previously reported to you and discussed at a meeting in April. The report includes DVDs of all video inspections, caliper and gamma ray logs and piezocone soundings. The County is in the process of hiring CH2M Hill to assist in further phases of this project. We will be glad to discuss this issue further, either via telephone or in person. We are particularly interested in your feelings on whether to do a piezocone sounding through the impacted section of collection pipes and liner to more closely define whether there is any loose soil or void below the liner.

Yours truly,

Susan J Metcalfe

Susan Metcalfe, P.G.
Director

SM

Attachment

CC: Glenn W. McCracken, Director, Public Works Department (report text only)
Bo Bruner, CH2M Hill, Gainesville
John Wood, CH2M Hill, Lancaster PA (report text only)

CITRUS COUNTY CENTRAL LANDFILL
PHASE 1/1A LEACHATE COLLECTION SYSTEM
ISSUES

230 W. GULF TO LAKE HIGHWAY
LECANTO, FLORIDA

DEPARTMENT OF PUBLIC WORKS
DIVISION OF SOLID WASTE MANAGEMENT

SUSAN J. METCALFE, DIRECTOR

352/527-7670

JULY 2009

CITRUS COUNTY LANDFILL PHASE 1/1A LEACHATE COLLECTION SYSTEM ISSUES

LOCATION/ DESCRIPTION

On the west side of the active Citrus County Central Landfill, there are seven pipes that lay on the side slope of Phase 1/1A. They are located in a notch in the 2:1 side slope and are bedded in polyurethane foam. The location of those pipes is shown on Figure 1. Details of the arrangement are shown in Figure 2, a reduced size excerpt from the as-built drawings prepared by CH2M Hill, the engineer for the project.

There are four different functions represented in this series of pipes:

One pipe is the leachate collection/cleanout pipe for Phase 1A. (a)

Two pipes are the carriers for the pumps that remove leachate from the secondary leachate collection sump for Phase 1A. (b)

Two pipes are the carriers for the pumps that remove leachate from the primary leachate collection sump for Phase 1A. (c)

Two pipes serve as inspection/cleanout access points, connected to the leachate collection pipes that exit the Phase 1 leachate sump through the berm/liner penetration between Phase 1 and 1A. (d)

Listing the pipes from north to south, the functions are as follows: a, b, c, c, b, d, d. The b and c pipes are designated for FDEP reporting from north to south as Secondary #1, Primary #1, Primary #2 and Secondary #2.

All pipes are HDPE. Dimensions of the pipes are as follows.

(a) 8-inch diameter solid on the side slope (approximately 185 feet long in plan view on the west slope), perforated along the bottom of the cell (approximately 800 feet) and solid on the east slope (approximately 155 feet long).

(b) 18-inch diameter solid on the side slope, turning the corner to horizontal and perforated in the sump, measured at a total of 215 feet.

(c) 18-inch diameter solid on the side slope (approximately 180 feet long in plan view or about 200 feet measured in the pipe), turning the corner to horizontal and increasing to 24-inch diameter perforated in the collection sump (approximately 24 feet long). The total length measured with inspection instruments from top of pipe to the sealed end was about 230 feet.

(d) 8-inch on the side slopes, turning south and horizontal to connect to the Phase 1 pipes, all solid. Total length is over 240 feet in Phase 1A.

SEQUENCE OF EVENTS

The Phase 1/1A leachate pipes were installed in 1996-97. They were video inspected and found to be in good condition in 2001. Phase 2 of the landfill was constructed in 2004-05 at the same time that the operating permit was renewed. Video inspection of the leachate pipes was conducted in November 2004 with no changes noted.

On July 20, 2007 it was determined that all of the Phase 1/1A leachate pumps had "tripped out" probably due to a power surge/lightning strike. Controls and meters were also impacted. On August 8 it was determined that Secondary pump #2 had again been impacted by a lightning strike (perhaps as early as July 31, the last date flow was registered) and was no longer functioning.

The #2 Secondary pump was removed for repairs and Secondary pump #1 continued in service. The operator reported that there seemed to be "slime" on the pump when it was removed. There were no spares onsite; the pump had to be shipped out of state and was not received back until early December.

At that time, the other secondary pump was also removed, the piping to the sump was jetted and a camera inspection of the secondary pipes was performed. Attachment A is a DVD of this inspection. Attachment B is the written report from Florida JetClean, the contractor who performed that work. No "slime" was noted in the pipes. This was the first observation of reduced vertical dimension of pipes. Both pumps were reinstalled and were functioning properly following this inspection.

On July 3, 2008, transducers on both primary pumps failed, probably due to a power surge. However since the pumps still operated in manual, they were pumped daily in that mode until July 26 when the #1 Primary pump was removed and the transducer was replaced. Operators noted that it was difficult to reinstall. On August 1 the same pump was removed for repairs again and Primary #2 was used exclusively to keep the sump pumped down. On August 26, a spare secondary pump was installed in the #1 Primary pipe and began operating in the automatic mode. On the same date, operators attempted to remove the Primary #2 pump; the lift cable broke when the pump was about 50 feet from the far end of the pipe. That information was reported to Solid Waste on September 5.

INVESTIGATION

Solid Waste contacted several of our engineering consultants to determine if there was a way to retrieve the pump; their suggestion was first to retrieve the broken cable. It was not known whether the pump was wedged because of not being parallel to the pipe or if the pipe was out of round. We also contacted the design engineer (CH2M Hill).

After removing the pump, Primary #1 pipe was video inspected on September 11, 2008 by TNT Sewer. Ovaling of the pipe was noted from about 100 feet below the top to about 195 feet. The camera was able to enter the sump and reached a total distance of 207 feet. Attachment C is the written report of that video inspection.

On November 6, the Primary #2 pipe was video inspected. Noticeable crushing was observed from about 100 feet down to 173 feet, where the top of the pump was observed to be stuck in the pipe. The cable was retrieved.

On December 12, the 8-inch diameter pipes at the north and south end of the array (functions a and d) were video inspected as well. The Phase 1 cleanouts function d)

showed no deformation, however the Phase 1A cleanout at the north end showed deformation starting at 119 feet below the top with the pipe diameter too small to pass at 137 feet. DVDs of the November-December 2008 video records (Attachment D) are attached and a summary of observations are shown in Table 1.

Borehole geophysical methods (caliper, gamma ray and inclinometer) were attempted next to better define the geometry of the pipes. The first attempt, performed February 13, 2009, was not successful due to interference between the pump discharge lines and the investigative tools. The tools were modified with a skate block and a second attempt was made on February 26. This time, the pump was removed from Secondary #1 for clear access and the two northernmost pipes were measured, i.e. the 8-inch Phase 1A leachate collection/cleanout line (vent) and the #1 Secondary sump pipe. The logs are attached as Attachment D and E. Inclinometer logs were unsuccessful because the pipe inclinations exceeded the capability of the tool.

The caliper tool was modified to use only two of the three arms, with the third arm being removed for the attachment to the skate. The total thickness of the tool plus the skate modification was 5.7 inches. The total length of the tool was 9.75 feet. The skate may have run down the low point of the pipe, or may have moved around somewhat in the lower side of the pipe, with the remaining two arms positioned at 120 degrees separated from the skate in both directions.

The caliper logs show that the #1 secondary pipe has an interior diameter of 15.6 inches to a depth of 95 feet below the top; it shows uneven deformation from that depth to 195 feet, where the instrument would not pass. The minimum measured diameter was 9 inches at a depth of 173 feet. Advanced Borehole Services, the contractor performing this work, indicated that the measurements indicated on the log may not reflect actual dimensions.

The gamma ray log measures radiation from the surrounding soil. Clays generally exhibit higher radiation levels than sand. Also, if the tool is closer to the soil, the radiation levels should increase. The log of #1 secondary shows slight variations from surface to 130 feet deep, gradually increasing to 175 feet then dropping dramatically to zero from 176 feet to 182 fee, remaining at that level to the end of the log.

The caliper log of the 8-inch diameter Phase1A leachate collection/cleanout pipe shows that the diameter is consistently 7.5 inches from the top to the 140 foot depth, at which point the tool would not pass, indicating a diameter of less than 5.7 inches. The gamma ray log for that pipe shows a similar pattern with slight variations from the surface to about 130 feet, then dropping dramatically in the last 10 feet.

This information was reported to the Tampa office of FDEP on April 20th. A meeting was held on April 27th to discuss the status and further investigation techniques.

Cone penetrometer tests were conducted on May 1, 2009. The locations of the two borings are shown on Figure 3, with Attachments G and H. presenting the log of each

boring. These investigations suggest that there is no loose soil or evidence of karst activity beneath the outside edge of the liner in the vicinity of the Phase 1/1A leachate pipes or in a similar position related to the proposed Phase 3 liner.

Later in May 2009, video inspections of all of the leachate pipes in the active landfill were conducted. DVDs of the video are attached (Attachment I) with a summary of observations shown in Table 2. The location of the top end of these pipes is shown on Figure 4 with the designations matching those in Table 2.

SUMMARY

Some condition has occurred that caused all the leachate pipes on the side slope associated with Phase 1A to deform in the section between about 90 feet and 190 feet below the top of the slope. The assumed vertical dimension has been reduced to the point that removal and replacement of one and possibly more leachate pumps is impossible. The deformation of the pipes may be increasing. The leachate collection pumps continue to function, except for Primary Pump #2. The cleanouts for the Phase 1 sump which are located at the south end of the same side-slope section appear to be full diameter to the bottom. None of the other leachate collection pipes at the site show any diameter changes from previous inspections.

FURTHER INVESTIGATION

One additional investigative technique that would reach the area of interest would be to use the cone penetrometer to advance a borehole through the waste and liner on the side slope so that the penetration resistance of the soils directly beneath the deformed pipes could be measured. The small liner penetration made by the instrument could be sealed with bentonite to reduce the very slight potential of leakage. Should very soft soils or a void be found, the remedial action would be different than if the liner and pipes are in fact well supported by the underlying soils.

POSSIBLE REMEDIES

Pipes only involved

Slip-lining the carrier pipes with smaller pipes and grouting between the inner and outer pipes is one possible solution. Pumps that would fit inside the smaller pipes would be used to replace the existing pumps. Sufficient pump capacity should be achievable in the smaller size, running longer at lower pumping rates to keep the level of leachate in the sump at compliant elevations.

Another possibility would be to create a new vertical pump carrier shaft into the primary sump. The next possibility is removing all waste over the side-slope leachate pipes in order to replace them.

Pipes and liner support involved

Removing waste, leachate pipes and liner then grouting or otherwise stabilizing the underlying soils, before replacing the liner, leachate pipes and waste is a possible remedy.

CITRUS COUNTY CENTRAL LANDFILL

Table 1. SUMMARY OF OBSERVATIONS, LEACHATE LINE VIDEO INSPECTIONS, NOVEMBER-DECEMBER 2008

DESCRIPTION	DIAMETER INCHES	LENGTH INSPECTED FEET	COMMENTS
Phase 1/1A Primary 1 (N)	18	178	first attempt, 106' slightly oval, 146' more oval, 166' more flattened, 177' could not pass
		218	second attempt, start at 149', tight at 166', 186' oval, 190' opens up, 206' water level, murky
Phase 1/1A Primary 2 (S)	18	173	103' slightly oval,143' more oval, (?) dip at 148', 156' more flattened, 173' top of stuck pump
Phase 1/1A Connection Cleanout ((S)	8	210	162' slightly oval, 202' series of joints to turn corner bottom of slope and turn south
Phase 1/1A Connection Cleanout (N)	8	211	pipe may deflect left-right, 203' series of joints, connection to other pipes, water running
Phase 1A Cleanout Cleanout	8	137	119' slight oval, 137' could not pass

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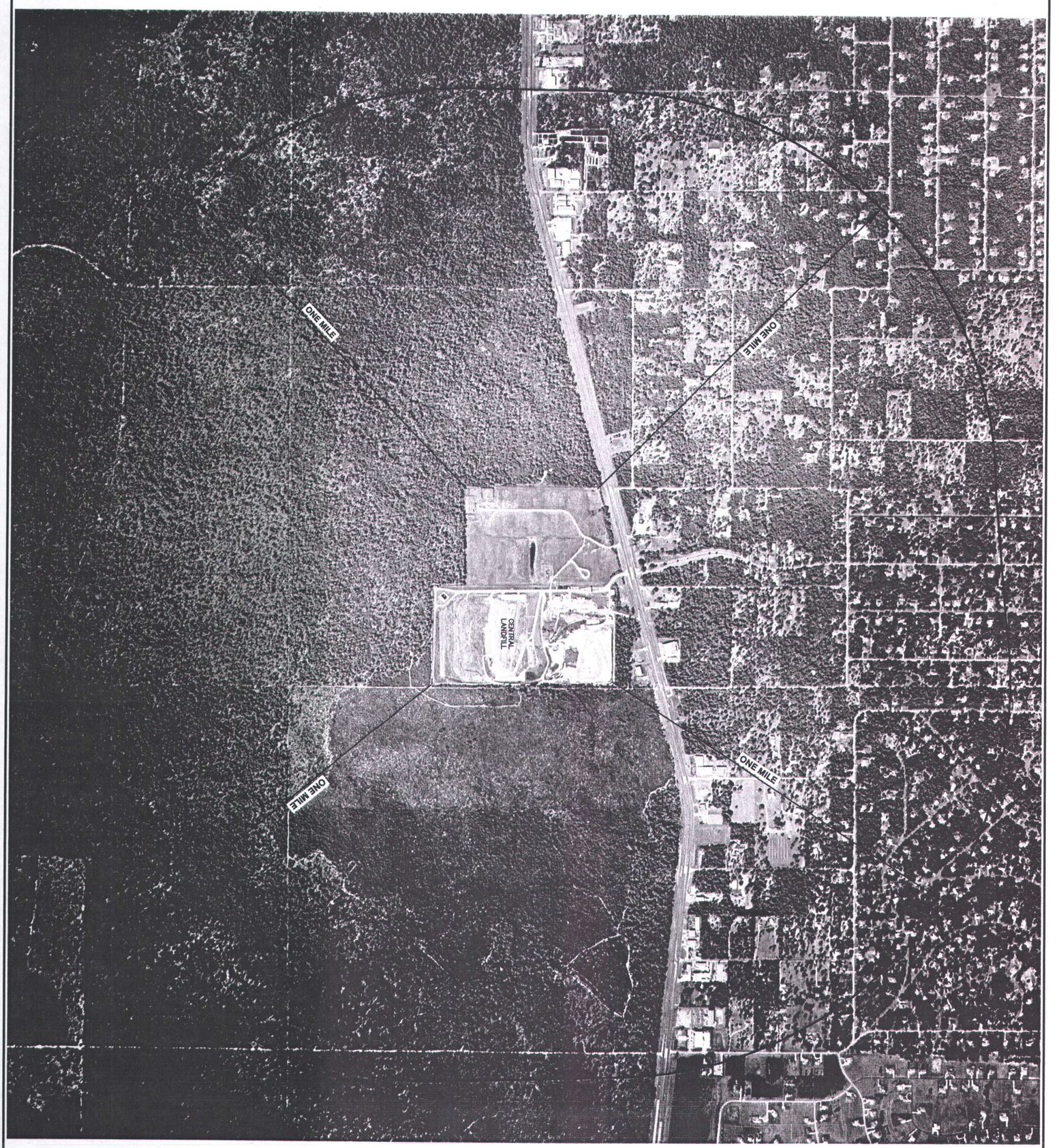

LEGEND

1 MILE RADIUS (APPROX.)

PHOTO DATE: 09/26/08

600 300 0 600
SCALE IN FEET

N

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813 621-9080 FAX 813 933-8757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO.	DWN. BY:	Q/A RVW BY:
09208040.03	CTN	DHB
DSN. BY:	CHK. BY:	APP. BY:
DHB	DHB	CEH

CLIENT
CITRUS COUNTY
SOLID WASTE MANAGEMENT DIVISION
CITRUS COUNTY, FLORIDA

DRAWING TITLE
1 - MILE AERIAL PHOTOGRAPH

PROJECT TITLE
CENTRAL LANDFILL
OPERATIONS PERMIT
RENEWAL DRAWINGS

REV	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			
6			

DOMINIQUE H. BRAMLETT, P.E.
LICENSE NO. 61829

CADD FILE: 084003AERIAL
DATE: FEBRUARY 2010
SCALE: AS SHOWN
DRAWING NO. 2 of 6

CITRUS COUNTY CENTRAL LANDFILL

Table 2. SUMMARY OF OBSERVATIONS, LEACHATE LINE VIDEO INSPECTIONS, MAY 2009

VIDEO DESIGNATION	DESCRIPTION OR FUNCTION	DIAMETER INCHES	LENGTH INSPECTED FEET	COMMENTS
W-1	Phase 2 - Primary 1	18	220	Approximates design length
W-2	Phase 2 - Primary 2	18	210	Approximates design length
W-3	Phase 2 Cleanout	8	588	Approximately to center of cell
W-4	Phase 2 - Secondary	18	210	Approximates design length
W-5	Phase 1A Cleanout	8	160	Impassable partway down side slope
W-6	Phase 1/1A Secondary 1	18	160	Impassable partway down side slope
W-7	Phase 1/1A Primary 1	18	165	Impassable partway down side slope
W-8	Phase 1/1A Primary 2	18	160	Impassable partway down side slope
W-9	Phase 1/1A Secondary 2	18	175	Impassable partway down side slope
W-10	Phase 1/1A Connection Cleanout	8	201	Connection with Phase 1 N/S line clear
W-11	Phase 1/1A Connection Cleanout	8	207	Connection with Phase 1 N/S line clear
W-12	Phase 1 Cleanout 1	8	202	Reached bottom of side slope
W-13	Phase 1 NS Cleanout Connection	8	162	Pipe bend joint prevents further inspection
W-14	Phase 1Cleanout 2	8	95	Matches previous observation, partially crushed
S-15	Phase 1NS Cleanout	8	130	Matches previous observation, partially crushed
E-16	Phase 1 Cleanout 2	8	210	Reached bottom of side slope
E-17	Phase 1 Cleanout 1	8	193	Reached bottom of side slope
E-18	Phase 1A Cleanout	8	200	Reached bottom of side slope
E-19	Phase 2 Cleanout	8	540	Approximately to center of cell

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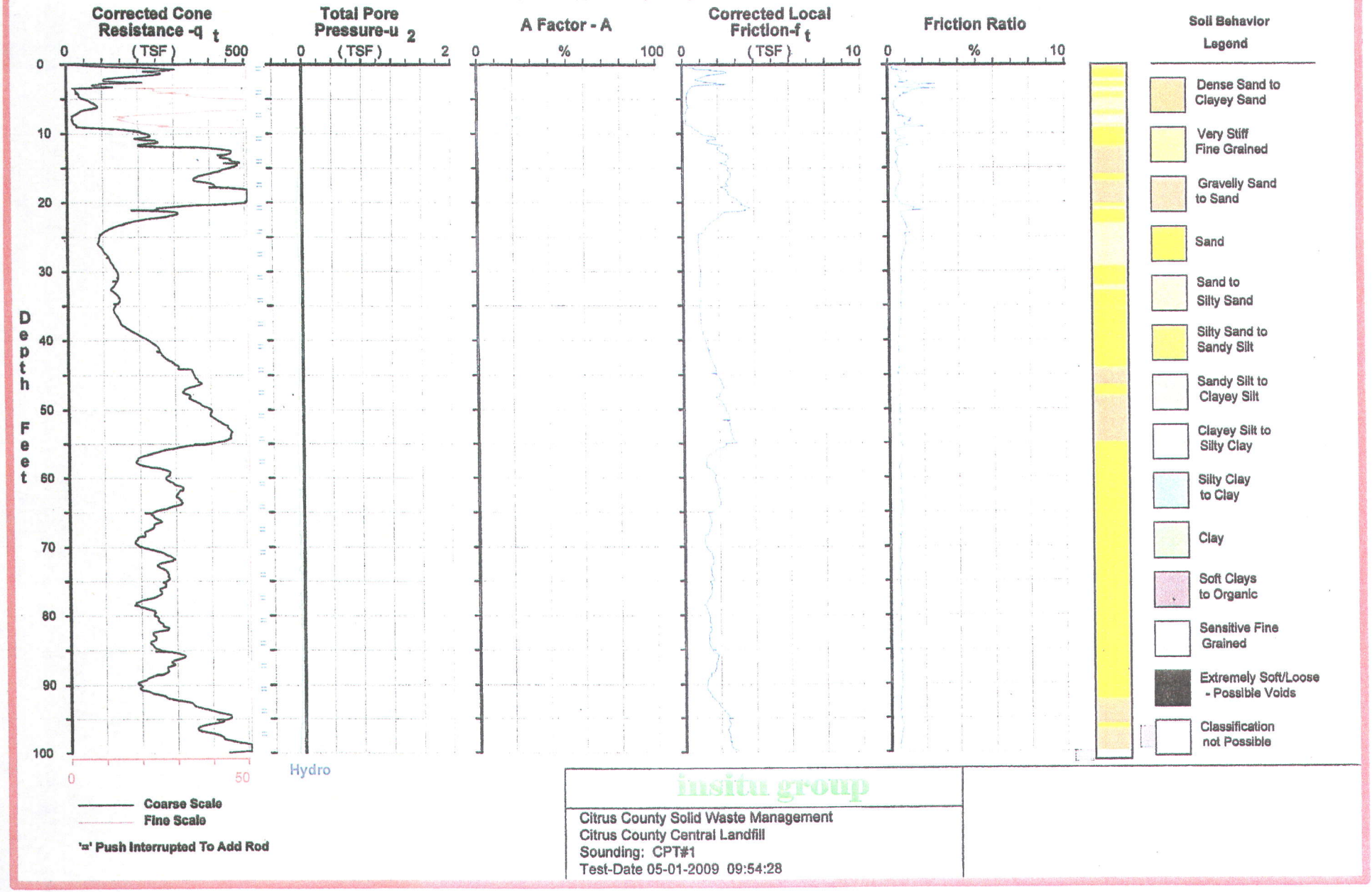
PIEZOCONE SOUNDING CPT#1



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Citrus County Solid Waste Management
Citrus County Central Landfill
Sounding: CPT#1
Test-Date 05-01-2009 09:54:28

REV: 04 - 37.02 - 0

STANDARD SOIL BEHAVIOR TABLE

Depth (Feet)	Soil Behavior Type	Qc (TSF)	Lf (TSF)	N (#)	Vertical Effective Stress (TSF)	Relative Density (%)	Friction Angle (Degrees)	Constrained Modulus (TSF)	Undrained Shear Strength (TSF)	Sens.	Comp.	OCR
1	SAND	281.6	1.66	51	.046	>85%	>43	575.9	--	--	--	--
2	SAND	137.66	1.05	27	.091	>85%	>43	302.8	--	--	--	--
3	SAND,TO SILTY SAND	96.4	1.16	24	.139	65%-85%	>43	216.4	--	--	--	--
4	SILTY SAND TO SANDY SILT	29.02	0.3	9	.188	50%-58%	37-39	63.7	--	--	--	--
5	SAND TO SILTY SAND	48.97	0.24	12	.236	50%-58%	39-41	109.9	--	--	--	--
6	SAND TO SILTY SAND	76.4	0.29	19	.284	58%-65%	39-41	172.4	--	--	--	--
7	SILTY SAND TO SANDY SILT	33.46	0.2	11	.333	42%-50%	35-37	73.5	--	--	--	--
8	SANDY SILT TO CLAYEY SILT	16.12	0.16	6	.386	35-42%	31-33	35.4	--	--	--	--
9	SAND TO SILTY SAND	73.46	0.51	18	.434	50%-58%	37-39	161.5	--	--	--	--
10	SAND	218	1.29	43	.479	>85%	41-43	479.5	--	--	--	--
11	SAND	230.19	1.55	45	.525	>85%	41-43	506.3	--	--	--	--
12	GRAVELLY SAND TO SAND	365.15	2.09	59	.569	>85%	>43	803.2	--	--	--	--
13	GRAVELLY SAND TO SAND	442.81	2.49	72	.613	>85%	>43	974.1	--	--	--	--
14	GRAVELLY SAND TO SAND	470.44	2.39	77	.657	>85%	>43	1034.9	--	--	--	--
15	GRAVELLY SAND TO SAND	442.02	2.58	72	.701	>85%	>43	972.3	--	--	--	--
16	SAND	372.52	2.67	73	.747	>85%	41-43	819.5	--	--	--	--
17	GRAVELLY SAND TO SAND	393.17	2.49	64	.791	>85%	41-43	864.9	--	--	--	--
18	GRAVELLY SAND TO SAND	504.76	2.4	82	.835	>85%	>43	1110.4	--	--	--	--
19	GRAVELLY SAND TO SAND	566.59	2.64	92	.879	>85%	>43	1246.4	--	--	--	--
20	SAND	409.59	3.35	80	.924	>85%	41-43	901	--	--	--	--
21	SAND	266.81	3.1	53	.97	>85%	39-41	591.2	--	--	--	--
22	SAND	239.89	1.96	47	1.018	>85%	39-41	527.7	--	--	--	--
23	SAND TO SILTY SAND	146.24	1.47	36	1.064	58%-65%	37-39	321.6	--	--	--	--
24	SAND TO SILTY SAND	100.04	1.09	24	1.112	50%-58%	35-37	220	--	--	--	--
25	SAND TO SILTY SAND	86.02	0.87	21	1.16	50%-58%	33-35	193.5	--	--	--	--
26	SAND TO SILTY SAND	90.05	0.87	22	1.209	50%-58%	33-35	198	--	--	--	--
27	SAND TO SILTY SAND	104.91	0.91	26	1.257	50%-58%	35-37	230.7	--	--	--	--
28	SAND TO SILTY SAND	117.37	0.91	29	1.305	50%-58%	35-37	258.1	--	--	--	--
29	SAND	129.57	0.96	25	1.351	50%-58%	35-37	284.9	--	--	--	--
30	SAND	139.51	0.99	27	1.397	50%-58%	35-37	306.8	--	--	--	--
31	SAND	136.54	0.97	27	1.442	50%-58%	35-37	300.4	--	--	--	--
32	SAND TO SILTY SAND	124.8	0.94	30	1.49	50%-58%	35-37	274.5	--	--	--	--
33	SAND	136.58	0.97	27	1.536	50%-58%	35-37	300.4	--	--	--	--
34	SAND	140.75	0.97	28	1.582	50%-58%	35-37	309.6	--	--	--	--
35	SAND	128.92	0.93	25	1.627	50%-58%	33-35	283.6	--	--	--	--
36	SAND	136.95	0.96	27	1.673	50%-58%	35-37	301.2	--	--	--	--
37	SAND	147.96	1	29	1.719	50%-58%	35-37	325.4	--	--	--	--
38	SAND	171.78	1.03	34	1.764	50%-58%	35-37	377.8	--	--	--	--
39	SAND	206.84	1.15	40	1.81	58%-65%	35-37	455.2	--	--	--	--
40	SAND	239.11	1.28	47	1.856	58%-65%	37-39	525.9	--	--	--	--

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Citrus County Solid Waste Management
Citrus County Central Landfill
Sounding # CPT#1
Test Date Test-Date 05-01-2009 09:54:28

STANDARD SOIL BEHAVIOR TABLE

Depth (Feet)	Soil Behavior Type	Qc (TSF)	Lf (TSF)	N (#)	Vertical Effective Stress (TSF)	Relative Density (%)	Friction Angle (Degrees)	Constrained Modulus (TSF)	Undrained Shear Strength (TSF)	Sens.	Comp.	OCR
41	SAND	255.87	1.4	50	1.901	65%-85%	37-39	562.8	-	-	-	-
42	SAND	273.17	1.53	53	1.947	65%-85%	37-39	600.9	-	-	-	-
43	SAND	301.91	1.7	59	1.992	65%-85%	37-39	664.1	-	-	-	-
44	GRAVELLY SAND TO SAND	345.7	1.81	56	2.036	>85%	37-39	760.4	-	-	-	-
45	GRAVELLY SAND TO SAND	356.87	2.02	58	2.08	>85%	37-39	789.4	-	-	-	-
46	GRAVELLY SAND TO SAND	353.87	2.18	58	2.124	>85%	37-39	778.5	-	-	-	-
47	SAND	327.44	2.09	64	2.17	65%-85%	37-39	720.3	-	-	-	-
48	GRAVELLY SAND TO SAND	347.82	1.97	57	2.214	65%-85%	37-39	765.1	-	-	-	-
49	GRAVELLY SAND TO SAND	384.88	2.29	63	2.258	>85%	37-39	846.6	-	-	-	-
50	GRAVELLY SAND TO SAND	399.11	2.47	65	2.302	>85%	37-39	877.9	-	-	-	-
51	GRAVELLY SAND TO SAND	421.34	2.5	69	2.346	>85%	37-39	926.9	-	-	-	-
52	GRAVELLY SAND TO SAND	449.1	2.6	73	2.39	>85%	37-39	988	-	-	-	-
53	GRAVELLY SAND TO SAND	456.83	2.66	74	2.434	>85%	37-39	1002.7	-	-	-	-
54	GRAVELLY SAND TO SAND	411.38	2.69	67	2.478	>85%	37-39	905	-	-	-	-
55	SAND	286.09	2.02	56	2.524	58%-85%	35-37	627.1	-	-	-	-
56	SAND	212.58	1.41	42	2.569	50%-58%	35-37	467.8	-	-	-	-
57	SAND	192.73	1.24	38	2.615	50%-58%	33-35	423.9	-	-	-	-
58	SAND	257.15	1.39	50	2.661	58%-85%	35-37	565.7	-	-	-	-
59	SAND	275.2	1.71	54	2.706	58%-85%	35-37	605.4	-	-	-	-
60	SAND	291.1	1.79	57	2.752	58%-85%	35-37	640.4	-	-	-	-
61	SAND	311.66	1.92	61	2.797	58%-85%	35-37	685.5	-	-	-	-
62	SAND	303.23	1.92	59	2.843	58%-85%	35-37	667	-	-	-	-
63	SAND	302.75	1.98	59	2.889	58%-85%	35-37	666.1	-	-	-	-
64	SAND	242.04	1.58	47	2.934	50%-58%	35-37	532.4	-	-	-	-
65	SAND	241.16	1.4	47	2.98	50%-58%	35-37	530.6	-	-	-	-
66	SAND	240.07	1.46	47	3.026	50%-58%	33-35	528.1	-	-	-	-
67	SAND	215.15	1.35	42	3.071	50%-58%	33-35	473.2	-	-	-	-
68	SAND	190.5	1.1	37	3.117	42%-50%	33-35	419	-	-	-	-
69	SAND	199.88	1.16	39	3.163	42%-50%	33-35	439.7	-	-	-	-
70	SAND	260.9	1.41	51	3.208	50%-58%	35-37	573.8	-	-	-	-
71	SAND	279.33	1.56	55	3.254	50%-58%	35-37	614.5	-	-	-	-
72	SAND	252.99	1.47	49	3.299	50%-58%	33-35	556.4	-	-	-	-
73	SAND	273.19	1.47	53	3.345	50%-58%	35-37	601	-	-	-	-
74	SAND	269.83	1.49	53	3.391	50%-58%	33-35	593.6	-	-	-	-
75	SAND	257.32	1.47	50	3.436	50%-58%	33-35	566	-	-	-	-
76	SAND	245.12	1.43	48	3.482	50%-58%	33-35	539.2	-	-	-	-
77	SAND	192.59	1.19	38	3.528	42%-50%	33-35	423.6	-	-	-	-
78	SAND	215.56	1.18	42	3.573	42%-50%	33-35	474.2	-	-	-	-
79	SAND	239.34	1.33	47	3.619	50%-58%	33-35	526.5	-	-	-	-
80	SAND	252.45	1.39	49	3.665	50%-58%	33-35	555.3	-	-	-	-

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Citrus County Solid Waste Management
Citrus County Central Landfill
Sounding # CPT#1
Test Date Test-Date 05-01-2009 09:54:28

STANDARD SOIL BEHAVIOR TABLE

Depth (Feet)	Soil Behavior Type	Qc (TSF)	Lf (TSF)	N (#)	Vertical Effective Stress (TSF)	Relative Density (%)	Friction Angle (Degrees)	Constrained Modulus (TSF)	Undrained Shear Strength (TSF)	Sens.	Comp.	OCR
81	SAND	258.27	1.41	50	3.71	50%-58%	33-35	668.1	--	--	--	--
82	SAND	235.03	1.32	46	3.756	50%-58%	33-35	516.9	--	--	--	--
83	SAND	227.51	1.32	44	3.801	42%-50%	33-35	500.5	--	--	--	--
84	SAND	263.58	1.5	52	3.847	50%-58%	33-35	579.8	--	--	--	--
85	SAND	306.64	1.79	60	3.893	50%-58%	33-35	675	--	--	--	--
86	SAND	281.3	1.71	55	3.938	50%-58%	33-35	618.8	--	--	--	--
87	SAND	263.64	1.57	52	3.984	50%-58%	33-35	579.9	--	--	--	--
88	SAND	212.05	1.31	41	4.03	42%-50%	31-33	466.4	--	--	--	--
89	SAND	192.69	1.18	38	4.075	35%-42%	31-33	423.8	--	--	--	--
90	SAND	230.98	1.3	45	4.121	42%-50%	33-35	508	--	--	--	--
91	SAND	293.66	1.56	57	4.167	50%-58%	33-35	645.9	--	--	--	--
92	GRAVELLY SAND TO SAND	356.46	1.92	58	4.211	58%-65%	35-37	784.1	--	--	--	--
93	GRAVELLY SAND TO SAND	426.52	2.23	69	4.255	65%-85%	35-37	938.2	--	--	--	--
94	GRAVELLY SAND TO SAND	426.88	2.41	70	4.298	65%-85%	35-37	943.6	--	--	--	--
95	SAND	363.53	2.43	71	4.344	58%-65%	35-37	799.6	--	--	--	--
96	GRAVELLY SAND TO SAND	404.64	2.4	66	4.388	65%-85%	35-37	890.1	--	--	--	--
97	GRAVELLY SAND TO SAND	461.97	2.48	75	4.432	65%-85%	35-37	1016.2	--	--	--	--
98	GRAVELLY SAND TO SAND	530.75	2.61	86	4.476	>85%	35-37	1167.5	--	--	--	--
99	GRAVELLY SAND TO SAND	443.19	2.92	72	4.52	65%-85%	35-37	975	--	--	--	--
100.1	END OF SOUNDING	463.77										

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Citrus County Solid Waste Management
Citrus County Central Landfill
Sounding # CPT#1
Test Date: Test-Date 06-01-2009 09:54:28

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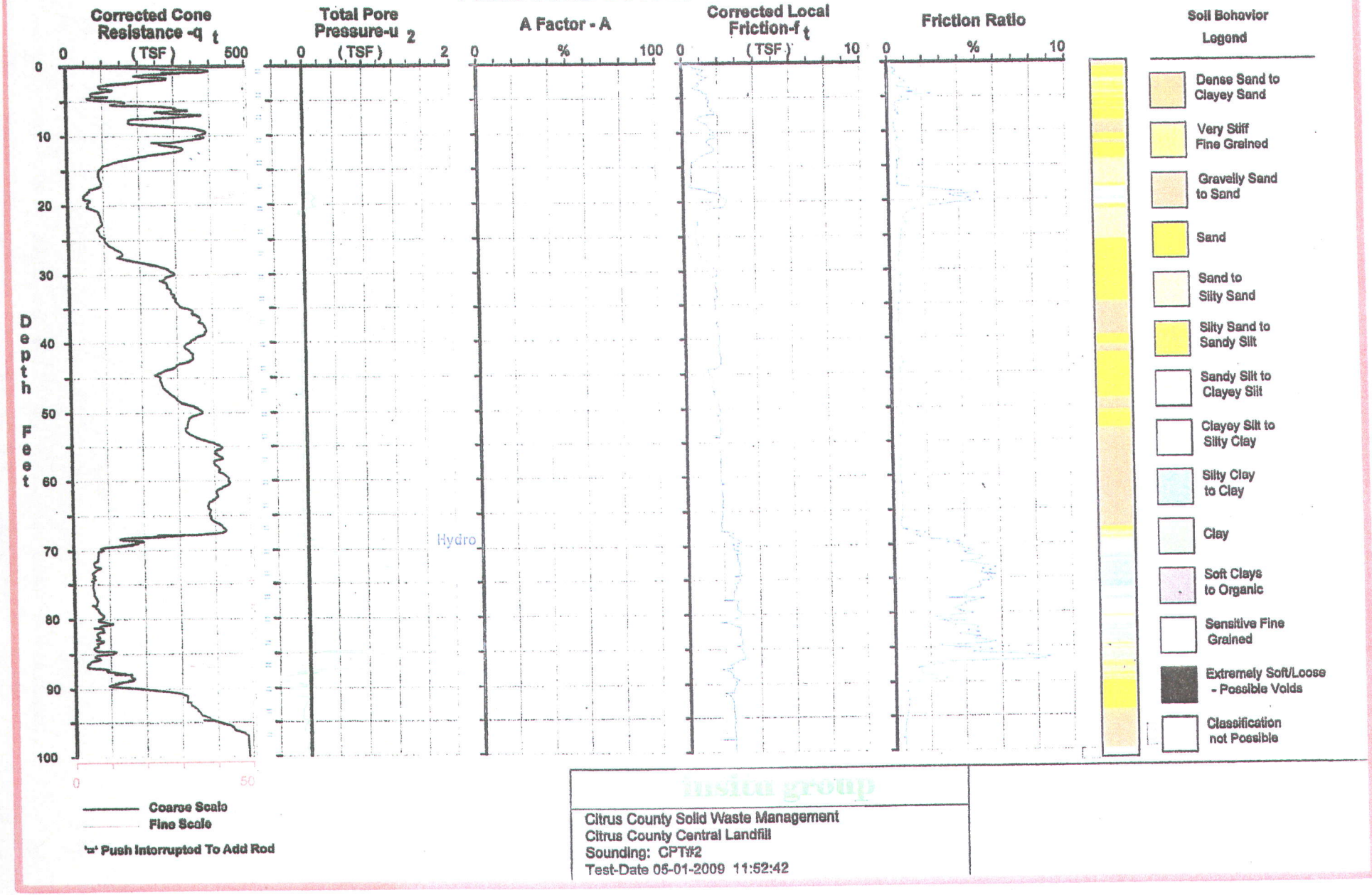
PIEZOCONE SOUNDING CPT#2



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Citrus County Solid Waste Management
Citrus County Central Landfill
Sounding: CPT#2
Test-Date 05-01-2009 11:52:42

REV: 04 - 37.02 - 0

STANDARD SOIL BEHAVIOR TABLE

Depth (Feet)	Soil Behavior Type	Qc (TSF)	Lf (TSF)	N (#)	Vertical Effective Stress (TSF)	Relative Density (%)	Friction Angle (Degrees)	Constrained Modulus (TSF)	Undrained Shear Strength (TSF)	Sens.	Comp.	OCR
1	GRAVELLY SAND TO SAND	308.9	0.96	60	.043	>85%	>43	679.5	--	--	--	--
2	SAND	218.18	1.19	43	.089	>85%	>43	479.9	--	--	--	--
3	SAND TO SILTY SAND	105.92	0.91	26	.137	65%-85%	>43	232.9	--	--	--	--
4	SILTY SAND TO SANDY SILT	78.58	1.12	26	.164	55%-65%	41-43	172.8	--	--	--	--
5	SAND TO SILTY SAND	119.15	1.46	29	.19	65%-85%	>43	262.1	--	--	--	--
6	SAND	277.81	1.54	54	.214	>85%	>43	611.1	--	--	--	--
7	SAND	303.02	1.75	59	.238	>85%	>43	666.6	--	--	--	--
8	SAND	192.39	1.04	38	.261	>85%	>43	423.2	--	--	--	--
9	GRAVELLY SAND TO SAND	355.38	1.43	69	.285	>85%	>43	781.7	--	--	--	--
10	GRAVELLY SAND TO SAND	367.05	1.72	60	.309	>85%	>43	807.4	--	--	--	--
11	SAND	251.01	1.52	66	.333	>85%	>43	618.2	--	--	--	--
12	SAND	304.17	1.66	59	.356	>85%	>43	669	--	--	--	--
13	SAND	193.73	1.37	38	.38	>85%	41-43	426.2	--	--	--	--
14	SAND TO SILTY SAND	113.65	0.89	28	.406	65%-85%	39-41	249.9	--	--	--	--
15	SAND TO SILTY SAND	87.34	0.5	21	.433	65%-85%	39-41	192.1	--	--	--	--
16	SAND TO SILTY SAND	89.49	0.49	22	.456	65%-85%	37-39	196.8	--	--	--	--
17	SAND TO SILTY SAND	82.86	0.46	20	.486	55%-65%	37-39	182.2	--	--	--	--
18	SILTY SAND TO SANDY SILT	52.72	1.05	17	.512	50%-55%	35-37	115.9	--	--	--	--
19	CLAYEY SILT TO SILTY CLAY	52.21	2.18	26	.543	--	--	--	3.49	2.3	0	>8
20	CLAYEY SILT TO SILTY CLAY	60.98	2.41	30	.574	--	--	--	4.08	2.5	0	>8
21	SILTY SAND TO SANDY SILT	86.19	1.48	28	.6	50%-55%	37-39	189.5	--	--	--	--
22	SAND TO SILTY SAND	92.82	0.86	23	.627	50%-55%	37-39	204.1	--	--	--	--
23	SAND TO SILTY SAND	83.98	0.8	21	.653	50%-55%	37-39	184.7	--	--	--	--
24	SAND TO SILTY SAND	91.6	0.71	22	.679	50%-55%	37-39	201.5	--	--	--	--
25	SAND TO SILTY SAND	105	0.73	26	.706	50%-55%	37-39	230.9	--	--	--	--
26	SAND	130.62	0.83	26	.729	55%-65%	37-39	287.3	--	--	--	--
27	SAND	144.84	0.86	28	.753	55%-65%	37-39	318.6	--	--	--	--
28	SAND	207.99	1.14	41	.777	>85%	39-41	457.5	--	--	--	--
29	SAND	279.19	1.64	55	.801	>85%	41-43	614.1	--	--	--	--
30	SAND	271.69	1.8	53	.824	>85%	41-43	597.6	--	--	--	--
31	SAND	270.19	1.74	53	.848	>85%	39-41	594.3	--	--	--	--
32	SAND	282.15	1.79	55	.872	>85%	41-43	620.6	--	--	--	--
33	SAND	292.74	1.83	57	.896	>85%	41-43	644	--	--	--	--
34	SAND	303.93	1.74	59	.92	>85%	41-43	668.5	--	--	--	--
35	GRAVELLY SAND TO SAND	340.8	1.72	55	.943	>85%	41-43	749.7	--	--	--	--
36	GRAVELLY SAND TO SAND	361.14	1.82	59	.967	>85%	41-43	794.4	--	--	--	--
37	GRAVELLY SAND TO SAND	373.75	1.81	61	.991	>85%	41-43	822.2	--	--	--	--
38	GRAVELLY SAND TO SAND	376.24	1.86	61	1.015	>85%	41-43	827.7	--	--	--	--
39	GRAVELLY SAND TO SAND	344.37	1.9	56	1.038	>85%	41-43	757.6	--	--	--	--
40	SAND	322.4	1.91	63	1.062	>85%	39-41	709.2	--	--	--	--

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Citrus County Solid Waste Management
Citrus County Central Landfill
Sounding # CPT#2
Test Date Test-Date 05-01-2009 11:52:42

STANDARD SOIL BEHAVIOR TABLE

Depth (Feet)	Soil Behavior Type	Qc (TSF)	Lf (TSF)	N (#)	Vertical Effective Stress (TSF)	Relative Density (%)	Friction Angle (Degrees)	Constrained Modulus (TSF)	Undrained Shear Strength (TSF)	Sens.	Comp.	OCR
41	GRAVELLY SAND TO SAND	337.57	1.92	55	1.088	>85%	39-41	742.5	–	–	–	–
42	SAND	328.62	1.98	64	1.11	>85%	39-41	718.5	–	–	–	–
43	SAND	280.92	1.94	55	1.134	>85%	39-41	618	–	–	–	–
44	SAND	245.9	1.37	48	1.157	>85%	39-41	540.9	–	–	–	–
45	SAND	251.45	1.5	49	1.181	>85%	39-41	553.1	–	–	–	–
46	SAND	261.43	1.5	51	1.205	>85%	39-41	575.1	–	–	–	–
47	SAND	283.36	1.59	55	1.229	>85%	39-41	623.3	–	–	–	–
48	SAND	312.12	1.69	61	1.252	>85%	39-41	686.5	–	–	–	–
49	GRAVELLY SAND TO SAND	358.59	1.84	58	1.276	>85%	39-41	788.8	–	–	–	–
50	GRAVELLY SAND TO SAND	336.81	1.86	55	1.3	>85%	39-41	740.5	–	–	–	–
51	SAND	324.91	1.86	63	1.324	>85%	39-41	714.7	–	–	–	–
52	SAND	321.42	1.9	63	1.348	>85%	39-41	707	–	–	–	–
53	GRAVELLY SAND TO SAND	349.08	1.88	57	1.371	>85%	39-41	767.9	–	–	–	–
54	GRAVELLY SAND TO SAND	401.39	1.8	65	1.395	>85%	39-41	883	–	–	–	–
55	GRAVELLY SAND TO SAND	408.22	1.86	66	1.419	>85%	39-41	893.6	–	–	–	–
56	GRAVELLY SAND TO SAND	411.12	1.87	67	1.443	>85%	39-41	904.4	–	–	–	–
57	GRAVELLY SAND TO SAND	403.75	1.87	66	1.466	>85%	39-41	888.2	–	–	–	–
58	GRAVELLY SAND TO SAND	417.82	1.87	68	1.49	>85%	39-41	919.1	–	–	–	–
59	GRAVELLY SAND TO SAND	436.94	1.86	71	1.514	>85%	39-41	961.2	–	–	–	–
60	GRAVELLY SAND TO SAND	427.69	1.91	70	1.538	>85%	39-41	940.8	–	–	–	–
61	GRAVELLY SAND TO SAND	405.1	1.92	66	1.562	>85%	39-41	891.1	–	–	–	–
62	GRAVELLY SAND TO SAND	390.24	1.95	64	1.585	>85%	39-41	858.4	–	–	–	–
63	GRAVELLY SAND TO SAND	380.51	1.94	62	1.609	>85%	39-41	837	–	–	–	–
64	GRAVELLY SAND TO SAND	384.41	1.91	63	1.633	>85%	39-41	845.6	–	–	–	–
65	GRAVELLY SAND TO SAND	394.72	1.91	64	1.657	>85%	39-41	868.3	–	–	–	–
66	GRAVELLY SAND TO SAND	421.51	1.88	69	1.68	>85%	39-41	927.2	–	–	–	–
67	SAND	317.01	2.04	62	1.704	>85%	37-39	697.3	–	–	–	–
68	SAND TO SILTY SAND	159.86	2.52	39	1.73	50%-58%	35-37	351.6	–	–	–	–
69	SANDY SILT TO CLAYEY SILT	76.36	2.66	31	1.759	35-42%	31-33	172.3	–	–	–	–
70	CLAYEY SILT TO SILTY CLAY	67.66	2.74	33	1.791	–	–	–	4.37	2.4	0	6
71	SILTY CLAY to CLAY	59.19	2.73	39	1.822	–	–	–	3.77	2.1	.01	6
72	CLAYEY SILT TO SILTY CLAY	62.52	2.84	31	1.853	–	–	–	3.99	2.2	0	6
73	SILTY CLAY to CLAY	55.12	2.85	36	1.884	–	–	–	3.49	1.9	.01	6
74	CLAYS	52.08	2.79	51	1.916	–	–	–	3.27	1.8	.02	6
75	SILTY CLAY to CLAY	54.3	2.81	35	1.947	–	–	–	3.42	2	.01	6
76	CLAYEY SILT TO SILTY CLAY	61.54	2.49	30	1.978	–	–	–	3.91	2.4	0	6
77	CLAYEY SILT TO SILTY CLAY	60.09	2.52	29	2.009	–	–	–	3.81	2.3	0	6
78	CLAYEY SILT TO SILTY CLAY	71.82	2.66	35	2.041	–	–	–	4.6	2.6	0	6
79	CLAYEY SILT TO SILTY CLAY	75.62	2.83	37	2.072	–	–	–	4.86	2.6	0	6
80	SANDY SILT TO CLAYEY SILT	79.97	2.25	31	2.101	<35%	31-33	175.8	–	–	–	–

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Citrus County Solid Waste Management
Citrus County Central Landfill
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STANDARD SOIL BEHAVIOR TABLE

Depth (Feet)	Soil Behavior Type	Qc (TSF)	Lf (TSF)	N (#)	Vertical Effective Stress (TSF)	Relative Density (%)	Friction Angle (Degrees)	Constrained Modulus (TSF)	Undrained Shear Strength (TSF)	Sens.	Comp.	OCR
81	CLAYEY SILT TO SILTY CLAY	69.81	2.74	34	2.132	--	--	--	4.39	2.5	0	6
82	CLAYEY SILT TO SILTY CLAY	68.15	2.86	33	2.163	--	--	--	4.34	2.3	0	6
83	VERY STIFF FINE GRAINED	58.42	2.89	57	2.195	--	--	--	3.67	2	.01	6
84	SANDY SILT TO CLAYEY SILT	78.79	2.91	31	2.223	<35%	29-31	173.2	--	--	--	--
85	CLAYS	50.32	3.06	49	2.255	--	--	--	3.11	1.6	.02	6
86	CLAYEY SILT TO SILTY CLAY	59.31	2.49	29	2.286	--	--	--	3.72	2.3	0	6
87	SAND TO SILTY SAND	136.16	2.15	34	2.312	35%-42%	33-35	306.1	--	--	--	--
88	SILTY SAND TO SANDY SILT	125.82	2.5	41	2.339	35%-42%	31-33	278.7	--	--	--	--
89	SAND TO SILTY SAND	204.04	2.53	50	2.365	50%-58%	35-37	448.8	--	--	--	--
90	SAND	308.04	2.27	60	2.389	65%-85%	37-39	677.6	--	--	--	--
91	SAND	319.42	2.31	62	2.412	65%-85%	37-39	702.6	--	--	--	--
92	SAND	340.07	2.4	66	2.436	65%-85%	37-39	748.1	--	--	--	--
93	SAND	362.52	2.42	71	2.46	65%-85%	37-39	797.5	--	--	--	--
94	GRAVELLY SAND TO SAND	410.44	2.45	67	2.484	>85%	37-39	902.9	--	--	--	--
95	GRAVELLY SAND TO SAND	458.65	2.44	75	2.507	>85%	37-39	1009.4	--	--	--	--
96	GRAVELLY SAND TO SAND	484.06	2.48	79	2.531	>85%	37-39	1064.8	--	--	--	--
97	GRAVELLY SAND TO SAND	485.44	2.44	79	2.555	>85%	37-39	1067.9	--	--	--	--
98	GRAVELLY SAND TO SAND	486.41	2.49	79	2.579	>85%	37-39	1070	--	--	--	--
99	GRAVELLY SAND TO SAND	484.54	2.51	79	2.603	>85%	37-39	1065.9	--	--	--	--
100.1	——— END OF SOUNDING ———	466.88										

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Citrus County Solid Waste Management
Citrus County Central Landfill
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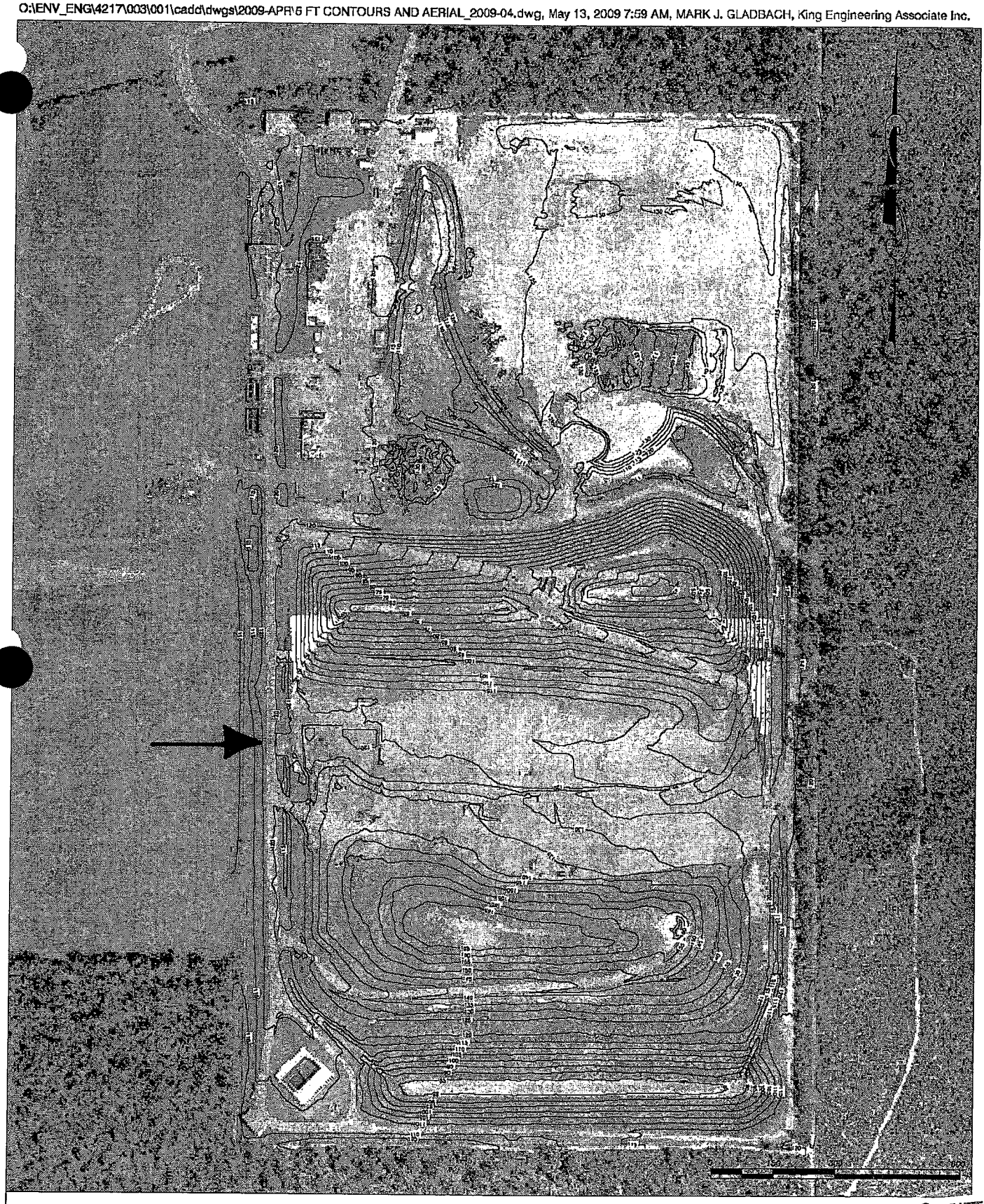

FIGURE 1. LOCATION OF PHASE 1/1A LEACHATE PIPES

BLACK & WHITE PHOTO
IMAGE IS OF POOR QUALITY

King ENGINEERING ASSOCIATES, INC.
4921 MEMORIAL HIGHWAY
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CITRUS COUNTY
SOLID WASTE TRANSFER STATION
& ASSOCIATED SITE IMPROVEMENTS

JOB NO 4217-001-001

DATE MAY 2009

EXHIBIT 1

CITRUS COUNTY CENTRAL LANDFILL

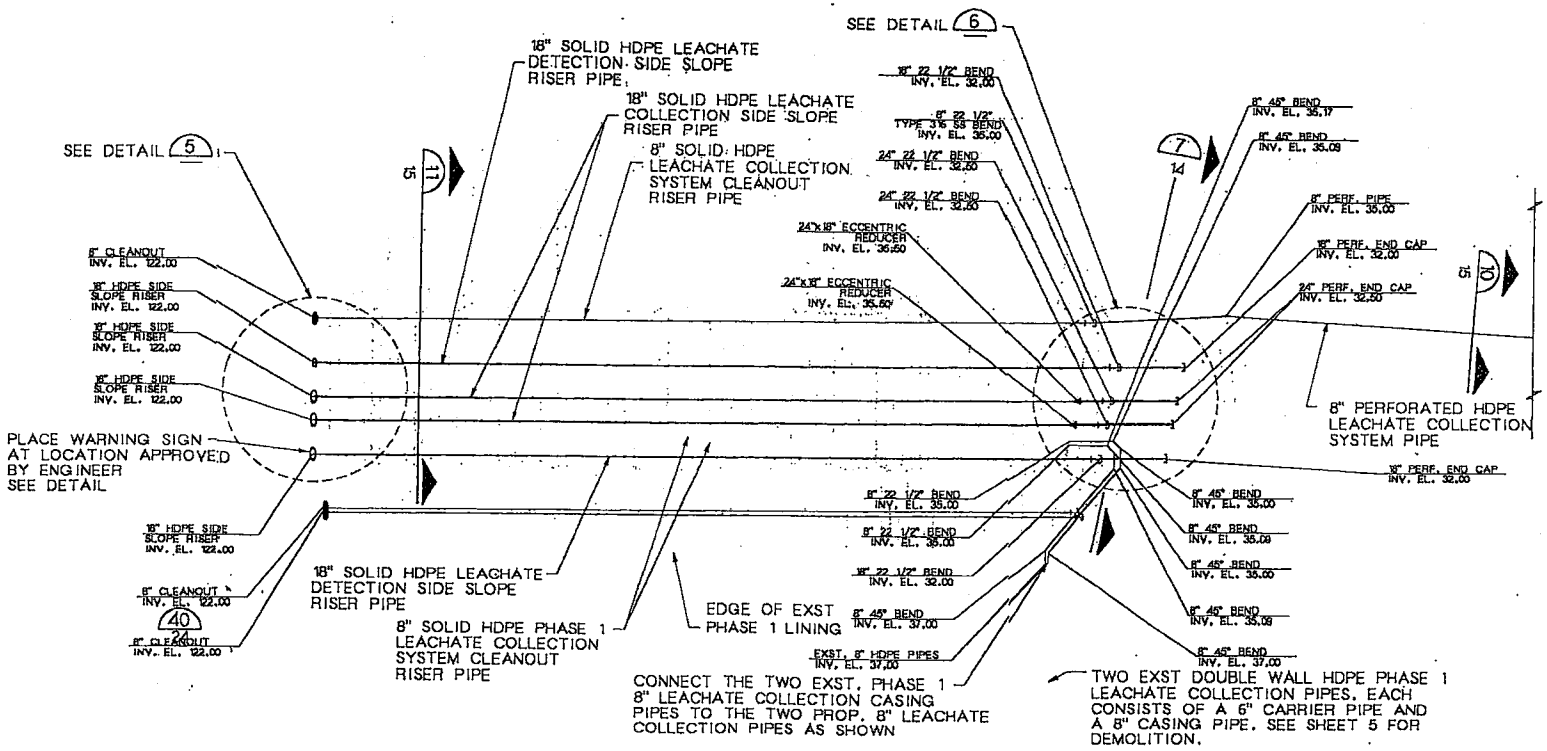

FIGURE 2. LEACHATE COLLECTION PIPING (EXCERPTED FROM 9/4/97 AS BUILT DRAWINGS BY CH2M HILL, SHEET 13)

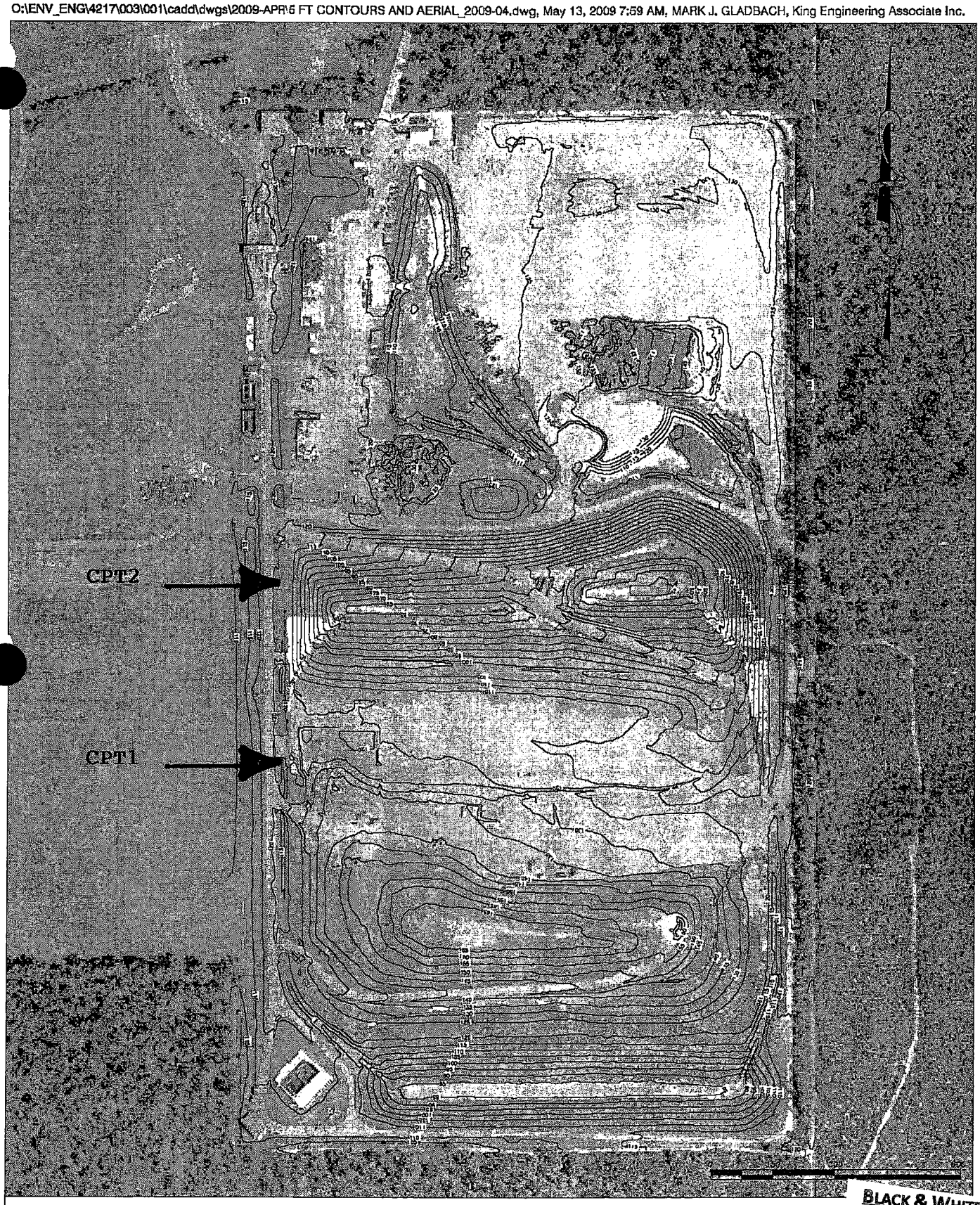

FIGURE 3. LOCATION OF CONE PENETROMETER TESTS

BLACK & WHITE PHOTO
IMAGE IS OF POOR QUALITY

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SOLID WASTE TRANSFER STATION
& ASSOCIATED SITE IMPROVEMENTS

JOB NO 4217-001-001
DATE MAY 2009
EXHIBIT 1

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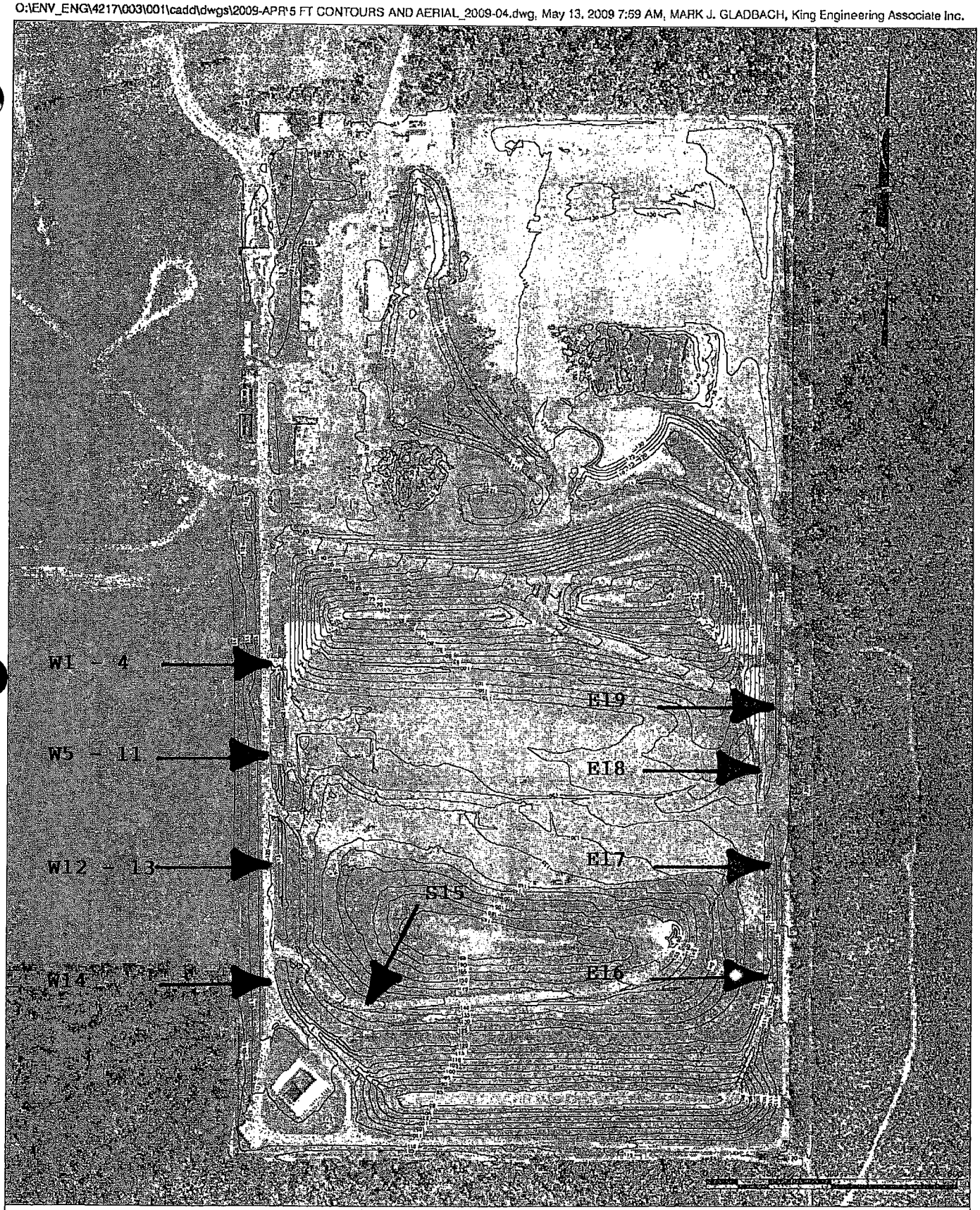

FIGURE 4. LOCATION AND DESIGNATION OF LEACHATE PIPES VIDEO INSPECTION IN MAY 2009, CITRUS COUNTY CENTRAL LANDFILL

King ENGINEERING ASSOCIATES, INC.
4921 MEMORIAL HIGHWAY
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CITRUS COUNTY
SOLID WASTE TRANSFER STATION
& ASSOCIATED SITE IMPROVEMENTS

JOB NO 4217-001-001
DATE MAY 2009
EXHIBIT 1

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IMAGE IS OF POOR QUALITY

APPENDIX G

LFG MONITORING FORM

APPENDIX F
LANDFILL GAS MONITORING FORM
CENTRAL LANDFILL, CITRUS COUNTY

Project Name: Citrus County Central Landfill
Project No.:
Personnel:
Method of Calibration:
Date:
Weather:
Comments:

Probe ID No.	CH_4 (%)	CO_2 (%)	O_2 (%)	Balance (%)	Pressure (in-w.c.)	Comments
GP-1						
GP-2						
GP-3						
GP-4						
GP-5						
GP-6						
GP-7						
GP-8						
GP-9						
GP-10						
GP-11						
GP-12						
GP-13						
GP-14						
GP-15						
GP-16						
GP-17						
GP-18						
GP-19						

On-Site Structures	CH_4 (%)	% LEL[1]	Comments
Scale House			
Admin. Building			
Gun Range North			
Gun Range South			
Leachate Treatment Plant			

Notes:

1 : % Lower Explosive Limit (LEL) of methane (CH_4) is 5%.

2 : On-site structions can not exceed 25% LEL (25% LEL = 1.25% CH_4) per Rule 62-701.530(1)(a), F.A.C.

3 : CH_4 at the landfill property boundary can not exceed the LEL of 5% CH_4 per Rule 62-701.530(1)(b), F.A.C.

APPENDIX H

PNEUMATIC PUMP OPERATIONS AND MAINTENANCE MANUAL

SEVERN TRENT

QED

AP-4 AutoPump

AutoPump Controllerless System (for 4-inch wells or larger)

OPERATIONS MANUAL

The equipment in this manual is protected under U.S. and foreign patents issued and pending:

U.S. Patents:	
Selective Oil Skimmer (SOS)	4,497,370
Specific Gravity Skimmer (SPG)	4,663,037
AutoPump (AP)	5,004,405
Specific Gravity Skimmer (SPG) Product Sensing	5,474,685
Vacuum/Pressure Hydrocarbon Recovery System	4,761,225
SPG PSR technology	5,474,685
AP-2	5,641,272
Genie System	5,704,772
Canada Patent:	
Specific Gravity Skimmer (SPG)	1,239,868

"AP" is a Registered Trademark of "QED Environmental Systems"
"AutoPump" is a Registered Trademark of "QED Environmental Systems"
"SOS" is a Registered Trademark of "QED Environmental Systems"
"Genie" is a Registered Trademark of "QED Environmental Systems"
"SPG" is a Registered Trademark of "QED Environmental Systems"
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Introduction

Welcome to QED Environmental Systems' AutoPump (AP-4) manual.

To ensure the best operator safety and system performance, it is strongly recommended that the operators read this entire manual before using the system.

This manual reflects our many years of experience and includes comments and suggestions from our sales and service personnel and most importantly from our customers. The chapters, their contents and sequence were designed with you, the user and installer, in mind. We wrote this manual so it can be easily understood by users who may not be familiar with systems of this type or are using a *QED* system for the first time.

Safety

Safety has been a cornerstone of our design which has been proven out in building and shipping systems throughout the world. Our high level of performance is achieved by using quality components, building in redundancies or backup systems, and not compromising our commitment to quality manufacturing. The net result is the highest quality and safest pneumatic pump recovery system on the market. We feel so strongly about safety, based on years of working with the hydrocarbon industry, that it is the first section in all of our manuals.

How to Contact *QED*

If for any reason you are unable to find what you need in this manual please feel free to contact the *QED* Service Department at any time. We encourage you to use following communication methods to reach us at any time:

Service Department
QED Environmental Systems
www.qedenv.com

Oakland Service Center
1133 Seventh Street
Oakland, California 94607

(800) 537-1767 – North America Only
(510) 891-0880 – Tele.
(510) 444-6789 – Fax
Service@cee.com – E-mail

Ann Arbor Service Center
PO Box 3726
6095 Jackson Road
Ann Arbor, Michigan 48106-3726

(800) 624-2026 — North America Only
(734) 995-2547 — Tele.
(734) 995-1170 — Fax
info@qedenv.com — E-mail

***QED* can be reached 24 hours a day**

We welcome your comments and encourage your feedback regarding anything in this manual and the equipment you have on-site.

Thank you again for specifying *QED* remediation equipment.

Chapter 1: Safety

Safety has been a prime consideration when designing the AutoPump System. Safety guidelines are provided in this manual, and the AutoPump System safety features are listed below. Please do not attempt to circumvent the safety features of this system.

We have also listed some possible hazards involved when applying this system to site remediation. Nothing will protect you as much as understanding the system, the site at which it is being used, and the careful handling of all the equipment and fluids. If you have any questions, please contact the *QED* Service Department for guidance.

As you read through this manual, you will encounter three kinds of warnings. The following examples indicate how they appear and lists their respective purposes.

Note:	Highlights information of interest.
Caution:	Highlights ways to avoid damaging equipment.
WARNING:	Highlights personal safety issues.

A Partial List of Safety Procedures

WARNING:
The air compressor and any other electrical equipment used with this pneumatic system must be positioned outside of any area considered hazardous because of possible combustible materials.

These safety procedures should be followed at all times when operating QED equipment on or off site, and should be considered as warnings:

- Wear safety goggles when working with the AutoPump System to protect eyes from any splashing or pressure release.

- Wear chemically resistant rubber gloves, boots, and coveralls when handling the AutoPump and fluid discharge hose to avoid skin contact with the fluid being recovered.
- Point all hoses away from personnel and equipment when connecting or disconnecting.
- Always ensure that the fluid discharge hose is connected before the air hose to prevent accidental discharge.

The AutoPump System minimizes the potential for accidents with the following safeguards:

Fire and Explosion Protection

Almost all of QED underground fluid extraction systems are pneumatic. This offers many inherent fire and explosion protection features:

- Compressed air lines eliminates electrical wiring in hazardous areas.
- Aluminum or fiberglass enclosures prevent sparking.
- Standard systems use brass fittings to eliminate sparking hazard.

Personal Protection

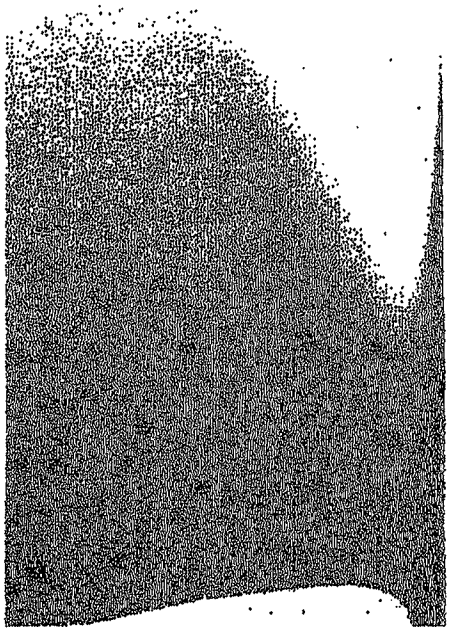
On-site, service and maintenance personnel can safely use *QED* equipment. Safety-in-use is the primary design feature in all systems. Following are some samples:

- All standard high pressure air hoses have automatic shut off quick-connects on the supply side which prevents injury due to hose whip or air blown particles. Tubing does not usually have quick-connect fittings; but is pushed over barbs or pushed into compression fittings.
- Metal regulators and filter bowls are rated at 200 psi and plastic bowls are rated at 150 psi. The metal air filter bowl is made of zinc, providing greater pressure and chemical resistance than plastic bowls and it is less prone to damage if dropped. The customer can choose either material.

Spill Protection

On-site spills cannot always be prevented. *QED* equipment is designed to take into consideration such unpredictable occurrences that may happen despite strict adherence to standardized safety practices.

- The standard air and fluid hoses are rated at over 800 psi burst pressure to prevent accidental hose breakage.
- Down well quick-connects have locking features to prevent accidental disconnections.



Chapter 2: Overview

The AutoPump fills and empties automatically, and is very easy to install, use, and maintain.

The AutoPump is a pneumatic fluid extraction pump that pumps in pulses. It handles any liquid which flows freely into the pump and is compatible with the component materials and with the connecting hoses. The AP-4 is intended for vertical operation in well casings with a 3.75-inch or greater internal diameter. It can pump particles up to 1/8-inch in diameter.

The AutoPump is very versatile and available in a wide range of lengths, valve arrangements, and materials of construction to meet particular site specifications.

Equipment will vary by application and site specifications. (See Chapter 3)

General Specifications

Pump Diameter	3.50 inch	88.9 mm
Pressure Range	5 - 120 psi	0.4 - 8.5 Kg/cm^2
High Pressure Option	5 - 200 psi	0.4 - 14.1 Kg/cm^2
Flow Ranges	0-16 gallons per minute	0-60 liters per minute

This is How it Works

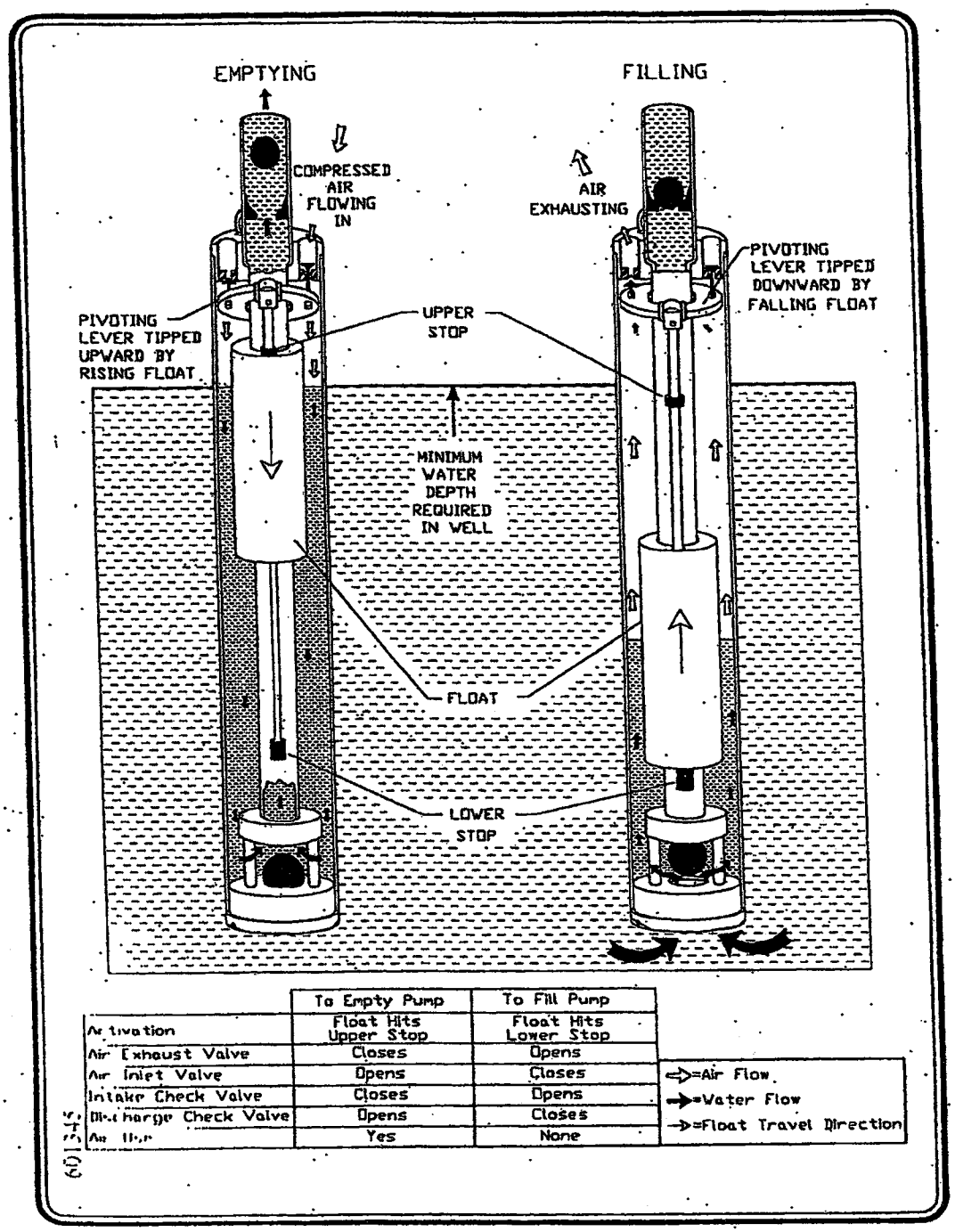
The AutoPump is a submersible compressed air-driven pump which fills and empties automatically. It also controls the fluid level in a well automatically. The pump fills (see Figure 1) when fluids enter either the top or bottom check valve. Air in the pump chamber exits through the exhaust valve as the fluid fills the pump. The float inside the pump is carried upwards by the fluids rising in the casing until it pushes against a stop on the control rod, forcing the valve mechanism to switch to the discharge mode.

The switching of the valve causes the exhaust valve to close and the air inlet valve to open. This causes the pump to empty (see Figure 1) by allowing compressed air to enter the pump. This pressure on the fluid closes the inlet check valve and forces the fluids up the discharge tube and out of the pump through the outlet check valve. As the fluid level falls in the pump, the float moves downwards until it pushes against the lower stop on the control rod, forcing the valve mechanism to switch to the fill mode. The outlet check valve closes and prevents discharged fluids from re-entering the pump. The filling and discharging of the pump continues automatically.

Note: The figures shown here are simplified schematics.

Major AutoPump Features

- The AutoPump System is small and lightweight and can be easily moved from site to site, allowing quick response to changing conditions.
- The hoses are color coded and all the fittings are different so only the proper connections can be made.
- Rugged construction ensures long system life, even under harsh conditions.
- The entire system is pneumatically powered with no electrical components, thus avoiding sparks in control power and sensing devices.
- Durable stainless steel air valves that can pass liquids as viscous as 90 weight gear oil without fouling. The air valves can handle reverse flow and submersion for long periods of time. Unlike pumps with bubblers or bleed hoses, there are no problems with start up, clogging, and failure under these difficult conditions when using the AP-4. This results in less downtime and lower training, maintenance, and repair costs.



	To Empty Pump	To Fill Pump
Activation	Float Hits Upper Stop	Float Hits Lower Stop
Air Exhaust Valve	Closes	Opens
Air Inlet Valve	Opens	Closes
Intake Check Valve	Closes	Opens
Discharge Check Valve	Opens	Closes
Air Hose	Yes	None

⇨=Air Flow
➡=Water Flow
→=Float Travel Direction

Figure 1 - How it Works

- The AP-4 only uses air while pumping. Unlike systems that rely on bleeding air sensors or timers which pressurize and depressurize the air hoses for each stroke, the air hose for the AP-4 remains pressurized to the pumps at all times. Air compressor power consumption, compressor filter maintenance, and thus operating costs are substantially reduced.

- The AP-4 can be configured to fill from the top or the bottom.

Figure 2 on the next page illustrates an overview of an AutoPump System.

The AP-4 System provides everything required for pumping fluid from a well. QED can also supply the air compressor, if desired.

The system is designed to perform for years and comes with a five year warranty.

Note:
An automatic drain on the compressor is highly recommended since it dramatically decreases air filter maintenance. *QED* can supply an automatic drain.

Caution:
Alteration of the System: Do not change or modify the equipment without the expressed written approval of *QED*.

Special Operating Conditions

Conditions may require adjustment or adaptations to the equipment. Below is a list of some of these conditions, their possible effects, and solutions.

Since every site is different, please contact your QED representative for detailed assistance if needed.

Cold Weather

Moisture in the pneumatic lines can freeze causing problems with the system. Such freezing could result in regulators not reducing the air pressure, valves sticking, and hoses clogging.

Actions To Take

- Use water traps and automatic compressor tank drains. These are available at industrial distributing companies (e.g., W.W. Graingers®).

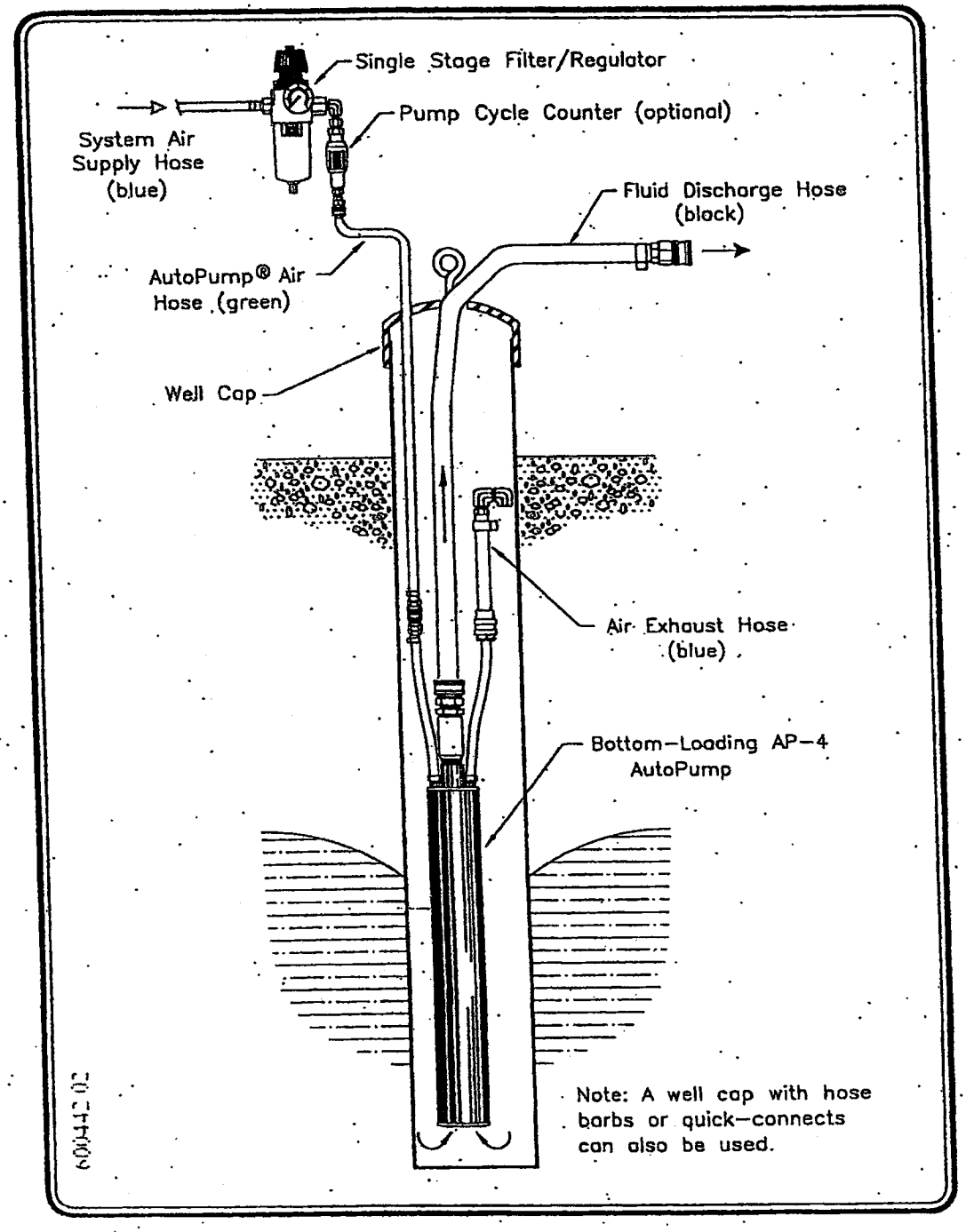


Figure 2 - Overview of the AutoPump System

- Reduce air line freezing by burying air hoses below the frost line, or insulating and heating with heat tape, or running hoses through a PVC pipe with warm air being blown through it.

- Remove all the moisture you can from the air by using drains on the compressor, filter, and low points in the air line. Use an air dryer to lower the dew point of the compressed air below the temperature of exposed lines.

- Protect the air regulator from freezing. During freezing conditions regulators may fail "open", allowing high pressure (e.g. 150 psi from the compressor) to enter components (e.g. gauges, hoses, fluid receptacles) that may be damaged, cause a safety problem, or release contaminating material.

- Locate the air intake to the compressor so the coolest (driest) air is drawn in. Usually it is better to draw air from outside a building than from the inside.

Flow induced freezing

Although it rarely occurs, air flow through an AutoPump may cause freezing at water temperatures well above 32°F, slowing down the system. Cold water, moisture in the compressed air, high air pressure, a high pumping rate, and back pressure on the pump are variables that alone, or in combination with each other, may induce freezing. Should it occur, there are system adaptations which can decrease or eliminate the freezing. Please contact *QED* for advice.

The well is under a vacuum

The pump will work in a well that is under a vacuum, but there are several conditions that must be considered.
(See Appendix D)

Abrasive particles in the well

Please contact QED service if you encounter problems with abrasives in the well.

Hard pipe air supply connection to the pump

These can cause debris and scale to travel down to the pump. It can also prevent the pump from cycling smoothly due to a solid connection (non-flexing) to the top of the pump. Blow out all of the hard pipe before connecting the pump. A short (6 feet) length of hose should be used between the hard pipe and the pump to allow the natural movement of the pump to occur without restraint. A small screen filter should be used at the lower end of the metal air pipe to prevent scale from reaching the air valve.

Other site conditions such as highly viscous fluids, extremes of pH; high salinity, deep (>400 feet) applications, high flow rates for LNAPL application, intermittent air supply, high dissolved solids, and high temperature can also be addressed. Please contact *QED* for guidance.

Options and Accessories

The following options and accessories are available from *QED*. Contact your *QED* Representative regarding the following:

- **AP Data Module** – This water-resistant enclosure protects and shields surface instrumentation from weather and/or harsh site conditions while providing easy visual access to key system instrumentation readings. The options available for inclusion inside the NEMA 3R enclosure are a filter/regulator, pump cycle counter, level sensor regulator and gauge with air flow meter. Also included are a fluid level indicator with an On/Off switch, an Air Inlet Supply Gauge, and a Vacuum/Pressure reference with Gauge.

- **Pump Cycle Counter (PCC)** – A PCC counts the number of times a pump cycles. The counter provides information for maintenance, service, and statistical purposes with minimal loss in air pressure or performance. A PCC is easily attached on the air inlet hose to the pump.

- **Component Materials** - Various materials specifically designed to withstand the harsh well environments (e.g. high temperature, abrasives, highly aggressive chemicals, high viscosity) of particular sites are available for all component pieces.

- **TFSO** – The Tank-Full Shut-Off (TFSO) System is a unique, self-contained pneumatic system that shuts down other pneumatic systems in the event of a liquid level rise or a pressure increase in a container. The TFSO provides dual safety by using two sensors. The system is expandable—the button sensor of the system can be teed to monitor many containers.

- **Inlet Conversions** – AutoPumps can be converted from Top- to Bottom-Loading and visa versa. See **Appendix C** for more information.

Chapter 3: Equipment

Unpacking

During the unpacking procedure, check for the following:

- All parts on the packing list have been included in the box
- All fitting openings are unobstructed
- The equipment has not been damaged in shipment

Equipment List

The equipment list will vary depending on site specifications, but the following list is a typical configuration:.

1. Top-Loading or Bottom-Loading AP-4 with support harness

2. Single stage filter/regulator with:
   - 5 micron filter with auto drain trap
   - Pressure regulator with gauge

3. Pump Cycle Counter (PCC)

4. Hoses:
   - Fluid discharge hose (black)
   - System air supply hose (blue)
   - AutoPump air hose (green)
   - Air exhaust hose (blue)

> **Note:**
> Black nylon tubing can be used in place of hose.

5. Pump support system:
   - Well cap
   - Polypropylene support rope with quick-link assembly or SS wire rope (Alternate materials as required)

Tools

The following tools are used to service the AP-4:
- Spanner wrench

Parts List

In aggressive sites over millions of cycles, the parts that one may anticipate replacing are:
- Discharge check valve ball

AP-4 AutoPumps

In both the Bottom-Loading and the Top-Loading models, the fluid is pushed out of the pump through a check valve located at the top of the pump. This check valve prevents the fluid from reentering the pump.

Bottom-Loading AP-4/BL

The Bottom-Loading AutoPump fills through a check valve at the bottom of the pump. There are three lengths of AP-4/BL: long, short, and low drawdown. The fluid level in the well can be drawn down to 36 inches from the bottom of the long BL, and 25 inches from the bottom of the short BL (See Figure 3) and as low as 11.5 inches with the low drawdown configuration (See Figure 5)

Top-Loading AP-4/TL

The Top-Loading AutoPump fills through a check valve at the top of the pump, therefore the fluid level in the well will never go below the level of this check valve. There are three lengths of AP-4/TL: long, short (See Figure 4) and low drawdown.

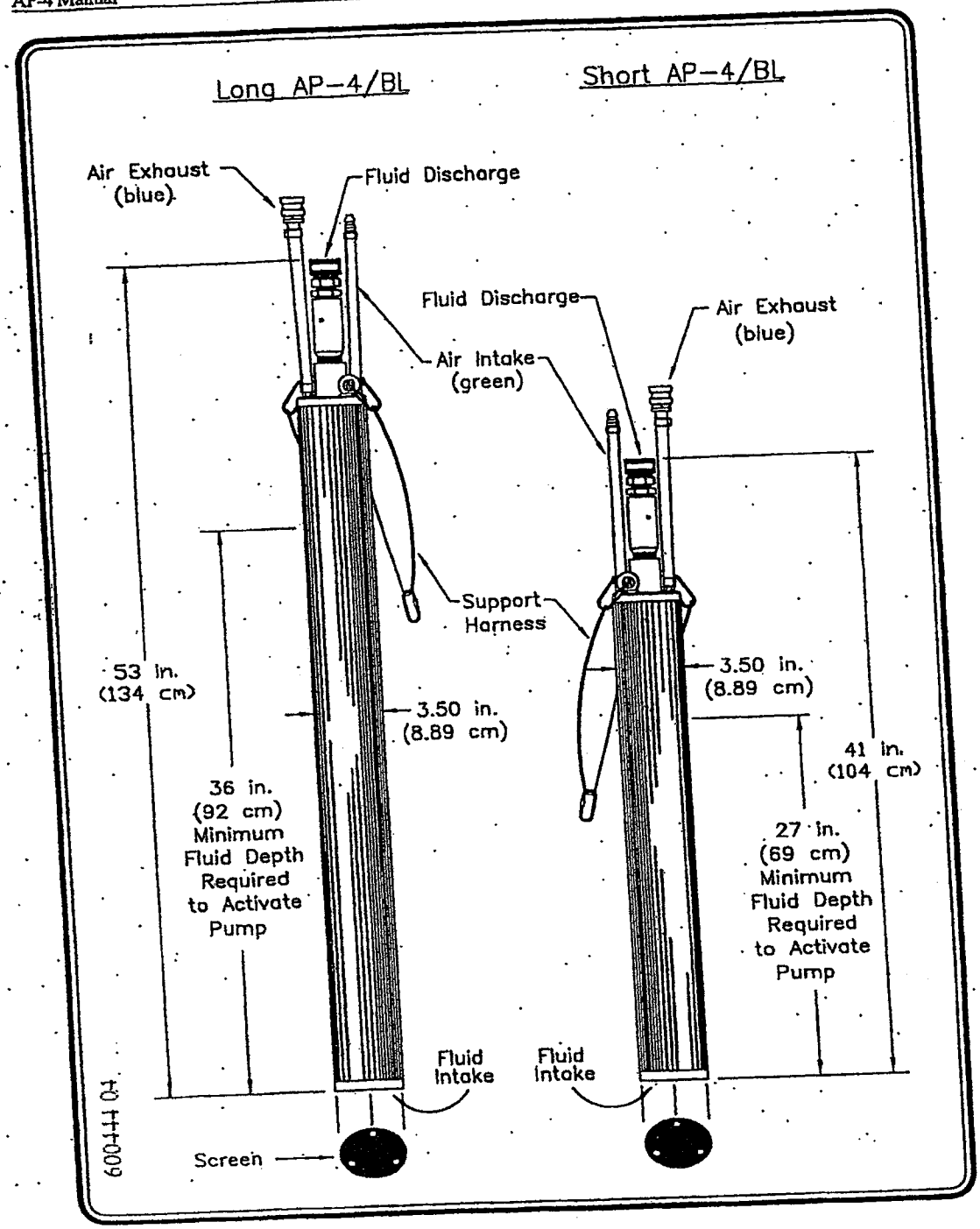


Figure 3 - Long and Short Bottom-Loading (AP-4/BL)

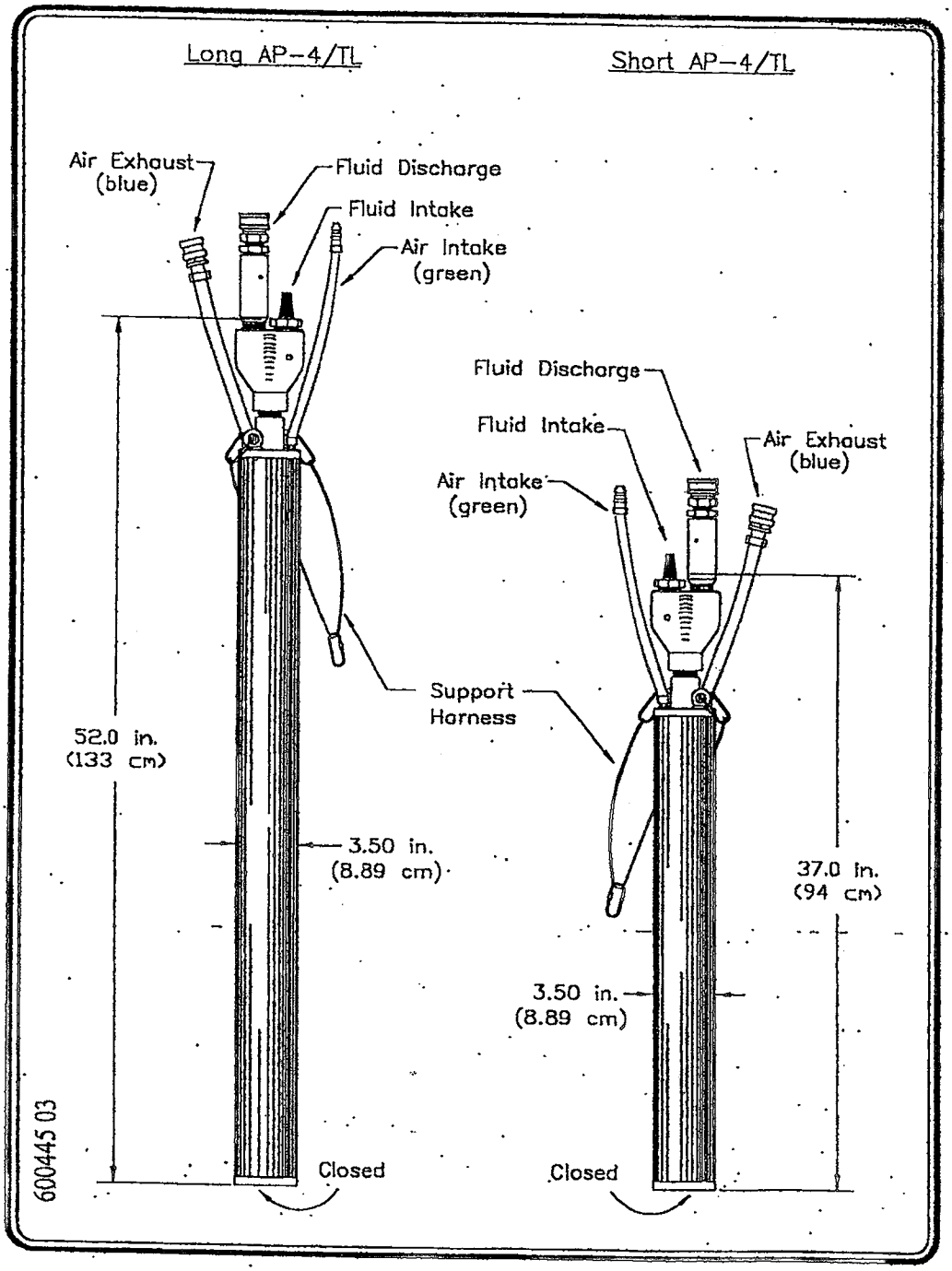


Figure 4 - Long and Short Top-Loading (AP-4/TL)

Specifications

Pump	Length	Vol/Cycle Range	Weight	Outside Diameter
Long AP-4/BL	53-inches 134-cm	.58 gal - .78 gal 2.2 L - 3.0 L	16 lb 7.2 kg	3.5-in 8.89-cm
Short AP-4/BL	41-inches 104-cm	.22 gal - .36 gal .83 L - 1.4 L	13 lb 5.9 kg	3.5-in 8.89-cm
Long AP-4/TL	57-inches 133-cm	.58 gal - .78 gal 2.2 L - 3.0 L	17 lb 7.7 kg	3.5-in 8.89-cm
Short AP-4/TL	42-inches 94-cm	.22 gal - .36 gal .83 L - 1.4 L	14 lb 6.3 kg	3.5-in 8.89-cm

Component Materials

Typical component materials include stainless steel, acetal, Viton, fiberglass, PTFE (Teflon), PVDF (Kynar), UHMW, epoxy, and brass.

Performance and Air Use Curves

See Appendices A and B.

Landfill Pump Configurations

All lengths (Long, Short, and Low Drawdown) and intake configurations (Bottom-Loading) are available in models for landfill leachate, condensate pumping and dewatering applications. **(See Figure 5)**

These models have material options to withstand temperatures up to 212° F (100° C) and pH levels from 1 to 12. Various inlet screen sizes also available.

Landfill Specifications

Pump	Length	Vol/Cycle Range	Weight	Outside Diameter
Long AP-4/BL	56-inches 142-cm	.58 gal - .78 gal 2.2 L - 3.0 L	16.5 lb 7.5 kg	3.5-in 8.89-cm
Short AP-4/BL	44-inches 111-cm	.22 gal - .36 gal .83 L - 1.4 L	13.5 lb 6.1 kg	3.5-in 8.89-cm
LDD	25.5-inches 64.8-cm	0.08 gal - 0.15 gal 0.30 L - 0.57 L	10.4 lb 4.7 kg	3.5-in 8.89-cm

Component Materials

Typical component materials include stainless steel, acetal, Viton, nylon, fiberglass, Teflon (PTFE), PVDF (Kynar), UHMW, epoxy, and brass.

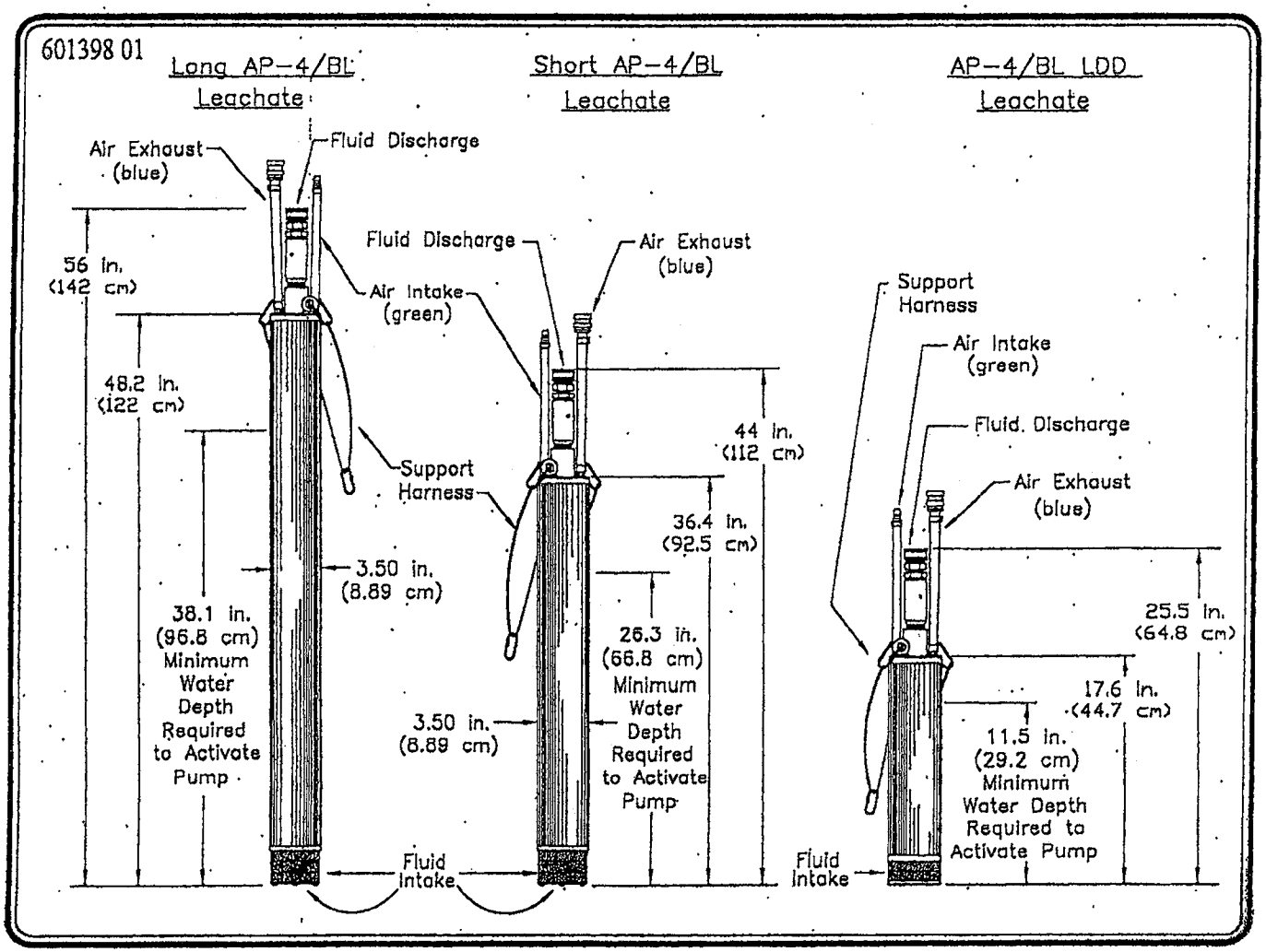


Figure 5 - Long, Short, and LDD Bottom-Loading Leachate (AP-4/BL)

Single Stage Filter/Regulator

A single stage 5 micron particulate air filter/regulator has an a manual or an optional automatic drain and is installed on the system air supply hose. The filter/regulator removes particles and some oil vapor, and water droplets from the air passing to the AP-4. The regulator should produce at least as much pressure as required to move the fluid from the depth at which the pump is installed. **(See Figure 6)**

Note:
Too much air pressure can result in low pump efficiency.

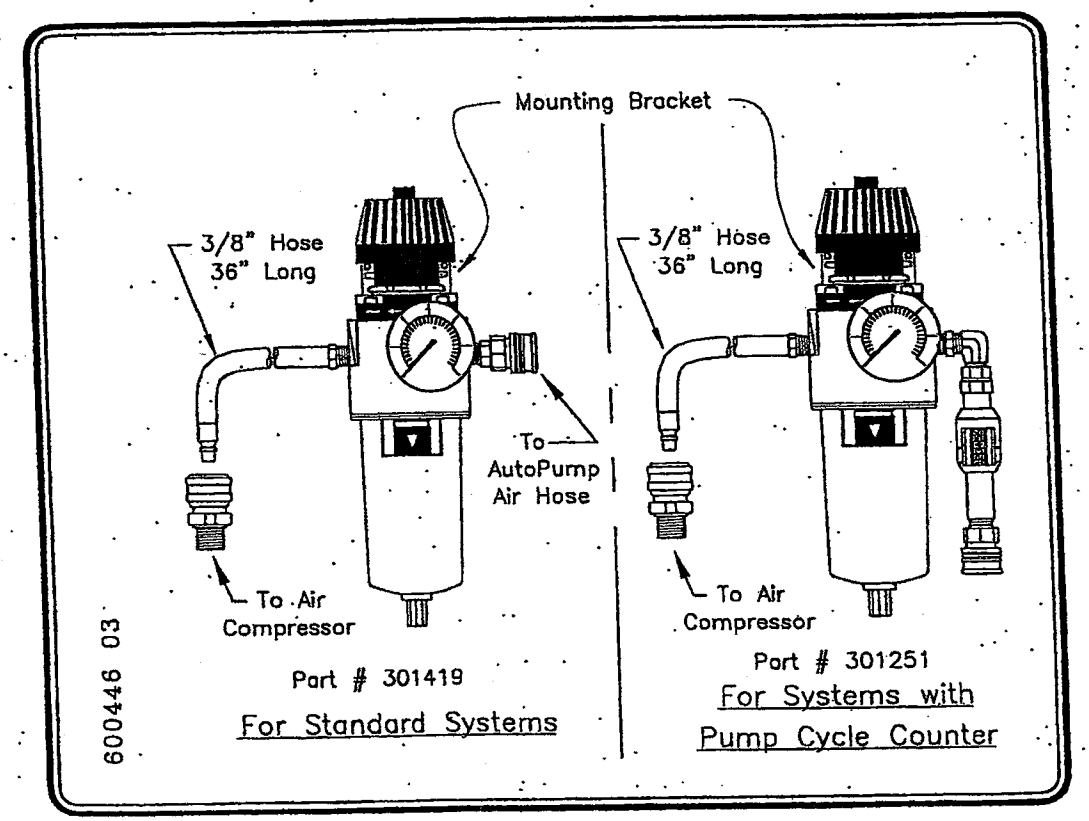


Figure 6 - Single Stage Filter/Regulator 60 with Quick-Connects

Hoses and Fittings

The table below shows the normal hose colors. These may change due to application or need.

Hose and Tubing Color Code Table

	System Air Supply Hose	Fluid Discharge Hose	AutoPump Air Hose	Air Exhaust Hose
Hose Color	Blue	Black	Green	Blue
Hose Material	Nitrile	Nitrile	Nitrile	Nitrile
Hose Size I.D.	3/8-inch to 3/4-inch	5/8-inch to 1-1/4-inch	3/8-inch to 1/2-inch	1/2-inch to 3/4-inch
Tubing Color*	Black	Black	Black	Black
Tubing Material*	Nylon	Nylon	Nylon	Nylon
Tubing Size O.D.*	3/8-inch to 1-inch	5/8-inch to 1-1/4-inch	3/8-inch to 5/8-inch	5/8-inch to 1-inch
Function	Transports air from air compressor to filter/regulator	Transports product from AutoPump to discharge point	Transports air from filter/regulator to AutoPump	Exhausts air from AutoPump
Fittings	Hose barb and clamp or one-way quick-connect fitting	Hose barb and clamp or straight through quick-connects	Hose barb and clamp or one-way quick-connect fitting	Hose barb and clamp or straight through quick-connects

* Nylon tubing is available in single tube or jacketed bundles. Contact QED for the sizes and bundle configurations.

If optional quick-connects are used, the flow of air and fluid in the hoses runs *into* the male plug and *out* of the female socket.

The quick-connect fittings on one type of hose will usually not interchange with those of another, so it is very difficult to connect a hose to an incorrect fitting.

Note:
The down well hose fittings normally have locking quick-connects. On sites with water depths over 50 feet, special consideration may be required to support the hoses. Consult with *QED* regarding such applications.

Pump Cycle Counter

Refer to Appendix F – Pump Cycle Counter

Volumes Pumped Per Cycle

- The volume of fluid pumped per cycle from an AutoPump varies depending upon the inlet air pressure, the fluid inlet head and the force against which the pump must move the fluid. This force is a sum of the static head and dynamic losses incurred during fluid movement, usually referred to as Total Head.
- The Total Head depends upon back pressure in the surface lines, hose size, fittings, vertical and horizontal pumping distance, the number of pumps feeding the hose system, air pressure to the pump, and the type of pump.
- The effects of some of these variables may cause the volume pumped per cycle to vary from pump to pump on a single site.

Pump	Volume per Cycle: Range	Volume per Cycle: Typical
Long AP4	0.58 - 0.78 gal (2.2 - 3.0 L)	0.65 gal (2.46 L)
Short AP4	0.22 - 0.36 gal (0.87 - 1.36 L)	0.25 gal (0.95 L)
Low Drawdown AP4	0.11- 0.16 gal (0.42 - 0.61 L)	0.13 gal (0.51 L)

All figures above are dependent on site specific conditions under which the pump is operating

Pump Support System

To safely support the AP-4, a pump support system is offered. Included in the system are a well cap, support rope, and quick-link assembly.
(See Figure 13 on page 36, and Figure 14 on page 37)

Well caps with various fitting combinations are available.
(See Figure 12 on page 34).

Caution:
Although it may be possible to support the pump using only tubing, it is not always wise to do so. If a pump becomes jammed in a well, a strong rope or wire rope separate from the tubing may be needed to withstand the force required to free it. Thus a separate support line is recommended.

Chapter 4: Assembly & Installation

WARNING:
PVC pipe is generally not recommended for compressed air service.

Cautions

The following suggestions are offered to reduce the complications involved in assembly and installation.

- Cover the hose ends with tape if they are being pulled through trenches. Be sure the ends of the hoses that connect to the air compressor and fluid discharge have the correct fitting leading out of the well. If you are unsure, look at the respective fittings on the pump.
- Blow out all water and particles from compressed air conduits (trunk lines, sensor hoses, air supply hoses etc.) and fluid lines for at least 10 seconds after the water and particles exit before connecting them to the system.
- When running hoses in conduit, include a rope to pull additional hoses in case they are needed at a later date
- If solid metal piping is used for compressed air conduit, it is advised that an air filter or a "Y" strainer with a fine mesh screen (60 mesh or finer) be placed at the downstream end of the piping. Metal flakes, rust, galvanizing material, dirt, etc. can be dislodged from such metal piping and travel to the pump.

Compressed Air Supply

The AP-4 System includes a compressor-to-pump air line quick disconnect fitting for the compressor.

There is a distinct air inlet on the AP-4; an "I" is stamped next to it on the head of the pump. The air inlet quick connect fitting on the pump has a female counterpart on the air inlet hose. The air inlet must be connected for the AP-4 System to function. Do not lubricate the compressed air coming out of the compressor. The AP-4 does not require lubrication and excess oil may foul the filter/regulator.

WARNING:
The compressor should not provide more pressure than the filter can accept. The filter and regulator with plastic bowl accepts a maximum of 150 psi air pressure. The metal bowl can accept 250 psi. Maximum output air pressure setting on the standard regulator is 120 psi. A higher pressure regulator and gauge are optional.

Component Assembly

Quick-Connects/Hose Barbs

Follow the instructions on **Figure 7** for properly securing the locking quick-connects. See **Figure 8 and Figure 9** for properly securing hose barbs.

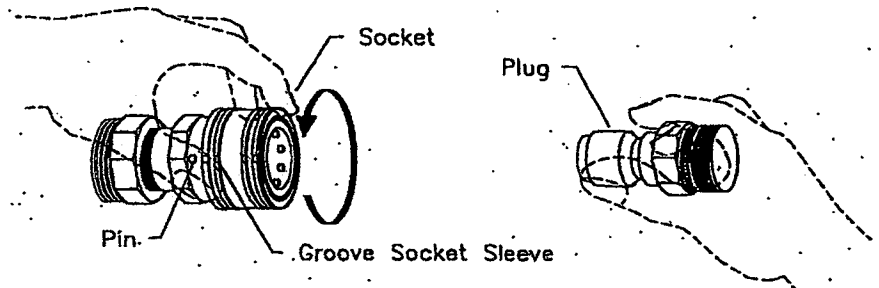
AutoPump Assembly

STEP 1 - **Attach Fluid Discharge Hose (black)**

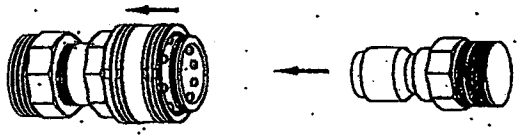
Note:
If a well cap with holes is used, insert the hoses through the cap before attaching hose.

a. Attach the fluid discharge hose or tubing to the AutoPump. **(See Figure 10 and Figure 11)**

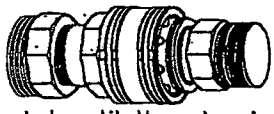
b. Attach the other end of the discharge hose to the fluid discharge point.



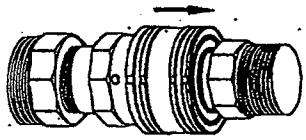
a. Rotate socket sleeve until groove is aligned with the pin close to the hex.



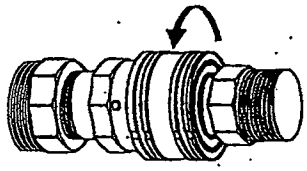
b. Pull socket sleeve against the hex (the pin will be totally covered). Hold in this position for plug insertion.



c. Push plug into socket until the plug is almost covered.



d. Let the socket sleeve go in. It must slide all the way until the pin is visible again.



e. Rotate the socket sleeve so the groove does not align with the pin. To test, gently pull hexes of both fittings in opposite directions. Fittings must remain attached.

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Figure 7 - Locking Quick-Connects

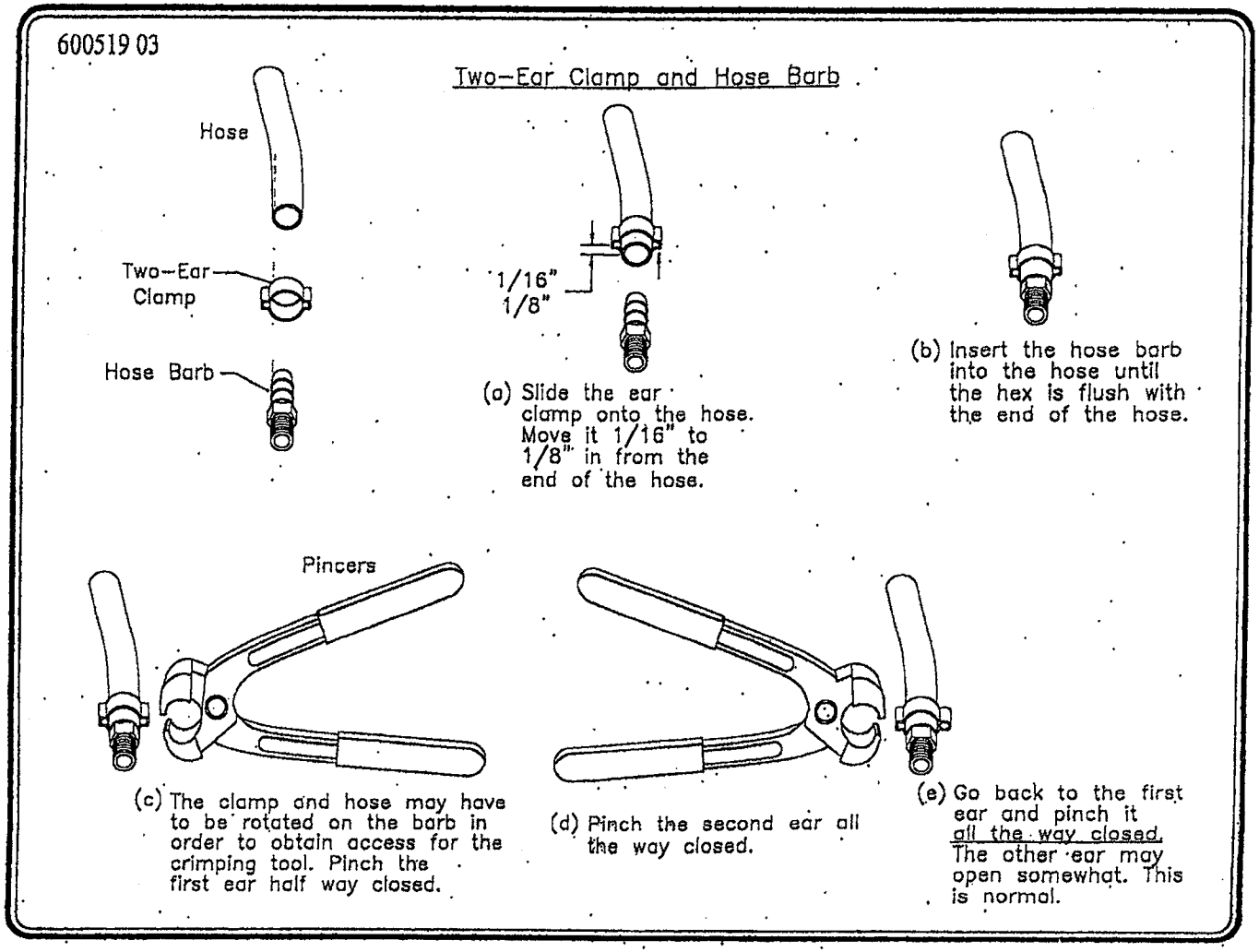


Figure 8 - Two-Ear Clamp and Hose Barb Assembly Instructions

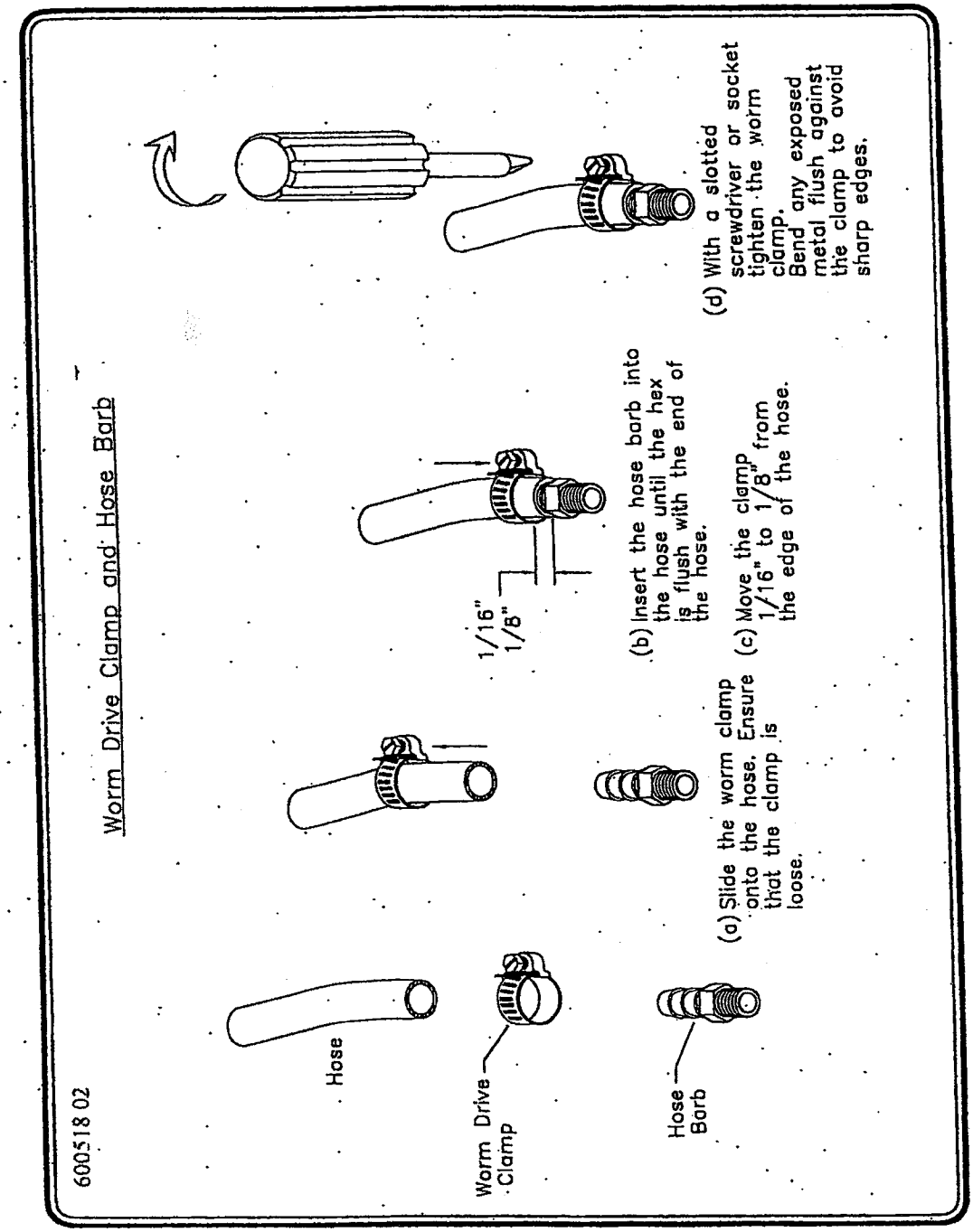


Figure 9 - Worm Drive Clamp and Hose Barb Assembly Instructions

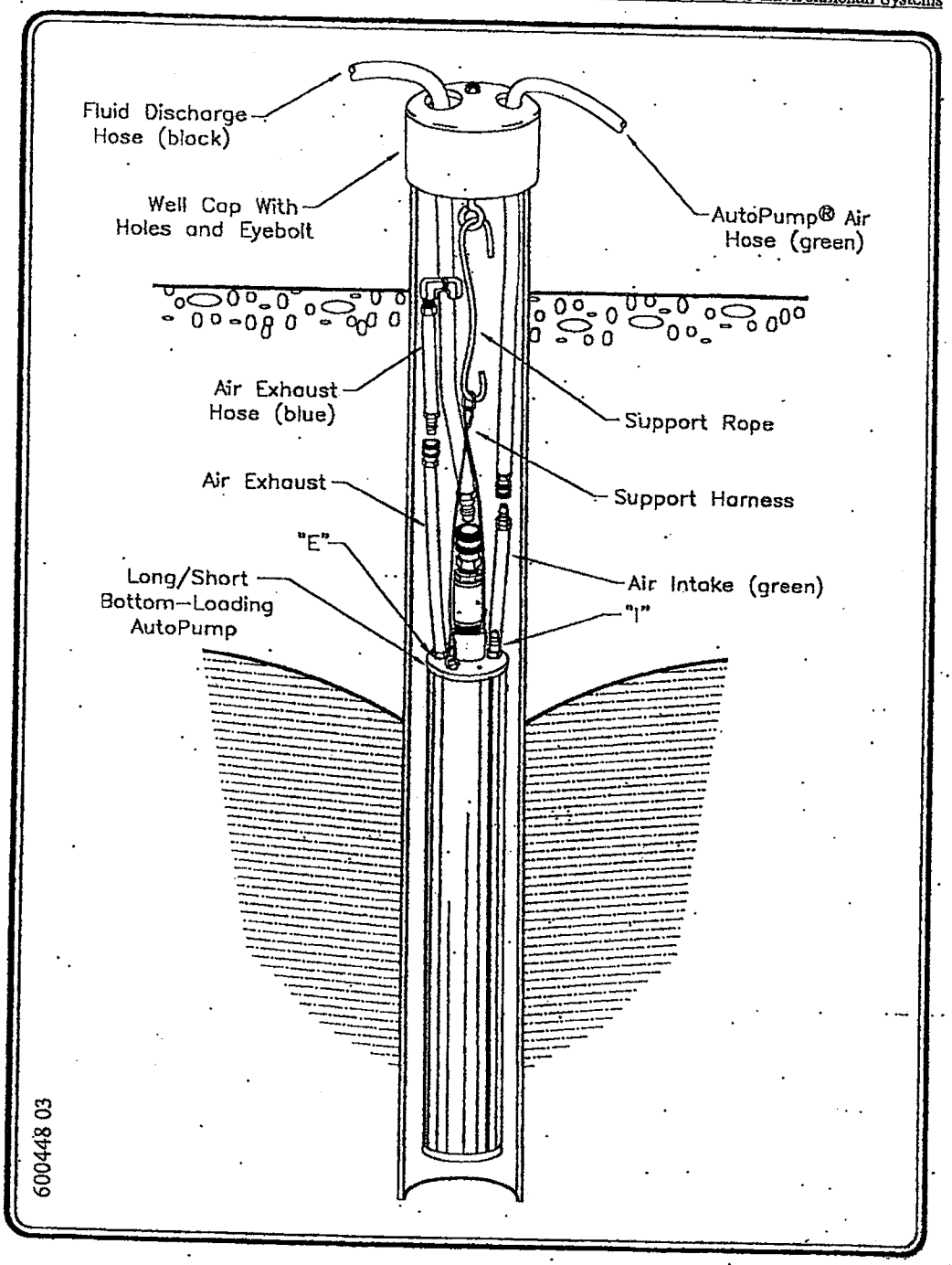


Figure 10 - AP-4 Assembly with Quick-Connects: Well Cap with Holes

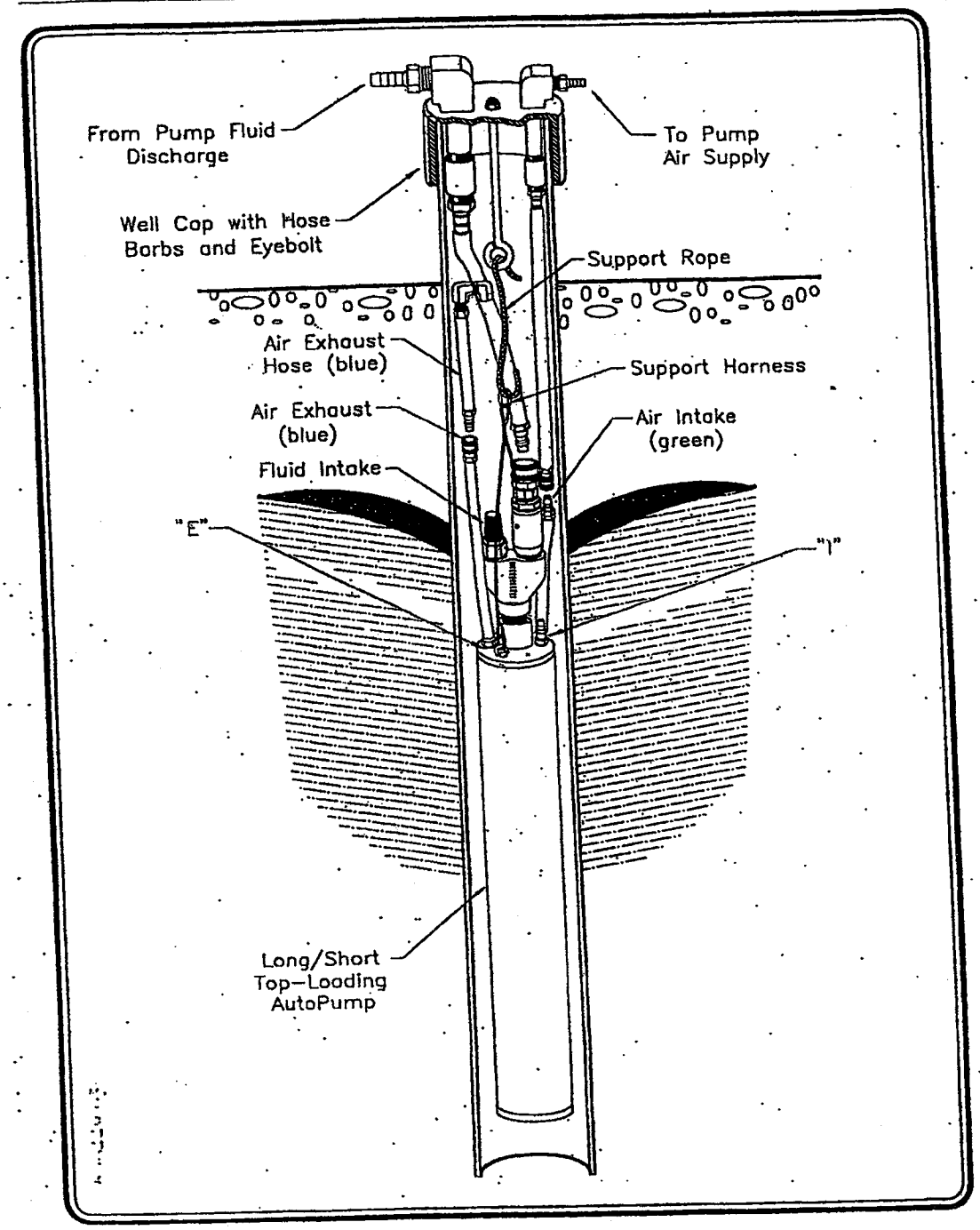


Figure 11 - AP-4 Assembly: Well Cap with Hose Barbs

STEP 2 - **Attach AutoPump Air Hose (green)**

a. If a Pump Cycle Counter (PCC) is used, install it downstream of the air filter regulator and as close to the pump as is reasonable.

b. Attach the AutoPump air hose to the single stage filter/regulator or optional Pump Cycle Counter (See Figure 2 on page 11)

c. Attach the other end of the AutoPump air hose to the AutoPump.

STEP 3 - **Attach Air Exhaust Hose (blue)**

a. Attach the air exhaust hose to the AutoPump. (See Figure 10 and Figure 11)

STEP 4 - **Attach System Air Supply Hose (blue)**

a. Thread the air hose socket with 1/4-inch MPT to the compressor. Use Teflon tape or sealant on the threads.

b. Attach the air hose plug end of the system air supply hose to the socket now attached to the compressor.

c. Attach the socket on the discharge end of the hose to the single stage filter/regulator. (See Figure 2 on page 11)

The pump will work in a well that is under vacuum, but there are several conditions that must be considered. (See Appendix D)

Dry Test

Before installing the AutoPump in the recovery well, it is important to test the system for proper operation. Before beginning this test, make sure that all hoses are properly connected as described in the previous section.

To test for float movement and air valve actuation follow these steps:

STEP 1 - Drain all fluid from the pump through the bottom inlet check valve (Bottom-loading) or air inlet fitting (Top-loading).

STEP 2 - Hold the pump horizontally.

STEP 3 - Tip the top of the pump downwards to about 45°. The float should slide to the top of the pump and open the air valve. Air should be heard going into the pump. It will exit the inlet fluid check valve (Bottom-loading) or the outlet check valve (Top-loading).

Caution:
If air is not acceptable in the fluid discharge hose, disconnect the hose before performing this test.

STEP 4 - Tip the head of the pump upwards past horizontal to 45° from the vertical. The float should slide to the bottom of the pump and close the air valve.

STEP 5 - Repeat this process 3 or 4 times to ensure the float moves freely and the air-valve opens and closes. If the pump must be tilted nearly vertical before the float slide or the air valve moves, open the pump and inspect for interference.

Pump Support System and Hose Bundling Assembly

A pump support system can be created to support the pump and hoses. The pump support system uses well caps with various fitting combinations. (See Figure 12)

Though it is possible in some instances to support a downwell pump with only the tubing, a separate support line is recommended.

Note:
The walls of some wells deform over time. They may trap a downwell pump. In some of those cases the AP-4 support harness and strong support line have proven useful when retrieving the pump.

In addition to supporting the down-well equipment with a support rope, it may be important to support down-well hoses (in most cases nylon tubing does not need to be supported by the support line). Since the down-well hoses can weigh more than the pump, particularly in wells over 50 feet deep with fluid inside the discharge hose, hose support can avoid problems such as kinking, jamming, and breaking.

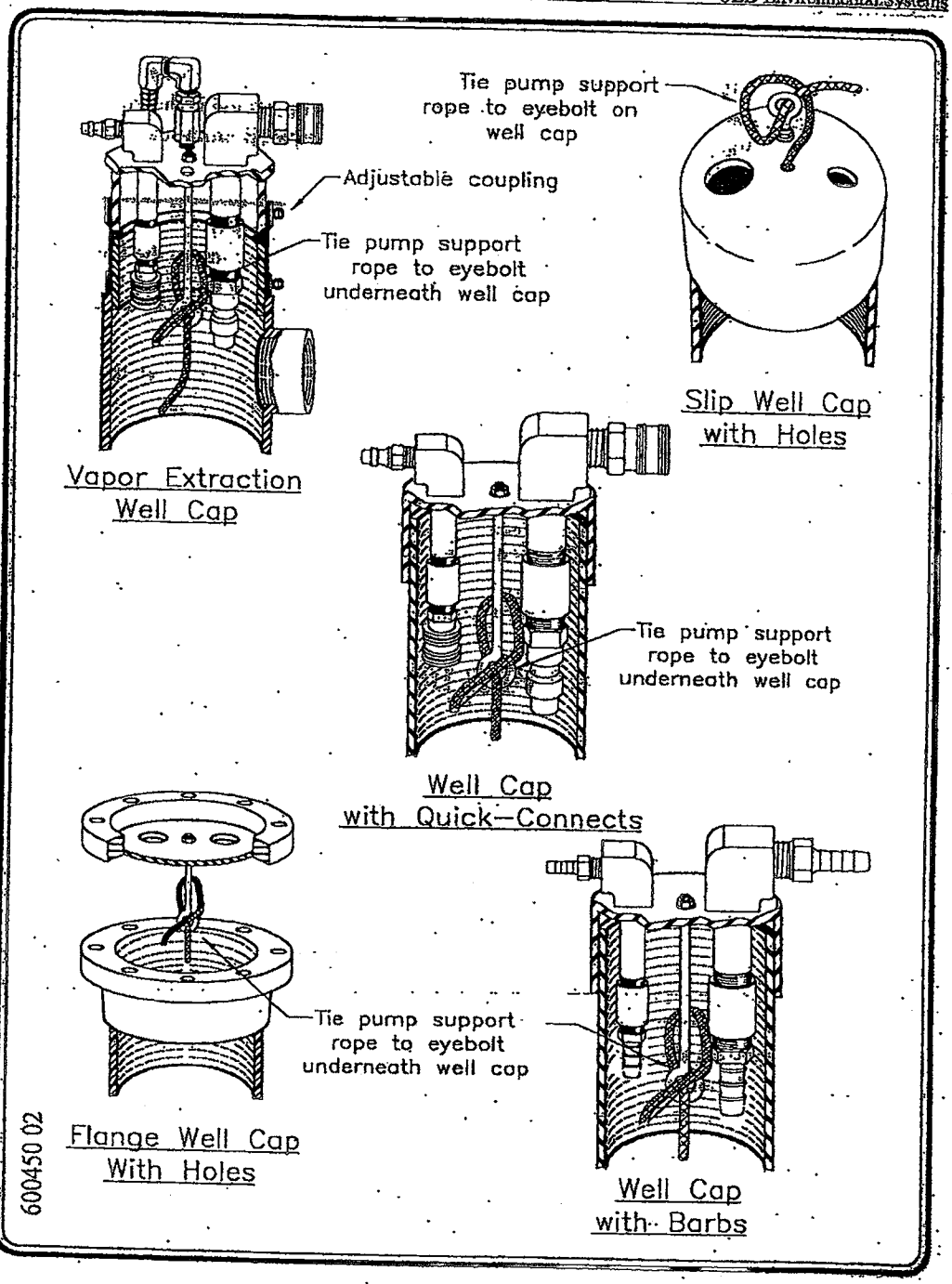


Figure 12 - Examples of Well Caps

Hose bundling or the use of jacketed tubing reduces equipment entanglement at the well surface, and aids the removal of the pump from the well. Bundling also assists in positioning the pump and down-well hose assembly against one side of the well casing. Maximum space is created for other items, such as probes, to be periodically placed inside the well.

Follow these instructions to create a hose bundle.

STEP 1 - Lay the equipment on the ground and make all of the necessary hose connections. **(See Component Assembly on page 26 and 32)**

STEP 2 - If a well cap is supplied, install it on the hoses. **(See Figure 10** for well cap with holes; see **Figure 11** for well cap with hose barbs)

STEP 3 - Connect the quick-link assembly on the support rope to the eyebolt on the AP-4 and lay the support rope out along with the hoses. Make sure that none of the hoses or support ropes are crossing over each other. **(See Figure 13)**

Note:
To make the next step easier, pull the support rope and the hoses taut.

STEP 4 - Starting at the AutoPump end of the hose, put a tie-wrap through the center of the braided support rope just above the uppermost quick-connect or barb on the AutoPump. **(See Figure 13 and Figure 14)**

STEP 5 - Pulling the rope taut, put the tie-wrap around the fluid discharge hose with the rough surface outwards. Cross the ends and complete the figure-8 pattern by securing the ends around the exhaust hose. When you connect the tie-wrap make sure it is straight and is not kinking the hoses. **(See Figure 13 and Figure 14)**

Note:
After completing this step, the fluid discharge hose will be attached to the support rope and the exhaust hose. At this point the air supply hose is still lying free.

STEP 6 - Place the next tie-wrap two feet towards the well cap from the first. Secure the air supply hose rather than the exhaust hose.

Note:
It is important to put the tie-wraps approximately two feet apart to keep a proper discharge hose/support rope bundle. Experience has shown that spreading the tie-wraps further apart than two feet increases the probability for hose kinking.

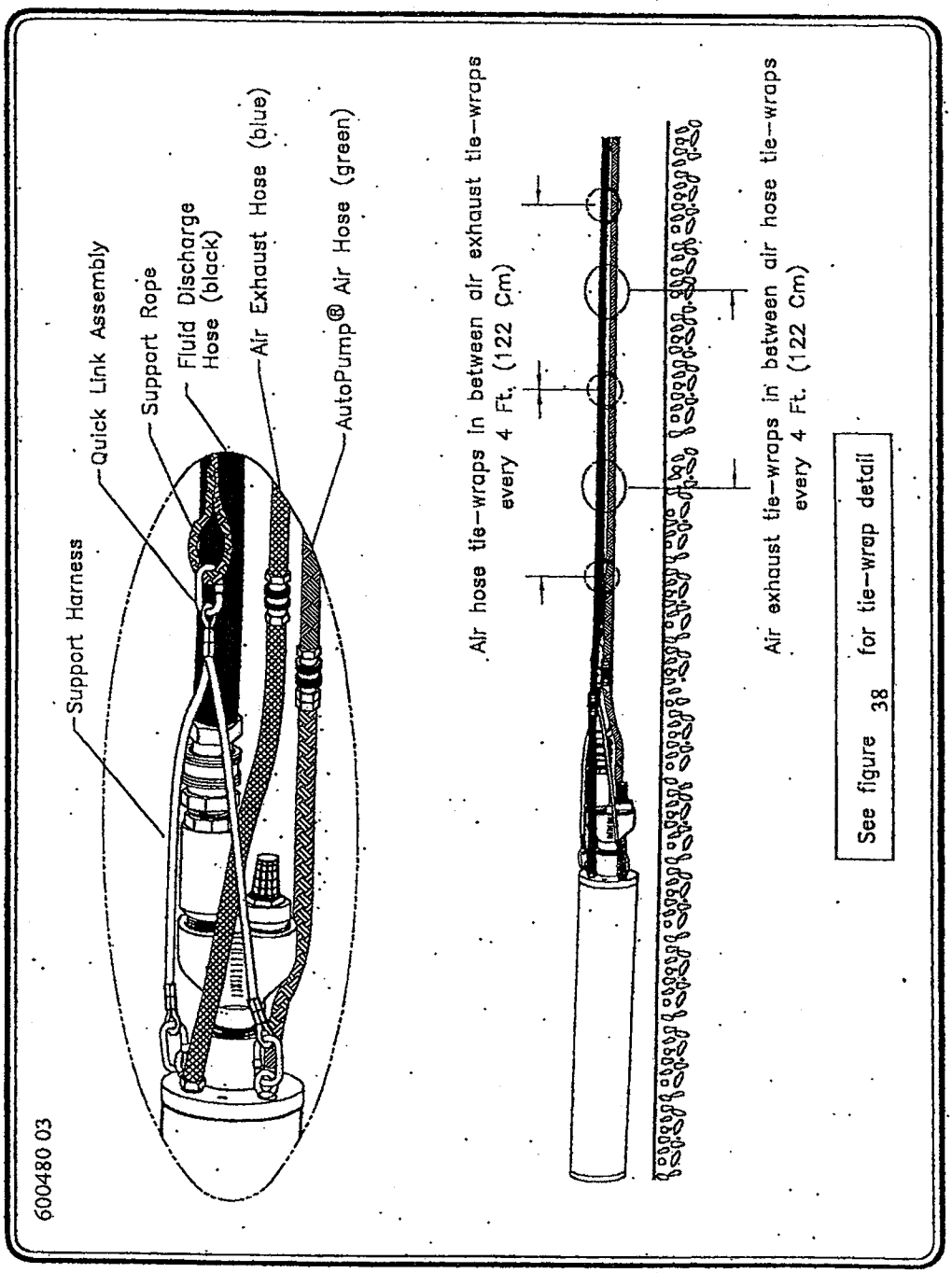


Figure 13 - Hose Bundling: Part 1 of 2

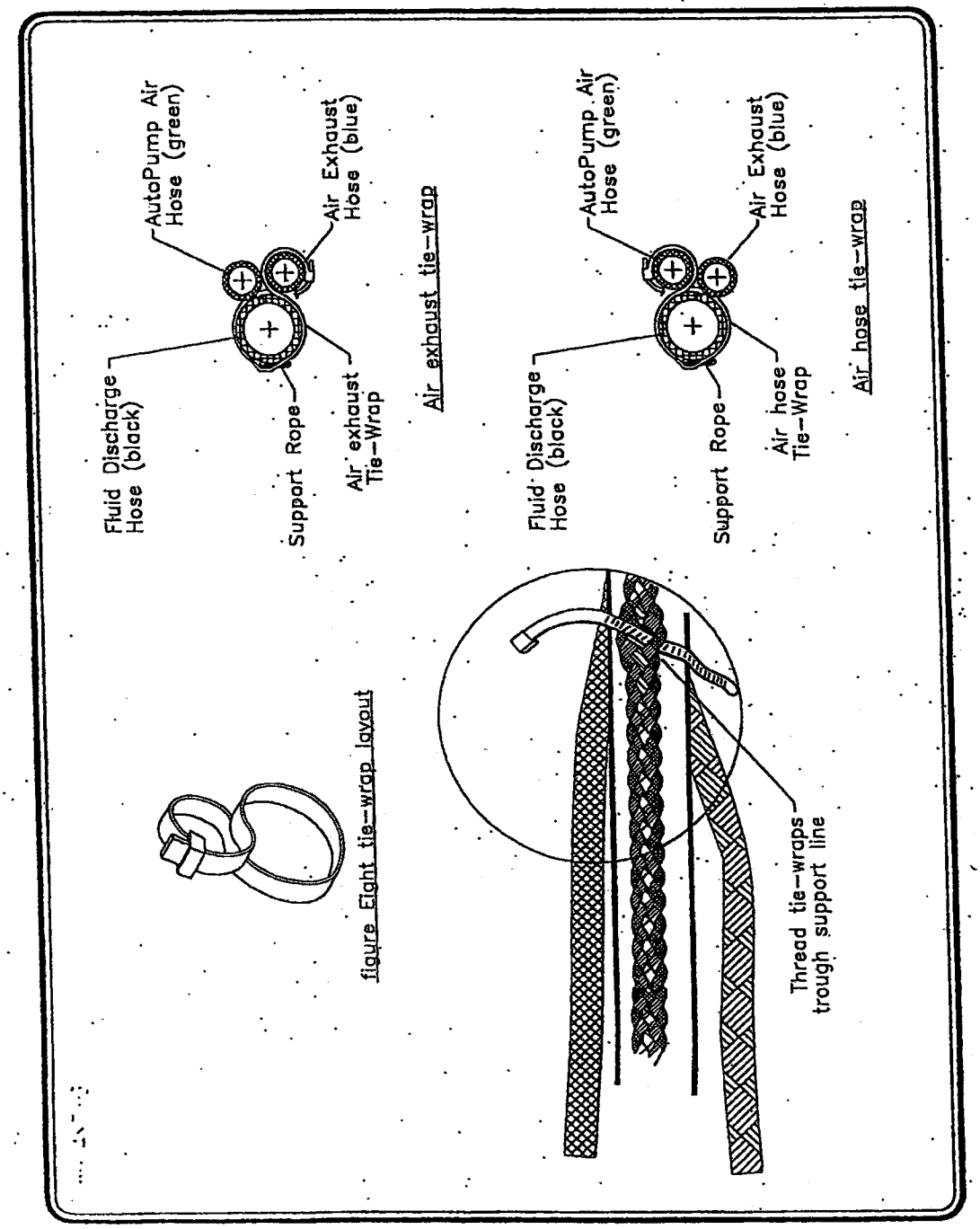


Figure 14 - Hose Bundling: Part 2 of 2

STEP 7- Continue to alternate the air exhaust and the air supply tie-wraps every two feet, stopping about five feet from the wellhead.

STEP 8- Being careful not to leave any sharp edges, cut the excess from the tie-wraps.

You now have a down-well bundled hose assembly that supports both the hoses and the down-well equipment.

AutoPump Installation

Once the installation of the pump support system is completed, you may install the AutoPump in the recovery well.

STEP 1 - Lower the pump until it is at the desired level.

STEP 2 - Secure the pump by tying off (securing) the support line or by placing the well cap on the well.

STEP 3 - Increase the air pressure to the pump until the pump is pushing the fluid out at the desired rate. With sufficient air pressure (at least 10 to 15 psi over the vertical static head), the AutoPump will gradually draw down the fluid level in the well to the level of the pump. The time required for this draw down varies with the yield of the well as compared to the flow rate of the pump. The maximum recommended continuous operating pressure is 120 psi (200 psi for high pressure version).

The pump rate can be increased slightly by increasing the air pressure to the pump. However, under conditions with high inlet pressures and little discharge resistance, some air may exit with the fluid. That would be due to a brief residual pressure in the pump which discharges fluid (and air) even after the exhaust valve is opened.

Under normal operating conditions, no air should exit the pump with the fluid.

If the pump is moving air out the fluid discharge and this is undesirable, a needle valve in the air line can be used. This reduces the air flow rate to the pump and thus the pressure buildup in the pump. Alternately, reduce the pressure going to the pump though the pressure regulator.

Note:
Submerging the pump before supplying it with air will result in fluids entering the exhaust hose. Those fluids will be discharged from the exhaust hose during the first few cycles of the pump. If such discharge will not be confined to the well, the operator may wish to install the pump with a low air pressure supplied to the pump. To obtain the value of that low pressure in psi, multiply the number of feet that the pump is to be submerged by one-half (0.5).

WARNING:
Be sure that the fluid discharge has a closed valve during such a process because the pump may have enough pressure to begin pumping fluid from the well.

Chapter 5: Start Up and Operation

Start Up Checklist

In normal operation, the AP-4 System requires little attention.

Before regulating the air pressure to the desired operating pressure, ensure that the following conditions exist:

1. Personal Protective Equipment (PPE) is being used by all personnel.

2. The pump is submerged below the fluid level.

3. All hoses are connected.

4. The exterior air filter is mounted vertically to allow the filter and its bowl drain to operate properly.

5. All out-of-well air and fluid valves are in their correct positions.

6. A method of rapid disconnect and exhaust (or at least a shut off) of compressed air to the pump is available in case of an unexpected occurrence.

7. When pumping is to begin, either gradually raise the air pressure to the pump or gradually open the air valve to the pump to allow the pump and hoses to slowly pressurize. Check for leaks as you do this.

8. As the air pressure overcomes the static and dynamic resistant forces, the pump will begin to cycle. Listen for the periodic exhaust of air from the pump to determine that the pump is working. The pump should push fluid out and then exhaust sharply to fill before pressurizing and pushing the fluid out again.

   Cycling can also be monitored by placing an air pressure gauge at the well head and by observing a pulse counter, if one is present.

Adjusting the Pump Cycle Counter

Refer to Appendix F – Pump Cycle Counter

Observation of System Operation

Observe the system operation for at least 10 pump cycles to ensure everything is working. If the well influx is low so the pump seldom cycles, pour clean water into the well to check on the pump. If allowed, the pump discharge can be directed into the well so the pump will cycle within an acceptable period to allow for observance of operation. Check your local regulations to determine if these practices are permissible.

> **Note:**
> The Pump Cycle Counter may have to be readjusted if it is set when the water is recirculating to the well.

After the entire site is operating, return to each well to ensure that the pump and PCCs are functioning properly. The addition of other pumps and possible system back pressure can necessitate air pressure and counter readjustment.

Downwell Testing of the AutoPump

While the AutoPump is in the well, it can be tested by putting compressed air into the exhaust hose of the pump.

> **Note:**
> The air supply hose must be shut off or pressurized when this is done.

The compressed air will enter the pump through the exhaust valve and push any fluids in the pump up the discharge tube. If sufficient compressed air is continually supplied, it will also exit the discharge tube and cause the fluid in the discharge hose to be airlifted to the surface. This method can be used to lighten the pump and hoses before removing the pump from the well. This process can also show whether the fluid inlet check valve is sealing and if the pump is capable of discharging fluid.

AutoPump Shutdown while Submerged

The AutoPump can be submerged for long periods of time at most sites. If the well environment is such that deposition occurs on stainless steel parts, the operator may wish to raise the pump above the water level during a shutdown of the system.

AutoPump Removal Technique (optional)

By pressurizing the exhaust hose as noted above and airlifting the fluids out of the well, the fluid in an AutoPump and discharge hose can be reduced significantly. This can be used to lighten the system before removing it from the well.

Chapter 6: Maintenance

General Maintenance

The AP-4 should be relatively free of maintenance. The frequency of maintenance depends upon the nature of the fluids being pumped. Follow these general maintenance checks.

- Periodically inspect all hoses and connections for damage. Make sure that the hoses are not split or cracked, and listen for leaks in the system.
- Even if significant amounts of oil and water enters the air hose, the AP-4 System should perform reliably for years. Check the Air filters and filter bowl drains on the filters/ regulator for saturation and operation every few weeks.
- Periodically drain the air filters on the air hose to the pumps of collected particles, water and oil. Draining prevents the filter from clogging up or being otherwise damaged. Check the regulator to ensure the pressure setting has not drifted appreciably.
- An automatic drain on the compressor is highly recommended, since such an addition can dramatically increase air filter life and decrease maintenance. Automatic drains are available from QED.
- The pump can be opened up in the field if the area is clean and dry.

A maintenance video is available from QED.

Maintenance Table

A visual check and/or maintenance is recommended at least once every two weeks, but some site environments may demand more frequent service. The following table outlines the recommended minimum schedule for the AP-4 System.

Equipment	Biweekly	Monthly*	As Required
Air Quality Check • Single Stage Filter/Regulator	X		
AutoPump Service			X
Check Pump Cycle Counter	X		
Check Volume Pumped Per Cycle		X	

* Site conditions may require maintenance more often.

The following sections describe each maintenance activity in detail.

Air Quality Check

Single Stage Filter/Regulator Maintenance

Even using air which has some oil and water in it, the AutoPump System should operate trouble-free for years. The air filter is normally a 5 micron filter with a replaceable element.

To replace the element in the air filter on the single stage filter/regulator use the following procedure:

STEP 1 - **Disconnect Air Source**

- Valve off the air supply and drain the downstream air to the air filter. Or disconnect the blue system air supply hose from the single stage filter/regulator. The air filters will depressurize, allowing them to be safely serviced.

WARNING:
Do not remove a filter bowl that is pressurized.

STEP 2 - Remove Filter Bowl

- Different styles of air filters are available. The following instructions are given for the most typical filter used.

- Remove the bowl of the air filter by sliding the black button downward and twisting the bowl about 1/10 of a turn. The bowl should slide downward from the upper portion of the filter revealing the filter element. Unscrew the element as you would unscrew a light bulb. Hand tighten the element after replacing it.

Make sure to replace the correct element.

- The 5 micron particulate filter was reddish-brown up until 1994.

- The new elements are white.
  Filter (for the FR 60 Filter Regulator): *QED* Part No. 205071

STEP 3 - Bowl Drain

Optional Float Drain

- Wash out any deposits and oil buildup from the filter bowl with warm water and soap. To make sure the float drain is operating freely, shake it; the drain should rattle. Test the float drain by filling the bowl with water, assembling the bowl to the filter and reconnecting it to the air supply. The water should drain from the bowl. When under pressure, the drain should not leak.

Standard Manual Drain

- With water in the bowl, open the drain and ensure the liquid drains easily. When under pressure and closed, the drain should not leak.

AutoPump Service

AutoPump Shutdown and Removal from Well

To shut down and remove the AutoPump, follow these directions:

STEP 1 - Wait until the pump is in its discharge cycle and then raise it above the water level in the well. This will empty most of the fluid from the pump making it lighter to lift. There will also be less fluid to drain from the pump.

Note:
See Start Up and Operation for optional pump removal technique.

STEP 2 - Pull the pump and hoses to the surface.

STEP 3 - Shut off the air to the pump and disconnect the air hose from the pump.

STEP 4 - Ensure that there is a safe place to drain any fluid from the pump and discharge hose.

STEP 5 - Disconnect the fluid discharge hose from the pump.

For Bottom-loading pumps

Drain the fluid in the pump by lifting the bottom inlet check valve from its seat by using a thin wire or Allen wrench.

For Top-loading pumps

Drain the fluid by turning the pump upside-down and allowing fluid to flow from the air inlet fitting.

Caution:
Wear gloves and catch the draining fluid in a sump or bucket.

Removing Pump Casing

Follow these instructions for removing the pump casing:

Caution:
When assembling or disassembling the pump, do not rotate the casing. This action may cause the float and control rod to rotate with the casing. Instead of rotating the casing, spin the bottom check valve (or plug on a Top-Loading pump) and hold the casing stationary.

Caution:
After troubleshooting is completed and before assembling the pump, slowly move the float through its range to ensure that the lever will trip, even if the pump fills and empties slowly.

Unscrew the bottom check valve or plug from the discharge tube. **(See Figure 15)**

STEP 1 - Fit a spanner wrench in one of the holes in the circumference of the lower head. The lower head has right-handed threads, so the direction of rotation for disassembly is counterclockwise if looking at the bottom of the pump.

STEP 2 - Hold the top head of the pump by the support rings.

STEP 3 - Insert a large screw driver through one of the support rings and leverage it against the coupling for the discharge tube.

Caution:
Do not press against the air hoses or air hose fittings.

STEP 4 - Turn the plug or check valve.

Caution:
Do not leverage the large screwdriver against the air inlet or air exhaust fittings. This could damage the fittings.

Note:
The O-rings at the top and bottom of the pump may have swollen due to solvents in the fluid being pumped and therefore make turning the plug or check valve difficult.

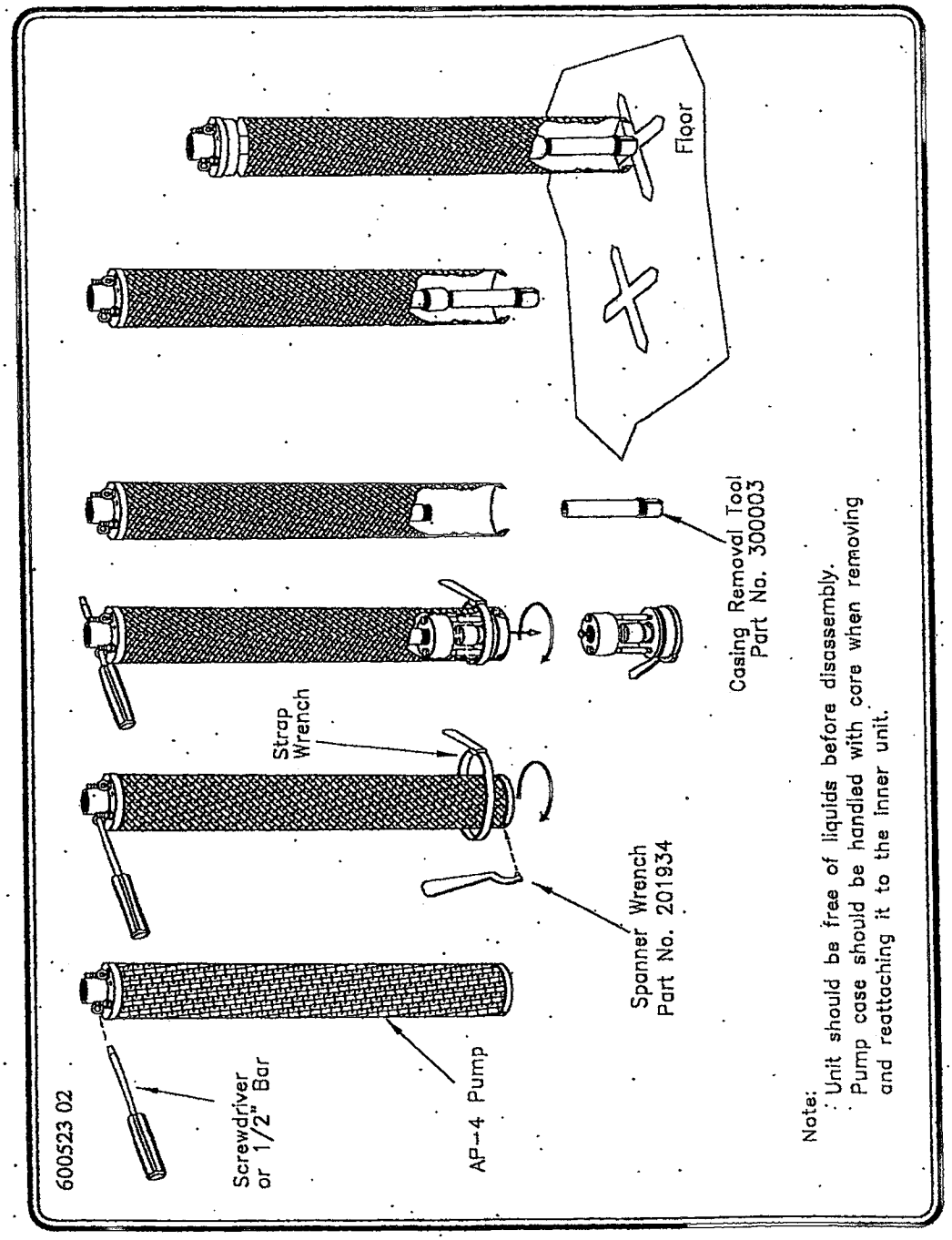


Figure 15 - Removing AP-4 Pump Casing

STEP 5 - If you suspect the pump of being clogged with mud or other particles, prevent the outer casing from turning while the lower plug or check valve is unscrewed.

STEP 6 - Have a second person hold a strap wrench around the pump casing. If there is only one person, hold the upper head in a vise while unscrewing the lower head. This allows a free hand to hold the strap wrench which prevents the pump casing from rotating.

STEP 7 - When the plug or check valve is removed, use a pump casing removal tool to remove the pump casing. The pump casing removal tool is a specially threaded coupling with a pipe extension.

STEP 8 - Thread the coupling onto the bottom of the discharge pipe (onto the same threads from which the lower head was unscrewed).

STEP 9 - Hold the pump vertically upright with the pump casing removal tool extending down out of the pump casing.

STEP 10 - Hold the pump casing and striking the pump casing removal tool on the ground. This will cause the pump casing to slide off the upper O-ring and will allow it to slide off the pump.

Cleaning Pump Interior

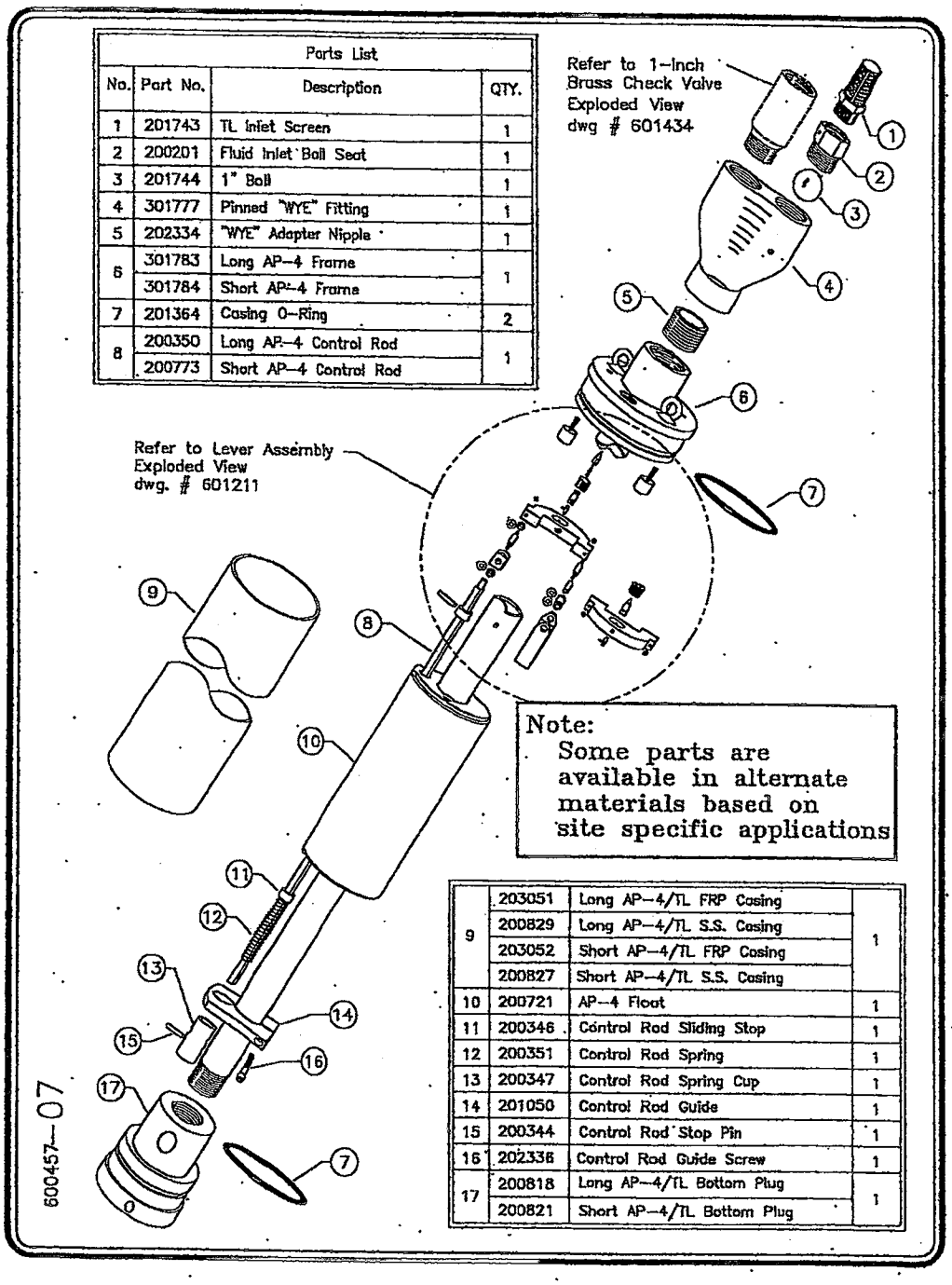
The inner workings of the pump should now be exposed for inspection and cleaning. **(See Figure 16, Figure 17, Figure 18, Figure 19, Figure 20, and Figure 21)**

Note:
A Scotch Brite® abrasive pad is useful for cleaning debris from the pump components.

STEP 1 - Gently brush off built-up solids from the float, the discharge tube, the pump casing and the control rod guide.

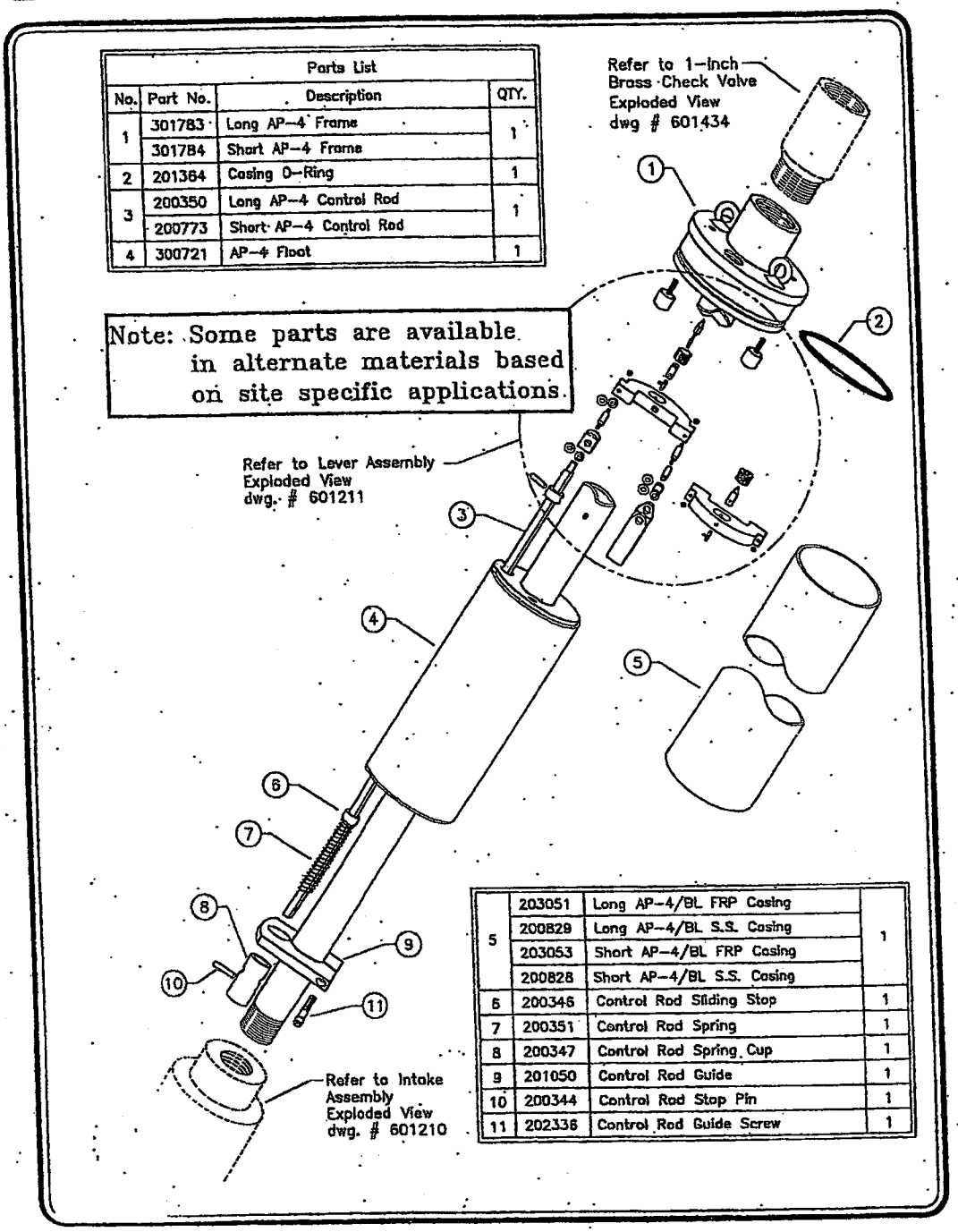
STEP 2 - The pump can be steam cleaned without damage.

STEP 3 - Remove thick deposits of hardened scale on the discharge tube by using a handbrush or by lightly tapping the discharge tube with a small hammer. Be careful not to strike any pins or other components, since they may be damaged.



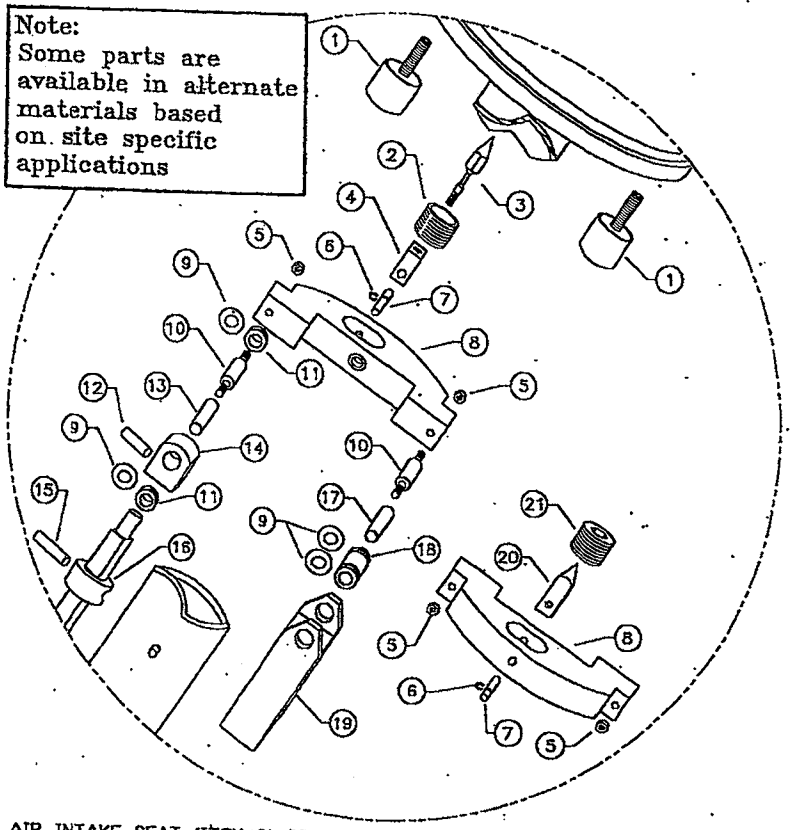
Parts List			
No.	Part No.	Description	QTY.
1	201743	TL Inlet Screen	1
2	200201	Fluid Inlet Ball Seat	1
3	201744	1" Ball	1
4	301777	Pinned "WYE" Fitting	1
5	202334	"WYE" Adapter Nipple	1
6	301783	Long AP-4 Frame	1
	301784	Short AP-4 Frame	
7	201364	Casing O-Ring	2
8	200350	Long AP-4 Control Rod	1
	200773	Short AP-4 Control Rod	
9	203051	Long AP-4/TL FRP Casing	1
	200829	Long AP-4/TL S.S. Casing	
	203052	Short AP-4/TL FRP Casing	
	200827	Short AP-4/TL S.S. Casing	
10	200721	AP-4 Float	1
11	200346	Control Rod Sliding Stop	1
12	200351	Control Rod Spring	1
13	200347	Control Rod Spring Cup	1
14	201050	Control Rod Guide	1
15	200344	Control Rod Stop Pin	1
16	202338	Control Rod Guide Screw	1
17	200818	Long AP-4/TL Bottom Plug	1
	200821	Short AP-4/TL Bottom Plug	

Figure 16 - Exploded View of a Top-Loading AutoPump AP-4 (Long & Short)



Parts List			
No.	Part No.	Description	QTY.
1	301783	Long AP-4 Frame	1
	301784	Short AP-4 Frame	
2	201364	Casing O-Ring	1
3	200350	Long AP-4 Control Rod	1
	200773	Short AP-4 Control Rod	
4	300721	AP-4 Float	1
5	203051	Long AP-4/BL FRP Casing	1
	200829	Long AP-4/BL S.S. Casing	
	203053	Short AP-4/BL FRP Casing	
	200828	Short AP-4/BL S.S. Casing	
6	200345	Control Rod Sliding Stop	1
7	200351	Control Rod Spring	1
8	200347	Control Rod Spring Cup	1
9	201050	Control Rod Guide	1
10	200344	Control Rod Stop Pin	1
11	202336	Control Rod Guide Screw	1

Figure 17 Exploded View of a Bottom-Loading AutoPump AP-4 (Long & Short)



NOTES:

1 - AIR INTAKE SEAT (ITEM 2) IS INCLUDED WITH FRAME ASSEMBLIES, BUT MAY ALSO BE SPECIFIED SEPARATELY.

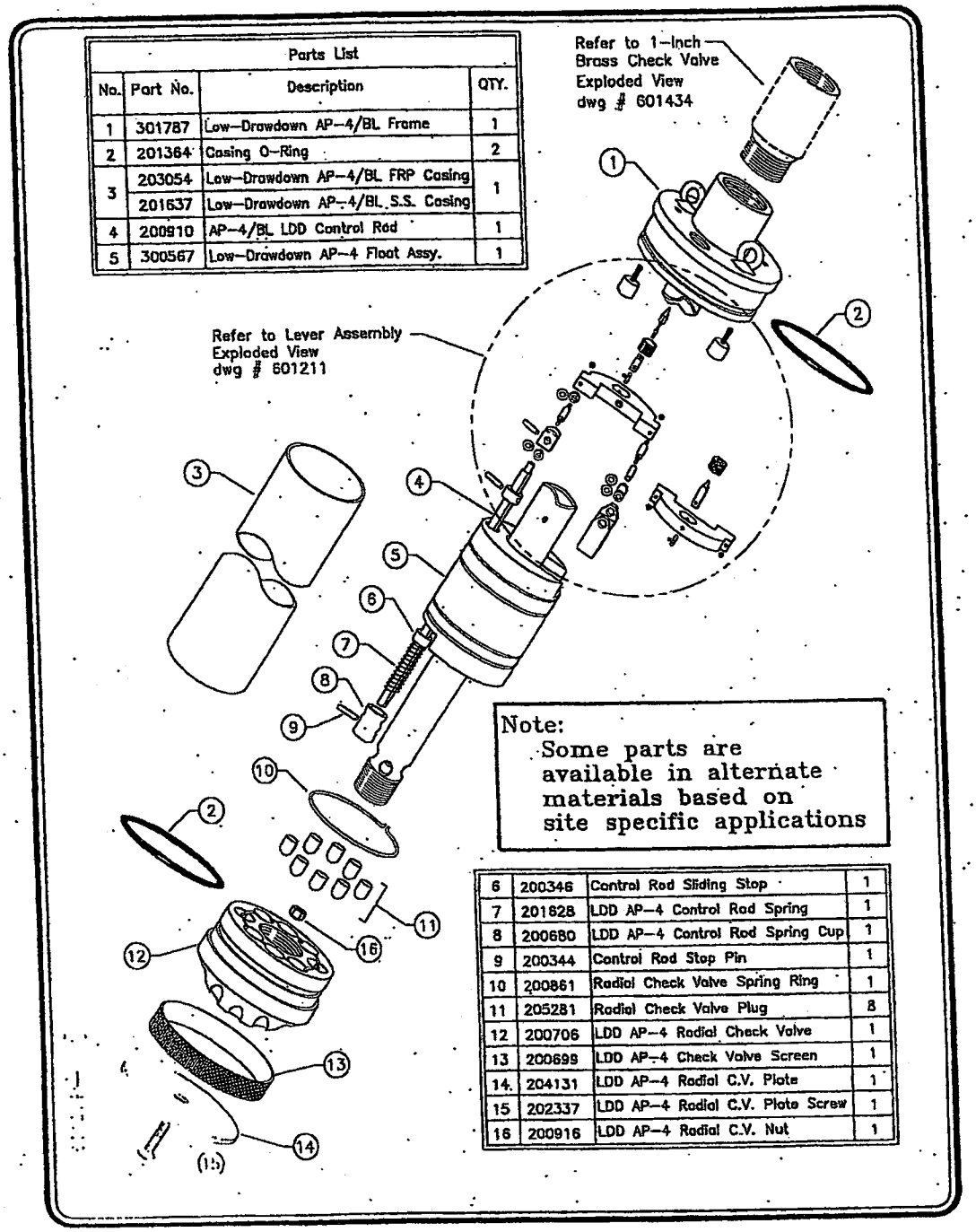
[2]- VARIOUS VERSIONS OF THIS COMPONENT AVAILABLE. CONTACT SERVICE DEPARTME FOR PART NUMBER.

Parts List

No.	Part No.	Description	QTY.	No.	Part No.	Description	QTY.
1	301816	AP-4 Magnet Assembly	2	12	200342	Control Rod Adapter Pin	1
2	[2]	Intake Poppet Seat Assembly	1	13	201416	Control Rod Adapter Bushing	1
3	[2]	Intake Poppet	1	14	200340	Control Rod Adapter	1
4	[2]	Intake Poppet Connector	1	15	200344	Control Rod Stop Pin	1
5	200495	Lever Connecting Pin Nut	4	16	201209	Control Rod Upper Stop	1
6	200497	Poppet Pin Retaining Ring	2	17	201432	Counterweight Bushing	1
7	201465	Poppet Pin	2	18	200330	Counterweight Roller	1
8	300570	Lever Assembly	2	19	[2]	Counterweight	1
9	200496	Bumper Ring	4	20	[2]	Exhaust Poppet	1
10	200328	Lever Connecting Pin	2	21	[2]	Exhaust Poppet Seat	1
11	201458	Control Rod Roller	2				

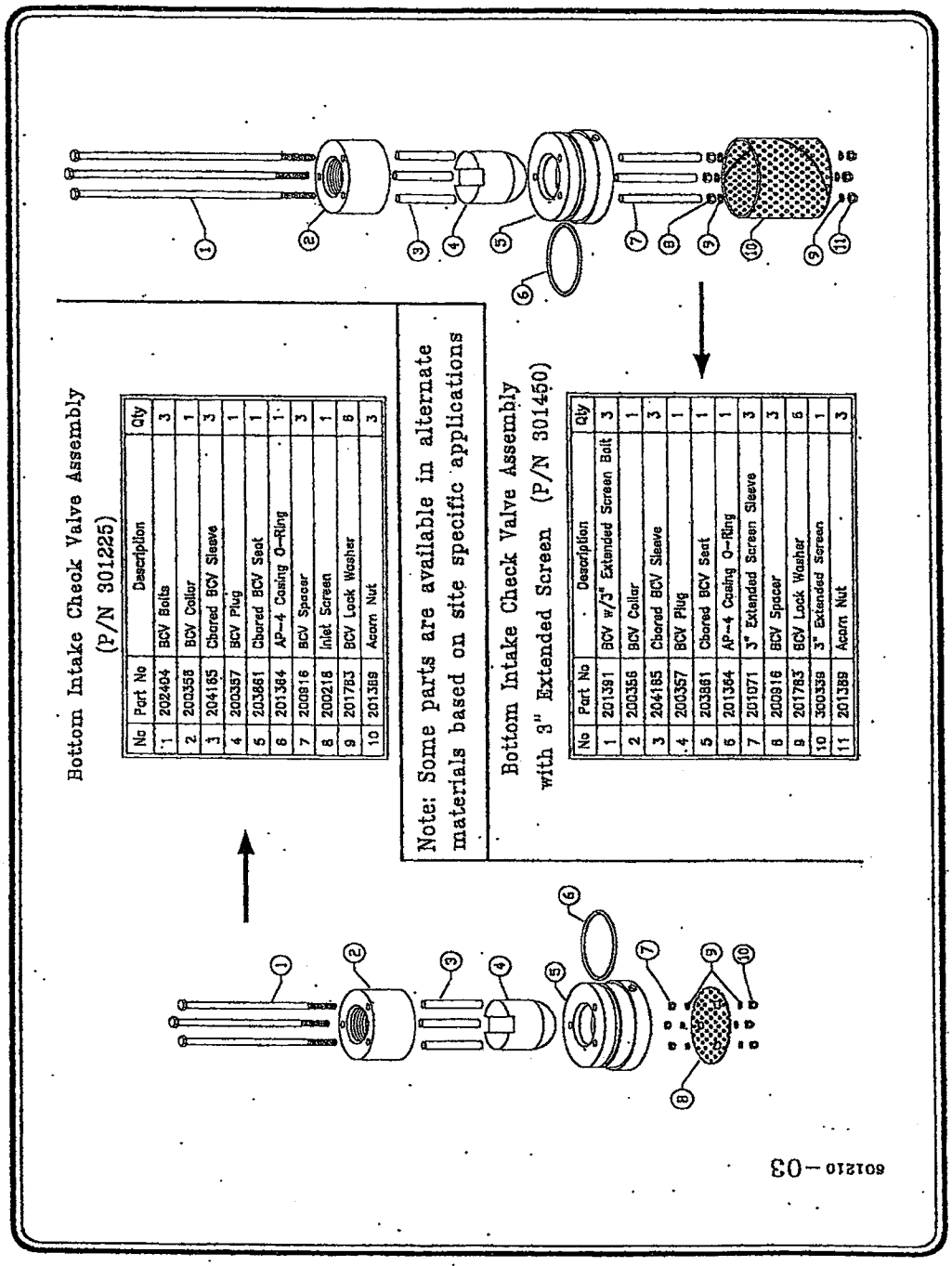
601211-04

Figure 18 - Exploded View of AP-4 Lever Assembly



Parts List			
No.	Part No.	Description	QTY.
1	301787	Low-Drawdown AP-4/BL Frame	1
2	201364	Casing O-Ring	2
3	203054	Low-Drawdown AP-4/BL FRP Casing	1
	201637	Low-Drawdown AP-4/BL S.S. Casing	
4	200910	AP-4/BL LDD Control Rod	1
5	300567	Low-Drawdown AP-4 Float Assy.	1
6	200346	Control Rod Sliding Stop	1
7	201628	LDD AP-4 Control Rod Spring	1
8	200680	LDD AP-4 Control Rod Spring Cup	1
9	200344	Control Rod Stop Pin	1
10	200861	Radial Check Valve Spring Ring	1
11	205281	Radial Check Valve Plug	8
12	200706	LDD AP-4 Radial Check Valve	1
13	200698	LDD AP-4 Check Valve Screen	1
14	204131	LDD AP-4 Radial C.V. Plate	1
15	202337	LDD AP-4 Radial C.V. Plate Screw	1
16	200916	LDD AP-4 Radial C.V. Nut	1

Figure 19 - Exploded View of LDD AutoPump AP-4.

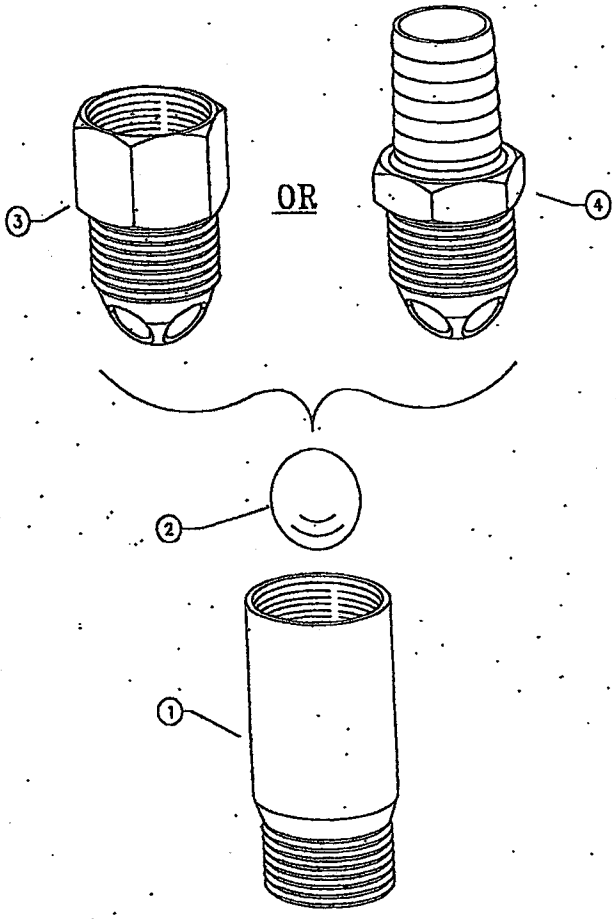


No	Part No	Description	Qty
1	202404	BCV Bolts	3
2	200358	BCV Collar	1
3	204185	Chored BCV Sleeve	3
4	200357	BCV Plug	1
5	203861	Chored BCV Seat	1
6	201364	AP-4 Casing O-Ring	1
7	200916	BCV Spacer	3
8	200218	Inlet Screen	1
9	201783	BCV Lock Washer	6
10	201389	Acorn Nut	3

No	Part No	Description	Qty
1	201391	BCV w/3" Extended Screen Bolt	3
2	200358	BCV Collar	1
3	204185	Chored BCV Sleeve	3
4	200357	BCV Plug	1
5	203861	Chored BCV Seat	1
6	201364	AP-4 Casing O-Ring	1
7	201071	3" Extended Screen Sleeve	3
8	200916	BCV Spacer	3
9	201783	BCV Lock Washer	6
10	300339	3" Extended Screen	1
11	201389	Acorn Nut	3

Figure 20 - Bottom Intake Check Valve Assembly

1-INCH BRASS CHECK VALVE
(S.S. OPTION AVAILABLE)



No.	Part No.	Description	QTY.
1	205599	Check Valve Housing, Brass	1
2	201852	7/8" Ball	1
3	205597	Adapter 1" FPT X 1" MPT, Brass	1
4		*Specify= Hose or Tubing and Size*	1

Figure 21 **Exploded View of 1-Inch Brass Check Valve**

Iron Build-up Cleaning Procedure

After the casing has been removed from the AutoPump please follow the procedure below:

Note:
The procedure described below can be seen in the Maintenance Video Tape. This will aid the technicians understanding and ease of properly disassembling the AutoPump, effectively cleaning components and then re-assembling the AutoPump.

STEP 1 - The bottom intake check valve assembly should be removed from the casing. **(See page 49, and Figure 15 on page 50)**

STEP 2 - Visually inspect both the 1 inch stainless steel fluid discharge pipe for iron build-up or debris. Also, do the same with the float that rides up and down on the SS discharge pipe.

STEP 3 - Should there be iron deposits on either or both the discharge pipe or float, then remove the float from the SS fluid discharge pipe as follows:

- Remove the control rod guide. **(See Figure 16 and Figure 17)**
- Remove the small SS pin from the bottom spring cup "Stop". The Stop is the small white part located just below the Spring identified on **Figure 16 and Figure 17.** The pin and Stop removal will allow you to remove the spring and float from the SS discharge pipe.

STEP 4 - The 1 inch stainless steel fluid discharge pipe can now be cleaned using either a Scotch Brite pad, a wire brush or finally a wire wheel on either a drill or a grinding machine. After removing the iron debris, it is recommended the pipe be water rinsed.

STEP 5 - Usually the AP-4 float will be one of two types. Most floats have a metal plate on each end. The second type of float has round pins protruding into its center hole, and it does not have metal plates.

Both the internal and external surfaces of the float will generally require cleaning. The material choices include a Scotch Brite pad, and a light grade 150 sandpaper.

For floats with plates: If these plates are removed to ease cleaning, they should be replaced on the same float end from which they came. That is, the plates should maintain their original top and bottom positions.

For floats without plates: A knife may be used to aid in cleaning this float.

STEP 6 - The white plastic square Control Rod is the next component to be cleaned. The control rod is the item that fits through the smaller hole in the float and is adjacent to the SS discharge pipe in the assembled pump. Again, use the Scotch Brite pad or a razor or Exacto knife (not sandpaper).

STEP 7 - The final component to be cleaned is the outer AutoPump casing. Please note you may either have a stainless steel or FRP fiberglass pump casing. The fastest and most effective way to clean out the inside surface of the pump casing is to use a three-stone honing tool. The technique is to move the hone in-and-out a half dozen times or so through each end of the casing. The time for the casing cleaning should take no longer than 5 minutes.

The AutoPump is now ready for re-assembly by following the steps above in reverse order.

Installing Pump Casing

STEP 1 - Inspect the O-rings to ensure they are capable of sealing (no discernible cuts or abrasions).

STEP 2 - Lubricate both inside ends of the casing to a depth of 3/4" with a thin layer of food-grade grease. Ensure that the film reaches the edges of the casing.

STEP 3 - Place the bottom check valve (Bottom Loading Pump) or bottom plug (Top Loading Pump) upright on a clean level surface.

STEP 4 - Pull the casing down over the check valve or plug.

Warning:
The pump casing has beveled ends that allow it to slide over the O-rings easily. Keep fingers, hands and other body parts away from these edges as they approach the heads. These edges can pinch when the pump casing is slid over the lower and upper heads.

STEP 5 - Turn the pump upside down and spin the casing assembly on the discharge tube by hand until the edge of the casing contacts the O-ring on the pump head.

Caution:
Be careful to swing the counterweight inside the pump.

STEP 6 - Using a spanner wrench on the bottom fitting, or, a strap wrench on the bottom end of the casing (pump bottom), turn the parts together until the casing just contacts the pump head.

STEP 7 - Turn the bottom check valve or the plug in the reverse direction (counter clockwise) so it is looser by 1/4 turn.

Cleaning the Pump Cycle Counter

Refer to Appendix F – Pump Cycle Counter

Checking Volumes Pumped Per Cycle

See page 23 for information on the AutoPump volumes pumped per cycle. Ensure that volumes correspond with the previous experience on-site, and with the ranges indicated on page 23. If it doesn't correspond, then one of the following may exist:

1. The AutoPump is malfunctioning. **(See Chapter 7: Troubleshooting & Repair)**

2. The Pump Cycle Counter may not be counting correctly. See **Appendix F – Pump Cycle Counter** for troubleshooting procedures.

3. Site conditions (e.g. air pressure, discharge head) may have changed substantially.

Chapter 7: Troubleshooting & Repairs

Problems may occur and usually can be easily resolved by following these instructions. If, after careful reading and service, you cannot resolve the problem, please contact the *QED Environmental Systems (QED)* Service Department at (800) 537-1767.

Caution:
Wear goggles, gloves, and coveralls when servicing this system.
After troubleshooting is completed and before assembling the pump, slowly move the float through its range to ensure that the lever will trip even if the pump fills and empties slowly.

Note:
See Chapter 6: Maintenance for disassembly and cleaning instructions.

Possible Causes	Symptoms		
Detailed Instructions Follow this Chart	Pump not cycling	Pump Cycles, but volume is reduced or there is no discharge	Air in fluid discharge
1. Air supply	X		X
2. Fluid level	X		
3. Air exhaust restricted	X		X
4. Fluid inlet clogged	X		
5. Debris, scale or very viscous fluid	X	X	X
6. Float pins	X		X
7. Lever pivot wear	X		X
8. Debris in air inlet valve	X		
9. Fluid check valve		X	
10. Valve timing	X		

Troubleshooting

1. Air Supply:
   - If the air pressure is too low, or if the flow is severely restricted, the pump will not cycle. Check the flow by inserting the pump air fitting part way into the air line socket. A healthy discharge of air should result.
   - If the air pressure exceeds the design limitations of the pump, the pump may fail to cycle, or the exhaust valve may have locked up and cause air to enter the fluid discharge.

2. Fluid Level:
   - The fluid level must be above the fluid inlet on a Top-Loading pump. On a Bottom-Loading pump, the fluid must be no lower than 9 inches below the head of the pump.

3. Air Exhaust Restricted:
   - The exhaust line must not be kinked, plugged, or too small in diameter.
   - The air exhaust outlet must be above the fluid level.
   - If the air exhausts in the well, the well must be vented to the atmosphere or a functioning vapor recovery line.
   - If the air exhausts to the atmosphere (outside the well) and a vacuum is drawn on the well, the pump may fail to fill. In order for the pump to fill under these adverse conditions, the pump must be submerged to make up for the pressure difference between the atmosphere and the partial vacuum in the well.

     The pressure difference, expressed as feet of water column (FT. W. C.), is how far the fluid must be above the pump before it can fill.
   - See Appendix D if there is a vacuum on the well.
   - Ice may be forming on the exhaust valve seat due to the temperature drop that accompanies expansion of compressed air. Restrict the exhaust to lower the expansion rate of the exhaust. Restrict the air inlet hose or lower the pressure to reduce the rate of incoming compressed air. The previous three suggestions may reduce the flow rate from the pump. Submerge the head of the pump, if it is not already submerged. Protect the air lines from low temperatures and freezing by burial or insulation.

4. **Fluid Inlet Clogged:**
   - If the fluid inlet screen is clogged with debris, or if a Bottom-Loading pump is on the bottom of the well, water cannot enter the pump.

5. **Debris, Scale, or very Viscous Fluid:**
   - If debris, scale or a very viscous fluid has accumulated inside the pump, the float may not move freely up and down, or the control rod may not slide easily through the float.
   - Clean the float, control rod, and the casing. See **Chapter 6** for cleaning instructions.

6. **Float Pins:**
   - Determine if any part of the float material itself can contact the discharge pipe. Move each end of the float back and forth, sideways, to ensure that the pins prevent float contact. Call *QED* for repair options.

Note:
If viscous materials cause continual problems, contact QED for possible solutions.

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7. **Lever Pivot Wear:**
   - Grasp the center of the lever with thumb and forefinger. Rotate the lever to horizontal.
   - Push up and down, toward and away from the head. Confirm that there is less than 1/32 inch of movement.
   - Replace the levers if the pivot hole is worn

8. **Debris in Air Inlet Valve:** (First check #7-Lever Pivot Wear)
   - Open the pump. Connect the air supply. Pull the control rod down. Listen to determine if air leaks through. If so, clean the valve by blowing air or water through it from both ends.
   - If air still leaks through the valve with the control rod down, the air-hose must be removed to access the valve inlet to check for debris in the valve or in the hose pigtail.
   - Push the rod upwards. If little or no air passes through, remove the air-in hose to access the valve inlet. Blow air through the valve from the poppet side to clear debris from the ball and seat.

9. Fluid Check Valves:

- Open the pump. Hold the pump vertically and pour water into the discharge check valve. If water flows through, clean the valve.
- Remove the valve and use emery cloth or a very fine sand paper to polish the surface where the ball seats.
- If the pump is a Bottom-Loading design, inspect the seat of the bottom check valve for debris and wear. Clean or replace if necessary.
- If the pump is a Top-Loading design, remove the fluid inlet check valve and inspect the seating surface and the ball for debris and wear.

10. Air Inlet Valve Timing:

- (First check lever pivot wear per #7)
- Call the QED Service Department for correct air valve timing for your pump.

Returning Equipment for Service

If the equipment needs to be returned to *QED* for servicing, please follow these steps:

STEP 1 - Call the *QED* Service Department and obtain a Return Material Authorization (RMA) number. Please have available the customers contact person's name, company name and address, phone number, fax number, reason for the return, and the names of the chemicals to which the equipment has been exposed.

STEP 2 - Clean all equipment before shipping. See **Equipment Cleaning Requirements** at the end of this section.

If the equipment must be cleaned after it arrives at *QED*, the customer will be charged for the cleaning and disposal of material, if necessary. (Cost can be $200.00 per piece of equipment cleaned.) Drain and dry all equipment after cleaning.

STEP 3 - Package the equipment so that it will not be damaged in shipment. Use bubble pack rather than styrofoam flakes as packing material.

STEP 4 - Ship the equipment via a carrier and service level (i.e., one-day, two-day shipping) in consideration of probable service time and return shipment time.

STEP 5 - It is recommended that such shipments be insured so if the shipment is badly damaged or lost, the customer can replace the equipment at little or no cost.

STEP 6 - Include the contact's name, company, phone number and RMA number given by *QED*.

STEP 7 - Write the RMA number on the outside of the packaging so it will be directed immediately to the *QED* Service Department.

Equipment Cleaning Requirements

If the equipment is to be shipped to another site or to the factory for service, it needs to be thoroughly cleaned before leaving the site. Cleaning the equipment protects the user (sender), the shipper, and the receiver from dirt and/or contaminants. If the equipment is not cleaned prior to shipping for servicing, it may be severely delayed, refused or the shipper may be charged a cleaning fee. Before packing and shipping, ensure that the equipment is dry inside and out.

The following is a list of equipment and how it should be cleaned prior to shipment.

Hoses and Fittings

STEP 1 - Pump clean water or water with a gentle soap solution (e.g. Dove Dish Soap) through the pump to remove free product and particles.

STEP 2 - Rinse all soap off of the equipment.

STEP 3 - Soak and rinse the outside of the unit with water to remove loose debris and dirt.

STEP 4 - Steam clean inside and out to remove difficult dirt and contaminants.

Caution:
Use low pressure (less than 40 psi) when steam cleaning.

AutoPumps

STEP 1 - Pump clean water or water with a gentle soap (e.g. Dove Dish Soap) solution through the pump to remove free product and particles.

STEP 2 - Rinse all soap off of the equipment.

STEP 3 - Soak and rinse the outside of the unit with water to remove loose debris and dirt.

STEP 4 - Steam clean inside and out to remove difficult dirt and contaminants.

Caution:
Use low pressure (less than 40 psi) when steam cleaning.

Appendix A: Performance Curves

These curves were derived from in-house tests using a pump with average air flow capacity. Flow rates in the field may vary slightly due to temperature, air quality, flow restrictions and minor differences in pump adjustments. Flow rates can be affected due to the natural cooling effect of compressed air expansion. If this cooling effect is lowering the flow rate, decreasing the air pressure to the pump can actually increase the flow rate in some cases. Another way to reduce freezing of water vapor in compressed air is to use an air dryer on the compressed air line.

The following charts show the performance flow rate curves for Long, Short, and Low-Drawdown

Long Bottom and Top-Loading AP-4 AutoPumps (3.5-inch OD).
- For US units, see Figures 22, 23, 26, and 27.
- For Metric units, see Figures 24, 25, 28, and 29.

Short Bottom and Top-Loading AP-4 AutoPumps (3.5-inch OD).
- For US units, see Figures 30, 31, 34, and 35.
- For Metric units, see Figures 32, 33, 36, and 37.

Low-Drawdown Bottom and Top-Loading AP-4 AutoPumps (3.5-inch OD).
- For US and Metric units, see Figures 38, 39, 40, and 41.

The curves are categorized by pump type, hose size, depth of submergence and air supply pressure. To determine the flow rate a pump will produce, the following information must be known:

1. Pump – Long, Short or Low Dardown; Top- or Bottom-Loading.
2. Discharge hose size – 3/4-inch or 1-inch is standard. A larger inside diameter may yield a higher flow rate. This depends on site conditions.
3. Fluid Inlet Submergence – Select the submergence depth of the pump below the fluid under normal operating conditions.
4. Air pressure.

With the previous information, obtain the flow rate by using the following steps:

- On the horizontal scale, find the depth in the well at which the pump will be located.
- Trace that depth upwards to the line for the air inlet pressure you selected.
- Travel horizontally over to the vertical scale and read the flow rate.

Example: A long Bottom-Loading pump with a 1-inch discharge hose and 70 psi supply pressure positioned 100 feet below ground and submerged 6 inches below the fluid will produce about 4.5 gallons per minute (GPM).

The same pump submerged 10 feet below the fluid produces 6 GPM.

Note:
These flow rates are only applicable for the designated well head conditions. Any additional resistance from out-of-well equipment (e.g. surface hoses, valves, etc.) will affect the values shown on these curves.

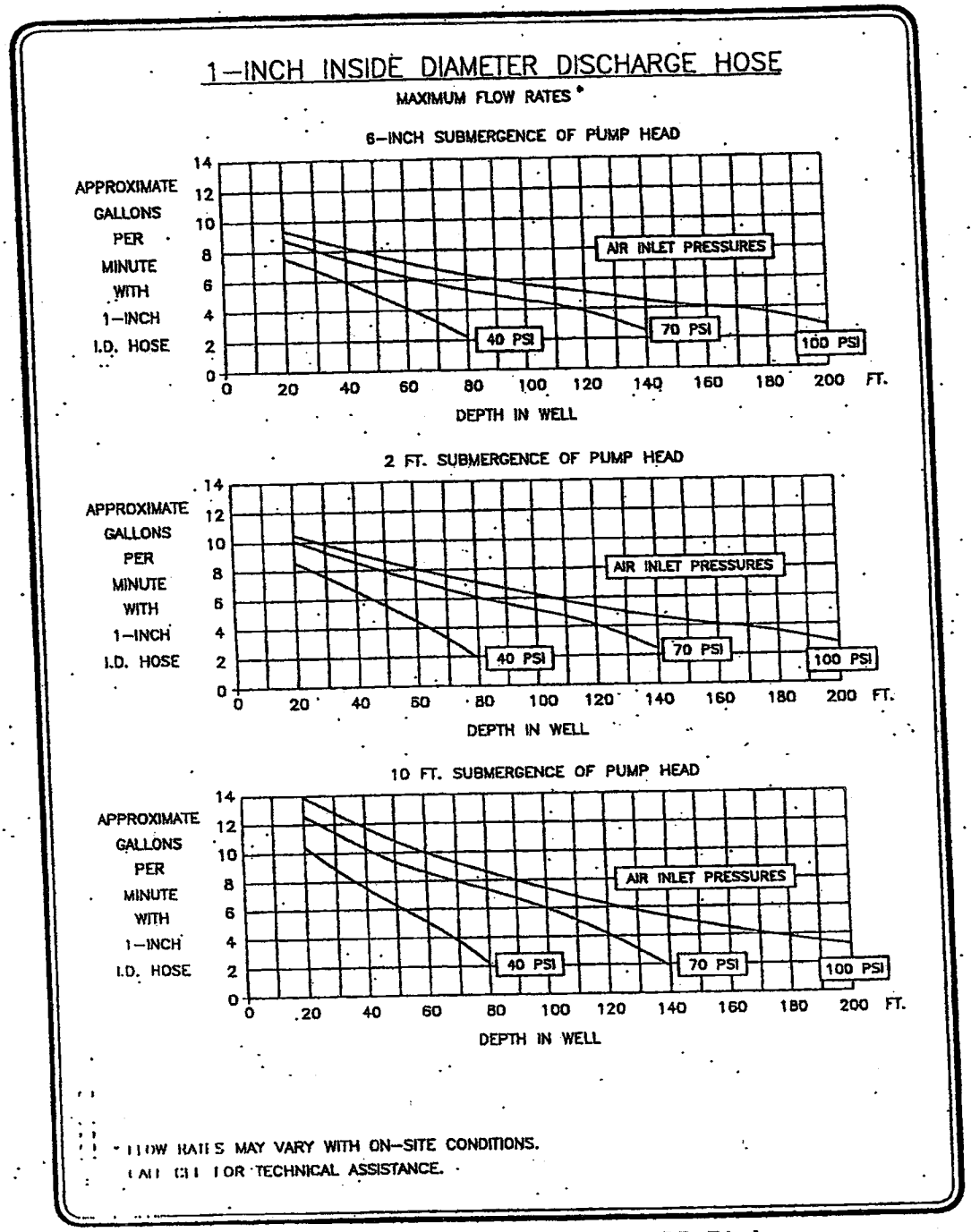


Figure 22 - Long AP-4/BL Performance Curves: 1-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

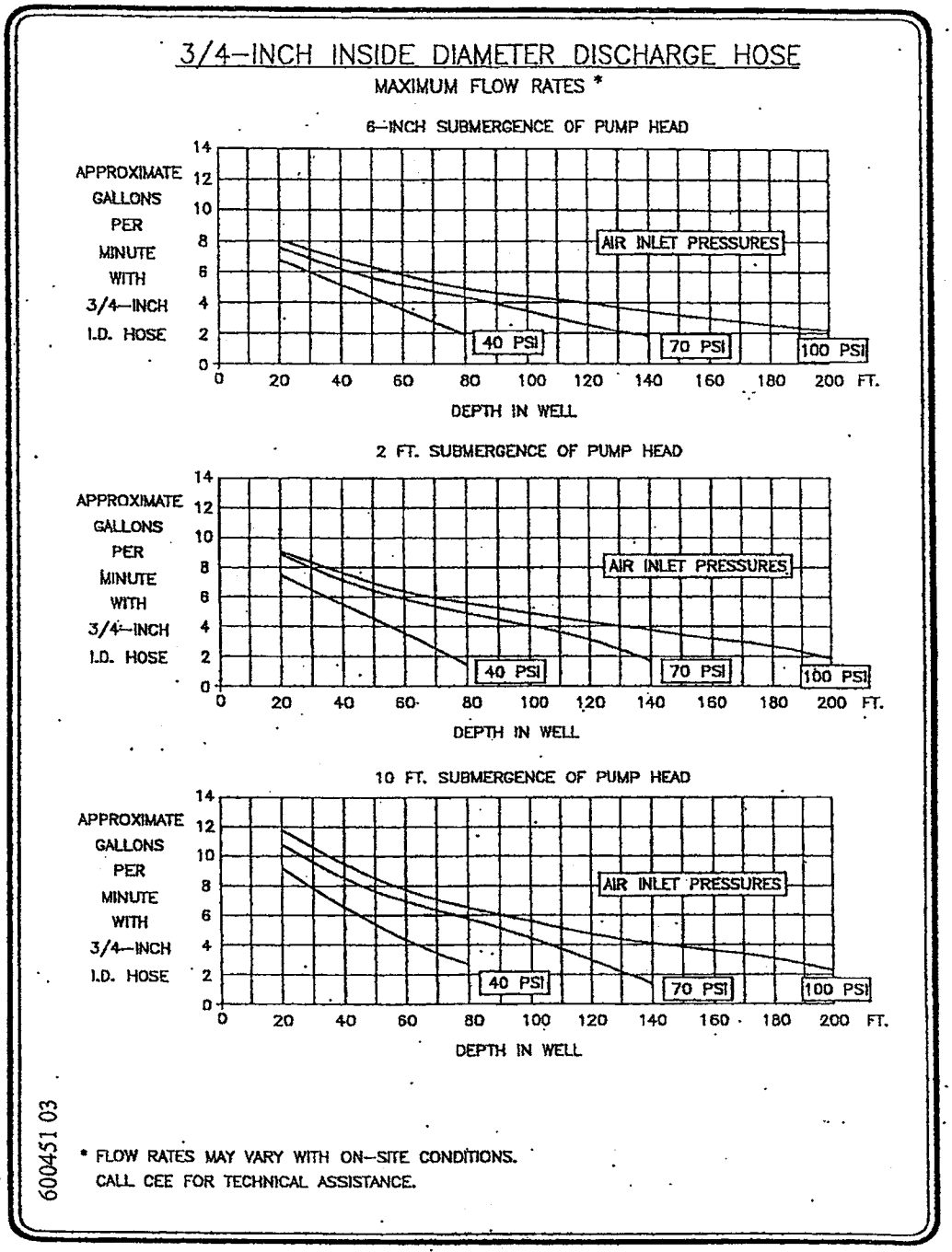


Figure 23 - Long AP-4/BL Performance Curves: 3/4-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

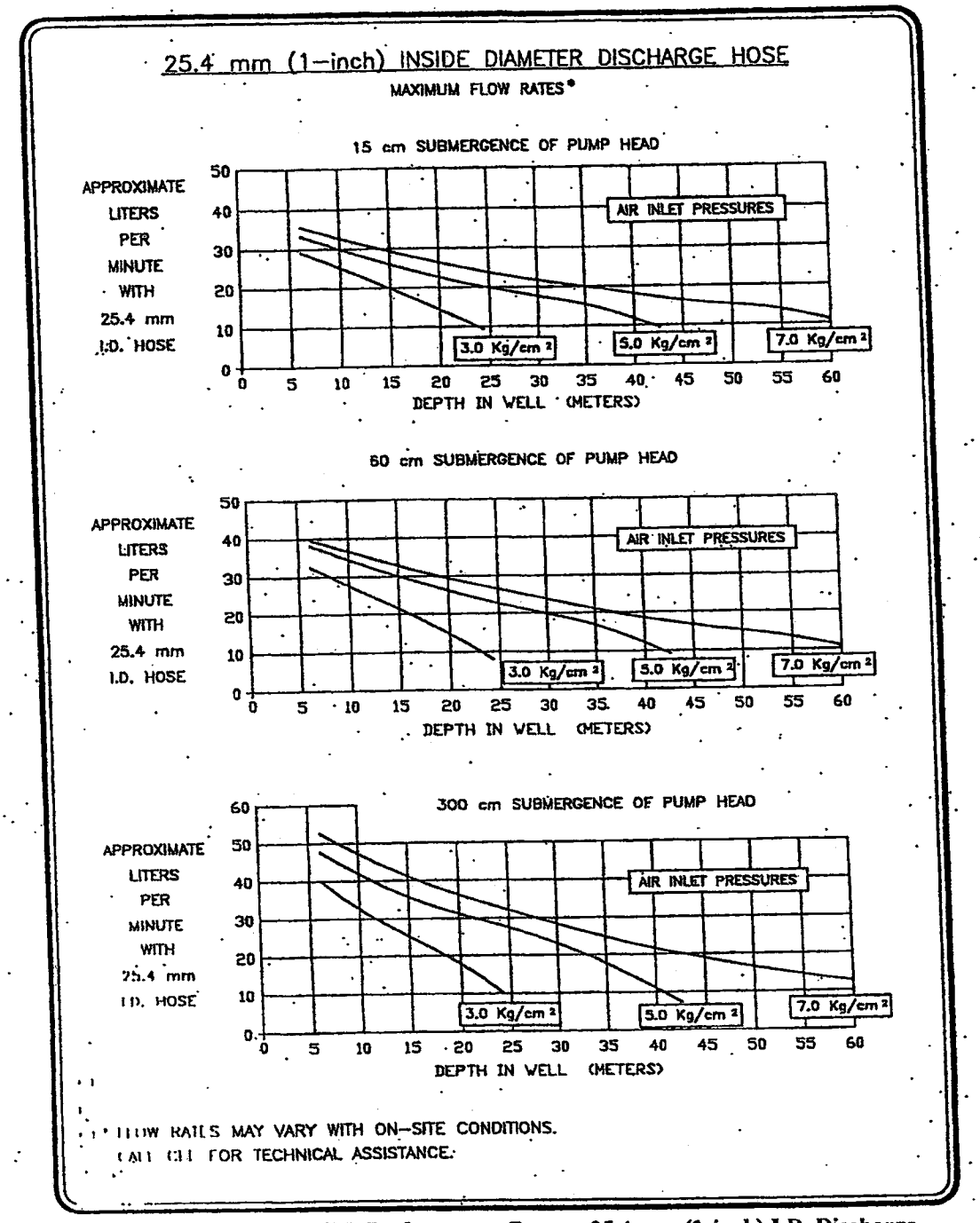


Figure 24 - Long AP-4/BL Performance Curves: 25.4 mm (1-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

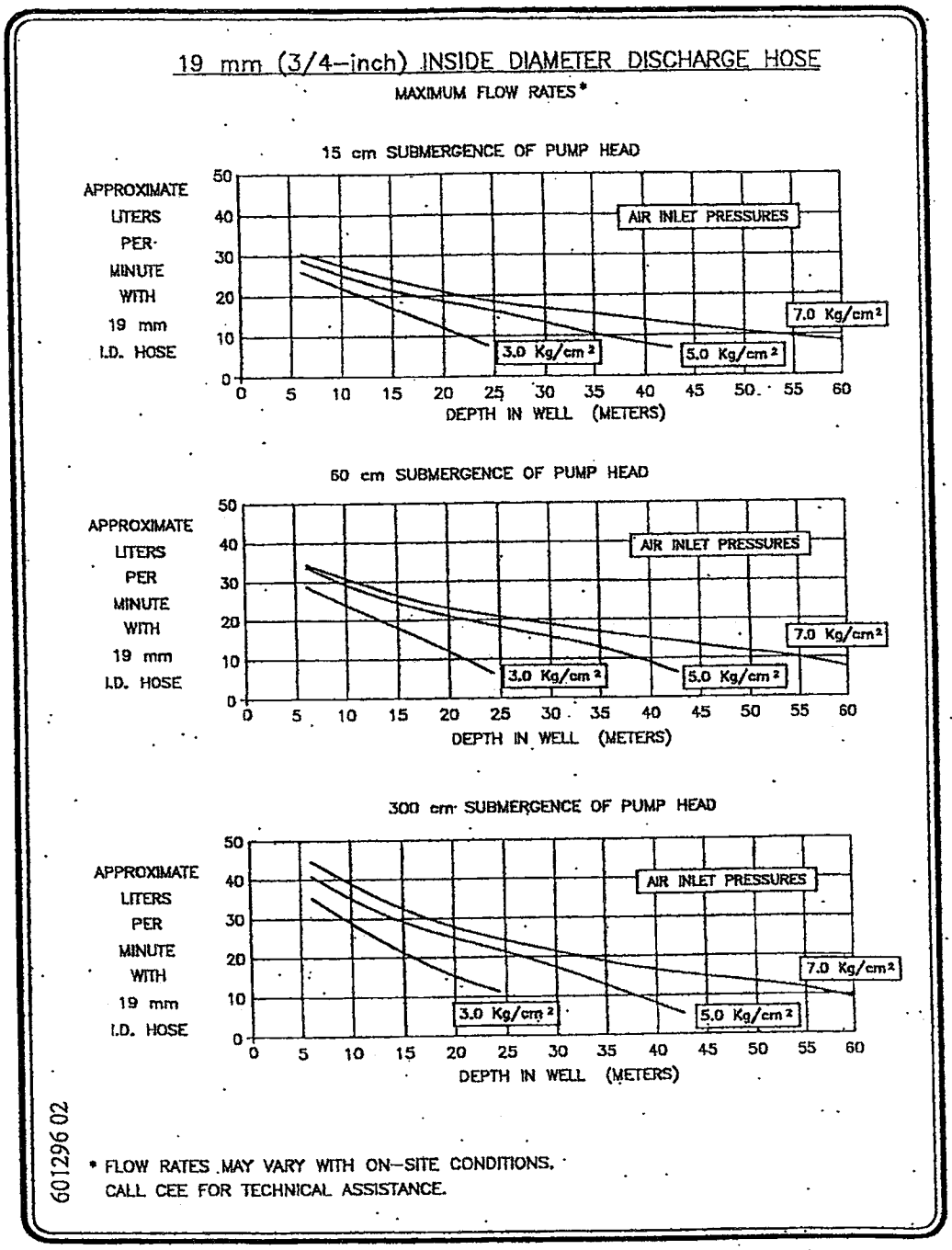


Figure 25 -- Long AP-4/BL Performance Curves: 19 mm (3/4-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

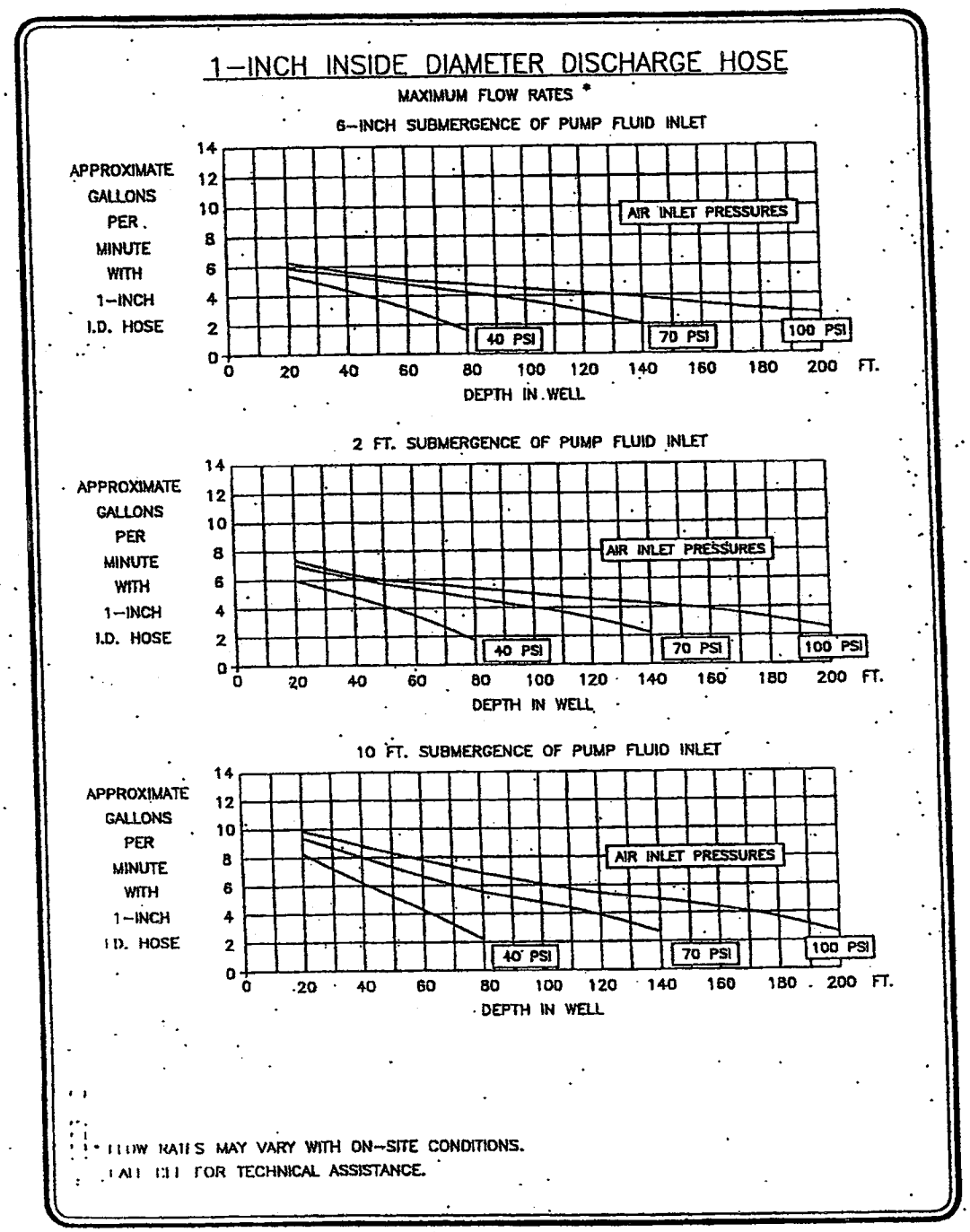


Figure 26 - Long AP-4/TL Performance Curves: 1-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

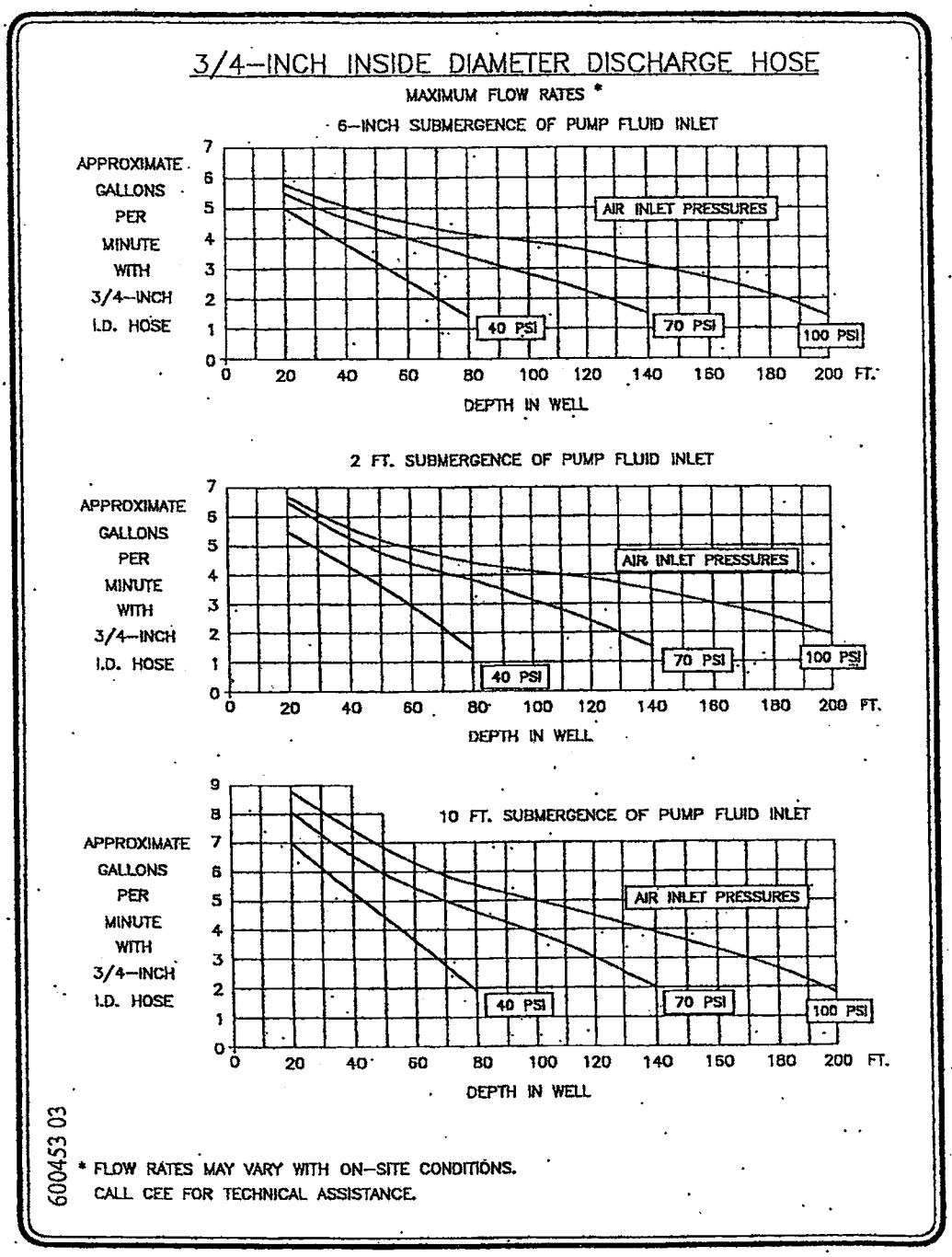


Figure 27 - Long AP-4/TL Performance Curves: 3/4-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

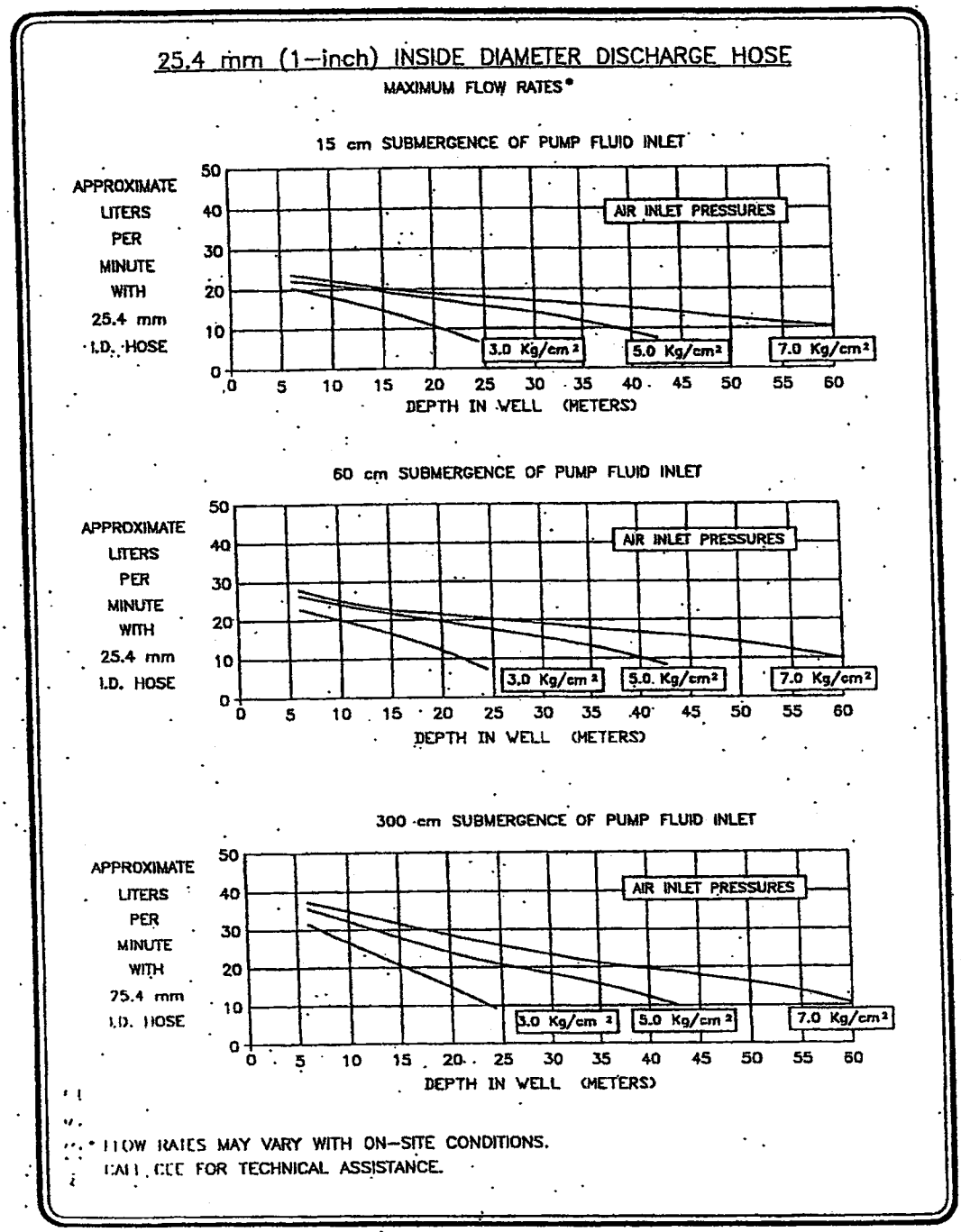


Figure 28 - Long AP-4/TL Performance Curves: 25.4 mm (1-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

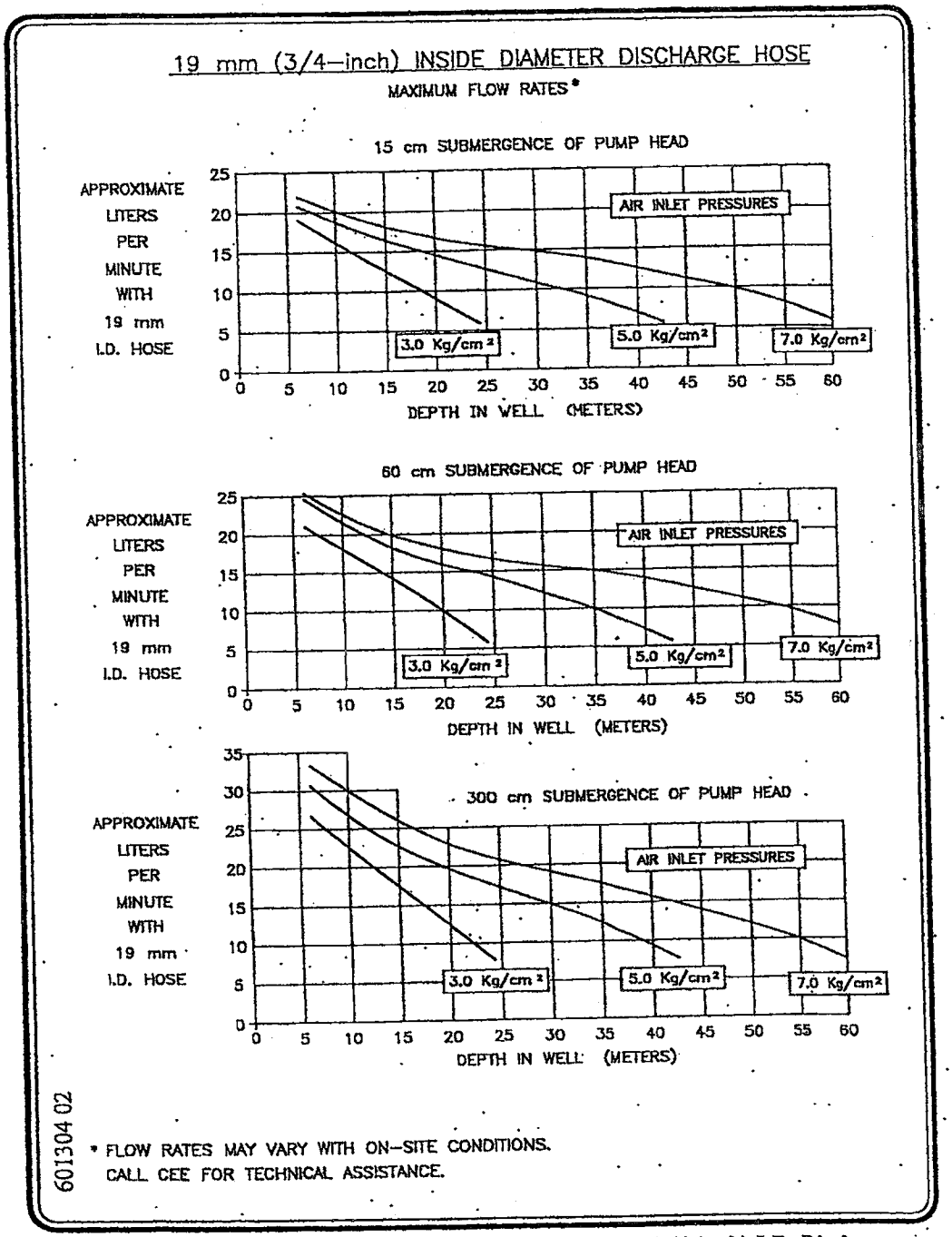


Figure 29 - Long AP-4/TL Performance Curves: 19 mm (3/4-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models).

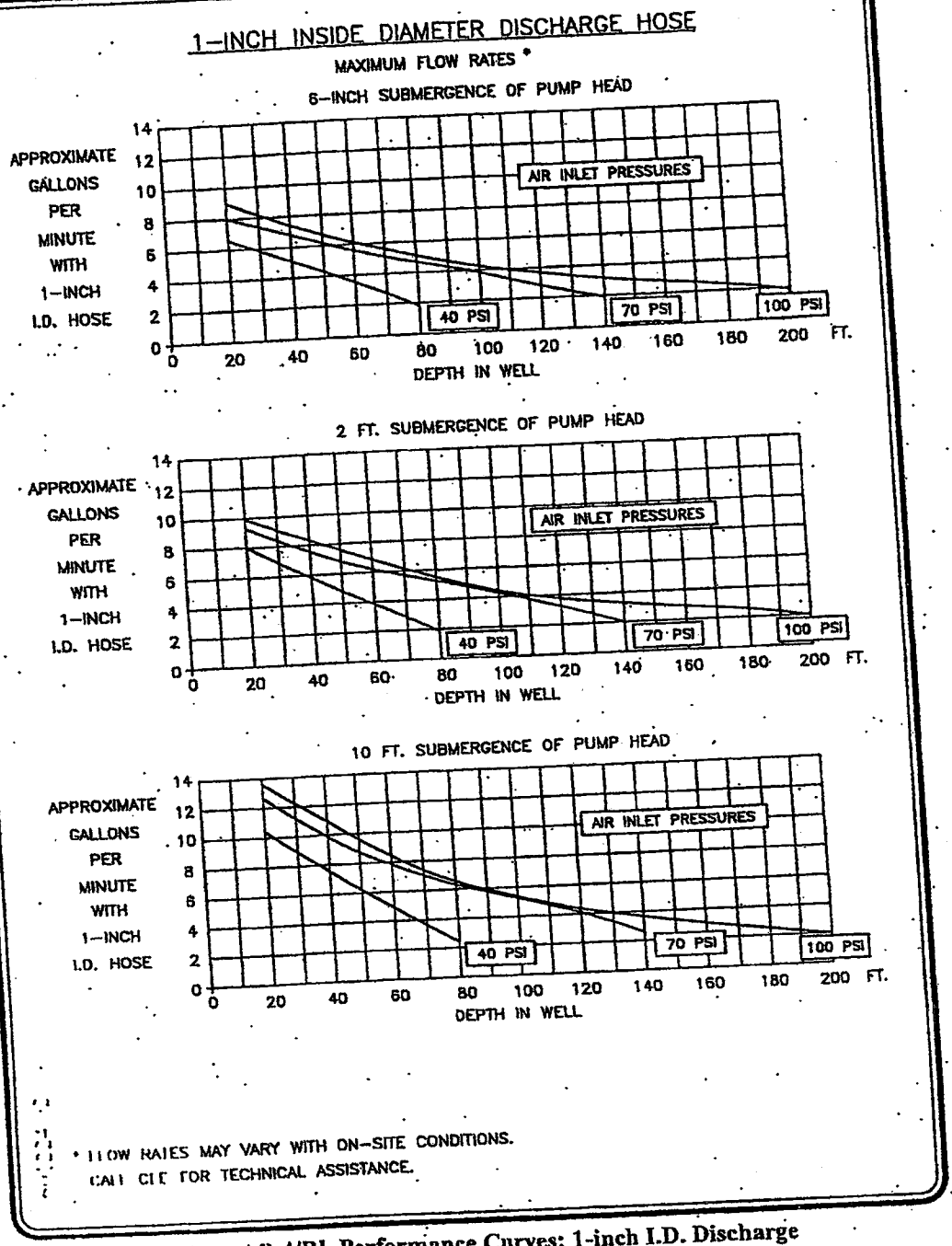


Figure 30 - Short AP-4/BL Performance Curves: 1-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

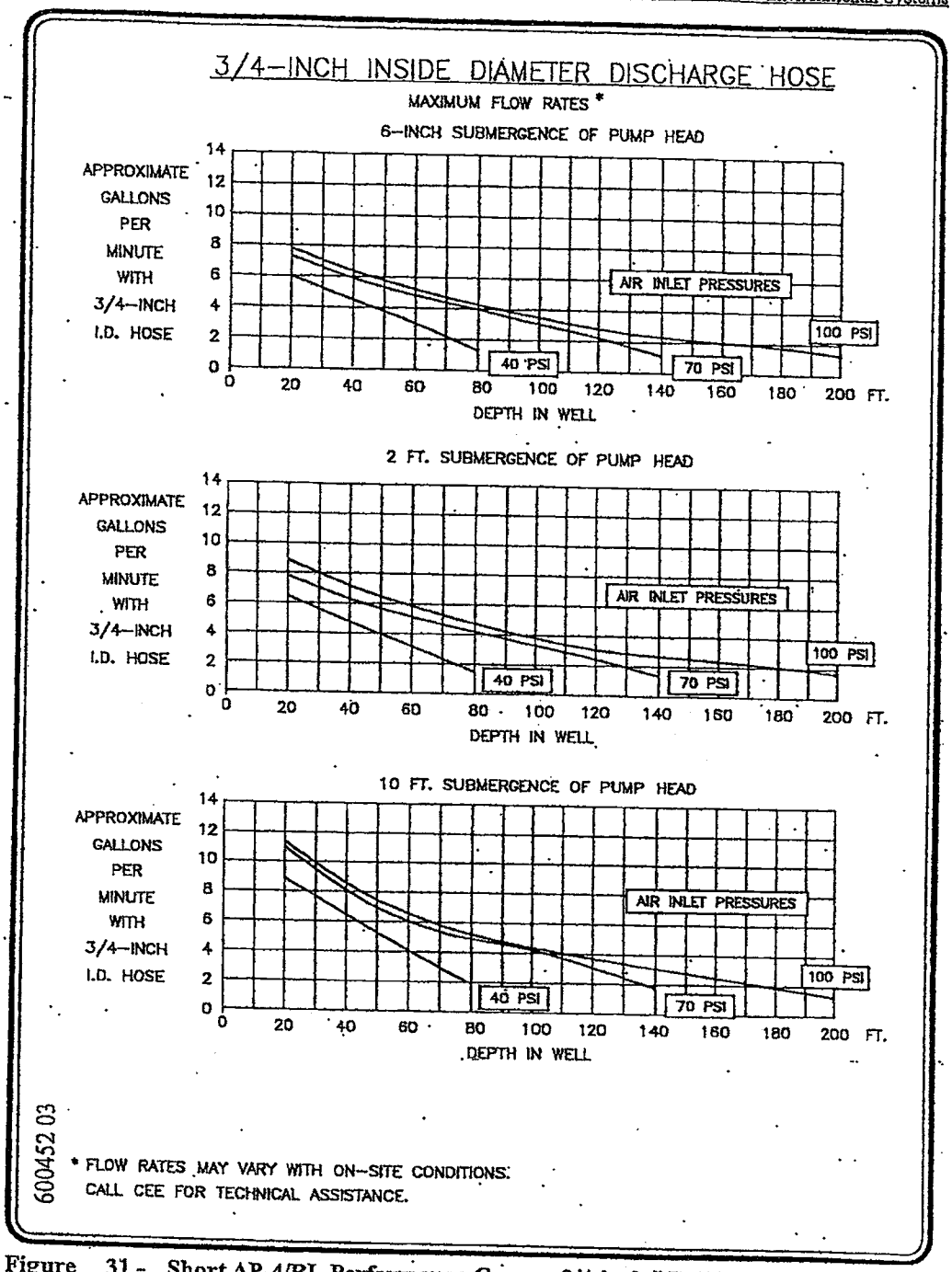


Figure 31 - Short AP-4/BL Performance Curves: 3/4-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

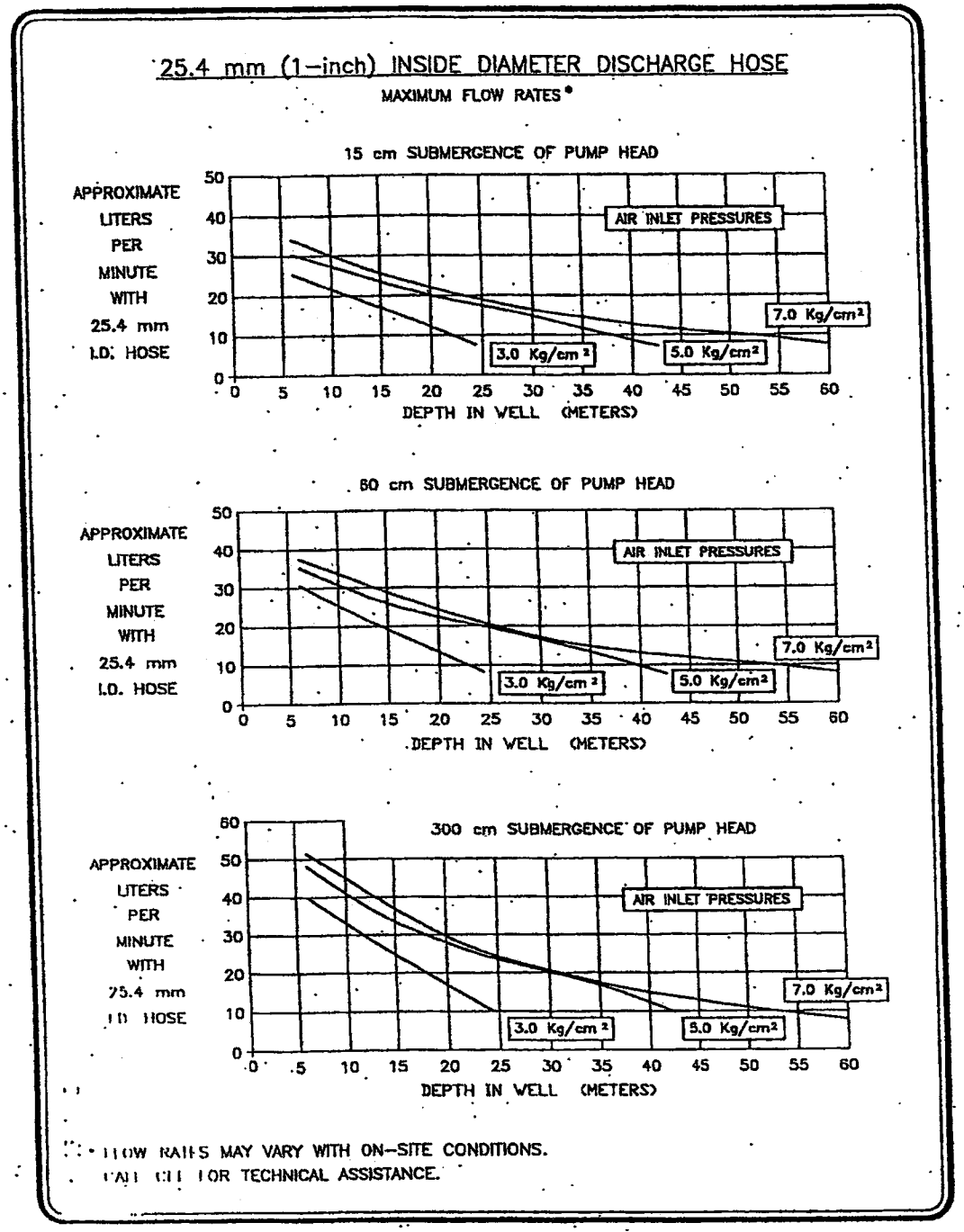


Figure 32 - Short AP-4/BL Performance Curves: 25.4 mm (1-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

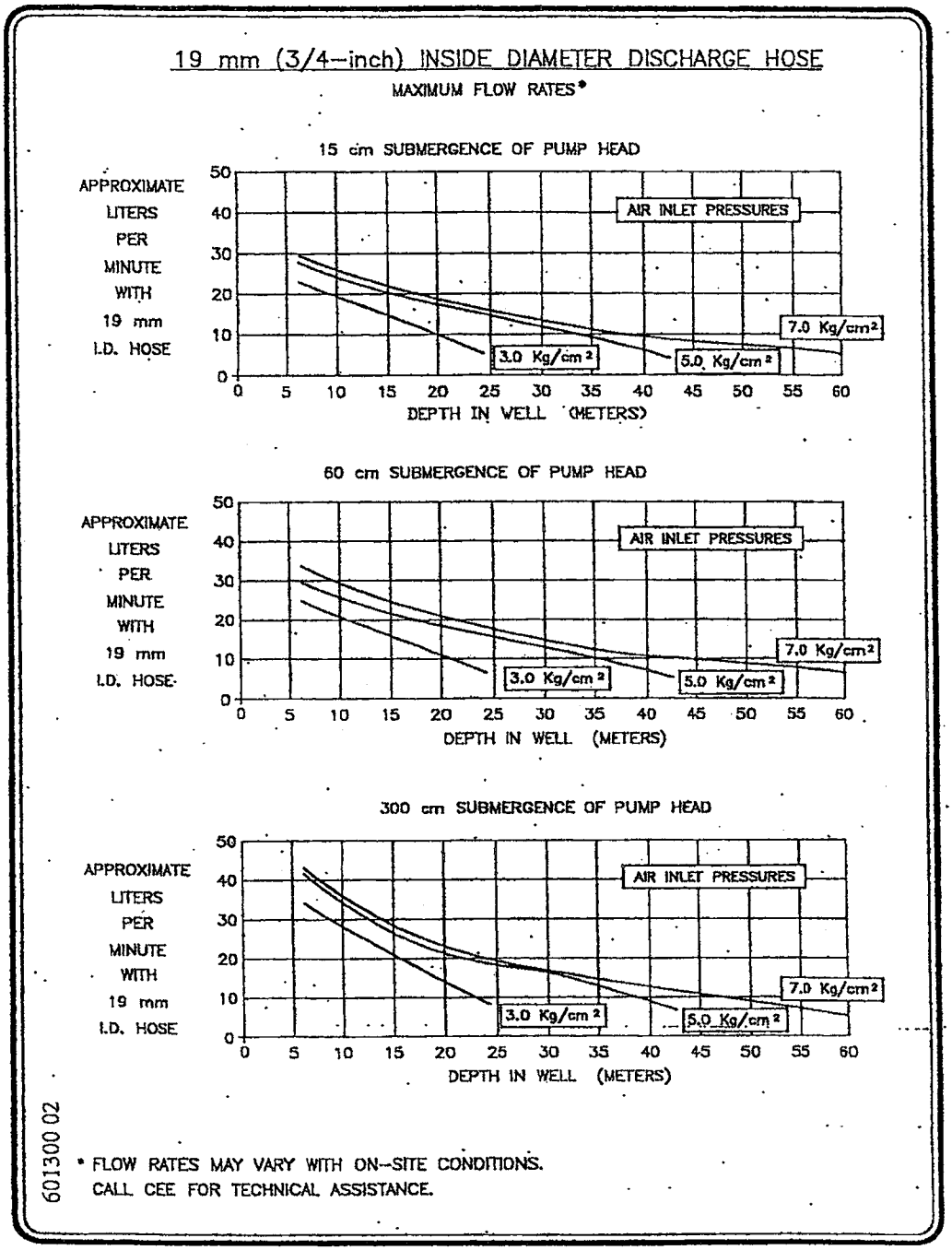


Figure 33 - Short AP-4/BL Performance Curves: 19 mm (3/4-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

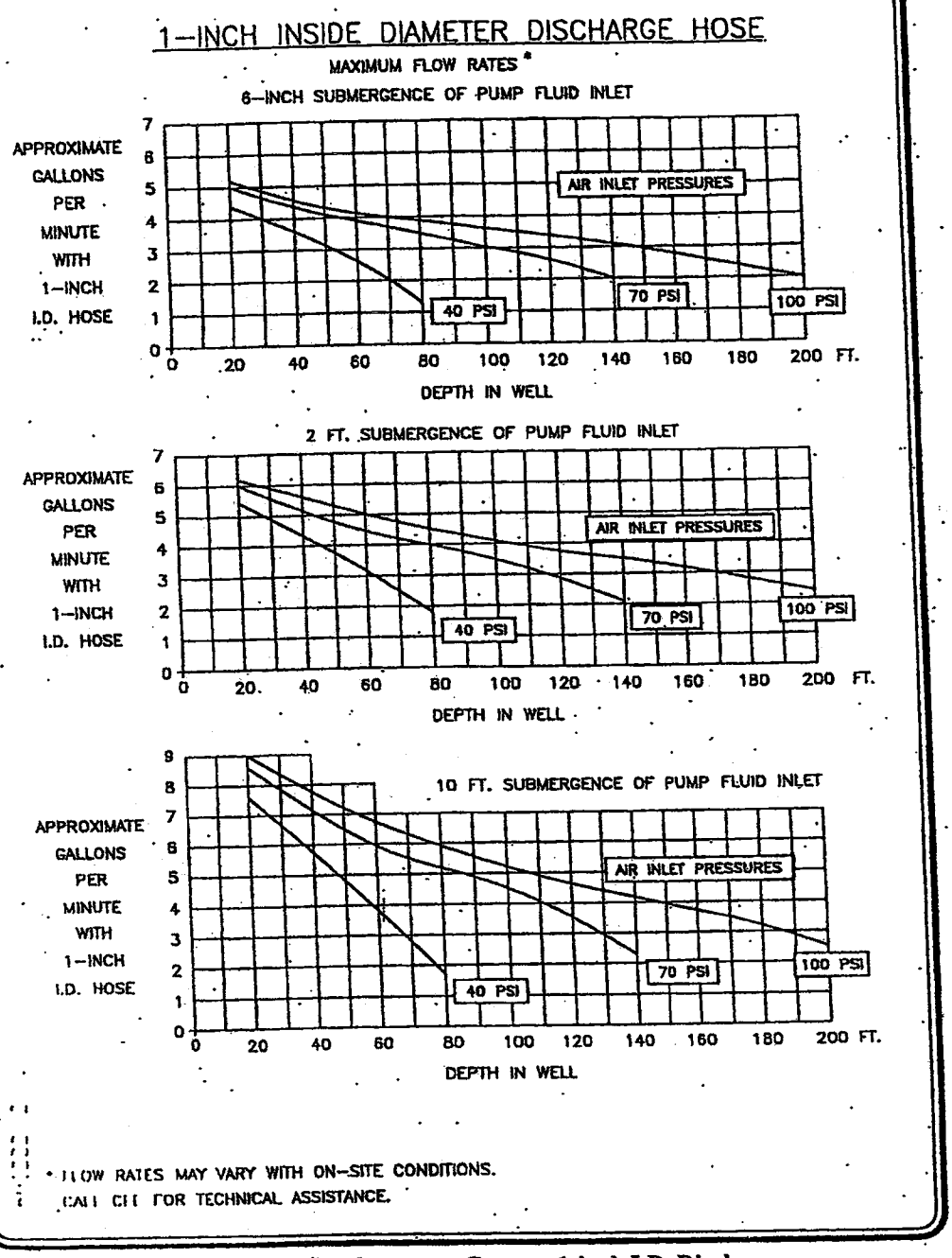


Figure 34 - Short AP-4/TL Performance Curves: 1-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

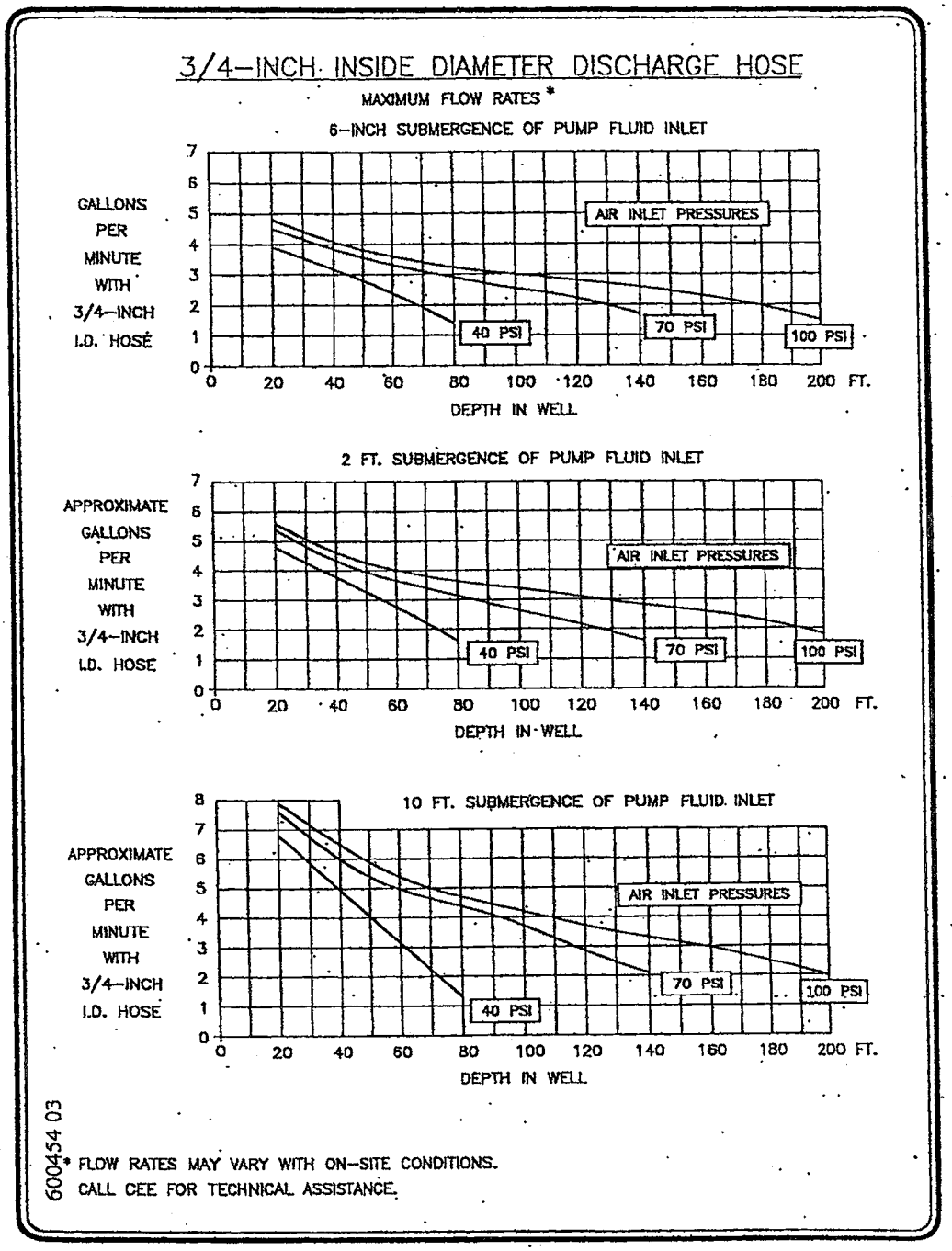


Figure 35 - Short AP-4/TL Performance Curves: 3/4-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

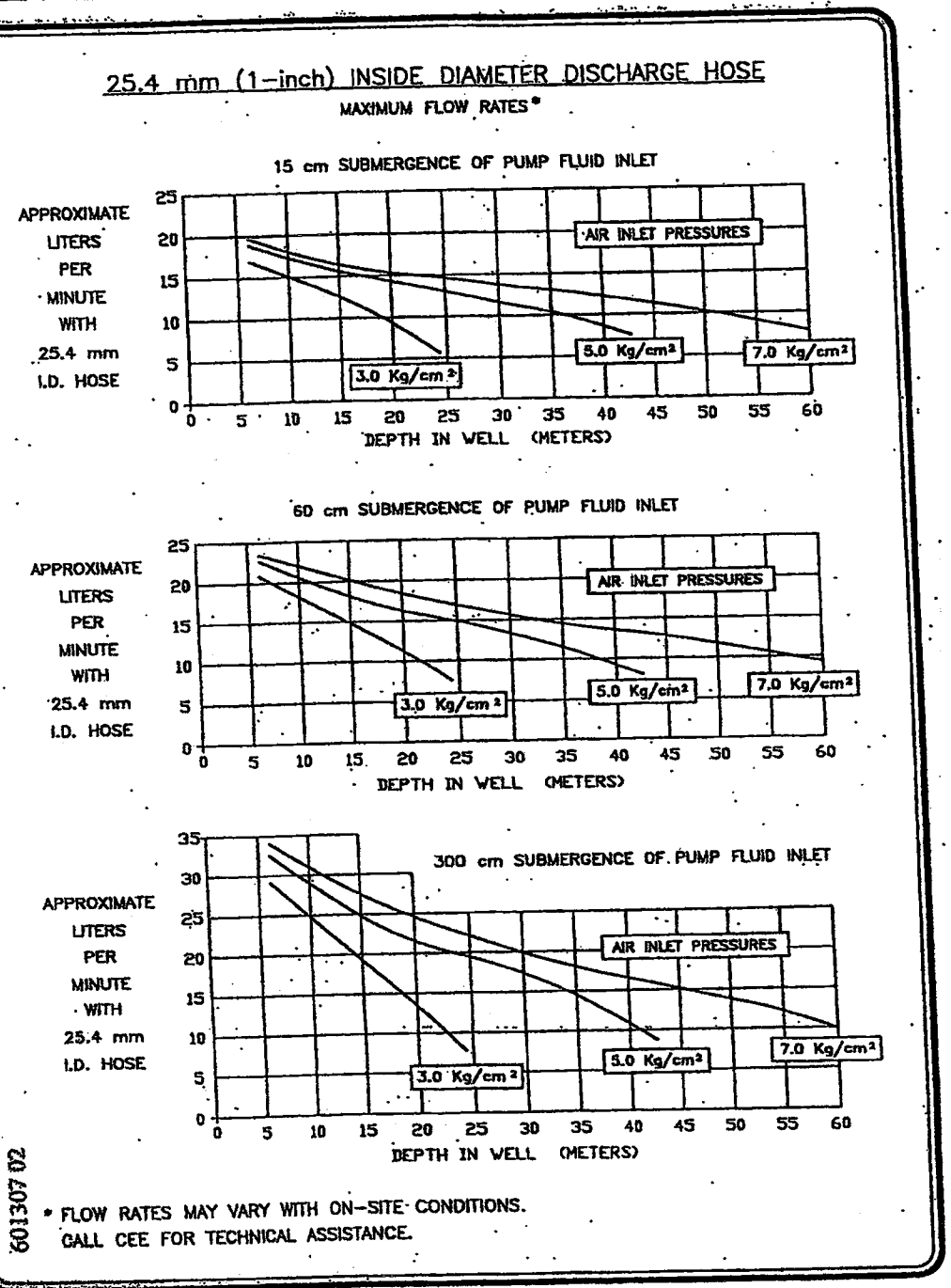


Figure 36 - Short AP-4/TL Performance Curves: 25.4 mm (1-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

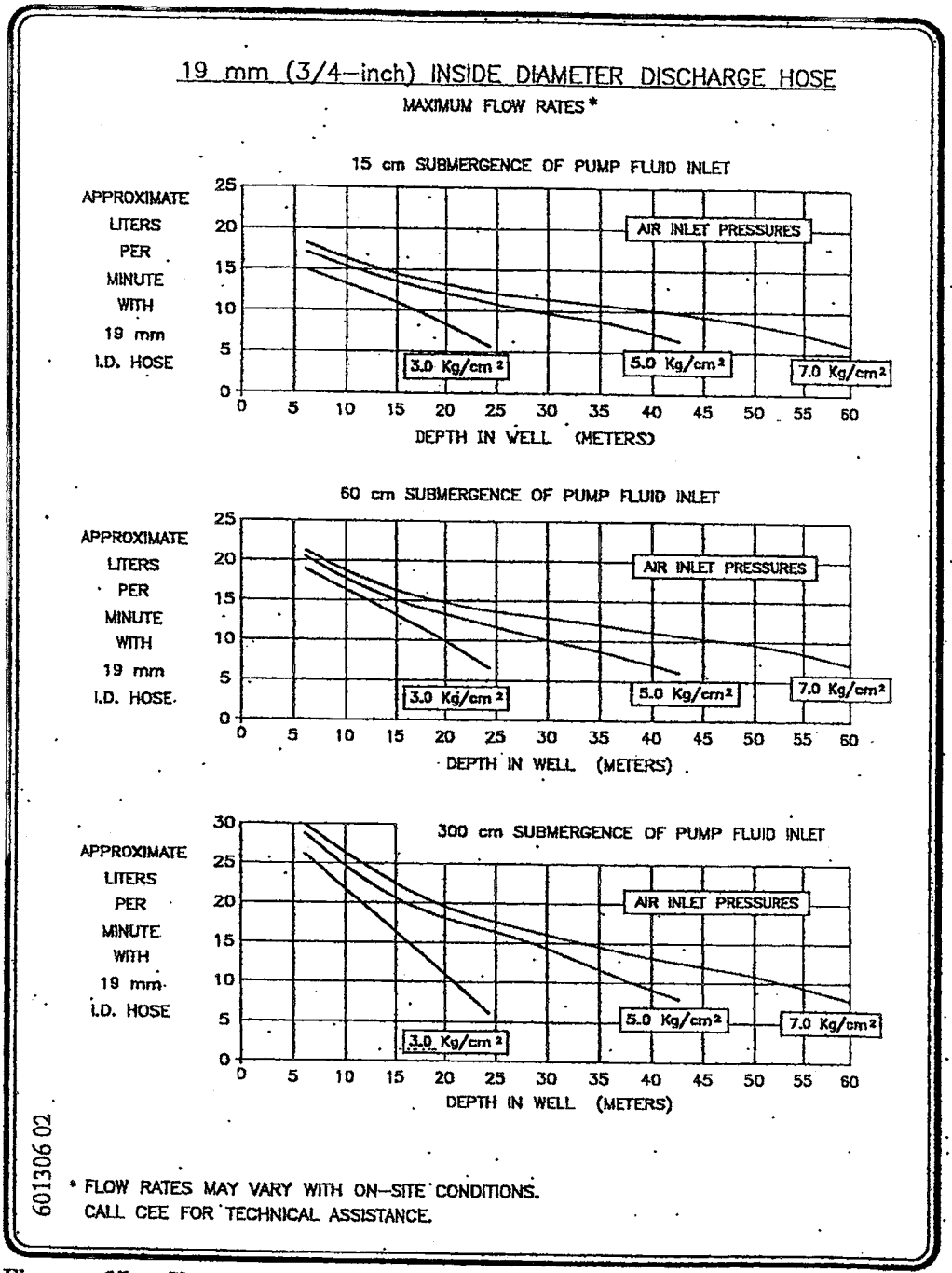


Figure 37 - Short AP-4/TL Performance Curves: 19 mm (3/4-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

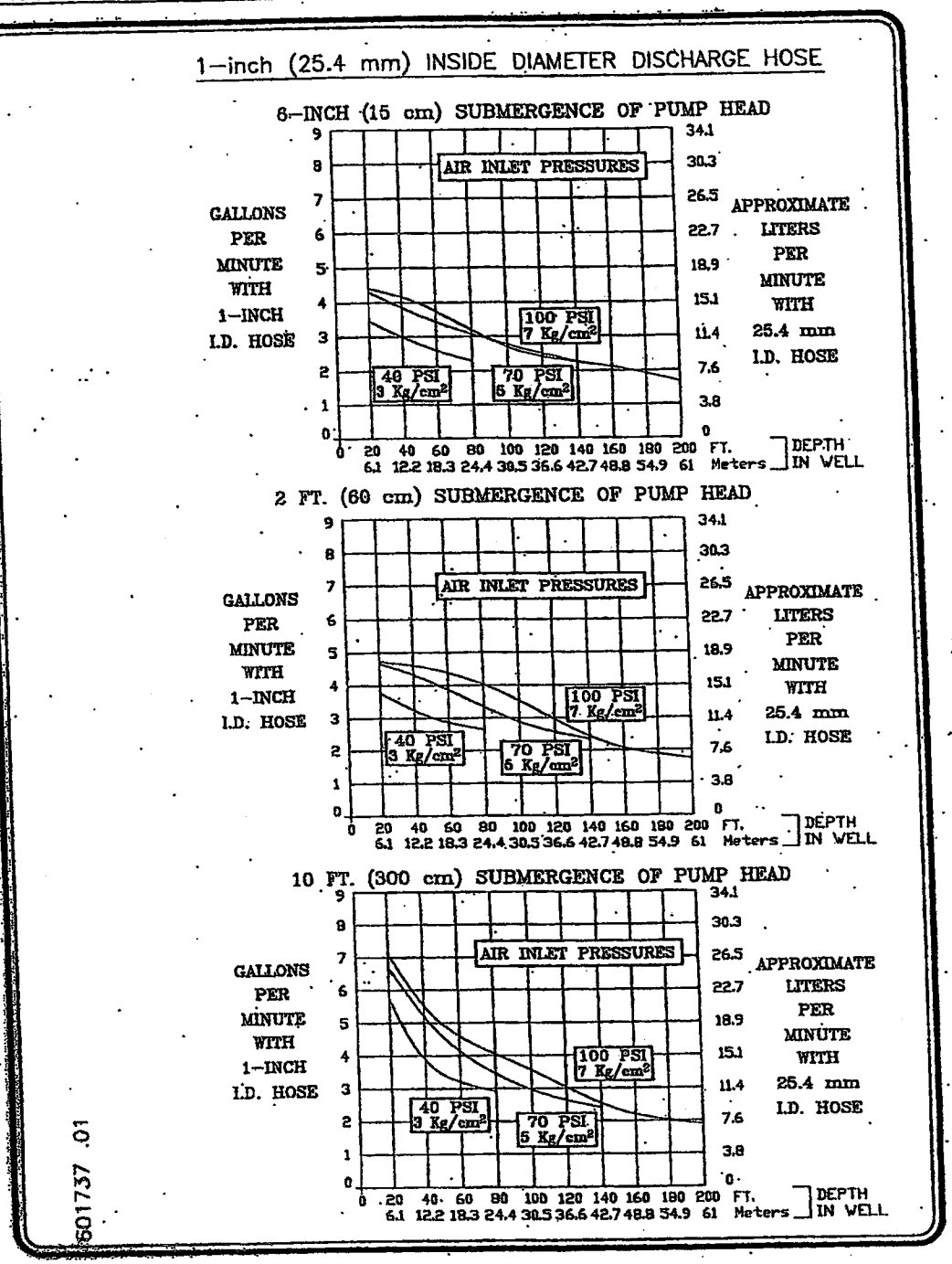


Figure 38 - Low Drawdown AP-4/BL Performance Curves: 1-inch (25.4 mm) I.D. Discharge US and METRIC UNITS

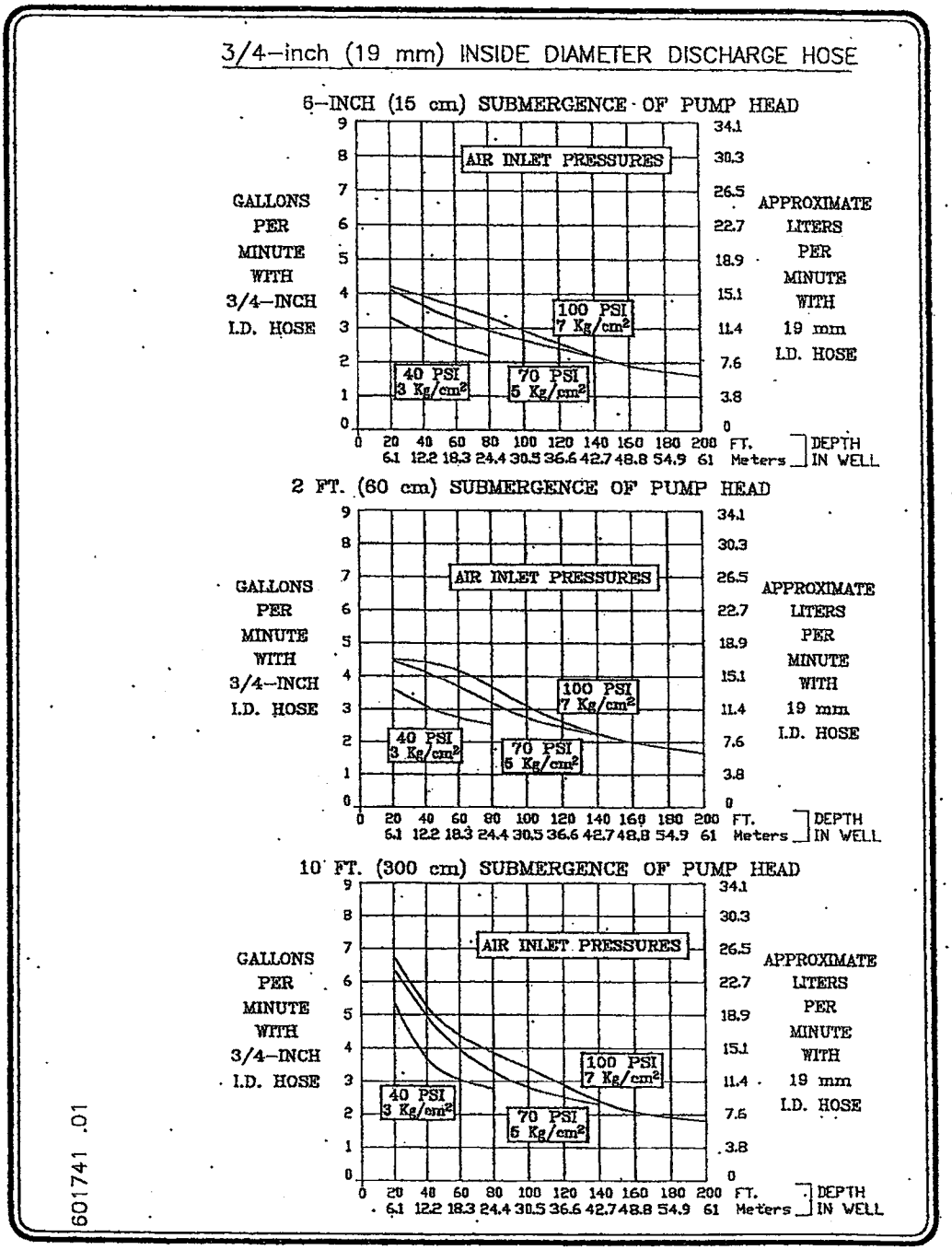


Figure 39 - Low Drawdown AP-4/BL Performance Curves: 3/4-inch (19 mm) I.D. Discharge US and METRIC UNITS

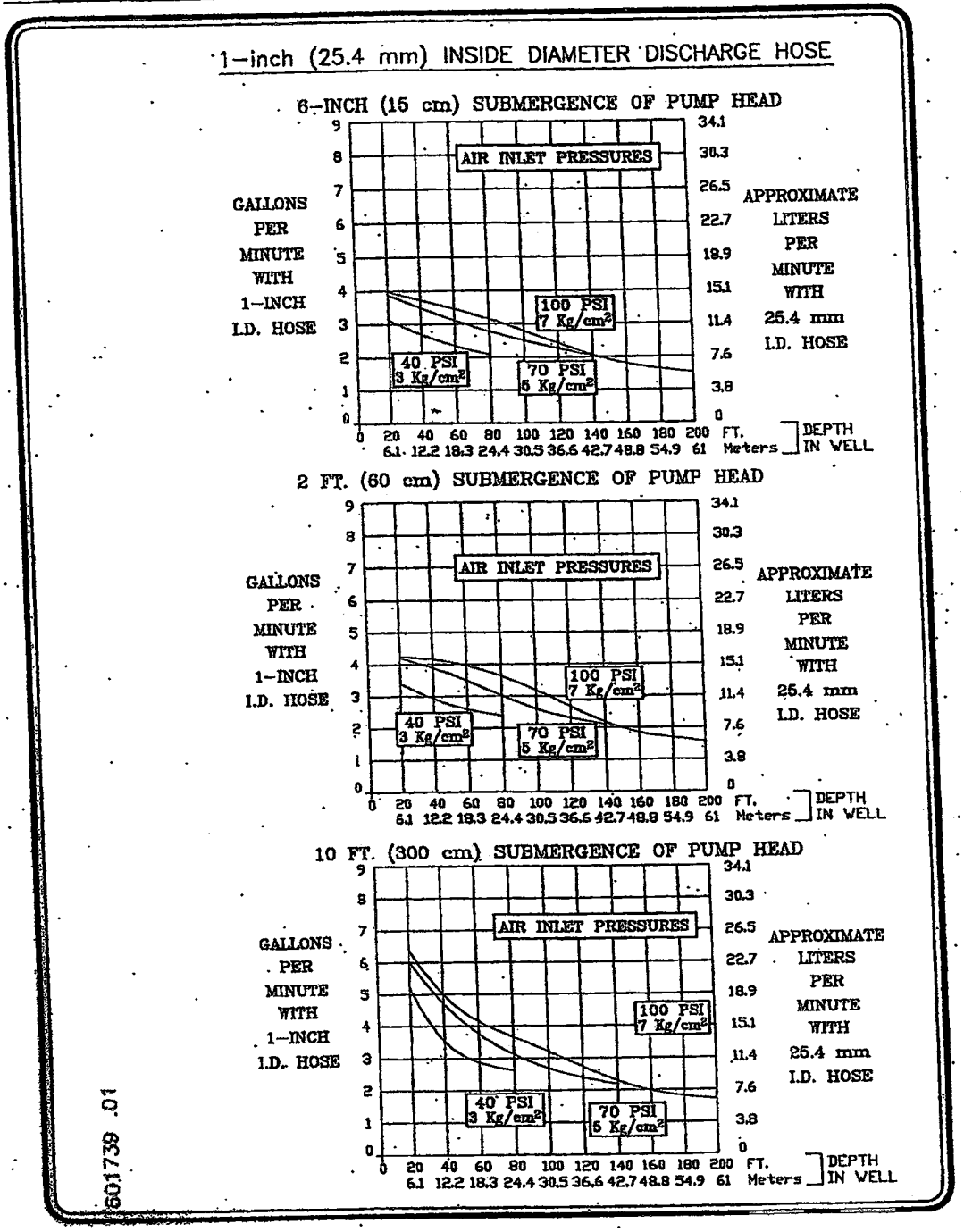


Figure 40 - Low Drawdown AP-4/TL Performance Curves: 1-inch (25.4 mm) I.D. Discharge US and METRIC UNITS

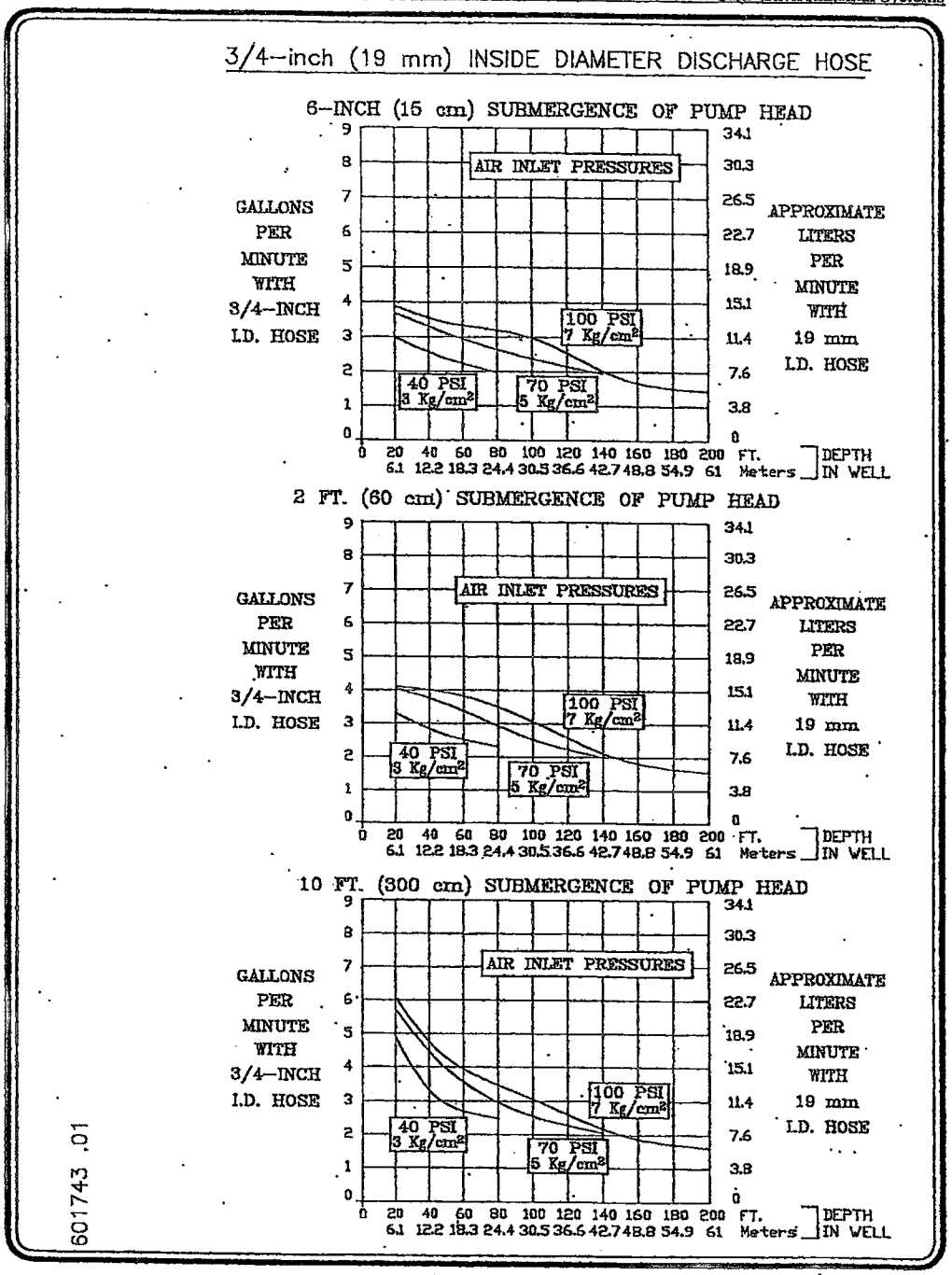


Figure 41 - Low Drawdown AP-4/TL Performance Curves: 3/4-inch (19 mm) I.D. Discharge US and METRIC UNITS

Appendix B: Air Consumption Curves

The following charts show the air consumption curves for the Long, Short, and Low-Drawdown length 3.5-inch OD AutoPumps. These curves can be used to estimate air use and compressor sizing. A compressor with reserve capacity is recommended.
(For U.S. UNITS, See Figures 42, 43, 46, 47, 50, 51, 52 and 53)
(For METRIC unit measurements, See Figures 44, 45, 48, 49, 50, 51, 52 and 53)

The curves are categorized by pump length, hose size, depth of submergence and air supply pressure. To determine the amount of air used for each gallon of fluid pumped, the following information must be known:

1. **Pump** – Long, Short, or Low Drawdown.
2. **Discharge hose size** – 3/4-inch or 1-inch is standard. A larger diameter may yield slightly lower use rates depending upon site conditions.
3. **Air pressure.**

With the above information, obtain the probable flow rate by using the following steps:

- On the horizontal scale, find the depth in the well at which the pump will be located.
- Trace that depth upwards to the line for the air inlet pressure you selected.
- Travel horizontally over to the vertical scale and read the air use factor.

Example: A long Bottom-Loading pump with a 1-inch discharge hose and 70 psi supply pressure positioned 100 feet below ground will use about .73 SCF of air for each gallon of fluid pumped.

The flow rate for the pump, taken from the flow rate curves, when there is 10 feet of fluid over the pump, is about 12.6 GPM.

Multiply the 12.6 GPM flow rate times the .73 SCF air use factor to generate a 9.2 SCFM (Standard Cubic Feet per Minute) air use result.

If the yield of the well is less than the maximum pump rate predicted by the appropriate flow rate graph, multiply the actual fluid recovery rate times the air use factor. This air use can be diminished if the regulator pressure is reduced. The maximum pump rate for the lower air pressure can be predicted using the performance curves.

Note:
These air use factors are only applicable for the designated well head conditions. Any additional resistance from out-of-well equipment (e.g. surface hoses, valves, etc.) will affect the factors shown on these curves.

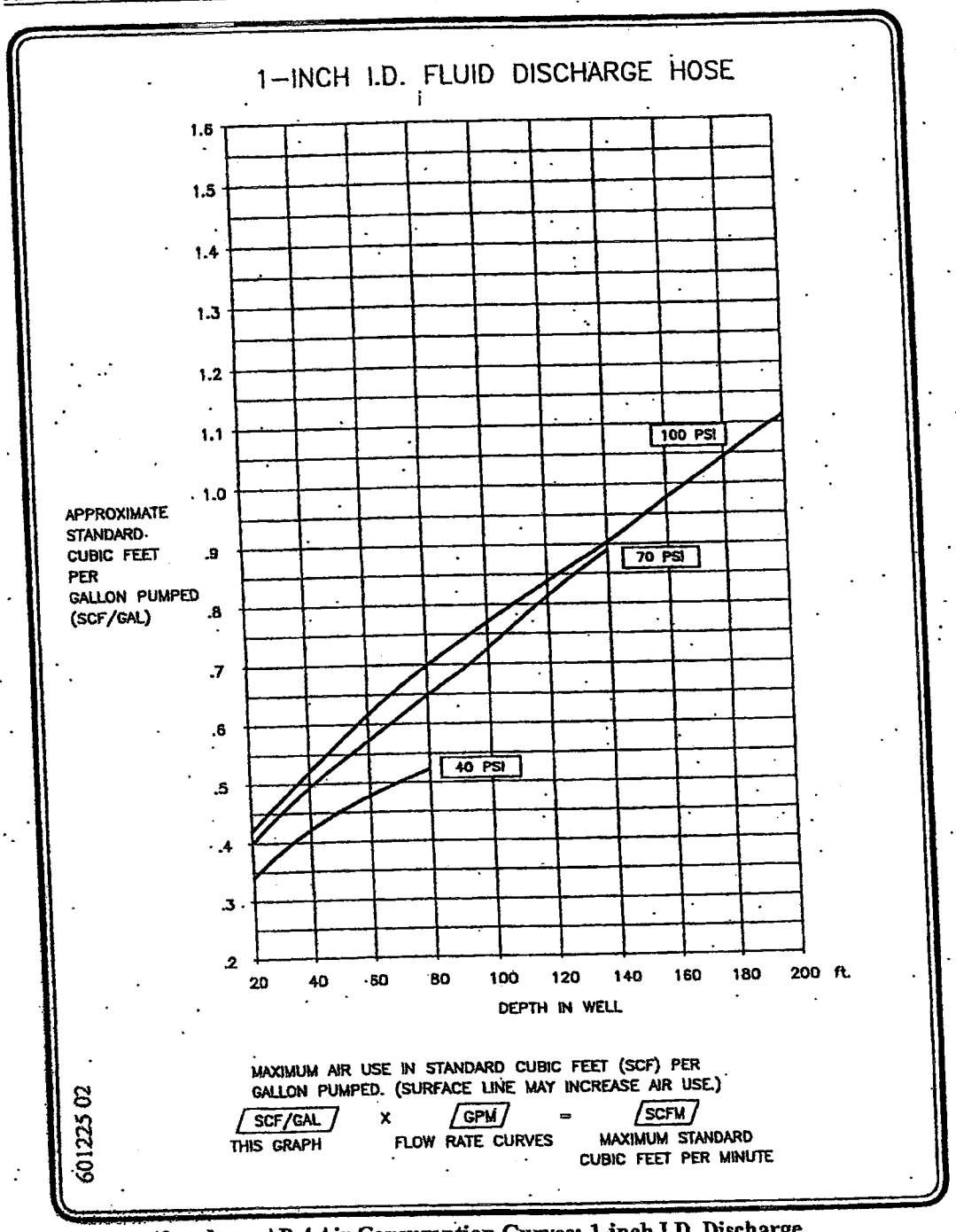


Figure 42 - Long AP-4 Air Consumption Curves: 1-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

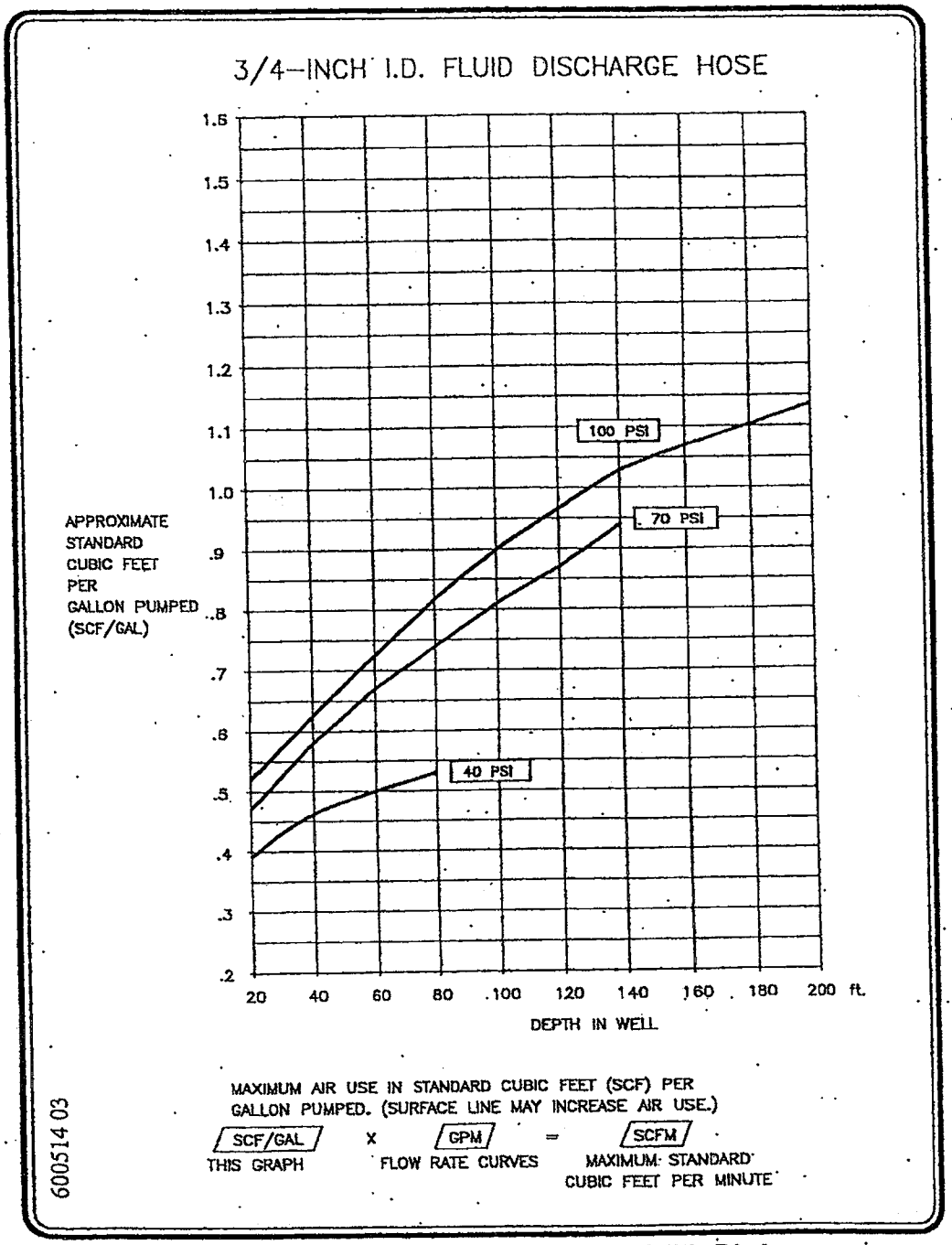


Figure 43 - Long AP-4 Air Consumption Curves: 3/4-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

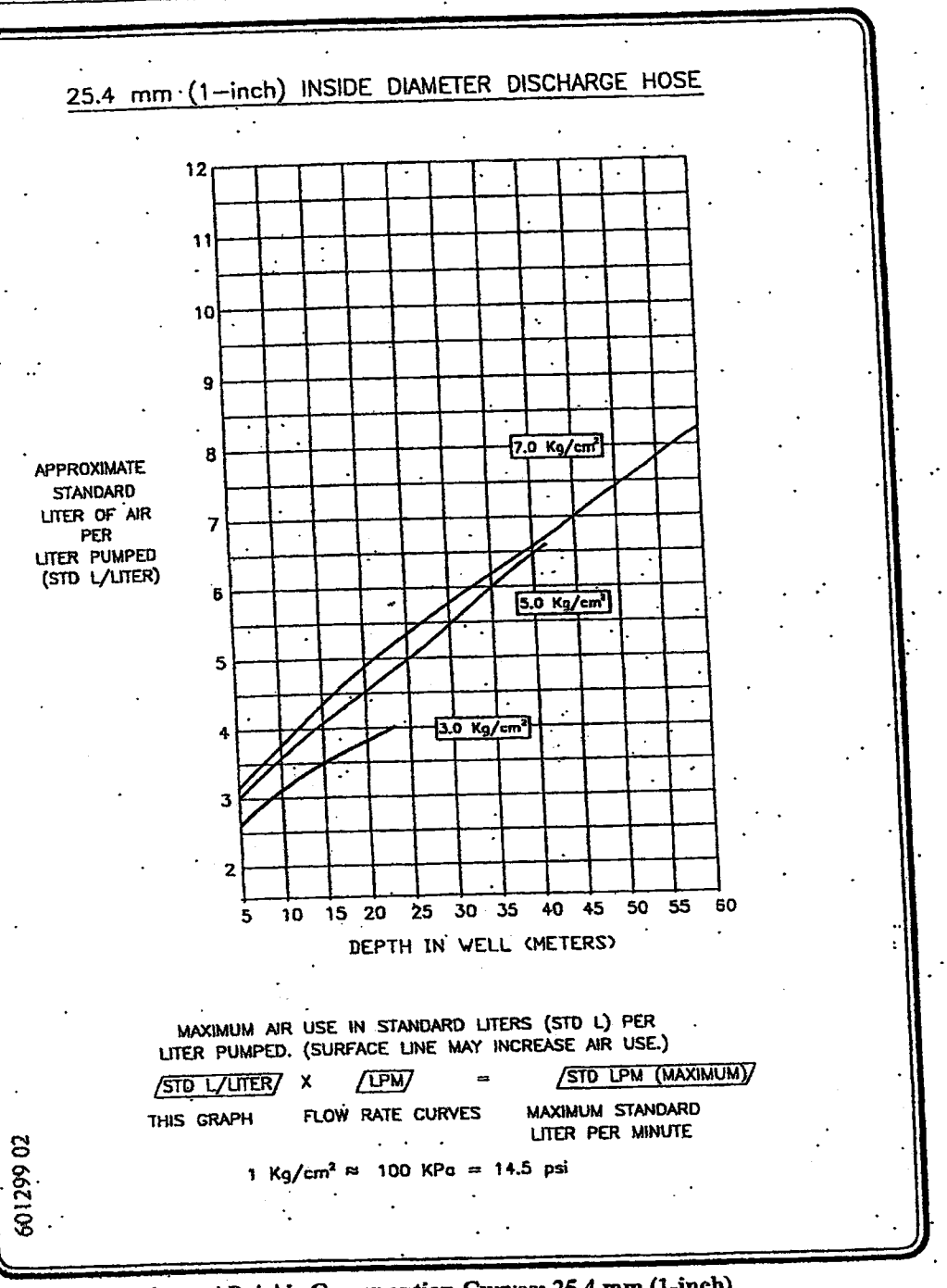


Figure 44 - Long AP-4 Air Consumption Curves: 25.4 mm (1-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

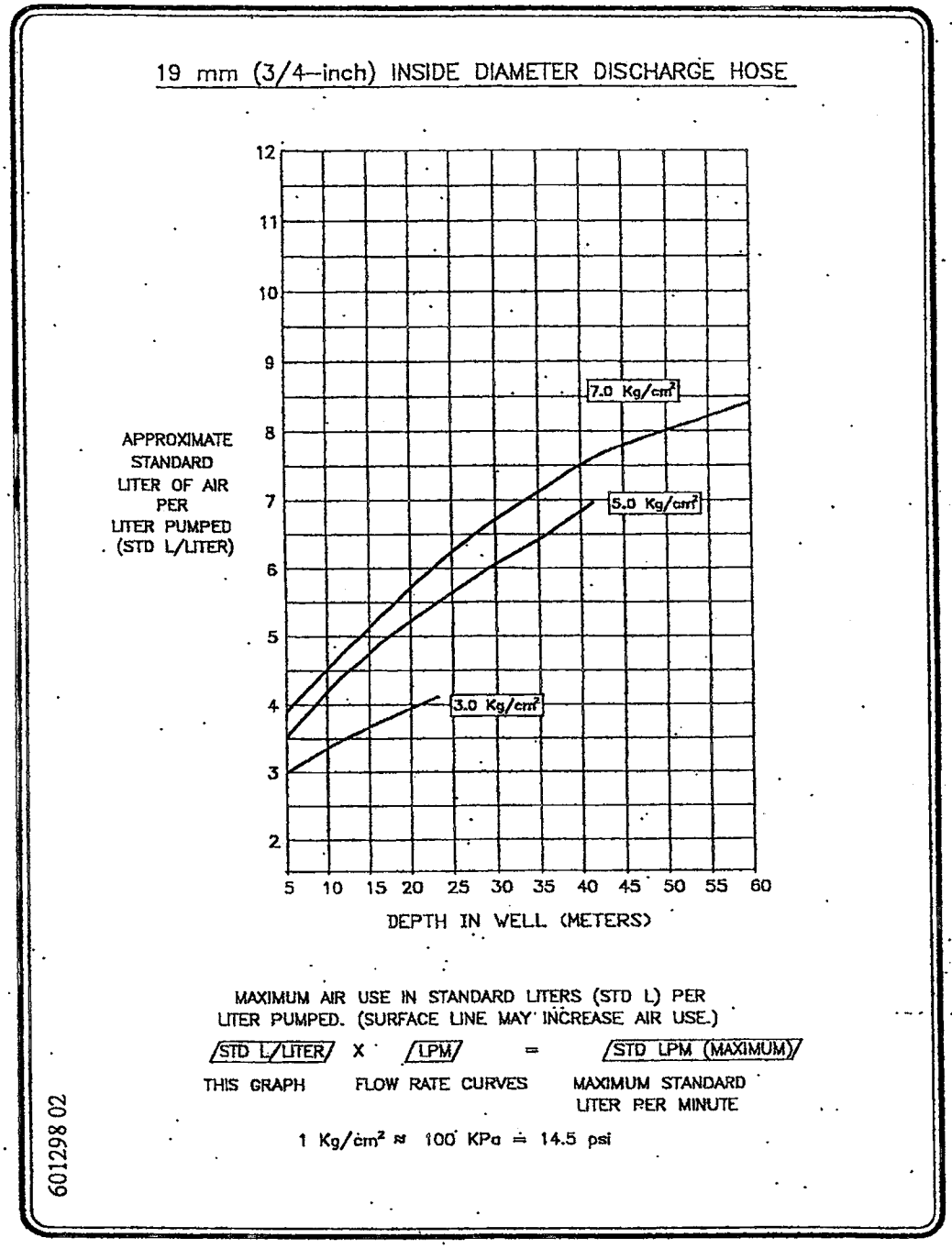


Figure 45 - Long AP-4 Air Consumption Curves: 19 mm (3/4-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

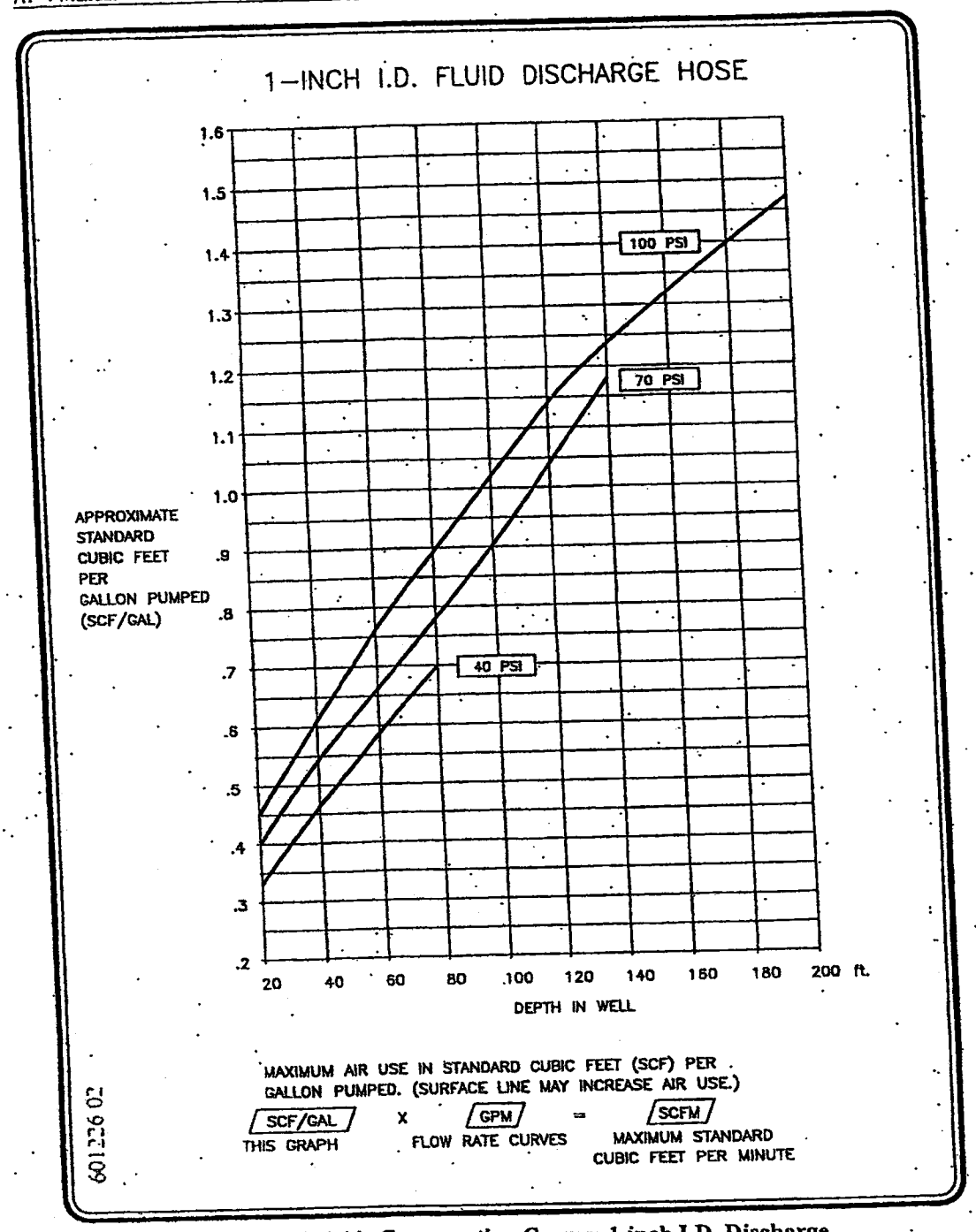


Figure 46 - Short AP-4 Air Consumption Curves: 1-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

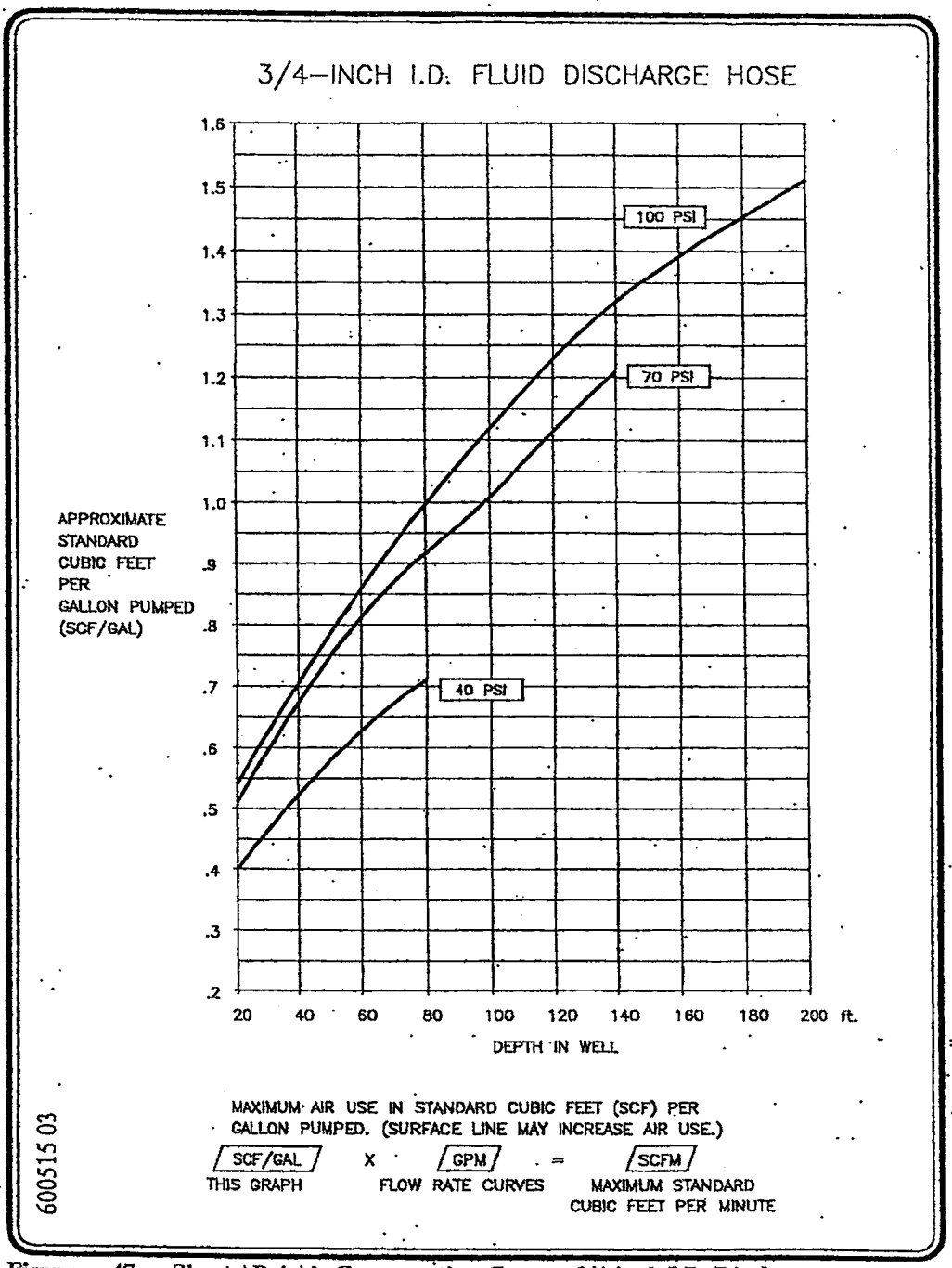


Figure 47 - Short AP-4 Air Consumption Curves: 3/4-inch I.D. Discharge U.S. UNITS (Includes Leachate Models)

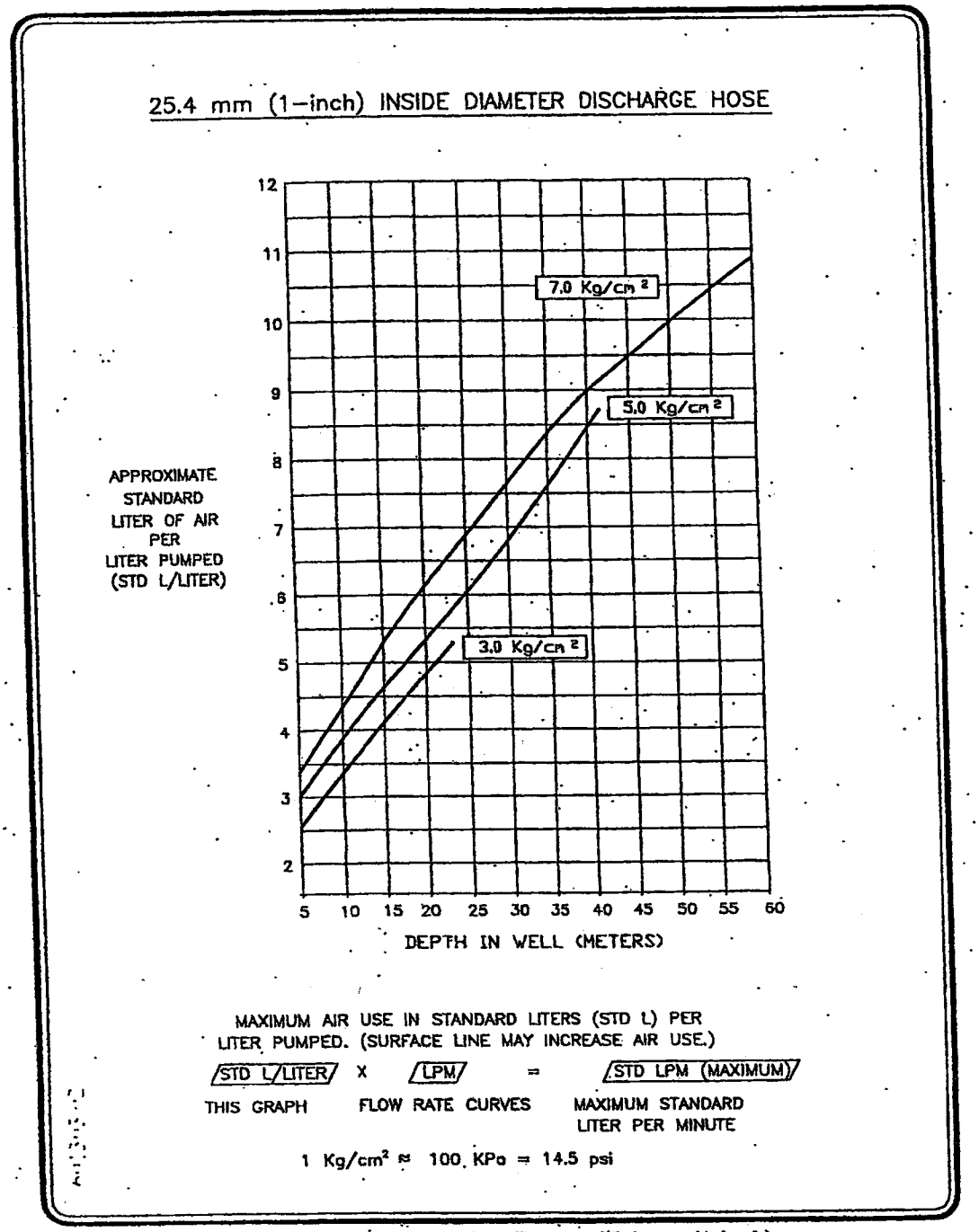


Figure 48 - Short AP-4 Air Consumption Curves: 25.4 mm (1-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

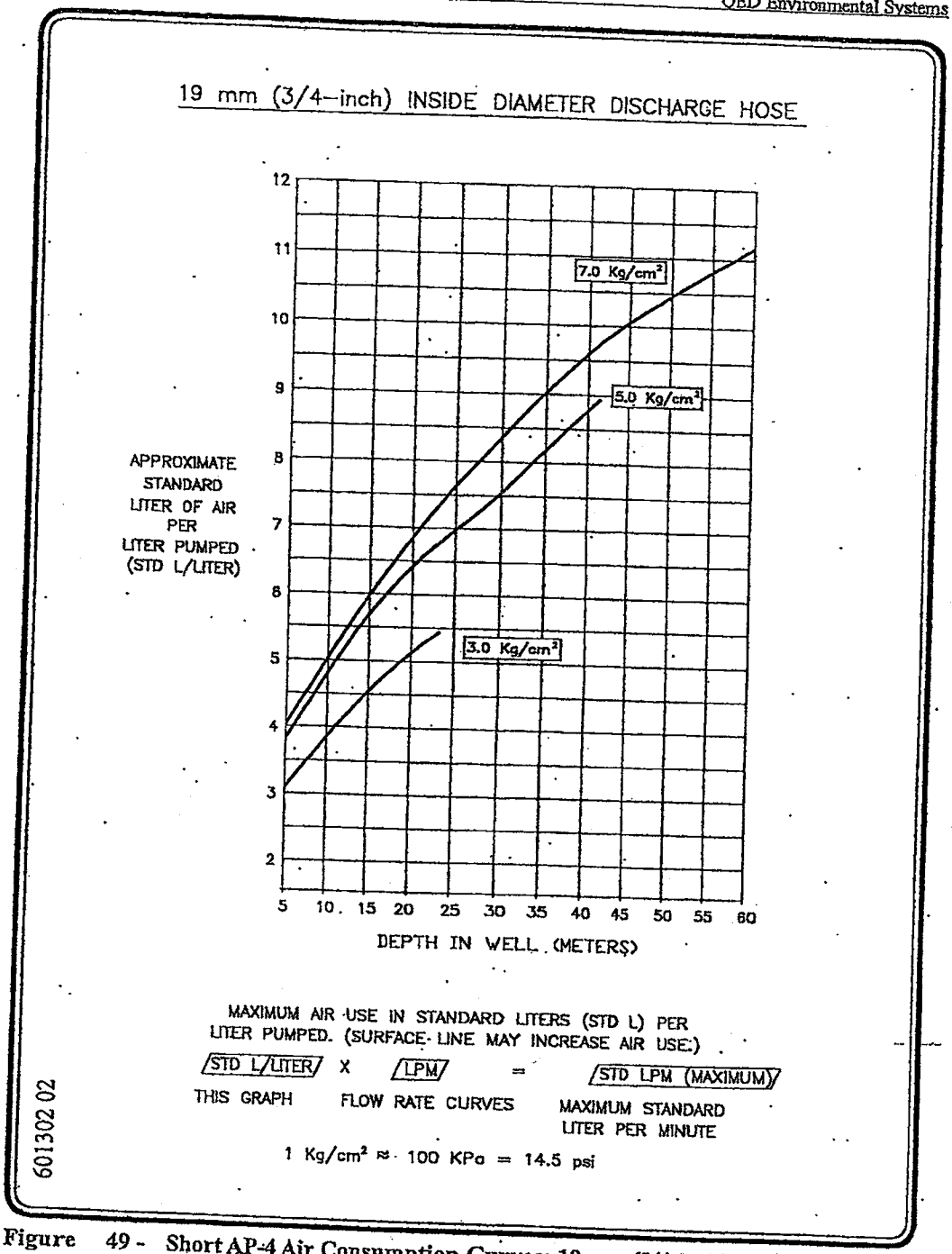


Figure 49 - Short AP-4 Air Consumption Curves: 19 mm (3/4-inch) I.D. Discharge METRIC UNITS (Includes Leachate Models)

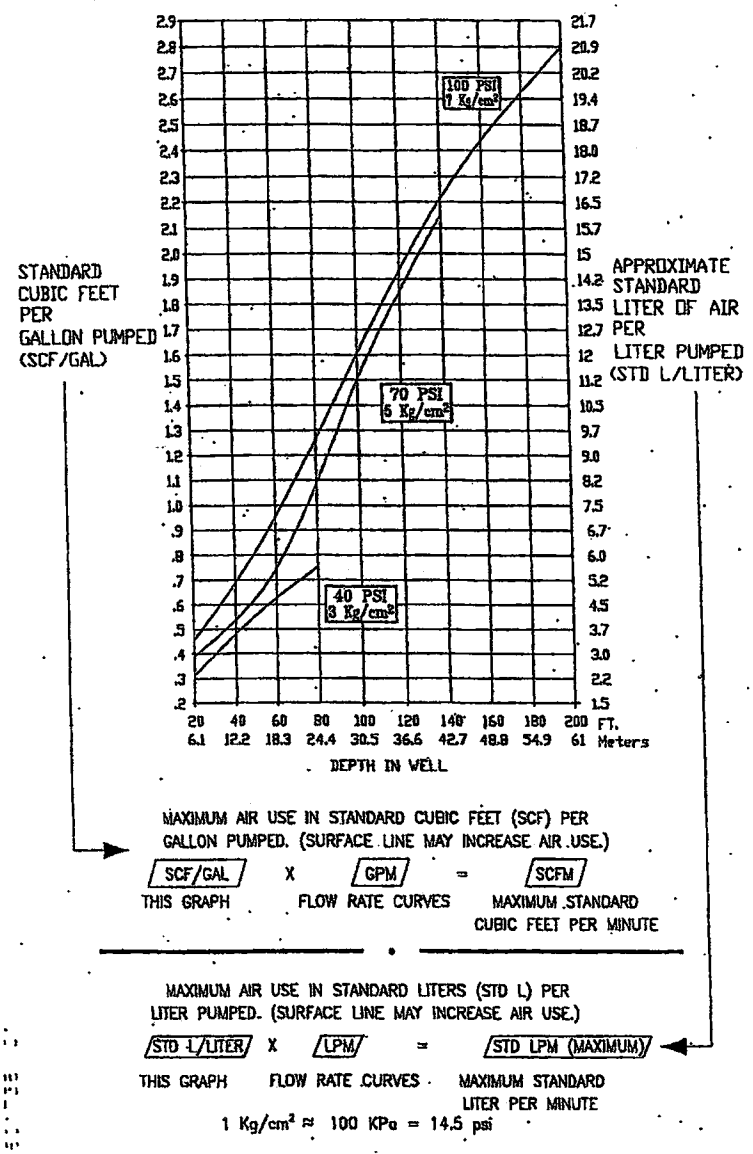


Figure 50 - Low Drawdown AP-4/BL Air Consumption Curves: 1-inch (25.4 mm) I.D. Discharge US and METRIC UNITS

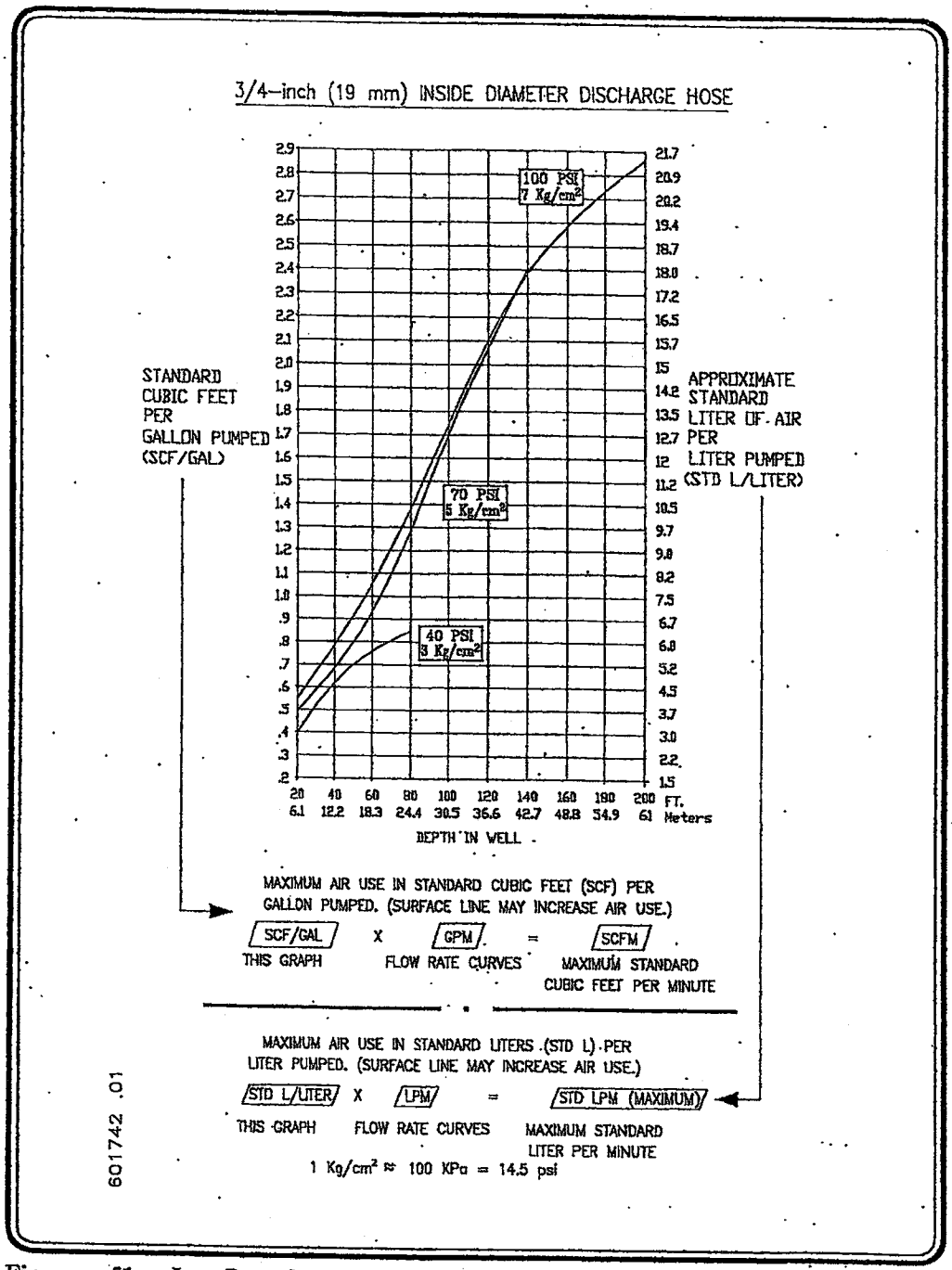


Figure 51 - Low Drawdown AP-4/BL Air Consumption Curves: 3/4-inch (19 mm) I.D. Discharge US and METRIC UNITS

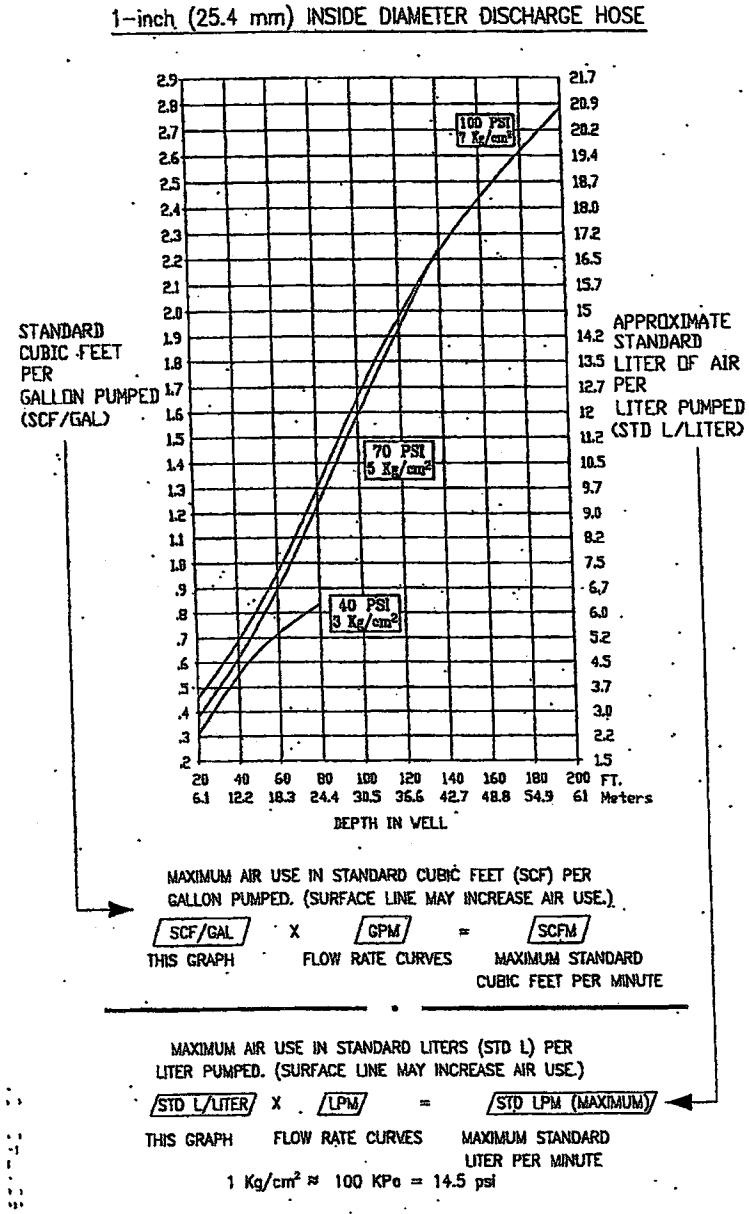


Figure 52 - Low Drawdown AP-4/TL Air Consumption Curves: 1-inch (25.4 mm) I.D. Discharge US and METRIC UNITS

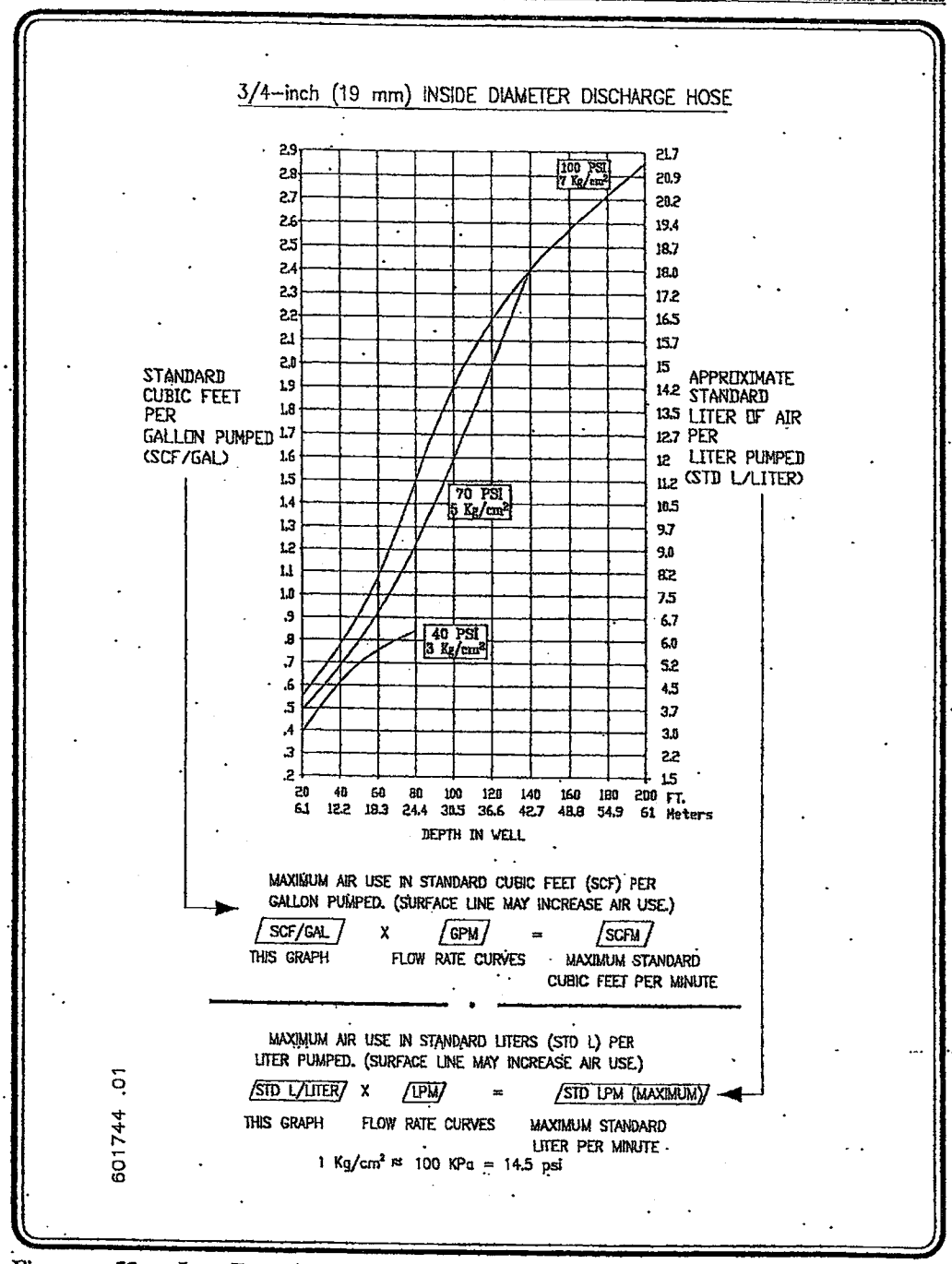


Figure 53 - Low Drawdown AP-4/TL Air Consumption Curves: 3/4-inch (19 mm) I.D. Discharge US and METRIC UNITS

Appendix C: AP-4 Conversions

The AP-4 can be converted the from Top- to Bottom-loading or Bottom- to Top-loading by rearranging the check valves.

Pumps produced prior to 1992
Top-loading to Bottom-loading conversions:

STEP 1 - Remove the inlet "Y" fitting at the top and move the inlet check valve and its inlet screen to the bottom of the pump.

STEP 2 - The outlet check valve is attached directly to the top of the export tube of the pump via a 1" coupling.

Convert a Bottom-loading pump to a Top-loading pump in the opposite manner.

Pumps produced in 1992 and after
Top-loading to a Bottom-loading conversion:

STEP 1 - Remove the inlet "Y" fitting at the top and install the outlet check valve in a coupling to the top of the export tube at the top of the pump. The inlet check valve must be obtained from *QED*.

STEP 2 - This inlet check valve replaces the blanked fitting at the bottom of a Top-loading pump.

Convert a Bottom-loading pump to a Top-loading pump in the opposite manner.
(See Figure 54 and 55)

Note:
When changing short pumps, change the outer casing as well. The casing for the short Top-loading pump is about 3 inches shorter than the case for long Top-loading pump.

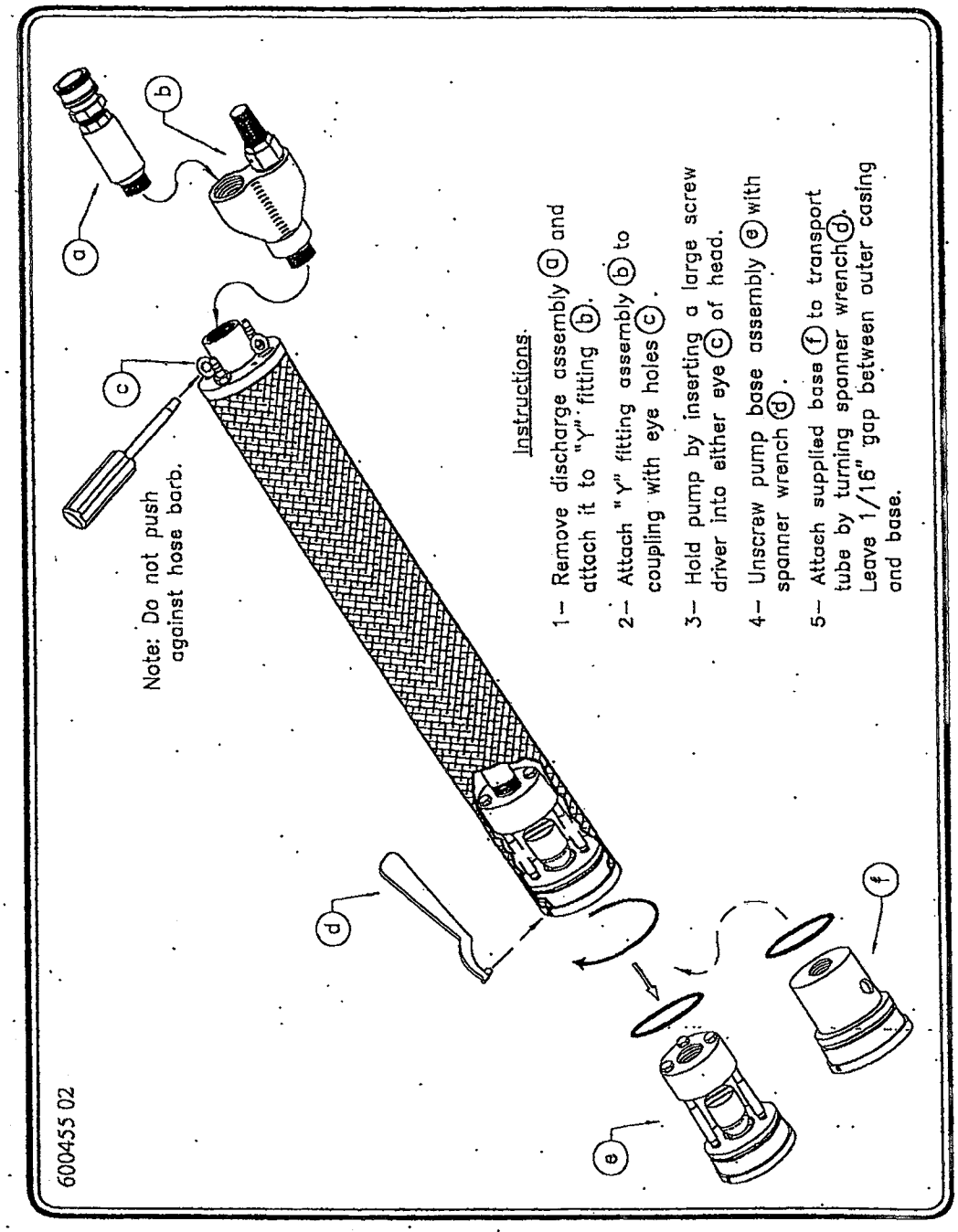


Figure 54 - Conversion From Bottom-Loading to Top-Loading AutoPump for pumps made after 1991

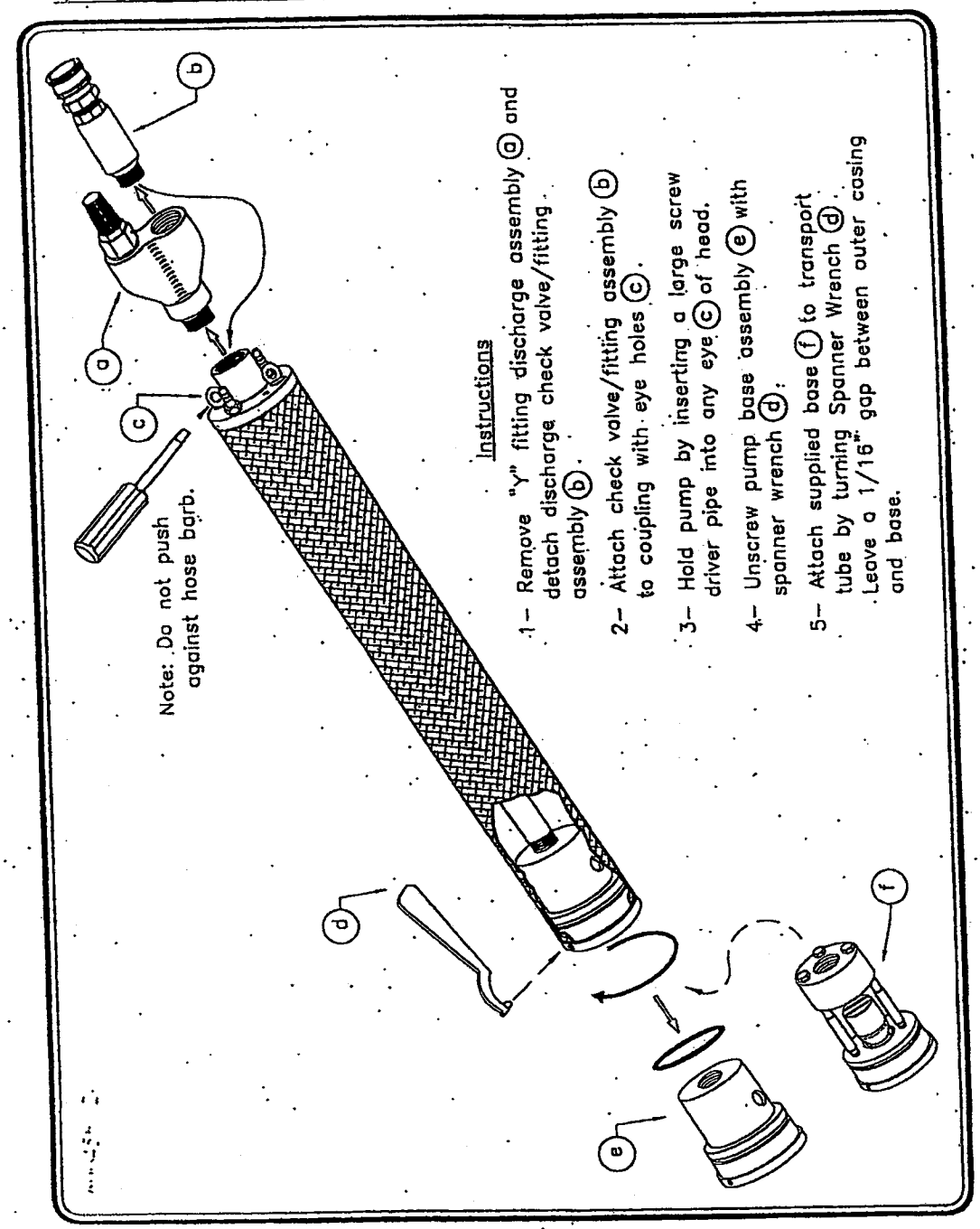
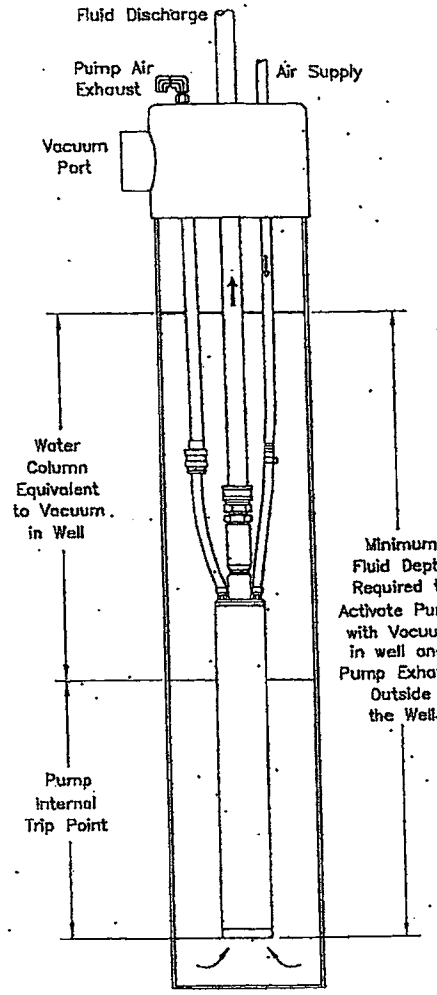


Figure 55 – Conversion From Top-Loading to Bottom-Loading AutoPump for pumps made after 1991

Appendix D: Vacuum on Well

The AP-4 will work in a well that is under vacuum, but there are several conditions that must be considered. These conditions are described in **Figure 56, Figure 57, Figure 58, and Figure 59** on the following pages.



- The water level required to activate the pump is equal to the pump internal trip point plus the vacuum water column.

  Example:

  – A Short AP–3/BL has an internal trip point of 22 in.

  – A well vacuum of 30 in. W.C. (water column)

  22+30 = 52 in. Water depth required to activate pump.

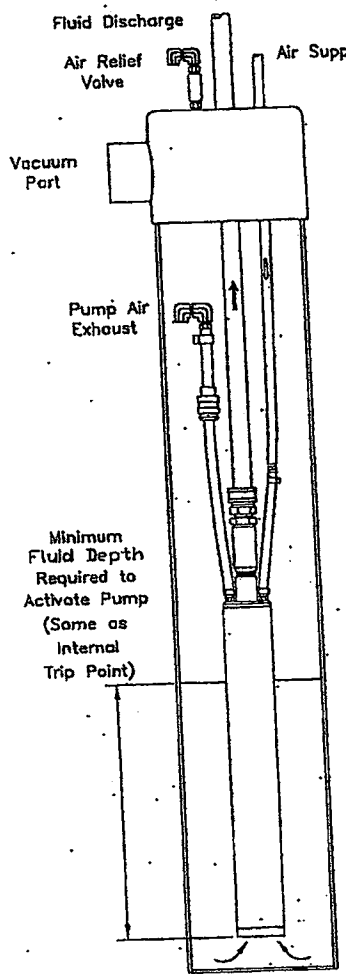
- The rated maximum operating pressure of the pump is not affected by this method of installation.

Pump Internal trip point*						
Long AP–4/BL	Short AP–4/BL	LDO AP–4/BL	Long AP–3/BL	Short AP–3/BL	Long AP–2/BL	Short AP–2/BL
35 in. 89 cm	27 in. 69 cm	11.5 in. 29.2 cm	31 in. 78.8 cm	22 in. 55.5 cm	35 in. 89 cm	20 in. 50.8 cm

* Special or Extended Intake Screens may Alter Listed Specifications.

601238 01

Figure 56 - AP-4/BL with Vacuum In the Well and Pump Exhaust Outside the Well



- For this condition the minimum fluid depth required to activate the pump is the same as the pump internal trip point.

- For this method of installation the fluid level required to activate the pump is unaffected by a vacuum or pressure in the well.

  If the well is completely sealed, however, and the well is pressurized (e.g. from the pump exhaust), the water level in the well may be depressed below the depth required to activate the pump. For this reason a CEE air relief valve (as shown) is recommended.

- A vacuum on the pump exhaust will affect the maximum operating pressure of the pump. Subtract the vacuum in psi from the rated maximum operating pressure.

  Example:

  – A Long AP–4/BL with 120 psi maximum operating pressure. (200 psi option available).

  – A 90 in. W.C. (water column) vacuum in the well.

  $$\frac{90}{12(2.31)} = 3 \text{ psi}$$

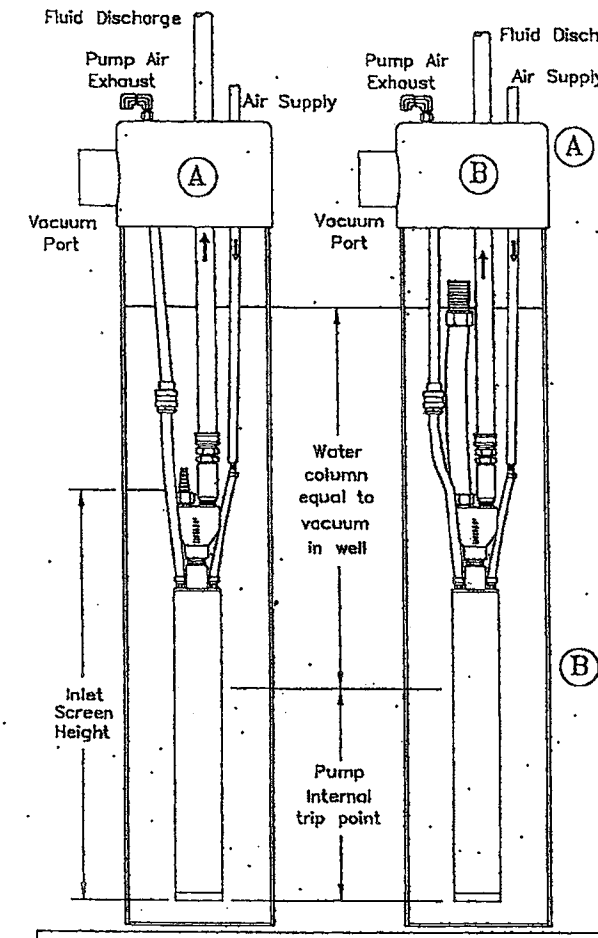
  120–3 = 117 psi maximum operating pressure of the pump.

	Pump Internal trip point*						
	Long AP–4/BL	Short AP–4/BL	LDD AP–4/BL	Long AP–3/BL	Short AP–3/BL	Long AP–2/BL	Short AP–2/BL
	27 in. 69 cm	27 in. 69 cm	11.5 in. 29.2 cm	31 in. 78.8 cm	22 in. 55.5 cm	35 in. 89 cm	20 in. 50.8 cm

* Special or Extended Intake Screens may Alter Listed Specifications.

601237-01

Figure 57 - AP-4/BL with Vacuum In the Well and Pump Exhaust In the Well



(A) • The water level required to activate the pump is equal to the pump internal trip point plus the vacuum water column, or, the inlet screen height — whichever is greater.

Example:

— A Long AP–2/TL with an internal trip point of 35 in. and an inlet screen height 52 in.

— A well vacuum of 49 in. W.C. (water column)

35+49 = 84 in. Water depth required to activate pump.

This (84 in) is greater than the inlet screen height (52 in).

(B) • C.E.E. offers custom fluid inlet screen extensions. One of these will enable the recovery of a floating layer of product when the water level (example above) is always above the normal screen position.

• For these methods of installation the rated maximum operating pressure of the pump is not affected.

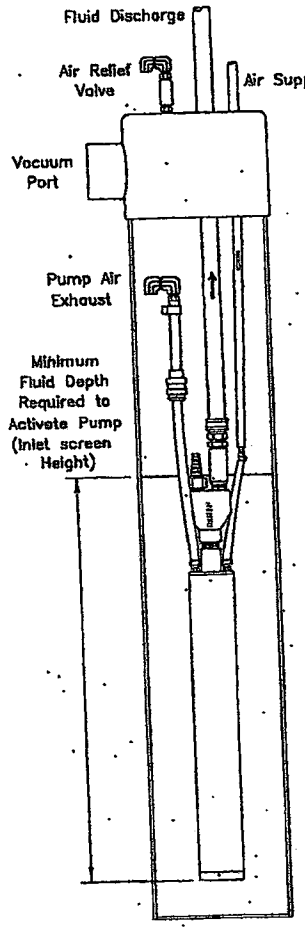
Internal trip point						
Long AP–4/TL	Short AP–4/TL	LDD AP–4/TL	Long AP–3/TL	Short AP–3/TL	Long AP–2/TL	Short AP–2/TL
35 in. 89 cm	27 in. 69 cm	10.6 in. 27 cm	31 in. 78.8 cm	22 in. 55.5 cm	35 in. 89 cm	20 in. 50.8 cm

Inlet screen height *						
Long AP–4/TL	Short AP–4/TL	LDD AP–4/TL	Long AP–3/TL	Short AP–3/TL	Long AP–2/TL	Short AP–2/TL
52 in. 132 cm	37 in. 94 cm	24 in. 61 cm	53 in. 134.7 cm	42 in. 106.6 cm	52 in. 132 cm	35 in. 89 cm

* Special or Extended Intake Screens may Alter Listed Specifications.

601241 01

Figure 58 - AP-4/TL with Vacuum In the Well and Pump Exhaust Outside the Well



- For this method of installation the fluid level required to activate the pump is unaffected by a vacuum or pressure in the well.

  If the well is completely sealed, however, and the well is pressurized (e.g. from the pump exhaust), the water level in the well may be depressed below the depth required to activate the pump. For this reason a CEE air relief valve (as shown) is recommended.

- A vacuum on the pump exhaust will affect the maximum operating pressure of the pump. Subtract the vacuum in psi from the rated maximum operating pressure.

  Example:

  – A Long AP–4/BL with 120 psi maximum operating pressure. (200 psi option available).

  – A 90 in. W.C. (water column) vacuum in the well.

  $$\frac{90}{12(2.31)} = 3 \text{ psi}$$

  120–3 = 117 psi maximum operating pressure of the pump.

Inlet screen height *						
Long AP–4/TL	Short AP–4/TL	LDD AP–4/TL	Long AP–3/TL	Short AP–3/TL	Long AP–2/TL	Short AP–2/TL
52 in. 132 cm	37 in. 94 cm	24 in. 61 cm	53 in. 134.7 cm	42 in. 106.6 cm	52 in. 132 cm	35 in. 89 cm

* Special or Extended Intake Screens may Alter Listed Specifications.

80:240 01

Figure 59 - AP-4/TL with Vacuum In the Well and Pump Exhaust In the Well

Appendix E: Air Compressor

Installation

The air compressor provides the air necessary to drive the system. The compressed air normally passes through a single stage filter/regulator and then into the AutoPump System.

WARNING:
The air compressor and any other electrical equipment used with this pneumatic system must be positioned outside of any area considered hazardous because of the possibility of the presence of combustible materials.

Compressors start and stop automatically. Do not place hands or objects on or near any part of the compressor.

QED Environmental Systems (QED) does not usually supply the air compressor. It is best to buy the compressor from a local supplier who provides service. Follow the instructions that accompany the compressor. This appendix is only a general guide, not an in-depth manual for the compressor.

WARNING:
When compressing air, parts of a compressor can get very hot. Do not touch the motor, compressor or piping until it has cooled down.

Caution:
The air compressor should be located outside and away from any area which may contain flammable fumes.

Note:
An automatic drain on the compressor receiver tank significantly reduces the load on the air filters, extends the life of the filter elements, and reduces system maintenance. If your air compressor is not equipped with an automatic drain, you can obtain one from QED.

Note:
The information on compressors is for reciprocating piston compressors. A centrifugal compressor produces about twice the air of a piston compressor for the same horsepower.

- As a general rule, a piston-type compressor should not start more than six times per hour. Also, a piston compressor should not operate more than 50% of the time.
- At a minimum, the air compressor should be in the 1 to 1-1/2 HP range with a 20 gallon holding tank.
- At sea level a 1 HP air compressor provides approximately 3.5 cubic feet per minute (SCFM) of free air.
- For compressor sizing, all down well and surface hosing and other resistance must be known:
- The 2 and 3 HP compressors should have 60 to 80 gallon tanks.
- A 5 HP compressor should have at least an 80 gallon tank, and the 7-1/2 HP and 10 HP compressors should have at least a 120 gallon tank.
- Storage tanks and automatic pressure shut-off switches provide a buffer so the compressor motor can cool between each time the tank is pressurized.
- Compressors are generally equipped with a pressure activated start/stop switch. This switch senses the pressure of the air in the holding tank (reservoir) of the compressor. The pressure difference between when the compressor starts and when it stops may need to be adjusted to maintain compressor starts to six times per hour. Refer to the compressor manufacturer for guidance.

Electrical Wiring for the Compressor

- All electrical connections should be made by a licensed electrician and in accordance with the electrical code for particular areas. The wiring should provide full motor nameplate voltage and current at the motor terminals during start-up.
- Wiring hookup must be made so that the compressor flywheel turns in the proper direction. There is usually an arrow on the flywheel to indicate the proper rotation direction.

Motor Overload Protection

- To prevent motor damage, provide all compressor motors with overload protection. Some motors are furnished with built-in thermal overload protection.
- To prevent motor damage due to low voltage or undue load imposed on the motor, use larger motors in conjunction with starters that include thermal overload units.
- To determine the proper thermal protection (thermal element), consider the load to be carried, the starting current, the running current, and the ambient temperature. Recheck electric current characteristics against nameplate characteristics before connecting wiring.

Caution:
Fuses are for circuit protection only and are not to be considered motor protection devices. Consult your local power company regarding proper fuse size.

Air Quality and Pressure

- In compressors requiring lubricating oil, do not use synthetic oil. Synthetic oil can adversely affect some materials. Non-detergent 30 Weight oil is recommended for compressor lubrication.
- Install an automatic drain on the compressor holding tank to periodically drain the water and oil which collects in the tank. This will help to extend air filter cartridge life.
- Do not lubricate the compressed air coming out of the compressor. QED equipment is designed to run without the aid of lubricated air. The air filters are designed to remove oil from the compressed air.
- The compressor should provide between 70 and 250 pounds per square inch (psi) of air pressure to the system. The filter (with metal bowl) and regulator will accept a maximum of 250 psi air pressure. Air filters with plastic bowls will accept a maximum of 150 psi. Maximum output air pressure setting on the regulator is 120 psi.

Maintenance

Although QED usually does not supply the compressor, this section is provided to help the operator. If the system receives clean, oil-free air from the compressor, maintenance will be significantly reduced.

Inspection - Check for possible damage in transit. Almost all compressors are shipped with the flywheel unmounted. Do not force the flywheel on the crankshaft. Use a wedge-in "slot" provided for easy assembly. Checked belt alignment and tension carefully.

Placement - A compressor is a source of sparking. Place it out of what is considered a hazardous area by local and national fire and electric codes.

Mounting - Install in a clean, dry, well-ventilated location away from any source of heat such as a boiler or radiator. If the unit is to be fastened to a foundation, support and shim all four feet firmly to remove all stress from the unit. The compressor flywheel should be mounted towards a wall with a minimum clearance of 18 inches to allow for circulation of air and additional clearance if required for servicing.

Lubrication - Fill the crankcase to the level mark on the oil gauge. Use the type of industrial compressor oil that is recommended by the manufacturer for the ambient temperature. Do not use synthetic oil, as these can damage the pumps.

Pressure and Speed - Never operate the compressor at pressures or speeds in excess of those recommended by the factory. Every compressor assembly must have a safety valve installed and should be set at either the maximum tank working pressure or 25 psi over the actual pressure of the pump, whichever is less.

Daily - Check for unusual noise, failure to compress, overheating, oil leaks, and vibration. Correct before serious damage can develop. Drain all condensate from receiver and traps.

Weekly - Examine intake filter elements and if they are dirty, remove and clean or replace them. Check oil level and add oil if necessary. Do not fill over level mark on sight glass. Keep compressor clean for efficient operation and appearance.

Monthly - Check and tighten all bolts and nuts as required. Check air connections for air leaks and tighten as required. Check belt tension.

Note:
These are standard maintenance procedures which the QED Environmental Systems "warranty" does not cover. QED does not manufacture compressors. Always use the manufacturer's instructions and recommendations when installing, using and servicing the compressor. These notes are included as a general guide only.

Troubleshooting

Although QED usually does not supply the compressor, this section is provided to help the operator. If the system receives clean, oil-free air from the compressor, maintenance will be significantly reduced.

I. Problem: Slow Pumping or Insufficient Pressure

Solutions:

A. Clogged filter element: clean or replace.

B. Leaks in air lines: retighten or replace.

C. Insufficient air capacity: add compressor capacity, consult dealer.

D. Head valves: clean or replace.

E. Slipping belts: adjust or replace.

F. Power cord is too long for the power needed, causing a voltage drop: use a short cord with large wires. Do not coil the power cord.

II. Problem: Excessive Oil Consumption

Solutions:

A. Too much oil: drain out excess to level mark on sight glass.

B. Worn rings: replace rings.

C. Clogged air intake filters: clean or replace.

D. Improper Oil: check the manufacturer's recommendation.

E. Oil leaks: check and tighten all bolts and nuts to manufacturer's specifications. Replace gaskets if necessary.

F. See "Overheating."

III. Problem: Overheating

Solutions:

A. Pump running backwards: reverse rotation.

B. Inadequate ventilation or high ambient temperature: move intakes to outside and install filters to protect against weather and foreign objects. Force air through enclosure if necessary.

C. Restricted air intakes: clean or replace.

D. Loose or restricted valves: retighten, clean, or replace.

E. Incorrect installation: allow 18 inches minimum between wall and flywheel.

F. Insufficient air capacity: consult dealer. Seal all air leaks.

G. Insufficient oil: check level and consult dealer.

IV. Problem: Oil or Water in Air

Solutions:

A. Drain tank more often: use an automatic drain.

B. Reposition intake to take in cooler, drier air.

C. Install water dropouts with automatic drains in the air lines.

D. Install an after cooler prior to the air storage tanks.

Appendix F: Pump Cycle Counter

Introduction

QED Environmental Systems (QED) Pump Cycle Counters (PCC) are air pulse detecting units that are placed in line between a pump and its air supply. They require no external power source. A digital readout displays the number of times a pump cycles. PCC's consist of a magnet housing, an internally located magnet shuttle, and a digital display.

The location of the digital display is adjustable, allowing the counter to be used on many different kinds of pumps and at various distances from the well. **(See Figure 60)**

The PCC can be used on at least 150 feet (45.7 m) of 3/8 inch (9.5mm) or 1/4 inch (6.4mm) air hose with air pressure supply 30% higher than the total developed head.

Performance of the PCC is dependent upon the air hose size and the length, the type of pump and the system pressure. Air flow control valves can affect counter performance. Please contact *QED* for application assistance.

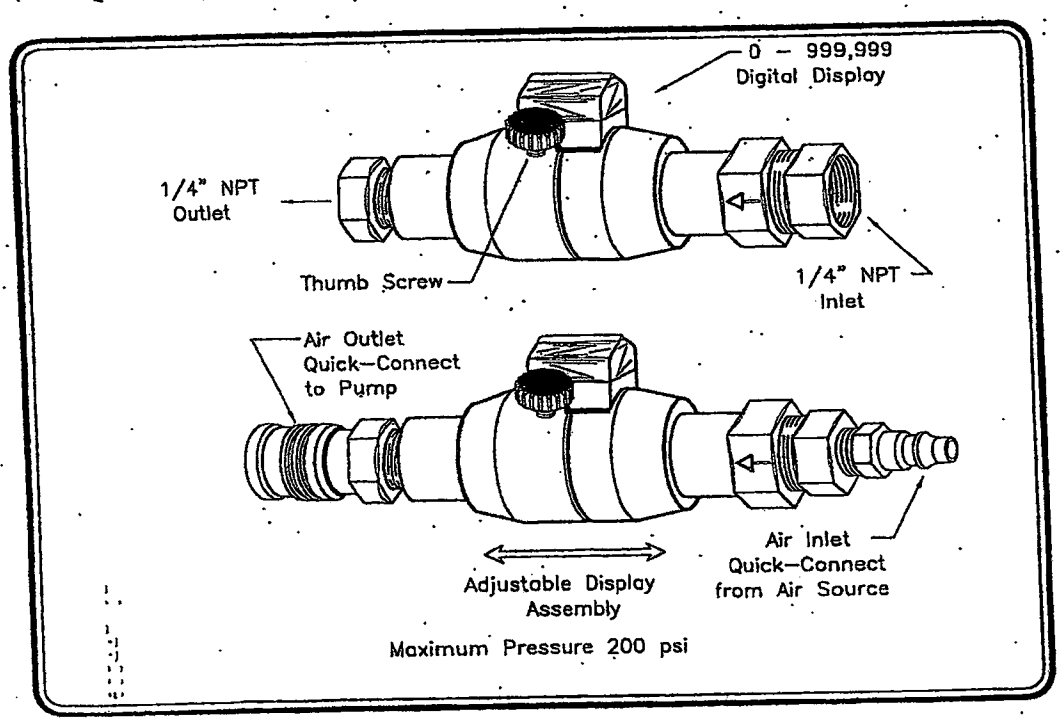


Figure 60 - Pump Cycle Counter

Pump Cycle Counter Operation/Installation

When a pneumatically operated pump such as the *QED* AutoPump® has filled, it triggers itself "On". This allows air to flow to the pump until a certain volume of fluid has discharged. The air stops; the pump fills; then the cycle continues to repeat.

A PCC mounted between a filter/regulator and a pump senses air flow to the pump. In a piston-like action, the internally located magnet shuttle moves forward (in the direction of air flow) during the "On" pulse and returns to a seated position in the "Off" period. (See Figure 61)

The digital display senses the completion of this "to-and-from" movement and records the cycle, increasing the number one digit that is shown in the clear plastic display.

This process repeats itself for each pump cycle.

Note:
The PCC will not function properly beyond certain distance limits from the pump, or, above or below optimum air line diameters. Safe limits are as follows:

AP-4: 250 ft. maximum with 1/4 inch or 3/8 inch ID air hose.
AP-3: 150 ft. maximum with 1/4 inch or 3/8 inch ID air hose.
AP-2: 75 ft. maximum with 1/4 inch or 3/8 inch ID air hose.

Contact *QED* for advice.

Digital Display

The digital display has the following features:

- A six digit counter that counts from 0 - 999,999 before resetting itself.
- A clear viewing lens that is water-and-impact resistant.
- **Optional:** Switch for remote electronic readout available upon request.

Magnet Housing

The magnet housing has the following features:

- A clear mark on the outside that indicates the correct direction of air flow.
- It is made of anodized aluminum.
- It has a 1/4-inch FNPT inlet and a 3/8-inch or 1/4-inch FNPT outlet.
- It handles air pressures from 40 - 200 psi.

Hardware Options

Inlet and outlet openings can be fit with no-mix quick-connects or barb connections depending on site requirements.

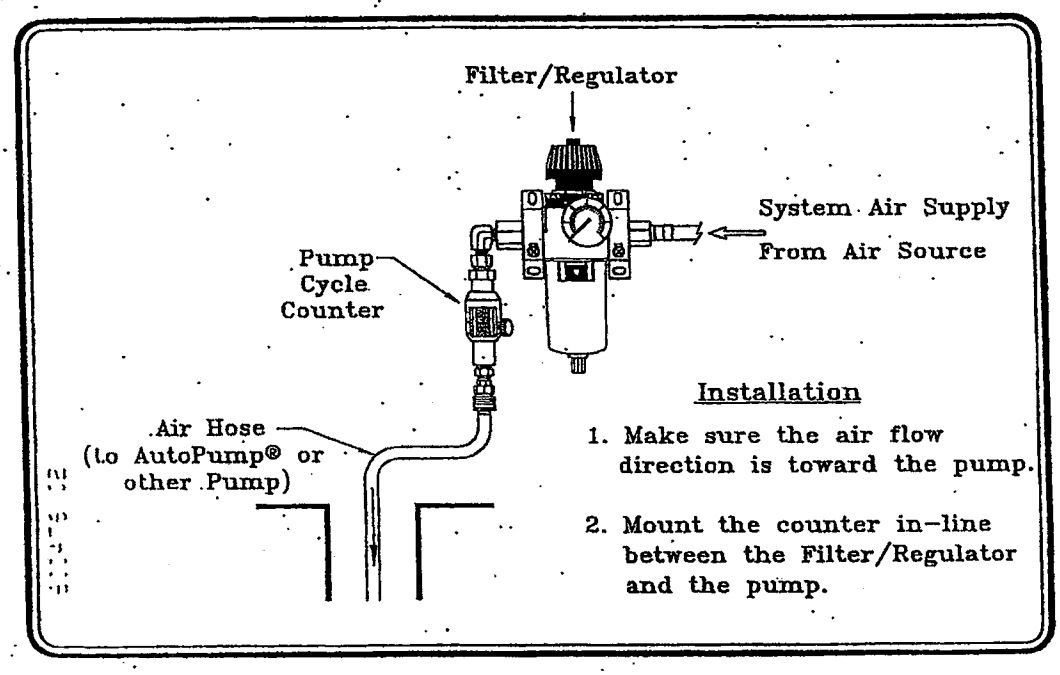


Figure 61 - **Pump Cycle Counter Installation**

Materials of Construction

QED PCCs are made of the following:

- Anodized Aluminum
- Stainless Steel
- Engineering Plastics
- Brass
- Viton

Pump Cycle Counter Weight - 0.4 lbs (0.2 kg)

Adjusting the Pump Cycle Counter

Note:
To get the most reliable performance, adjust the counter after it is installed and the pump is running. Typically, the Display Assembly that holds the digital readout is set 1/2-inch (13mm) from the upstream hex. Before adjusting the PCC be sure there is no air leak downstream of the counter. A leak could influence the travel of the magnet shuttle when the pump cycles.

STEP 1 - Loosen, but do not remove, the thumb screw (item #3) that locks the Display Assembly. (See Figure 62)

STEP 2 - Slide the Display Assembly on the magnet housing (item #6) (back and forth or up and down as the case may be) while the pump is cycling until the digital display (item #4) advances once per pump cycle.

STEP 3 - Slowly slide the Display Assembly upstream towards the air source until the digital display (item #4) stops counting. Using a pencil, mark this point on the magnet housing (item #6).

STEP 4 - Slowly slide the Display Assembly in the opposite direction, towards the pump, past where the counting occurs until the digital display (item #4) stops counting. Using a pencil, mark this point on the magnet housing (item #6).

STEP 5 - Position the Display Assembly between the two extremes where counting did not occur. Lock the Display Assembly in place with the thumb screw. (item #3)

Cleaning the Pump Cycle Counter

Sometimes the PCC does not count due to either the magnet shuttle or the spring hanging up inside the magnet housing. The counter components can be cleaned by *gently* washing the unit in warm water. A soft brush may be used to remove debris. To clean the inside, follow these instructions: **(See Figure 62)**

Note:
As a precaution, mark and/or measure with a pencil, the set distance **(See Figure 62)** so that it can be reset in the same position should movement occur. Do not loosen the thumb screw (item #3) since movement of the Display Assembly is unnecessary for cleaning.

STEP 1 - Remove the inlet fitting (item #11), not the thumb screw (item #3) as noted above.

STEP 2 - Remove the magnet shuttle assembly (item #9) and the spring (item #8) from inside the magnet housing (item #6).

STEP 3 - Inspect the magnet shuttle assembly (item #9), the spring (item #8), and the inside of the magnet housing (item #6) for burrs which may restrict the magnet shuttle assembly (item #9) movement.

STEP 4 - If burrs are present, remove the burrs and smooth the part. Replace the PCC if necessary.

STEP 5 - Use a soft bottle brush and warm water to clean the inside of the magnet housing.

Caution:
Be careful not to scratch the pieces.

STEP 6 - Let the parts dry.

STEP 7 - Reassemble the PCC.

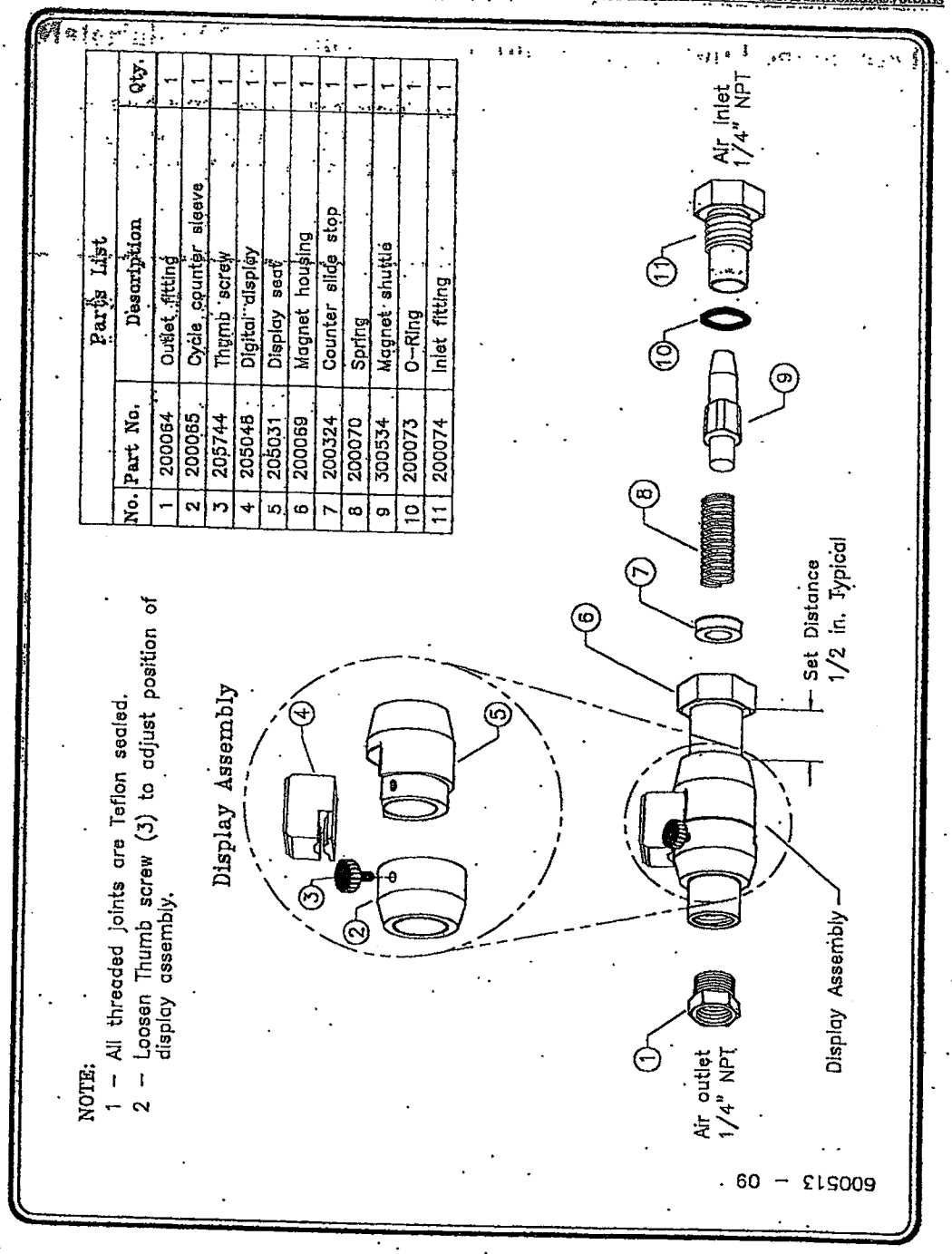


Figure 62 - Pump Cycle Counter Cleaning and Adjustment

Assembly of the Digital Display (Figure 62)

Should the digital display be removed and disassembled for any reason, the procedure for assembling is as follows:

STEP 1 - Seat the digital display (item #4) on the flat of the display seat (item #5). (See Figure 62)

STEP 2 - Slide the cycle counter sleeve (item #2) over the display seat (item #5) and the bottom lip portion of the digital display (item #4). Both pieces (the display seat #5 and the digital display #4) should be held in place by the cycle counter sleeve (item #2).

STEP 3 - Align the thumb screw holes.

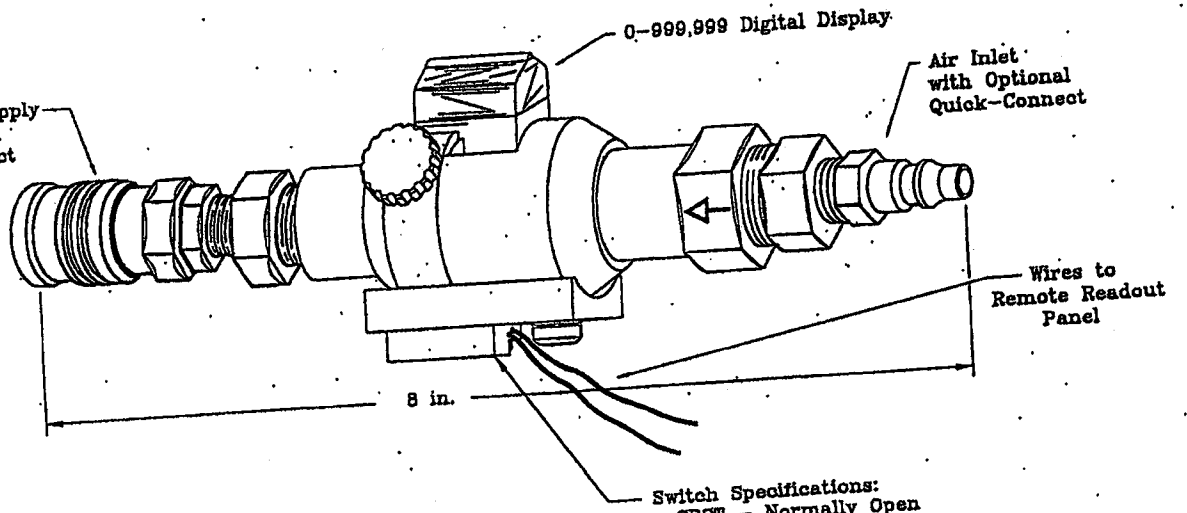
STEP 4 - Screw in the thumb screw (item #3) to hold the Display Assembly together.

AP-4 Volumes Pumped Per Cycle

The volume of fluid pumped per cycle from an AutoPump® varies depending upon the inlet air pressure and the total developed head (TDH) (static plus dynamic head). The closer the pressures are to each other, (the TDH is almost the same as the inlet air pressure), the closer the volume pumped per cycle will be to the lower end of the gallon range in the table below. The TDH depends upon back pressure in the surface lines, hose size, fittings, vertical and horizontal pumping distance, the number of pumps feeding the hose system, air pressure to the pump, and the type of pump. The effects of some of these variables may cause the volume pumped per cycle to vary from pump to pump on a single site.

AP4 AutoPump Models

Pump	Volume per Cycle: Range	Volume per Cycle: Typical
Long AP4	0.58 - 0.78 gal (2.2 - 3.0 L)	0.65 gal (2.46 L)
Short AP4	0.22 - 0.36 gal (0.87 - 1.36 L)	0.25 gal (0.95 L)
Low Drawdown AP4	0.11- 0.16 gal (0.42 - 0.61 L)	0.13 gal (0.51 L)



Maximum Pressure	200 psi	(14 kg/cm²)
Shipping Weight	1 Lb.	(.45 kg)

- Magnetic Shuttle Inside the Counter Barrel Moves as Air Flows.
- The Display Numeral moves Half Way when Air Flow Begins and Finishes the count when Air Flow Ceases.
- The Electrical Switch Closes with each Pulse of Air Flow.

Switch Specifications:
- SPST - Normally Open
- 10 Max. Watts

NOTE: Volts X Amps Must be less than or equal to 10 (Watts)

- 200 Max. VDC
- 0.5 Max. Amps
- 12" Leads
- Encapsulated and Hermetically Sealed.

01749 01

2. **Pumps, hose, tubing, fittings, heater, condensers and air filtration housings** warranted for one (1) year: 100% material and 100% workmanship. This does not include AP-4 AutoPumps. There will be no warranty for application or material compatibility. The materials used vary depending upon application and the customer is responsible for knowing the environment in which the equipment will be operating and working with QED to determine what materials of construction will be best for the application.

3. **Pneumatic Data Modules / Logic Control Panels** — warranted for one (1) year: 100% material and 100% workmanship.

4. **Parts and Repairs** — warranted for ninety (90) days: 100% material and 100% workmanship; when repairs are performed by QED or its appointed agent; from date of repair or for the full term of the original warranty, whichever is longer. Separately sold parts are warranted for ninety (90) days: 100% materials and 100% workmanship.

This warranty will be void in the event of unauthorized disassembly of component assemblies. Defects in any equipment that result from abuse, operation in any manner outside the recommended procedures, use and applications other than for intended use or exposure to chemical or physical environments beyond the designated limits of materials and construction, will also void the warranty.

Chemical attack by liquids and/or abrasive substances contacting equipment and accessories shall not be covered by this warranty. A range of materials of construction is available from QED and it is the Buyer's responsibility to select materials of construction to fit the Buyer's application. QED will only warrant that the supplied site liquid contacting materials will conform to published QED specifications and generally accepted standards for that particular material.

QED Environmental Systems shall be released from all obligations under all warranties if any product covered hereby is repaired or modified by persons other than QED service personnel (unless such repair by others is made with the written consent of QED); resold to other parties; and/or moved to or used on a remediation site other than originally specified.

It is understood and agreed that QED Environmental Systems shall in no event be liable for incidental or consequential damages resulting from its breach of any of the terms of this agreement, nor for special damages, nor for improper selection of any product described or referred to for a particular application. Liability under this warranty is limited to repair or replacement F.O.B. QED's factory, or its appointed agent's shop, of any parts which prove to be defective within the duration and conditions set forth herein, or repayment of the purchase price at the option of QED, provided the products have been returned in accordance with the duration and conditions set forth herein.

Subassemblies and Other Equipment Manufactured by Others
The foregoing warranty does not apply to major subassemblies and other equipment, accessories, and other parts manufactured by others, and such other parts, accessories, and equipment are subject only to the warranties, if any, supplied by their respective manufacturers. QED makes no warranty concerning products or accessories not manufactured by QED. In the event of failure of any such product or accessory, QED will give reasonable assistance to Buyer in obtaining from the respective manufacturer whatever adjustment is reasonable in light of the manufacturer's own warranty.

Illustrations and Drawings
Reasonable Effort has been made to have all illustrations and drawings accurately represent the product(s) as it actually was at the time of doing the illustrations and drawings.

However, products may change to meet user requirements and therefore may not be reflected in the literature. In addition, literature may be updated to reflect the most recent equipment revision(s). Changes to either or both equipment and/or literature can be made without notice.

Buyer's Remedies
The buyer's exclusive and sole remedy on account of or in respect to the furnishing of defective material or workmanship shall be to secure replacement thereof as aforesaid. QE shall not in any event be liable for the cost of any labor expended on any such product or material or for any special, direct, indirect or consequential damages to any one by reason of the fact that it shall have been deemed defective or a breach of said warranty.

Changes without Notice
Prices and Specifications are subject to change without notice.

Shipping Dates
Shipping dates are approximate and are subject to delays beyond our control.

F.O.B. Point and Title
All material is sold F.O.B. factory. Title to all merchandise sold shall pass to Buyer upon delivery by Seller to carrier at factory. All freight insurance is the responsibility of the Buyer and shall be charged to the Buyer on the invoice unless directed in writing. All Freight claims are the Buyer's responsibility.

Terms
Payment terms are Net 30 days; 1.5% per month past due.

State and Local Taxes
Any taxes, duties or fees which the seller may be required to pay or collect upon or with respect to the sale, purchase, delivery, use or consumption of any of the material covered hereby shall be for the account of the Buyer and shall be added to the purchase price.

Acceptance
All orders shall be subject to the terms and conditions contained or referred to in the Seller's quotation, acknowledgments, and to those listed here and to no others whatsoever. No waiver, alteration or modification of these terms and conditions shall be binding unless in writing and signed by an executive officer of the Seller. All orders subject to written acceptance by QED Environmental Systems, Ann Arbor, MI, U.S.A.

Warranty Claims Procedure (Responsibility of purchaser)
The original purchaser's sole responsibility in the instance of a warranty claim shall be to notify QED or its appointed agent, of the defect, malfunction, or other manner in which the terms of this warranty are believed to be violated. The purchaser may secure performance of obligations hereunder by contacting the Customer Service Department of QED or its appointed agent, and:

1. Identifying the product involved by model or serial number, or other sufficient description, that will allow QED, or its appointed agent, to determine which product is defective.

2. Specifying where, when, and from whom the product was purchased.

3. Describing the nature of the defect or malfunction covered by this warranty.

4. After obtaining authorization from QED, sending the malfunctioning component via a RMA# (Return Material Authorization number) to the address below or to its appointed agent:

QED Environmental Systems
1133 Seventh Street
Oakland, CA 94607
USA

(800) 537-1767 Toll-Free in North America
(510) 891-0880
(510) 444-6789 FAX
Service@cee.com Electronic Mail

5. Equipment must be cleaned before shipment or it will be cleaned by QED before any work is performed. The customer will be charged for such cleaning.

If any product covered hereby is actually defective within the terms of this warranty, purchaser must contact QED, or its appointed agent, for determination of warranty coverage. If the return of a component is determined to be necessary, QED, or its appointed agent, will authorize the return of the component at Purchasers expense. If the product proves not to be defective within the terms of this warranty, then all costs and expenses in connection with the processing of the Purchaser's claim and all costs for repair, parts, labor, and shipping and handling, as authorized by owner hereunder, shall be borne by the Purchaser. In no event shall such allegedly defective products be returned to QED, or its appointed agent, without its consent, and QED's, or its appointed agent's, obligations of repair, replacement or refund are conditional upon the buyer's return of the defective product to QED, or its appointed agent. All equipment returned to QED will be appropriately cleaned of contamination before shipping.

SECTION M

WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

M.1 WATER QUALITY AND LEACHATE MONITORING PLAN

The Citrus County Central Landfill Water Quality and Leachate Monitoring Plan (WQLMP), November 2008 by Jones, Edmunds & Associates, Inc. (JE&A) was included in the Phase 3 construction permit application as Attachment M-1.

M.1.a Signed, Dated and Sealed Plan

Please see Attachment M-1 of the Phase 3 construction permit application for signed, dated and sealed plans. There are no changes to this subsection.

M.1.b Performing Sampling and Analysis

Sampling and analysis of groundwater, leachate and surface water is described in the Water Quality And Leachate Monitoring Plan. There are no changes to this subsection.

M.1.c Ground Water Monitoring Requirements

M.1.c.1 Location of Detection Wells

There are no detection wells at the Citrus County Central Landfill and no detection wells are currently planned to be constructed. There are no changes to this subsection.

M.1.c.2 Downgradient Compliance Well

There are currently seven compliance wells (MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, and MW-17) positioned at the edge of the zone of discharge, which is the compliance line boundary. One compliance well (MW-20) north of the Phase 3 Expansion Area is currently planned to be constructed. The approximate location is shown on Figure 2 of the Monitoring Plan. The well will be installed 100 feet from the edge of waste on the zone of discharge compliance line. There are no changes to this subsection.

M.1.c.3 Background Wells

There are currently four background wells (MW-1R, MW-2, MW-3, and MW-7). MW-1R is down gradient from the Phase 3 Expansion area and is proposed to be used as a pieziometer in the new monitoring network. Therefore the proposed network will have three background wells (MW-2, MW-3, and MW-7).

The only laterally continuous aquifer at the Citrus County Central Landfill is the unconfined Floridan aquifer. There are no changes to this subsection.

M.1.c.4 Monitoring Well Location Information

The location of the monitoring wells is shown on the site plan located in Attachment 1 of the WQLMP document. One compliance well (MW-20) north of the Phase 3 Expansion Area is currently planned to be constructed. The approximate location is shown on Figure 2 of the Monitoring Plan. The well will be installed 100 feet from the edge of waste on the zone of discharge compliance line.

Well MW-1R is downgradient of the Phase 3 Expansion Area. The well will be re-designated as a piezometer and used to provide water levels only. Water level measurements will be collected semiannually in conjunction with the continuous-round measurements. There are no changes to this subsection.

M.1.c.5 Well Spacing

There are no changes to this subsection.

M.1.c.6 Well Screen Locations

The well screen for the proposed well MW-20 will be positioned to intersect the water table during normal seasonal fluctuation. A construction diagram for proposed compliance well MW-20 is provided as Figure 3 in the Monitoring Plan. The screen will be positioned between 15 ft and -5 ft NGVD. There are no changes to this subsection.

M.1.c.7 Abandoning Monitoring Wells

There are no changes to the subsection.

M.1.c.8 Detection Sensors

No detection sensors are used at the Citrus County Central Landfill therefore this subsection is not applicable.

M.1.d Surface Water Monitoring Requirements

There are no changes to this subsection.

M.1.e Leachate Sampling Locations Proposed

Attachment 1 of the WQLMP provides the locations for collecting samples of leachate from the disposal areas. Leachate can be sampled from the above-ground pipe access pad located at land surface on the west end of the cell at the leachate manifold crossing. At the piping access pad, sampling access is provided in the discharge pipe from each leachate pump through a valved port on each pipe where it exits the 24-inch diameter riser pipe.

M.1.f Initial and Routine Sampling Frequency and Requirements

M.1.f.1 Initial Background Ground Water and Surface Water Sampling

There are no changes to this subsection.

M.1.f.2 Routine Leachate Sampling and Analysis

Leachate will be sampled and analyzed annually for the parameters listed in Rule 62-701.510 (8) (c) and (d), F.A.C.

M.1.f.3 Routine Monitor Well Sampling and Analysis

There are no changes to this subsection.

M.1.f.4 Routine Surface Water Sampling and Analysis

There are no changes to this subsection.

M.1.g Procedures for Implementing Evaluation Monitoring, Prevention Measures and Corrective Action

There are no changes to this section.

M.1.h Water Quality Monitoring Report

M.1.h.1 Semi-annual Report Requirements

There are no changes to this subsection.

M.1.h.2 Biennial Report Requirements

There are no changes to this subsection.

ATTACHMENT M-1

BIENNIAL REPORT

Citrus County Landfill
Biennial
Water Quality Monitoring
Report
2009

Prepared for:

Citrus County
Board of County Commissioners
P.O. Box 340
Lecanto, Florida 34460

Prepared by:

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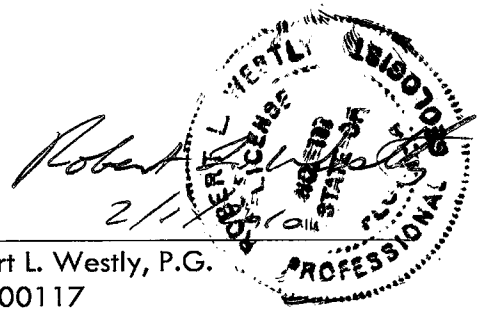

Robert L. Westly, P.G.
PG 000117

February 1, 2010
File No. 09208040.06

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B Attachments 1 and 2 from the November 2008 WQLMP Prepared by JEA
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D Graphs of Water Quality Trends
E Leachate Quality Data

1 INTRODUCTION

SCS Engineers (SCS) prepared this biennial water quality monitoring report (biennial report) for the Citrus County Central Class I Landfill (CLF). The CLF is located on S.R. 44, 3 miles east of Lecanto, Citrus County, Florida. The site property lies within Section 1, Township 19 South, and Range 18 East in Citrus County, Florida. The main entrance of the Citrus County Central Landfill facility is located at latitude 28°51'08", longitude 82°26'38" (Figure 1-1).

This biennial report was prepared in accordance with Florida Department of Environmental Protection (FDEP) Permit/certification Nos. 21375-008-S0/01 (Modification No. 21375-012-S0/MM), Condition E.11.b, and Chapter 62-701.510(9)(b) Florida Administrative Code (FAC). Locations of monitoring sites are shown on Attachment 1, Appendix A. This biennial report includes a summary and evaluation of the groundwater and leachate analytical data from monitoring events performed at the CLF from July 2007 through July 2009 (the reporting period). The following lists the specific data and information included in this report.

- Tabular and graphical displays of data that show that a monitoring parameter has been detected, including hydrographs for all monitoring wells.
- Trend analysis of monitoring parameters detected.
- Comparison among shallow, middle, and deep zone wells.
- Comparison between upgradient and downgradient wells.
- Correlation between related parameters such as total dissolved solids and specific conductance.
- Discussion of erratic and/or poorly correlated data.
- An interpretation of the groundwater contour maps, including an evaluation of groundwater flow rates.
- An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based upon site conditions.

Field work, sampling methodologies, data evaluation, and data Quality Assurance/Quality Control (QA/QC) were conducted in accordance with FAC Chapter 62-160 Standard Operating Procedures (DEP-SOP-001/01) and the CLF site permit. Laboratory analyses were performed in accordance with Chapter 62-160, FAC DEP-SOP-001/01 and the site permit.

This report was prepared under the direct supervision of an SCS Florida Professional Geologist in accordance with Florida Statute Chapter 492 and Rules of the Department of Professional Regulation Board of Professional Geologist, Chapter 61G16. The geologic interpretations provided in Appendices A and B were prepared by others and were not confirmed by SCS as part of the biennial reporting services.

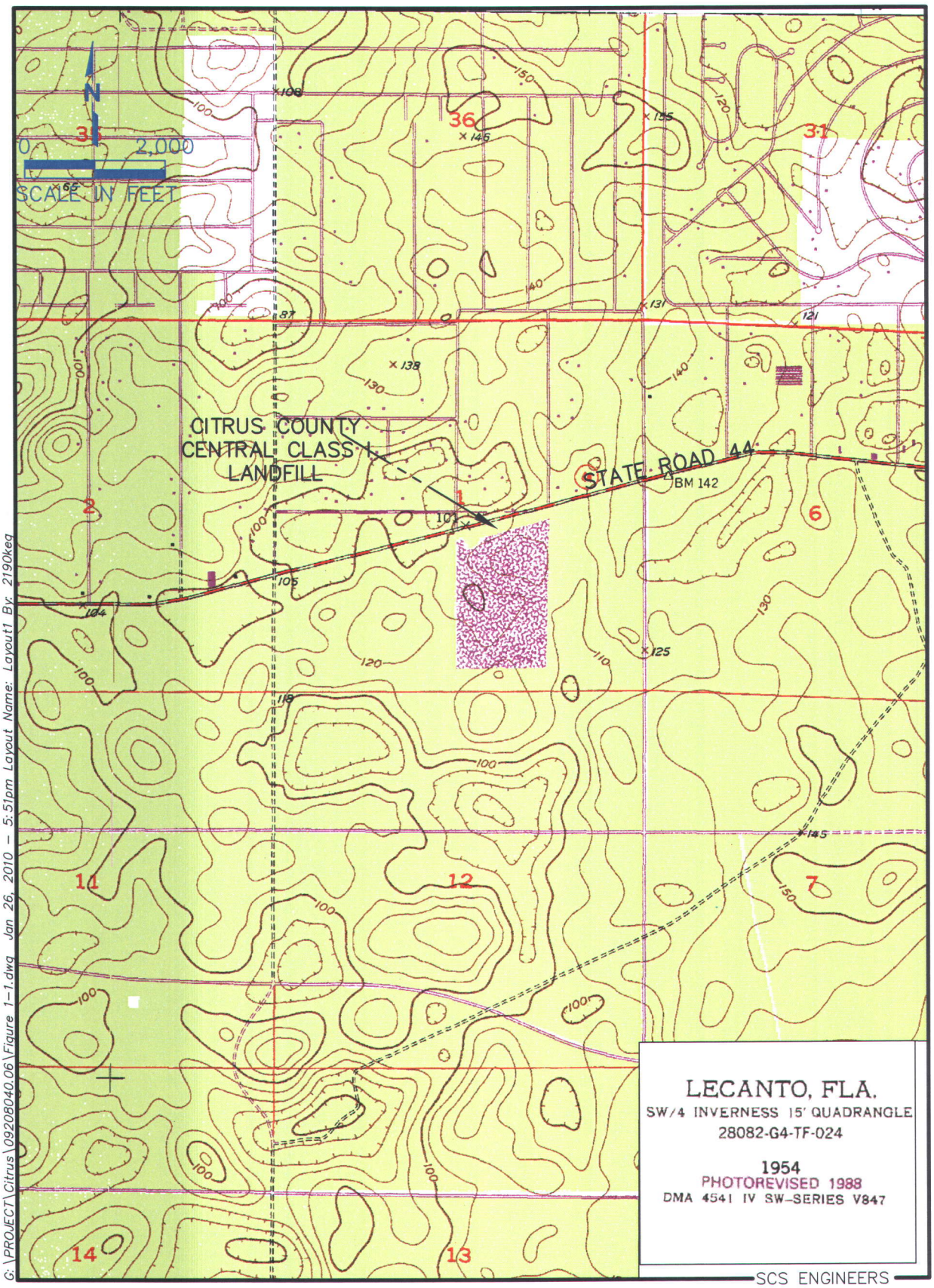


Figure 1–1. Site Location Map, Central Class I Landfill, Citrus County, Florida

BACKGROUND

The CLF currently is under a consent agreement with the FDEP to address the groundwater exceedances in down-gradient groundwater monitoring wells since 2002 and exceedances of the lower explosive limit for methane at the landfill gas (LFG) monitoring probes since 2003. Jones Edmonds and Associates, Inc., (JEA) prepared the Groundwater Investigation Report dated January 3, 2006 and the subsequent Groundwater Investigation Report Response to FDEP Request for Additional Information (RAI) dated September 2006. JEA prepared the Site Assessment Report (SAR) in Accordance with Chapter 62-780.600 (8), FAC, dated October 2007 and subsequent SAR Addendum (SARA) Response to FDEP Request for Additional Information Received September 4, 2008, dated January 2009. The SAR and SARA provide a summary of the previous work completed under the Consent Agreement. Interpretations provided in these documents were not confirmed by SCS as part of this biennial report.

The SAR and SARA concluded that LFG appears to be the source of the volatile organic compounds (VOCs) at the CLF. LFG has not been detected beyond the ZOD since the implementation of the LFG Compliance Action Plan. The VOCs have been delineated and, following written approval from the FDEP of the SAR and SARA, a natural attenuation monitoring plan will be submitted for approval.

2 GEOLOGIC AND HYDROGEOLOGIC CHARACTERISTICS

The site lies within the Brooksville Ridge as described by White[1], which is an extensive, internally drained, karst terrain with high local relief. The sediments which underlie the site, from youngest to oldest, consist of silty, sandy, clayey sediments of the Coharie-Okefenokee Formation, underlain by the deposits of clay, sand, and phosphatic limestone of the Alachua Formation, underlain by the Suwanee Limestone, underlain by the Ocala Limestone, and underlain by the Avon Park Formation.

In the vicinity of the site it appears that the surficial non-artesian aquifer is in direct hydraulic connection with the underlying Floridan aquifer. The surficial aquifer is recharged by infiltration of rainfall. Based on regional potentiometric surface maps, groundwater flow in the Floridan aquifer at the CLF is generally westward toward the Gulf of Mexico.

GROUNDWATER FLOW ASSESSMENT

The Water Quality and Leachate Monitoring Plan (WQLMP), November 2008, prepared by JEA, discusses that the overall groundwater gradient across the site is towards the west; however, the percolation basin for the leachate treatment plant effluent has created a localized northwesterly flow direction near the northern boundary of the proposed Phase 3 Expansion area. The groundwater mounding creates a localized zone of influence where flow patterns are different than the regional gradient. When groundwater flow leaves the zone of influence of the percolation basin it flows westerly parallel to the regional gradient. Potentiometric maps for the site have previously been submitted with the semi-annual reports for the site and a typical map is included in Appendix A.

The SAR and SARA provide evaluations of the vertical and horizontal groundwater flow velocities at the CLF. Relevant pages from the SARA have been included as Appendix A. Based on these documents the maximum horizontal distance groundwater would travel within the Floridan aquifer in 6 months is 38 feet; however, it is more probable that the maximum distance traveled in 6 months is 15 feet. The maximum vertical distance groundwater would travel downward in 6 months was calculated to be 46.21 feet.

[1] White, W.A., 1970. The Geomorphology of the Florida Peninsula. Florida Bureau of Geology Bulletin No. 51, Tallahassee, Florida.

3 GROUNDWATER, SURFACE WATER, AND LEACHATE MONITORING PROGRAM

The monitoring program consists of Floridan aquifer groundwater, surface water, and leachate monitoring. The following sections summarize the WQLMP.

GROUNDWATER MONITORING PROGRAM

The Floridan aquifer groundwater currently is monitored at the site at numerous locations. Well locations for each monitored zone are shown on Attachment 1, Appendix B. The monitoring wells for each monitored zone are listed in Table 3-1.

A construction detail summary for 24 monitoring wells and piezometers included in the monitoring program is presented in Attachment 2, Appendix B.

Table 3-1. Active Floridan Aquifer Monitoring Wells at the CLF

Background Monitoring Wells	Compliance Monitoring Wells	Assessment Monitoring Well	Intermediate Monitoring Well	Piezometer
MW-1R (proposed to be changed to piezometer)	MW-10	MW-18	MW-6	MW-AA
MW-2	MW-11	MW-19		MW-B
MW-3	MW-12			MW-E
MW-7	MW-13			MW-4R
	MW-14			MW-5
	MW-15			MW-8R
	MW-17			MW-9
				MW-16
				PZ-1
				PZ-2

Semi-Annual Monitoring Program

The current permit requires semi-annual sampling of the background, compliance, intermediate, and assessment monitoring wells for the field and laboratory parameters listed below.

Background and Compliance Monitoring Wells

Field Parameters–

- Static water level before purging
- Specific conductivity
- pH
- Dissolved oxygen
- Turbidity

- Temperature
- Color and sheens by observation

Laboratory Parameters--

- Total ammonia
- Chlorides
- Iron
- Mercury
- Nitrate
- Sodium
- Total dissolved solids (TDS)
- Parameters listed in 40 CFR (Code of Federal Regulations) Part 258, Appendix I

Intermediate Monitoring Well

Field Parameters--

- Static water level before purging
- Specific conductivity
- pH
- Dissolved oxygen
- Turbidity
- Temperature
- Color and sheens by observation

Laboratory Parameters--

- Total ammonia
- Chlorides
- Iron
- Mercury
- Nitrate
- Sodium
- Total dissolved solids (TDS)
- Fecal Coliform
- Total Trihalomethanes (THMs)
- Parameters listed in 40 CFR Part 258, Appendix I

Assessment Monitoring Wells

Field Parameters--

- Static water level before purging
- Specific conductivity
- pH
- Dissolved oxygen
- Turbidity
- Temperature

- Color and sheens by observation

Laboratory Parameters--

- Benzene
- Methylene Chloride
- Vinyl Chloride

Piezometers

Field Parameters--

- Static water level

Semi-annual reporting of the results of groundwater sampling is performed in accordance with the CLF permit.

SURFACE WATER MONITORING PROGRAM

Surface water monitoring is required if there is a discharge off of the CLF property. The sample is collected from which the discharge occurred for the following parameters.

Field Parameters--

- Specific Conductivity
- pH
- Dissolved Oxygen
- Turbidity
- Temperature
- Colors and Sheens

Laboratory Parameters--

- Unionized Ammonia
- Total Hardness
- Biochemical Oxygen Demand (BOD)
- Copper
- Iron
- Mercury
- Nitrate
- Zinc
- Total Dissolved Solids (TDS)
- Total Organic Carbon (TOC)
- Fecal Coliform
- Total Phosphates
- Chlorophyll A
- Total Nitrogen
- Chemical Oxygen Demand (COD)
- Total Suspended Solids (TSS)

- Parameters listed in 40 CFR Part 258, Appendix I

Semi-annual reporting of the results of surface water sampling is performed in accordance with the CLF permit.

LEACHATE MONITORING PROGRAM

Leachate samples are collected from the following locations:

- Master lift station for Phase 1/1A (Phase 1 and 1A Leachate Influent).
- Primary pump sampling port for the Phase 2 (Phase 2 Leachate Influent).
- Leachate effluent from the discharge from the chlorine contact tank (Leachate Effluent).
- Waste sludge from the treatment plant.

Locations for each monitored location are shown on Attachment 1, Appendix B.

Master lift station for Phase 1/1A and Primary Pump for Phase 2

The following parameters are collected annually:

Field Parameters–

- Specific conductivity
- pH
- Dissolved oxygen
- Color and sheens by observation

Laboratory Parameters–

- Total ammonia
- Bicarbonate
- Chlorides
- Iron
- Mercury
- Nitrate
- Sodium
- TDS
- Parameters listed in 40 CFR Part 258, Appendix II

A composite sample may be collected combining each of the phases except that individual samples must be collected from each location for the analysis of volatile organic compounds.

Leachate Effluent

The following parameters are collected at the frequency listed:

Field Parameters–

- pH – Daily
- Flow – Daily
- Specific conductivity – Quarterly
- Dissolved oxygen – Quarterly
- Color and sheens by observation – Quarterly

Laboratory Parameters–

- BOD - Monthly
- TSS - Monthly
- Nitrate – N – Monthly
- Chloride – Quarterly
- Sodium – Quarterly
- TDS – Quarterly
- Total Ammonia –N – Quarterly
- Benzene – Quarterly
- Toluene – Quarterly
- Ethylbenzene – Quarterly
- Total xylenes – Quarterly
- Vinyl chloride – Quarterly
- Ethylene dibromide (EDB) – Quarterly
- Total Trihalomethanes – Semi-annual
- Arsenic – Annual
- Barium – Annual
- Cadmium – Annual
- Chromium – Annual
- Iron – Annual
- Mercury – Annual
- Lead – Annual
- Selenium – Annual
- Silver – Annual
- Parameters listed in 40 CFR Part 258, Appendix I
- Parameters listed in 40 CFR Part 258, Appendix II (only for annual sampling event befor a permit renewal)

Waste Sludge

The following parameters are collected annually:

Laboratory Parameters–

- pH
- Solids (percent)

- Toxicity Characteristics Leaching Potential Test (TCLP) for the organics, metals and pesticides listed in 40 CFR Part 261.24, Table 1

ZONE OF DISCHARGE

The horizontal zone of discharge (ZOD) for the CLF is defined in the permit as "The zone of discharge shall extend horizontally 100 feet from the limits of the landfill disposal areas or to the property boundary, whichever is less, and shall extend vertically to the first semi-confining unit within the upper Floridan aquifer." The horizontal ZOD is shown on Attachment 1, Appendix B. Table 3-3 lists monitoring wells and approximate distances to the edge of the horizontal ZOD. The table also includes each well's distance from the edge of waste. The adequacy of the locations of the monitoring wells and sampling are evaluated in Section 4.0.

FLORIDAN AQUIFER GROUNDWATER QUALITY

Water quality data for the groundwater parameters monitored during this reporting period were evaluated in accordance with Chapter 62-701.510(9)(b), FAC. Selected data tables and graphs are presented to support the groundwater monitoring plan evaluation.

Appendix C includes tables listing water quality detections and exceedances. Exceedances are concentrations in excess of primary or secondary drinking water standards or in excess of groundwater cleanup target levels (GCTL) listed in Chapter 62-777, FAC. Exceedances of one or more parameters over the last two years were evaluated in accordance with the permit.

Graphs of water quality data and water quality trends for selected constituents detected are included in Appendix D. Graphs are provided for constituents that frequently exceeded their respective drinking water standard and/or exhibited significant trends in their concentrations over time. The following section discusses exceedances and includes related trends, where appropriate. Following the exceedances discussion the relationship between total dissolved solids and specific conductance is presented.

Table 3-2. Locations of Monitoring Wells Relative to the Horizontal ZOD

Well No.	Purpose	ZOD Description	Distance to ZOD (Feet)	Distance to Edge of Waste (Feet)
MW-2	Background	NA	NA	NA
MW-3	Background	NA	NA	NA
MW-7	Background	NA	NA	NA
MW-10	Compliance	100	0	100
MW-11	Compliance	100	0	100
MW-12	Compliance	100	0	100
MW-13	Compliance	100	0	100
MW-14	Compliance	100	0	100
MW-15	Compliance	100	0	100
MW-17	Compliance	100	0	100
MW-18	Assessment	100	-150	250
MW-19	Assessment	100	0	100
MW-6	Intermediate	Vertical	0	NA

Notes:

1. Distances are measured to within +/- 10 feet and are based on the survey maps.
2. The 100 ft value in the "ZOD Description" indicates the ZOD is 100 feet from the edge of waste and lies within the property boundary.
3. Negative values within the "Distance to ZOD" column indicate permitted monitoring wells that lie beyond the defined horizontal ZOD by the value listed.

Metals Exceedances

Antimony, iron, and lead concentrations were in excess of applicable groundwater standards or guidance concentrations for at least one sampling event in the two-year period of record. These exceedances are discussed below and are based on the exceedance tables included in Appendix C.

Antimony–

Detectable antimony concentrations exceeded the FDEP PDWS of 6 ug/L in compliance monitoring well MW-11 (January 2009).

Compliance monitoring well MW-11 was re-sampled in April 2009 and antimony was found to be below the FDEP PDWS. Antimony also was below the PDWS during the April 2009 and July 2009 monitoring events at MW-11. Based on review of the subsequent sampling events, this value is considered an outlier and is not meaningful. Due to the limited exceedances (January 2009) a trend analysis was not performed.

Iron–

The concentration of iron in the groundwater at CLF in the Floridan aquifer ranged from non-detect to 11,000 ug/L during the monitoring period. The FDEP secondary drinking water standard of 300 ug/L for iron, was exceeded at background monitoring well MW-3 (July 2008 and August 2008) and compliance wells MW-6 (January 2009), MW-10 (January 2007 through August 2009), MW-12 (January 2007 through July 2009), MW-13 (January 2007 through July 2009), MW-15 (January 2007 through July 2009), and MW-17 (January 2007 through July 2009).

Trend analyses for iron measurements (Figure D-1, Appendix D) indicate slightly increasing trends occurring in the compliance wells.

Iron detections can be naturally occurring according to the Florida Geologic Survey Special Publication No.34, 1992:

> "The most widespread violation of water quality standards is for iron. Seventy-five percent of all surficial aquifer system samples exceeded the standard. Forty-two percent of the intermediate aquifer system and forty-nine percent of the Floridan aquifer system samples violated the standard. There is no reason to believe the iron violations are anthropogenic. Iron is a natural constituent, and chemical conditions are conducive to transport of the iron."

Because iron is ubiquitous in the soils it is often difficult to know whether iron detected is the result of a release from the landfill or a change in the redox potential of the soil/water system that can cause the iron to be released from the sediments due to shadowing effects. The shadowing effect refers to the possibility that large facilities (e.g., landfills or parking lots) may cause geochemical changes to the aquifer/soil systems underlying them resulting in the release of redox sensitive or pH sensitive parameters (e.g., iron, arsenic, manganese, sulfates) from the soils.

Based on the iron data, it appears that the presence of iron in the groundwater is not necessarily directly related to the CLF operations, but is related to naturally occurring iron in groundwater and the liberation of naturally-occurring iron from the soils.

When the "Existing Facility" exemption (discussed below) is applied to iron concentrations occurring at MW-6, MW-10, MW-12, MW-13, MW-15, and MW-17, the wells are in compliance.

Lead–

Detectable lead concentrations exceeded the FDEP PDWS of 15 ug/L in background monitoring well MW-3 (July 2007 and July 2008).

Background well MW-3 was re-sampled in August 2008 and lead was found to be below the FDEP PDWS. Lead also was below the PDWS during the January 2009 and July 2009 monitoring events at MW-3. Trend analyses of lead concentrations (Chart D-2, Appendix D) indicate a declining trend in concentrations for background monitoring well MW-3.

Inorganic Parameters Exceedances

Chloride, nitrate as N, nitrate-nitrite (N), and pH concentrations were evaluated because they exceeded applicable PDWS and/or SDWS for at least one sampling event in the two-year period of record.

These parameters are discussed below.

Chloride–

Detectable chloride concentrations exceeded the FDEP SDWS of 250 mg/L in intermediate monitoring well MW-6 (January 2009).

Chloride was below the PDWS during the July 2009 monitoring event at MW-6; however additional monitoring events are necessary to evaluate if this exceedance is an anomaly. Trend analyses of chloride concentrations (Chart D-3, Appendix D) do not indicate a consistent trend in the chloride data for intermediate monitoring well MW-6.

When the "Existing Facility" exemption (discussed below) is applied to chloride concentrations occurring at MW-6, the well is in compliance.

Nitrate as N and Nitrate-Nitrite (N)–

Nitrate as N and nitrate-nitrite (N) were detected above the Chapter 62-550, FAC PDWS of 10 mg/L in intermediate monitoring well MW-6 (January 2007 and July 2007); however, Nitrate as N and Nitrate-Nitrite (N) was not detected above the PDWS in subsequent sampling events (January 2008, July 2008, January 2009, and July 2009).

Trend analysis of nitrate concentrations (Chart D-4, Appendix D) in the Floridan aquifer show a decreasing trend in intermediate well MW-6. Based on review of the subsequent sampling events, these values are considered outliers and are not meaningful.

pH–

The pH measurements were below the Chapter 62-550, FAC Secondary Drinking Water Standard (SDWS) range of 6.5-8.5 units during the monitoring period for background monitoring wells MW-1R, MW-2, MW-3, and MW-7, compliance monitoring wells MW-6, MW-10, MW-12 (January 2009), MW-13, MW-15, and MW-17, and assessment monitoring wells MW-18 and MW-19. Monitoring wells MW-11 and MW-14 were within the SDWS range of 6.5-8.5 units during the monitoring period.

Low groundwater pH in this region results from low pH precipitation, rapid recharge, and little buffering capacity of the surficial sands. The pH levels observed at CLF are characteristic of the ground water in this region of Florida. Additionally, based on the detections below the pH SDWS range for the background monitoring wells this appears to be related to background water quality and not the landfill.

Trend analyses for pH measurements (Chart D-5, Appendix D) indicate a wide range of concentrations with increasing and decreasing trends occurring in various wells at various times.

Organic Parameters Exceedances

Parameters with concentrations in excess of applicable groundwater standards or guidance concentrations for at least one sampling event in the reporting period include:

- Benzene
- Bromodichloromethane
- Dibromochloromethane
- Methylene Chloride
- Vinyl Chloride

These exceedances are discussed below.

Benzene–

Detectable benzene concentrations exceeded the PDWS of 1 ug/L in intermediate monitoring well MW-6 (January 2008) and compliance monitoring well MW-10 (January 2007 through August 2009).

As discussed in the SAR and SARA, the VOC detections at MW-10 are likely caused by LFG. The site implemented compliance monitoring as required by the Permit Modification #21375-011 issued on April 11, 2007, for VOC detections in monitoring well MW-10. The evaluation monitoring involved installing and monitoring two assessment monitoring wells, MW-18 (horizontal delineation) and MW-19 (vertical delineation). The data from assessment monitoring wells MW-18 and MW-19 did not indicate any exceedances for benzene.

Trend analyses of benzene concentrations (Chart D-6, Appendix D) indicate a slightly increasing trend in the data; however, the concentrations are within the historical range of data for compliance monitoring well MW-10.

When the "Poor Quality Groundwater" criterion (discussed below) is applied to benzene concentrations occurring at MW-10, the well is in compliance.

Bromodichloromethane and Dibromochloromethane

Detectable concentrations of bromodichloromethane and dibromochloromethane exceeded the FDEP GCTLs in intermediate monitoring well MW-6 during the January 2007 through July 2009 monitoring events; however, total THMs were below the permit-specified MCL of 100 ug/L during the reporting period. The bromodichloromethane and dibromochloromethane are are formed as a by-product when chlorine or bromine are used to disinfect water for drinking (commonly known as disinfection by-products). They result from the reaction of chlorine and/or bromine with organic matter in the water being treated. Bromodichloromethane and dibromochloromethane are not detected in the down gradient compliance wells at the ZOD along

the western boundary of the site. Because total THMs are below the permit specified MCL, a trend analysis was not performed for the compounds that make up the total THM concentrations that include bromodichloromethane and dibromochloromethane.

Additionally, when the "Poor Quality Groundwater" criterion (discussed below) is applied to bromodichloromethane and dibromochloromethane concentrations occurring at MW-6, the well is in compliance.

Methylene Chloride –

Concentrations of methylene chloride exceeded the FDEP PDWS of 5 ug/l in compliance well MW-10 (July 2009 and August 2009). Monitoring well MW-10 was resampled in August 2009 and analyzed for methylene chloride. Methylene chloride was detected at MW-10 during the resample event; thus, verifying the exceedance.

As discussed in the "Benzene" section, the VOCs are likely caused by LFG. The site implemented compliance monitoring as required by the Permit Modification #21375-011 issued on April 11, 2007, for VOC detections in monitoring well MW-10. The data from assessment monitoring wells MW-18 and MW-19 did not indicate any exceedances for methylene chloride. Due to the limited amount of detections at MW-10 a trend analysis was not performed.

When the "Poor Quality Groundwater" criterion (discussed below) is applied to methylene chloride concentrations occurring at MW-10, the well is in compliance.

Vinyl Chloride–

Concentrations of vinyl chloride exceeded the FDEP PDWS of 1 ug/l in compliance well MW-10 (January 2007 through August 2009), MW-13 (January 2007, January 2009, July 2009, and August 2009), MW-15 (July 2009 and August 2009), and MW-18 (January 2008).

Assessment monitoring well MW-18 was re-sampled in March 2008 and vinyl chloride was found to be below the FDEP PDWS. Vinyl chloride was below the PDWS during the July 2008, January 2009, and July 2009 monitoring events at MW-18. Based on review of the subsequent sampling events, the January 2008 concentration is considered an outlier and is not meaningful.

As discussed in the "Benzene" section, the VOCs are likely caused by LFG. The site implemented compliance monitoring as required by the Permit Modification #21375-011 issued on April 11, 2007, for VOC detections in monitoring well MW-10. The data from assessment monitoring wells MW-18 and MW-19 did not indicate any exceedances for vinyl chloride.

Trend analyses of vinyl chloride concentrations (Chart D-7, Appendix D) indicate a potentially increasing trends in the data for compliance monitoring wells MW-10, MW-13, and MW-15. Due to the lack of detections, a trend analysis was not performed for assessment monitoring wells MW-18 and MW-19.

When the "Poor Quality Groundwater" criterion (discussed below) is applied to vinyl chloride, concentrations occurring at MW-10, MW-13, and MW-15 the wells are in compliance.

Applicability of "Poor Quality Groundwater" Criteria

CLF is requesting that the groundwater of low yield/poor quality criteria listed in FAC Chapter 62-777, be applied to the CLF. Chapter 62-780.200 (35), FAC defines "Poor quality" as groundwater within the affected monitoring zone with background concentrations, as defined in subsection 62-780.200(5), FAC, that exceed any of Florida's Primary or Secondary Drinking Water Standards referenced in Chapter 62-550, FAC. Background monitoring wells MW-1R, MW-2, MW-3, and MW-7 have consistent exceedances of pH (SDWS). These data indicate the low yield/poor quality criteria in Chapter 62-777, FAC are applicable and can be applied to the CLF as discussed below.

The water quality exceedances in the background monitoring wells relative to the SDWS allow the use of 62-780.680(2)(c)1, FAC, which states "For contamination of groundwater of low yield or poor quality, the CTLs specified in Chapter 62-777, FAC, Table I groundwater of low yield/poor quality criteria column shall apply to groundwater within the property boundaries, provided that it has been demonstrated to the Department by a minimum of one year of groundwater monitoring data that groundwater contaminant concentrations at the property boundaries do not, and will not, exceed the appropriate groundwater CTLs specified in subparagraph 62-780.680(1)(c)1., FAC, and that the plume has not affected, and will not affect, a freshwater or marine surface water body pursuant to subparagraph 62-780.680(1)(c)2., FAC." The poor quality CTLs are 10 times the applicable PDWS, SDWS, or GCTL. These poor quality CTLs would apply within the property boundaries and would not be limited by the ZOD.

Existing Installation Exemption from SDWS

The CLF meets the requirements of Chapter 62-520.200, FAC, for an existing installation. Therefore, in accordance with Chapter 62-520.310 (14), FAC, the CLF is exempt from compliance with secondary standards outside the ZOD. Based on this exemption, additional assessment activities for iron exceedances are not required for monitoring wells MW-6, MW-10, MW-12, MW-13, MW-15, and MW-17. Additionally, based on this exemption, additional assessment activities for chloride exceedances are not required for monitoring well MW-6.

SURFACE WATER QUALITY

Surface water monitoring is required if there is a discharge off of the CLF property. A discharge off of the CLF property did not occur during the monitoring period; therefore, a sample was not collected.

LEACHATE QUALITY

Appendix E includes tables listing leachate quality detections and exceedances. Leachate influent samples are compared to the regulatory standards listed in 40 Code of Federal Regulations (CFR) Part 261.24 and permit conditions. Leachate effluent samples are compared to the groundwater standards listed in Chapters 62-520.400 and 62-520.420, FAC, with the exception of sodium, chloride, and TDS (Permit Condition E.9.B).

Elevated Detections

Parameters with concentrations in excess of applicable standards or guidance concentrations for at least one sampling event in the two-year period of record include:

- Total Trihalomethanes
- Bromodichloromethane
- Dibromochloromethane
- Arsenic
- pH

These exceedances are discussed below.

Total Trihalomethanes, Bromodichloromethane, and Dibromochloromethane

Detectable total trihalomethane concentrations exceeded the FDEP permit requirement of 100 ug/L in the Leachate Effluent sample during the July 2009 monitoring event.

Leachate Effluent was re-sampled in September 2009 after the July 2009 detection of total trihalomethane and was found to be below the FDEP permit requirement. Based on review of the resampling event, this value is considered an outlier and is not meaningful.

Detectable concentrations of Bromodichloromethane and dibromochloromethane exceeded the FDEP GCTLs in Leachate Effluent samples during the January 2007 through July 2009 monitoring events; however, total THMs were below the permit specified MCL of 100 ug/L during the reporting period. The bromodichloromethane and dibromochloromethane are are formed as a by-product when chlorine or bromine are used to disinfect water for drinking (commonly known as disinfection by-products). They result from the reaction of chlorine and/or bromine with organic matter in the water being treated. Bromodichloromethane and dibromochloromethane are not detected in the down gradient compliance wells at the ZOD along the western boundary of the site.

Arsenic

Detectable arsenic concentrations exceeded the FDEP PDWS of 10 ug/L in the Leachate Effluent samples during the July 2007 and July 2008 monitoring events. However, when the "Poor Quality Groundwater" criterion (discussed below) is applied to arsenic concentrations occurring in the leachate effluent the samples are in compliance.

pH–

The pH measurements were above the Chapter 62-550, FAC Secondary Drinking Water Standard (SDWS) range of 6.5-8.5 units during the July 2008 monitoring event. pH was within the SDWS range from the October 2008 through October 2009 monitoring events. Based on review of the subsequent sampling events, this value is considered an outlier and is not meaningful.

ERRATIC AND POORLY CORRELATED DATA

Total Dissolved Solids/Specific Conductance Correlation

A simple ratio was calculated to evaluate the correlation between TDS and specific conductance (SCond) data. The ratio between TDS and SCond may be evaluated using standard water/wastewater analysis methods to assess the accuracy of the laboratory methods. A generally acceptable correlation is a TDS to SCond ratio of 0.55 to 0.70. Ratios outside this range may indicate that one or both measurements are suspect.

A summary of the TDS/SCond ratios for the reporting period is presented in Table 3-4. The ratios are generally within the acceptable range or just slightly exceeding the criteria. Deviations may be due to analytical error or sampling procedures. Overall, there are relatively few large deviations. The deviations are most likely due to differences in field sampling techniques and do not affect the quality of the reported data.

Table 3-3. TDS/SCond Ratio

Well ID	January 2007	July 2007	January 2008	July 2008	January 2009	July 2009
MW-1R	0.88	0.84	0.89	0.85	0.56	1.07
MW-2	1.39	1.83	0.85	1.80	0.57	0.93
MW-3	1.27	1.15	1.52	0.96	0.5	0.72
MW-6	0.51	0.53	0.57	0.56	0.47	0.53
MW-7	0.74	0.81	0.87	0.83	0.51	0.69
MW-10	0.98	0.80	0.82	0.85	0.46	0.69
MW-11	0.58	1.07	0.55	0.61	0.55	0.56
MW-12	0.54	0.57	0.56	0.60	0.51	0.54
MW-13	0.76	0.70	0.80	0.64	0.42	0.63
MW-14	0.58	0.55	0.55	0.63	0.52	0.58
MW-15	0.96	0.80	0.68	0.93	0.50	0.86
MW-17	0.70	0.97	0.45	0.86	0.47	0.75

No additional erratic or poorly correlated data were observed in the water quality substantive analyses.

4 ADEQUACY OF MONITORING PROGRAM

This section assesses the adequacy of the monitoring program to observe potential effects of the CLF operations on groundwater.

FLORIDAN AQUIFER MONITORING ADEQUACY

Monitoring Well Locations and Frequency

Attachment 2, Appendix B, lists monitoring wells and piezometers and their construction details at the CLF. Piezometers listed under the "Well Designation" column are used for water elevation data only and are not sampled during the routine semi-annual monitoring events. This section discusses the adequacy of well location for horizontal and vertical monitoring and the adequacy of the semi-annual sampling frequency.

Monitoring Well Geographic Location

Geographic location is guided by the direction of lateral groundwater flow in the Floridan aquifer beneath the CLF. Figure 9-4.b, Appendix A, is thought to be representative of Floridan aquifer flow. Typically, background wells would be located at the hydraulically up gradient end of the flow arrows with protection and compliance wells located at the down gradient end within or at the edge of the ZOD. The following discusses the locations of monitoring wells.

Floridan Aquifer Well Locations –

Currently, there are four Floridan aquifer background monitoring well (MW-1R, MW-2, MW-3, and MW-7) at the CLF. These monitoring wells appear to provide sufficient Floridan aquifer background data for the CLF. JEA's Water Quality and Leachate Monitoring Plan, dated November 2008 proposed to remove MW-1R from routine monitoring for use as a piezometer for water level measurements.

Monitoring Parameters

Current routine monitoring parameters include various volatile organic, metals, and inorganic constituents. There have been no findings that indicate a need to modify the routine parameter list. Consequently, CLF will maintain the current groundwater quality monitoring parameters.

SURFACE WATER

Surface water monitoring is required if there is a discharge off of the CLF property. The sample is collected from which the discharge occurred. This would appear to provide sufficient surface water data for the CLF.

Current routine monitoring parameters include various volatile organic, metals, and inorganic constituents. There have been no findings that indicate a need to modify the routine parameter list. Consequently, CLF will maintain the current surface water quality monitoring parameters.

LEACHATE

The current permit includes leachate monitoring sites. This section addresses the ability of this monitoring site to assess these potential effects. Leachate samples are collected from the following locations:

- Master lift station for Phase 1/1A (Phase 1 and 1A Leachate Influent).
- Primary pump sampling port for the Phase 2 (Phase 2 Leachate Influent).
- Leachate effluent from the discharge from the chlorine contact tank (Leachate Effluent).
- Waste sludge from the treatment plant.

Leachate monitoring sites include discharge from all cells and appear to provide a representative sample of leachate conditions at the site.

Current routine monitoring parameters include various volatile organic, metals, and inorganic constituents. There have been no findings that indicate a need to modify the routine parameter list. Consequently, CLF will maintain the current leachate quality monitoring parameters.

APPENDIX A

GROUNDWATER HORIZONTAL AND VERTICAL FLOW VELOCITIES AND FIGURE 9-4.b FROM THE SARA PREPARED BY JEA

plant drying beds and east of the fence that separates the closed Landfill property from the active site. The old well is still in use and is connected to the leachate plant for makeup water and to a couple of hose connections used to fill the water truck and for equipment washing. Public water supply is available for all of the businesses on SR 44 (#50, 61, 62, 63, 64, 65) and the residences on Sharp Lane (#1-10); they are required to hook up for potable use. However, they are allowed to use their wells for irrigation.

2.12 SLUG TEST RESULTS

Hydraulic conductivity testing (slug testing) was performed in MW-18, MW-19, PZ-1, and PZ-2 during April 2007. The tests were conducted by lowering a slug (a solid plastic cylinder) into the well, causing water levels to rise (referred to as *slug-in*). An electronic data logger recorded water levels as they rose in the well and as they recovered (fell) to static conditions. The slug was then quickly removed from the well (referred to as *slug-out*). Water levels were recorded by the data logger as they fell upon slug removal and recovered (rose) to static levels. The data were evaluated using the Hvorslev method (Fetter, 1994) to determine the hydraulic conductivity (K) value of the aquifer; results are included on Table 12-1. The average hydraulic conductivity for the slug out test on PZ-1 and MW-18 and both the slug in and slug out tests for MW-19 was calculated to be 4.86 ft/day. The slug out test conducted on PZ-2 did not show a recovery. The slug in data was not used for PZ-1, PZ-2, and MW-18 due to the well screens being partially submerged. Both sets of data were used for MW-19 as the well screen was submerged. ~~The average hydraulic conductivity for PZ-1, PZ-2, MW-18, and MW-19 was calculated to be 2.42 feet/day.~~ Hydraulic conductivity data and graphs from each slug test are provided as Attachment D.

Slug tests were performed on wells MW-10 through MW-17 in conjunction with the GWIR and RAI submitted to the Department in January and September 2006. The K values ranged from a low of 5.53 feet/day in monitoring well MW-13 to a high of 40.04 feet/day in monitoring well MW-17. A summary of slug test data and K value calculations using the Hvorslev method were provided in subset A of Table 4 of the GWIR. The slug test field data was provided in Appendix E of the GWIR. Additional discussion of the slug test data was provided in the RAI, Section 3.3.2.

2.13 HORIZONTAL GROUNDWATER FLOW VELOCITY CALCULATION

Horizontal average linear groundwater velocity calculations are included as Table 13-1.b for MW-10, MW-18, ~~MW-19,~~ PZ-1, and PZ-2. The average linear groundwater velocity was calculated as described in Fetter, 1994. The maximum calculated average linear groundwater velocity was ~~0.0811~~0.1929 ft/day, which translates to a travel distance of ~~14.603~~4.72 feet in 6 months for the assessment area near MW-10. This data was consistent with the data collected for the GWIR, which is summarized below. Table 13-1.b also includes the hydraulic gradients calculated for the water levels collected during the May and June 2007. Hydraulic gradients ranged from 0.0001 to 0.0026~~0045~~ feet /foot. ~~Groundwater velocity ranged from 0.000013 to 0.0811 (ft/day)^3.~~

The hydraulic gradient of the site was calculated using groundwater elevation data collected on December 21, 2005 and July 17, 2006 (Jones Edmunds, January and September 2006). Hydraulic gradient values ranged from 0.00021 to 0.00132 foot/foot on December 21, 2005 and from 0.00024 to 0.00068 feet/foot on July 17, 2006. A conservative estimate for the effective porosity (25%) was selected based on published values (Fetter, 1994).

The rate of groundwater flow beneath the Landfill was determined using the following equation:

Velocity (V) = Hydraulic Conductivity (K) x Hydraulic Gradient (i) / Porosity (n)

Using the equation above and the most conservative values (i.e., the highest) for hydraulic conductivity (40.04 feet/day), hydraulic gradient (.00132 foot/foot), and porosity (.25), the maximum groundwater flow velocity was determined to be 0.211 foot/day. The resulting groundwater travel time in six months is approximately 38 feet. Although the max distance that groundwater could travel in six months was calculated to be 38 feet it is more probable that the max distance will be no greater than 15 feet (Jones Edmunds, September 2006). The calculations presented in this SAR are consistent with what was shown in the GWIR.

2.14 VERTICAL GROUNDWATER FLOW VELOCITY CALCULATION

Vertical average linear groundwater velocity calculations are included as Table 14-1.b. The vertical gradient was calculated between wells MW-10 and MW-19, which were installed in cluster. The screened interval for MW-10 is between ~~14.9~~-24 and ~~-5.1~~5.76 feet NGVD and the screened interval for MW-19 is between ~~-16.0~~ -15.44 and ~~-26.0~~ -25.44 feet NGVD. The head difference between the two wells created ~~an upward~~ downward gradient for each groundwater elevation determination event ~~except the June 6, 2007 event~~. The maximum vertical average linear groundwater velocity was ~~0.0714~~ 0.2567 ft/day, which translates to a travel distance of ~~12.84~~46.21 feet in 6 months.

2.15 GEOPHYSICAL METHODS DESCRIPTION

Geophysical methods were not used for the assessment.

2.16 SITE-SPECIFIC STRATIGRAPHY

The Landfill lies within the Hernando Hammock physiographic subdivision of the Ocala Uplift District as described by Brooks (1981). This region is characterized by remnant erosional hills and ridges, which are in-filled with thick, weathered deposits of sand and clayey sand. The Landfill is also within the northern portion the Brooksville Ridge. The Brooksville Ridge is characterized as an extensive, internally drained, karst terrain with high local relief.

Regional geology at the Landfill is typically characterized by undifferentiated sands and clays of the Alachua formation overlying the Hawthorn Group clays, which are found in erosional valleys

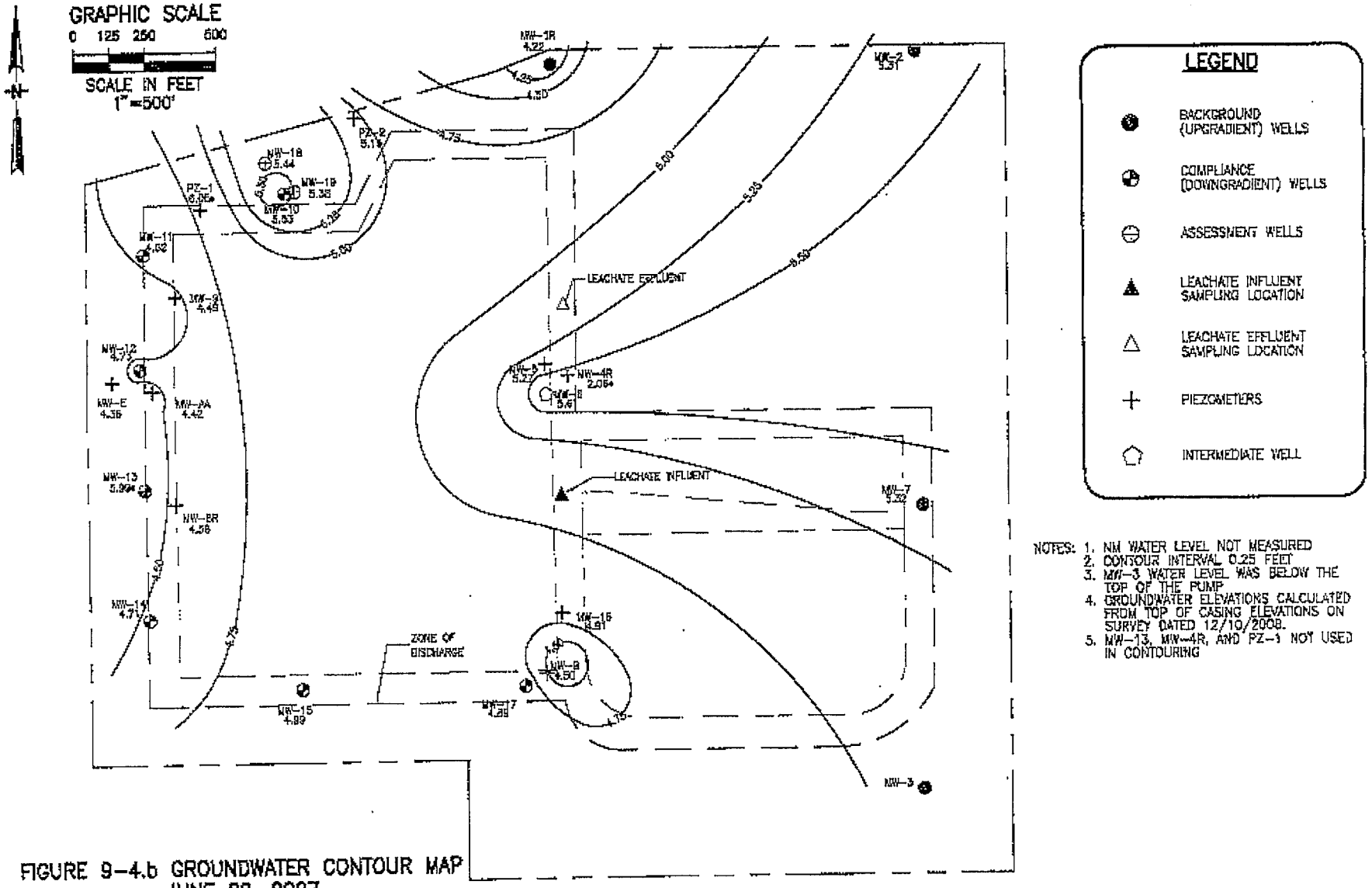


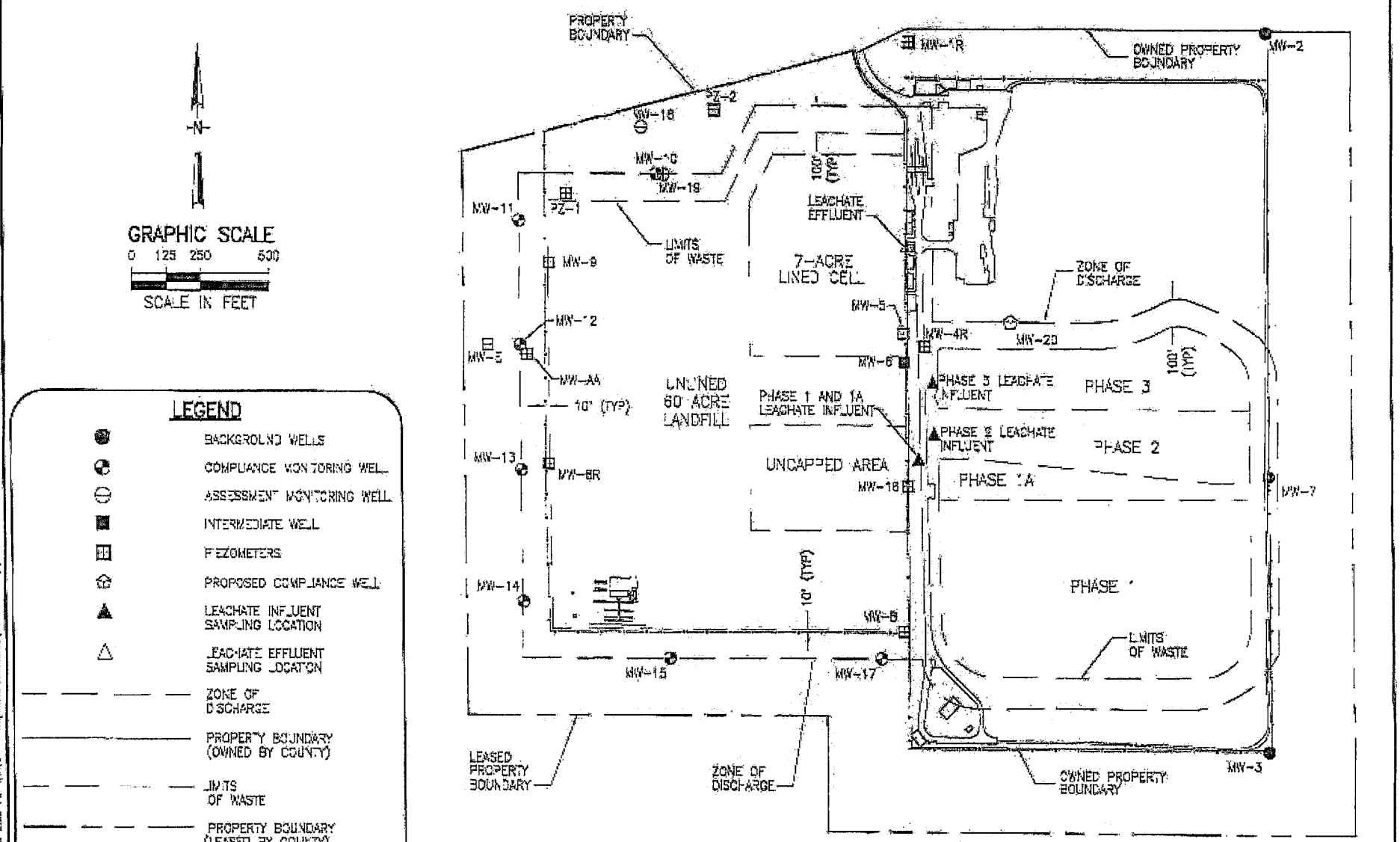
FIGURE 9-4.b GROUNDWATER CONTOUR MAP
JUNE 20, 2007
CITRUS COUNTY LANDFILL

JONES EDMUNDS

0336D-02B-01
LAST SAVED: 12/26/2008 11:54 AM THARS K:\Jones Edmunds\Citrus County\Central Landfill\SAR\SAR RPT\GW 9-20-2007_new fcc.dwg
Plotted: 1/20/09 3:30pm thars

APPENDIX B

ATTACHMENTS 1 AND 2 FROM THE NOVEMBER 2008 WQLMP PREPARED BY JEA



ATTACHMENT 1 SITE PLAN
CITRUS COUNTY CENTRAL LANDFILL

JONES EDMUNDS

LAST SAVED: 11/20/2008 3:23 PM THAYS K:\Jones Edmunds\Class Envdy\Central Landfill\SAR\Phase 3 SAR\Fig 1_Layout.dwg
03960-088-01
Plotted: 11/20/08 3:32pm thays

ATTACHMENT 2
CITRUS COUNTY CENTRAL LANDFILL
WELL CONSTRUCTION DETAILS

Well Name	Well Designation	Date Installed	Top of Casing Elevation (Ft. NGVD)	Ground Elevation (Ft. NGVD)	Total Depth (Ft. BLS)	Total Depth (Ft. BTOC)	Screen Details					Filter Pack (Silica Sand)	Well Location	
							Length (Ft.)	Depth (Ft. BLS)		Elevation (Ft. NGVD)			Northing (Ft.)	Easting (Ft.)
								Top	Bottom	Top	Bottom			
MW-AA[1]	Piezometer	NR	106.11	104.7	116	NR	10	106	116	0.1	-9.9	NR	NR	NR
MW-B[1]	Piezometer	NR	111.94	111.1	128	NR	20	108	128	3.9	-16.1	NR	NR	NR
MW-E[1]	Piezometer	NR	109.88	107.0	118	NR	20	98	118	11.9	-8.1	NR	NR	NR
MW-1R[1]	Peizometer[3]	NR	118.08	115.3	125	NR	10	115	125	3.1	-6.9	NR	NR	NR
MW-2[1]	Background	NR	136.29	133.5	161	NR	15	146	161	-9.7	-24.7	NR	NR	NR
MW-3[1]	Background	NR	120.47	119.7	119	NR	15	104	119	15.5	1.5	NR	NR	NR
MW-4R	Piezometer	11/9/05	119.33	119.71	125.0	124.6	20	105.0	125.0	14.7	-5.3	NR	1642794.06	515836.95
MW-5[1]	Piezometer	NR	121.14	118.6	120	NR	10	110	120	11.1	1.1	NR	NR	NR
MW-6[1]	Intermediate	NR	118.48	115.8	122	NR	10	112	122	6.5	-3.5	NR	NR	NR
MW-7[1]	Background	NR	126.66	NR	137	NR	20	117	137	11.7	-8.3	NR	NR	NR
MW-8R[1]	Piezometer	NR	118.13	NR	128	NR	20	108	128	10.1	-9.9	NR	NR	NR
MW-9[1]	Piezometer	NR	113.55	NR	121	NR	20	101	121	12.5	-7.5	NR	NR	NR
MW-10	Compliance	11/2/05	113.51	114.05	120.5	118.6	20	100.5	120.5	14.9	-5.1	20/30	1643658.80	514808.73
MW-11	Compliance	11/2/05	104.83	105.17	112.0	111.5	20	92.0	112.0	13.3	-6.7	Gravel	1643432.56	514300.80
MW-12	Compliance	11/2/05	103.49	103.98	110.0	108.8	20	90.0	110.0	14.7	-5.3	20/30	1642872.51	514307.73
MW-13	Compliance	11/10/05	112.04	112.56	120.0	118.8	20	100.0	120.0	13.2	-6.8	20/30	1642402.16	514320.79
MW-14	Compliance	11/10/05	108.63	109.09	116.0	115.9	20	96.0	116.0	12.7	-7.3	20/30	1641950.73	514332.03
MW-15	Compliance	11/10/05	123.71	124.15	130.0	129.5	20	110.0	130.0	14.2	-5.8	20/30	1641702.99	514664.91
MW-16	Piezometer	10/31/05	119.81	120.22	127.0	126.5	20	107.0	127.0	13.3	-6.7	20/30	1642141.07	515781.53
MW-17	Compliance	11/3/05	110.98	111.50	118.0	117.6	20	98.0	118.0	13.4	-6.6	20/30	1641705.53	515647.01
MW-18	Assessment	1/23/07	115.98	116.28	120.0	119.5	20	100.0	120.0	16.4	-3.6	20/30	1643745.78	514731.67
MW-19	Assessment	1/22/07	113.64	114.04	140.0	139.6	10	130.0	140.0	-16.0	-26.0	20/30	1643658.75	514817.07
MW-20[2]	Compliance	proposed	~118.5	~119	~124	~123.5	20	~104	~124	15.0	-5.0	20/30	~1643068.7	~516100.2
PZ-1	Piezometer	1/26/07	111.12	111.42	120.0	119.6	20	100.0	120.0	11.5	-8.5	20/30	1643505.21	514454.92
PZ-2	Piezometer	1/24/07	117.00	117.19	120.0	119.6	20	100.0	120.0	17.4	-2.6	20/30	1643832.98	515021.33

BLS = Below Land Surface

BTOC = Below Top of Casing

NR = Not recorded

Ft. = Feet

NGVD = National Geodetic Vertical Datum

Notes:

[1] Well Construction and Elevation information obtained from the Two-Year Groundwater Monitoring Report for Years 1997 and 1998, prepared by CH2MHill

[2] Well MW-20 is proposed; well will be installed to position the screen interval between 15 and -5 ft NGVD. Total depths and location are approximate and will be updated after surveying.

[3] Well MW-1R changed from background to piezometer with the Phase 3 Expansion

Elevation and survey data compiled from a Nature Coast Land Surveying, Inc. survey dated December 16, 2005 and from a Terrence J. Brannan Land Surveyor Inc. survey dated March 22, 2007

APPENDIX C

TABLES OF EXCEEDANCES AND DETECTIONS

Summary of Detected Parameters, Background Monitoring Well MW-1R
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Feb-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics										
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	---	0.28 U	0.35 U	0.21 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	---	0.33 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	---	0.18 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.24 U	---	0.33 U	0.33 U	0.27 U	0.52 U	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	---	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	---	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.48 U	0.32 U	0.34 U	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	---	0.52 I	0.5 U	0.22 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	---	0.27 U	0.27 U	0.28 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	---	0.18 U	0.34 U	0.22 U	0.65 U	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	---	0.32 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene Chloride	ug/l	5	PDWS	1 U	---	0.19 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	---	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	---	0.47 U	0.47 U	0.2 U	0.5 U	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	---	0.35 U	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	---	0.26 U	0.3 U	0.26 U	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	---	0.44 U	0.52 U	0.71 U	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	---	0.21 U	0.35 U	0.22 U	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	---	0.6 U	0.52 U	0.71 U	0.5 U	0.5 U
Trihalomethanes (THMs)										
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	---	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	---	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	---	0.22 U	0.36 U	0.27 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	---	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U
Metals										
Antimony	ug/l	6	PDWS	2.73 IV	---	0.76 U	0.82 U	0.82 U	0.6 IV	2.3 U
Arsenic	ug/l	10	PDWS	0.98 U	---	0.98 U	2.75 IV	1.1 U	0.81 I	1.3 U
Barium	ug/l	2000	PDWS	12.2 IV	---	1.3 U	5 U	15.5 IV	6.3	6.1
Beryllium	ug/l	4	PDWS	0.81 U	---	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	---	0.435 IV	0.82 U	0.82 U	0.26 I	0.37 I
Chromium	ug/l	100	PDWS	3.85 IV	---	1.2 U	1.69 IV	2.09 IV	0.6 U	2.5 U
Cobalt	ug/l	140	GCTL	2.3 I	---	0.26 U	0.5 U	0.5 U	0.77	0.55
Copper	ug/l	1000	SDWS	0.63 U	---	0.63 U	0.5 U	0.5 U	1.2 U	1.3 I
Iron	ug/l	300	SDWS	46.7 I	---	6.7 U	2.8 U	73 V	110	67 I
Lead	ug/l	15	PDWS	2.16 IV	---	0.17 U	0.614 I	1.84 IV	2.1	3.6
Mercury	ug/l	2	PDWS	0.11 U	---	0.0092 U	0.009 U	0.015 U	0.22 U	0.3
Nickel	ug/l	100	PDWS	8.04 IV	---	5.16 I	5.25 I	4.39 I	4.8	7.2
Selenium	ug/l	50	PDWS	1.7 U	---	1.7 U	3.1 U	3.1 U	0.6 U	1 U
Silver	ug/l	100	SDWS	0.2 U	---	0.2 U	0.072 U	0.072 U	0.09 U	0.25 U
Sodium	mg/l	160	PDWS	8.65	---	7.71 V	7.36	7.7 V	---	6.4
Thallium	ug/l	2	PDWS	0.29 U	---	0.29 U	0.2 U	0.2 U	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	---	0.38 U	0.5 U	1.67 IV	1.6 I	3.8 U
Zinc	ug/l	5000	SDWS	23.3 IV	---	16 IV	26.4 IV	12.6 I	13 I	14 I
General Chemistry										
Ammonia as N	mg/l	2.8	GCTL	0.003 U	---	0.008 U	0.008 U	0.022	0.05	0.01 U
Chloride	mg/l	250	SDWS	3.8	---	3.4	4.9 V	4.5 I	3.9	4.3
Nitrate as N	mg/l	10	PDWS	6.2	---	5.8	3.4	4.5	4.6	4.3
Nitrate-Nitrite (N)	mg/l	10	PDWS	6.2	---	5.8	---	---	---	---
Nitrite as N	mg/l	1	PDWS	0.007 U	---	0.003 U	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	100	---	90	88	78	61	94
Field Parameters										
Dissolved Oxygen	mg/l	NS	NS	3.68	3.57	2.58	3.68	3.99	5.05	4.25
Oxidation/Reduction Potential	mV	NS	NS	480.8	485.1	58.8	240.2	103.5	---	---
pH	S.U.	SDWS	6.5-8.5	5.02	4.98	5.39	5.53	5.05	5.64	5.23
Specific Conductivity	umhos/cm	NS	NS	114	109	107	99	92	109	88
Temperature	Deg C	NS	NS	19.26	27.2	28.76	23	26.44	24.7	24.2
Turbidity	NTU	NS	NS	0.53	0.57	0.43	0.36	0.31	1.42	2.55

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow Shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Background Monitoring Well MW-2
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.28 U	0.35 U	0.21 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.33 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.18 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.24 U	0.33 U	0.33 U	0.27 U	0.52 U	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.32 U	0.34 U	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.3 U	0.64 I	0.22 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.27 U	0.27 U	0.28 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.18 U	0.34 U	0.22 U	0.65 U	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.32 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene Chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.47 U	0.47 U	0.2 U	0.5 U	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	0.35 U	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.26 U	0.3 U	0.26 U	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.44 U	0.52 U	0.71 U	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.21 U	0.35 U	0.22 U	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	0.71 U	0.5 U	0.5 U
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	1.7	2.9	4.2	2.7	3.1	3
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U
Metals									
Antimony	ug/l	6	PDWS	2.83 IV	0.76 U	0.82 U	0.82 U	0.63 IV	2.3 U
Arsenic	ug/l	10	PDWS	0.98 U	0.98 U	1.1 U	1.1 U	0.5 I	1.3 U
Barium	ug/l	2000	PDWS	1.81 I	1.3 U	5 U	13.3 IV	2 U	3.2 I
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	0.12 U	0.095 U
Chromium	ug/l	100	PDWS	1.2 U	1.2 U	0.69 U	0.69 U	0.6 U	2.5 U
Cobalt	ug/l	140	GCTL	0.26 U	0.26 U	0.5 U	0.943 I	0.39 I	0.35 I
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	1.11 I	1.4 I	1.1 U
Iron	ug/l	300	SDWS	34.6 I	27 I	22.2 I	67.7 V	18 I	75 I
Lead	ug/l	15	PDWS	0.17 U	0.61 I	0.5 U	1.52 IV	0.51 I	1.2 I
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.015 U	0.22 U	0.072 U
Nickel	ug/l	100	PDWS	0.47 U	0.47 U	0.5 U	0.931 I	0.46 I	0.5 U
Selenium	ug/l	50	PDWS	1.7 U	1.7 U	3.1 U	3.1 U	0.6 U	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.072 U	0.09 U	0.25 U
Sodium	mg/l	160	PDWS	2.46	2.68 V	3.19 V	3.67 V	---	2.5
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.2 U	0.2 U	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	1.65 IV	0.8 U	3.8 U
Zinc	ug/l	5000	SDWS	14.1 IV	13.6 IV	33.2 IV	21.6 IV	14 I	12 I
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	0.003 U	0.008 U	0.008 U	0.023	0.066	0.01 U
Chloride	mg/l	250	SDWS	2.8	2.5	3.3	5.7	3.4	3.2
Nitrate as N	mg/l	10	PDWS	0.13	0.5	0.16 V	0.16 I	0.1 U	0.1 U
Nitrate-Nitrite (N)	mg/l	10	PDWS	0.13	0.5	---	---	---	---
Nitrite as N	mg/l	1	PDWS	0.007 U	0.003 U	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	32	42	22	54	12	25
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	5.87	1.52	5.08	4.95	5.21	5.74
Oxidation/Reduction Potential	mV	NS	NS	543.2	149.9	205.6	148.6	---	---
pH	S.U.	SDWS	6.5-8.5	3.99	4.87	5.05	4.82	4.69	3.85
Specific Conductivity	umhos/cm	NS	NS	23	23	26	30	21	27
Temperature	Deg C	NS	NS	21.78	22.75	22.1	22.75	21.7	22.5
Turbidity	NTU	NS	NS	0.2	0.27	0.22	0.29	0.6	3.73

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow Shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Background Monitoring Well MW-3
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Aug-08	Jan-09	Jul-09
Volatile Organics										
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.28 U	0.35 U	0.21 U	---	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.33 U	0.33 U	0.29 U	---	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.18 U	0.39 U	0.26 U	---	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.24 U	0.33 U	0.33 U	4.5	---	0.52 U	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	2.5 U	2.5 U	2.7 I	---	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	0.74 U	0.74 U	9.6	---	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.32 U	0.34 U	0.67 I	---	0.5 UJ	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.3 U	0.5 U	0.22 U	---	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.27 U	0.27 U	1	---	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.18 U	0.34 U	0.22 U	---	0.65 U	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.32 U	0.36 U	9.6	---	0.44 U	0.44 U
Methylene Chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	---	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.18 U	0.23 U	0.29 I	---	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.47 U	0.47 U	0.2 U	---	0.5 U	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	0.35 U	0.38 U	0.82 I	---	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.26 U	0.3 U	0.26 U	---	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	---	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.44 U	0.52 U	3	---	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.21 U	0.35 U	0.92 I	---	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	3.9	---	0.5 U	0.5 U
Trihalomethanes (THMs)										
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.19 U	0.22 U	0.25 U	---	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.28 U	0.33 U	0.2 U	---	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	0.46 I	0.77 I	0.27 U	---	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.23 U	0.23 U	0.25 U	---	0.34 U	0.34 U
Metals										
Antimony	ug/l	6	PDWS	2.91 IV	0.76 U	0.82 U	0.82 U	---	0.5 IV	2.3 U
Arsenic	ug/l	10	PDWS	0.98 U	0.98 U	2.44 IV	1.1 U	---	0.5 I	1.3 U
Barium	ug/l	2000	PDWS	1.3 U	1.3 U	5 U	21.7 IV	---	10	11
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	---	0.065 U	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	---	0.13 I	0.15 I
Chromium	ug/l	100	PDWS	1.2 U	1.2 U	1.24 IV	3.08 IV	---	0.6 U	2.5 U
Cobalt	ug/l	140	GCTL	0.26 U	0.26 U	0.5 U	0.5 U	---	0.44 I	0.39 I
Copper	ug/l	1000	SDWS	3.68 I	35.7	17.4	28	---	14	15
Iron	ug/l	300	SDWS	6.7 U	8.47 I	2.8 U	590 V	3900	37 I	91 I
Lead	ug/l	15	PDWS	12.3	27.8	9.33	15.6 V	3.3 I	2.6	5.5
Mercury	ug/l	2	PDWS	0.11 U	0.0094 I	0.009 U	0.058 I	---	0.22 U	0.072 U
Nickel	ug/l	100	PDWS	1.82 I	2.44 I	1.4 I	2.33 I	---	2.4	2.1
Selenium	ug/l	50	PDWS	1.7 U	1.7 U	3.1 U	3.1 U	---	0.6 U	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.072 U	---	0.09 U	0.25 U
Sodium	mg/l	160	PDWS	2.96	4.66 V	2.87	4.87 V	---	---	4.5
Thallium	ug/l	2	PDWS	0.29 U	0.325 I	0.2 U	0.2 U	---	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	0.744 IV	---	0.8 U	3.8 U
Zinc	ug/l	5000	SDWS	91.1 IV	42.9 IV	52.5 V	40.7 I	---	46	41
General Chemistry										
Ammonia as N	mg/l	2.8	GCTL	0.003 U	0.008 U	0.008 U	0.37	---	0.056	0.01 U
Chloride	mg/l	250	SDWS	3.8	5.8	4.3 V	5.3	---	6	5.5
Nitrate as N	mg/l	10	PDWS	0.26	0.72	0.23	0.39 I	---	0.45 I	0.82
Nitrate-Nitrite (N)	mg/l	10	PDWS	0.26 V	0.72	---	---	---	---	---
Nitrite as N	mg/l	1	PDWS	---	0.003 U	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	42	62	50	54	---	22	36
Field Parameters										
Dissolved Oxygen	mg/l	NS	NS	4.72	4.07	5	5.88	3.31	3.83	3.39
Oxidation/Reduction Potential	mV	NS	NS	530.6	213.6	289.7	157.5	45.7	---	---
pH	S.U.	SDWS	6.5-8.5	4.11	4.92	5.1	4.84	5.45	4.35	4.39
Specific Conductivity	umhos/cm	NS	NS	33	54	33	56	90	44	50
Temperature	Deg C	NS	NS	21.47	27.86	21.24	26.95	25.92	21.4	28.3
Turbidity	NTU	NS	NS	0.63	0.19	0.41	0.89	0.31	0.42	4.06

NOTES:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow Shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Intermediate Monitoring Well MW-6
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.7 I	1.8	0.88 I	0.52 U	0.76 I
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.27 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.94 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.43 I	0.31 I	0.33 U	0.62 I	1	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	1 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	2.6 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.91 I	0.52 I	1.2	0.89 I	0.61 I	0.79 I
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.97 U	0.5 U	0.22 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.21 U	0.27 U	0.28 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	1	0.75 U	2.1	1.1	0.85 I	1.1
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.99 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene Chloride	ug/l	5	PDWS	1 U	1 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.19 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.65 U	0.47 U	0.4 I	1.4	0.5 U
Toluene	ug/l	40	SDWS	0.25 U	0.42 I	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.71 U	0.59 I	0.54 I	1.6	0.5 U
Vinyl chloride	ug/l	1	PDWS	2.3	1.4	3.2	1.6	1.1	2.2
m,p-Xylene	ug/l	20	SDWS	0.87 I	0.93 I	2.3	1	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.6 U	1.6	0.77 I	---	---
Xylenes (Total)	ug/l	20	SDWS	0.87 I	0.93 I	3.9	1.8	0.77 I	1.5 I
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	2.9	3.2	3.2	2.9	1.7	1.7
Bromoform	ug/l	NS	NS	0.8 I	0.48 U	0.74 I	0.95 I	0.58 U	0.39 U
Chloroform	ug/l	70	GCTL	4.7	4.8	5.5	3.3	2.7	2.8
Dibromochloromethane	ug/l	0.4	GCTL	3.2	3	2.6	3	1.5	1.4
Trihalomethanes (Total)	ug/l	100	Permit	---	---	---	---	6.2	5.9
Metals									
Antimony	ug/l	6	PDWS	2.24 IV	0.76 U	0.82 U	0.82 U	0.56 IV	2.3 U
Arsenic	ug/l	10	PDWS	0.98 U	0.98 U	2.7 IV	1.1 U	0.75 I	1.3 U
Barium	ug/l	2000	PDWS	105 V	66.1 I	44.5 I	91.8 IV	95	78
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.55	0.46 I
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	0.36 I	0.23 I
Chromium	ug/l	100	PDWS	4.61 IV	1.44 I	1.94 IV	2.08 IV	1.4 I	2.5 U
Cobalt	ug/l	140	GCTL	3.43 I	1.88 I	1.51 I	2.88 I	2.7	2.1
Copper	ug/l	1000	SDWS	23.7	14.3	10.1	19.3	12	20
Iron	ug/l	300	SDWS	141	108	91.4	204 V	1300	280
Lead	ug/l	15	PDWS	3.54 IV	0.768 I	1.06 I	2.69 IV	2.6	2.3
Mercury	ug/l	2	PDWS	0.11 U	0.034 I	0.02 I	0.06 I	0.22 U	0.072 U
Nickel	ug/l	100	PDWS	38.6 V	28.3	15.8	25.6	20	19
Selenium	ug/l	50	PDWS	2.7 I	2.65 I	3.1 U	3.81 IV	1.1 I	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.078 I	0.09 U	0.25 U
Sodium	mg/l	160	PDWS	125	94.6	76	95 V	---	110
Thallium	ug/l	2	PDWS	0.29 U	1.71	0.409 I	0.729 I	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	1.32 IV	0.8 U	3.8 U
Zinc	ug/l	5000	SDWS	31 IV	20.4 IV	27.5 IV	25.4 IV	17 I	16 I
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	1.1	0.59	0.49	0.7	0.88	1.1 J
Chloride	mg/l	250	SDWS	220	150	120 V	170	260	220
Nitrate as N	mg/l	10	PDWS	16	18	7.8	3.7	9.6	6.6
Nitrate-Nitrite (N)	mg/l	10	PDWS	16	18 V	---	---	---	6.6
Nitrite as N	mg/l	1	PDWS	0.016 I	0.042 I	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	480	370	310	390	470	430
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	0.29	0.38	0.15	0.44	0.65	0.68
Oxidation/Reduction Potential	mV	NS	NS	295	225.2	355	156.6	---	---
pH	S.U.	SDWS	6.5-8.5	4.1	4.02	4.23	4.12	4.35	4.37
Specific Conductivity	umhos/cm	NS	NS	945	702	548	696	1003	815
Temperature	Deg C	NS	NS	21.97	25.08	23.64	25.1	23.8	24.9
Turbidity	NTU	NS	NS	0.36	0.32	0.34	0.98	1.15	2.21

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow Shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Background Monitoring Well MW-7
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.28 U	0.35 U	0.21 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.33 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.18 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.24 U	0.33 U	0.33 U	0.27 U	0.52 U	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.32 U	0.34 U	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.3 U	0.5 U	0.22 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.27 U	0.27 U	0.28 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.18 U	0.34 U	0.22 U	0.65 U	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.32 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene Chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.47 U	0.47 U	0.2 U	0.5 U	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	0.35 U	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.26 U	0.3 U	0.26 U	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.44 U	0.52 U	0.71 U	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.21 U	0.35 U	0.22 U	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	0.71 U	0.5 U	0.5 U
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	0.22 U	0.36 U	0.27 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U
Metals									
Antimony	ug/l	6	PDWS	3.58 IV	0.76 U	0.82 U	0.82 U	0.6 IV	2.3 U
Arsenic	ug/l	10	PDWS	0.98 U	0.98 U	4.72 IV	3.67 I	4.6	1.3 U
Barium	ug/l	2000	PDWS	14.8 I	1.3 U	5 U	27.4 IV	13	25
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	0.12 U	0.11 I
Chromium	ug/l	100	PDWS	1.2 U	1.2 U	1.34 IV	0.69 U	0.6 U	2.5 U
Cobalt	ug/l	140	GCTL	0.26 U	0.26 U	0.5 U	0.697 I	0.4 I	0.3 I
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	1.1 I	1.2 U	1.1 U
Iron	ug/l	300	SDWS	16.2 I	6.7 U	24.1 I	67.7 V	140	150
Lead	ug/l	15	PDWS	0.17 U	1.14 I	0.706 I	2.45 IV	0.93 I	2.1
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.024 I	0.22 U	0.072 U
Nickel	ug/l	100	PDWS	1.76 I	2.84 I	2.12 I	3.02 I	3	4.4
Selenium	ug/l	50	PDWS	1.7 U	1.7 U	3.1 U	3.53 IV	0.6 U	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.103 I	0.09 U	0.25 U
Sodium	mg/l	160	PDWS	25	19.5 V	20.1	17.6 V	---	12
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.2 U	0.2 U	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	1.52 IV	0.87 I	3.8 U
Zinc	ug/l	5000	SDWS	17.2 IV	14.5 IV	25.1 IV	24.4 IV	20 I	13 I
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	0.01 I	0.008 U	0.008 U	0.021	0.065	0.01 U
Chloride	mg/l	250	SDWS	6	5.3	6 V	7.2	6.2	6.1
Nitrate as N	mg/l	10	PDWS	0.12	0.41	0.16	0.004 U	0.1 U	0.1 U
Nitrate-Nitrite (N)	mg/l	10	PDWS	0.12	0.41	---	---	---	---
Nitrite as N	mg/l	1	PDWS	0.007 U	0.003 U	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	98	110	100	92	62	92
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	0.25	0.22	0.2	0.57	1.12	0.26
Oxidation/Reduction Potential	mV	NS	NS	352.1	69.9	187.8	101.8	---	---
pH	S.U.	SDWS	6.5-8.5	4.99	5.43	5.44	5.22	5.5	5.45
Specific Conductivity	umhos/cm	NS	NS	133	135	115	111	121	134
Temperature	Deg C	NS	NS	21.54	26.86	22.74	28.5	21.8	28.2
Turbidity	NTU	NS	NS	0.85	1.45	2.87	1.85	2.13	4.83

NOTES:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow Shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-10
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Feb-07	Jul-07	Jan-08	Jul-08	Jan-09	Apr-09	Jul-09	Aug-09
Volatile Organics												
1,1-Dichloroethane	ug/l	70	GCTL	1.4	---	1.4	2.4	0.75 I	1.5	1.2	1.8	1.7
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	---	0.47 I	0.33 U	0.29 U	0.44 U	0.44 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	---	0.25 I	0.39 U	0.26 U	0.57 U	0.57 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	4	---	5.9	5.5	4.6	5.9	4.6	7.7	7.4
2-Butanone	ug/l	4200	GCTL	1 U	---	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	5.8	---	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	1.4	1.1	2.5	2.5	1.4	2	1.9	2.5	2.2
Carbon disulfide	ug/l	700	GCTL	0.97 U	---	0.49 I	1 I	0.22 U	0.85 U	0.85 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.43 I	---	0.85 I	0.6 I	0.33 I	0.63 U	0.72 I	0.8 I	0.79 I
cis-1,2-Dichloroethene	ug/l	70	PDWS	5	---	7.3	12	5.4	7.1	6	8.7	8.3
Ethylbenzene	ug/l	30	SDWS	0.99 U	---	0.36 I	0.36 U	0.25 U	0.44 U	0.44 U	0.44 U	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	1 U	4.5	0.49 U	3.9	4 U	4.5 I	6.5	5.4
Styrene	ug/l	100	PDWS	0.19 U	---	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	---	0.81 I	0.47 U	0.2 U	0.5 U	0.53 I	0.57 I	0.52 I
Toluene	ug/l	40	SDWS	0.25 U	---	0.59 I	0.38 U	0.26 U	0.51 U	0.51 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	---	0.77 I	0.47 I	0.26 U	0.5 I	0.5 U	0.65 I	0.53 I
Vinyl chloride	ug/l	1	PDWS	2.5	1.2	2.3	5.4	0.92 I	3.3	2.5	3.9	5
m,p-Xylene	ug/l	20	SDWS	4.4	---	8.2	5.5	3.4	---	---	---	---
o-Xylene	ug/l	20	SDWS	0.7 I	---	1.1	0.83 I	0.34 I	---	---	---	---
Xylenes (Total)	ug/l	20	SDWS	5.1	---	9.3	6.4	3.7	6	6.3	8.7	8.7
Trihalomethanes (THMs)												
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	---	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	---	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	---	0.22 U	0.36 U	0.27 U	0.9 U	0.9 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	---	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U	0.34 U	0.34 U
Metals												
Antimony	ug/l	6	PDWS	2.57 IV	---	0.76 U	0.82 U	0.82 U	1.1 IV	---	2.3 U	---
Antimony (Dissolved)	ug/l	6	PDWS	2.36 IV	---	---	---	---	0.56 IV	---	2.3 U	---
Arsenic	ug/l	10	PDWS	0.98 U	---	1.48 I	1.1 U	1.1 U	6.9	---	5	---
Arsenic (Dissolved)	ug/l	10	PDWS	1.22 I	---	---	---	---	1.5 IV	---	2.1 I	---
Barium	ug/l	2000	PDWS	19.5 IV	---	1.3 U	5 U	21.9 IV	1300	---	590	---
Barium (Dissolved)	ug/l	2000	PDWS	9.78 IV	---	---	---	---	4 I	---	3.8 I	---
Beryllium	ug/l	4	PDWS	0.81 U	---	0.81 U	0.73 U	0.73 U	1.2	---	0.56	---
Beryllium (Dissolved)	ug/l	4	PDWS	0.81 U	---	---	---	---	0.065 U	---	0.25 U	---
Cadmium	ug/l	5	PDWS	0.3 U	---	0.3 U	0.82 U	0.82 U	1	---	0.41 I	---
Cadmium (Dissolved)	ug/l	5	PDWS	0.3 U	---	---	---	---	0.12 U	---	0.095 U	---
Chromium	ug/l	100	PDWS	5.62 IV	---	1.88 I	0.69 U	0.907 IV	67	---	32	---
Chromium (Dissolved)	ug/l	100	PDWS	4.39 IV	---	---	---	---	0.6 U	---	2.5 U	---
Cobalt	ug/l	140	GCTL	1.36 I	---	0.708 I	0.5 U	0.5 U	1	---	0.75	---
Cobalt (Dissolved)	ug/l	140	GCTL	1.43 I	---	---	---	---	0.73	---	0.64	---
Copper	ug/l	1000	SDWS	0.63 U	---	0.63 U	0.5 U	0.937 I	5.1	---	2.2 I	---
Copper (Dissolved)	ug/l	1000	SDWS	0.63 U	---	---	---	---	1.2 U	---	1.1 U	---
Iron	ug/l	300	SDWS	1610	---	4490	4020	3320 V	11000	3400	8400	3800
Iron (Dissolved)	ug/l	300	SDWS	1480	---	---	---	---	2400	3500	3500	3000
Lead	ug/l	15	PDWS	0.952 IV	---	0.17 U	0.5 U	0.951 IV	42	0.77 I	20	2.1
Lead (Dissolved)	ug/l	15	PDWS	0.638 IV	---	---	---	---	0.15 U	0.25 I	0.2 U	0.2 U
Mercury	ug/l	2	PDWS	0.11 U	---	0.0092 U	0.009 U	0.015 U	0.22 U	---	0.16 I	---
Mercury (Dissolved)	ug/l	2	PDWS	0.11 U	---	---	---	---	0.22 U	---	0.072 U	---
Nickel	ug/l	100	PDWS	4.22 IV	---	5.65 I	8.51 I	1.84 I	4.2	---	3.9	---
Nickel (Dissolved)	ug/l	100	PDWS	4.3 IV	---	---	---	---	2.4	---	2.7	---
Selenium	ug/l	50	PDWS	1.7 U	---	1.7 U	3.1 U	3.1 U	1.4 I	---	1 U	---
Selenium (Dissolved)	ug/l	50	PDWS	1.74 IV	---	---	---	---	0.6 U	---	1 U	---
Silver	ug/l	100	SDWS	0.2 U	---	0.2 U	0.072 U	0.072 U	0.1 I	---	0.25 U	---
Silver (Dissolved)	ug/l	100	SDWS	0.2 U	---	---	---	---	0.09 U	---	0.25 U	---
Sodium	mg/l	160	PDWS	5.51	---	5.26 V	5.24 V	5.32 V	---	---	5.7	---
Sodium (Dissolved)	mg/l	160	PDWS	5.39	---	---	---	---	---	---	4.7	---
Thallium	ug/l	2	PDWS	0.29 U	---	0.29 U	0.2 U	0.2 U	0.55 U	---	0.5 U	---
Thallium (Dissolved)	ug/l	2	PDWS	0.29 U	---	---	---	---	0.55 U	---	0.5 U	---
Vanadium	ug/l	49	GCTL	0.38 U	---	0.38 U	0.5 U	0.818 IV	16	---	8.5 I	---
Vanadium (Dissolved)	ug/l	49	GCTL	0.38 U	---	---	---	---	0.8 U	---	3.8 U	---
Zinc	ug/l	5000	SDWS	24.3 IV	---	21.7 IV	26.3 IV	204	19 I	---	13 I	---
Zinc (Dissolved)	ug/l	5000	SDWS	24.3 IV	---	---	---	---	9.9 I	---	11 I	---
General Chemistry												
Ammonia as N	mg/l	2.8	GCTL	0.003 U	---	0.039	0.008 U	0.017 I	0.068	---	0.01 U	---
Chloride	mg/l	250	SDWS	5.8	---	5.1	5.6	6.8	6.6	---	7	---
Nitrate as N	mg/l	10	PDWS	0.11	---	0.24	0.15 V	0.004 U	0.1 U	---	0.1 U	---
Nitrate-Nitrite (N)	mg/l	10	PDWS	0.11	---	0.24	---	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	58	---	48	46	46	29	---	36	---
Field Parameters												
Dissolved Oxygen	mg/l	NS	NS	0.21	0.23	0.34	0.17	0.19	0.41	1.68	0.43	2.13
Oxidation/Reduction Potential	mV	NS	NS	252.6	336.9	-45.8	94.1	96.7	---	---	---	---
pH	SU	SDWS	6.5-8.5	4.1	4	4.65	4.77	4.15	4.4	4.29	3.88	3.86
Specific Conductance	umhos/cm	NS	NS	59	55	60	56	54	63	45	52	45
Temperature, Water	Deg C	NS	NS	26.77	25.94	24.48	23.16	24.51	23.1	23.9	24.2	25.6
Turbidity	NTU	NS	NS	7.64	11.7	2.27	51.4	4.88	1000	8.84	160	175

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-11
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Apr-09	Jul-09
Volatile Organics										
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.28 U	0.35 U	0.21 U	0.52 U	---	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.33 U	0.33 U	0.29 U	0.44 U	---	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.18 U	0.39 U	0.26 U	0.57 U	---	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.24 U	0.33 U	0.33 U	0.27 U	0.52 U	---	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	2.5 U	2.5 U	1.3 U	8.4 U	---	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	0.74 U	0.74 U	1.5 U	9.9 U	---	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.32 U	0.34 U	0.3 U	0.5 U	---	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.3 U	0.5 U	0.22 U	0.85 U	---	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.27 U	0.27 U	0.28 U	0.63 U	---	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.18 U	0.34 U	0.22 U	0.65 U	---	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.32 U	0.36 U	0.25 U	0.44 U	---	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	4 U	---	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.18 U	0.23 U	0.2 U	0.98 U	---	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.47 U	0.47 U	0.2 U	0.5 U	---	0.5 U
Toluene	ug/l	40	SDWS	0.25 U	0.35 U	0.38 U	0.26 U	0.51 U	---	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.26 U	0.3 U	0.26 U	0.5 U	---	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	---	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.44 U	0.52 U	0.71 U	---	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.21 U	0.35 U	0.22 U	---	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	0.71 U	0.5 U	---	0.5 U
Trihalomethanes (THMs)										
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.19 U	0.22 U	0.25 U	0.35 U	---	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.28 U	0.33 U	0.2 U	0.58 U	---	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	0.22 U	0.36 U	0.27 U	0.9 U	---	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.23 U	0.23 U	0.25 U	0.34 U	---	0.34 U
Metals										
Antimony	ug/l	6	PDWS	2.51 IV	0.76 U	0.82 U	0.82 U	9.3 V	0.36 U	2.3 U
Antimony (Dissolved)	ug/l	6	PDWS	---	---	---	---	---	---	2.3 U
Arsenic	ug/l	10	PDWS	0.98 I	0.98 U	1.1 U	1.1 U	7.4	---	1.6 I
Arsenic (Dissolved)	ug/l	10	PDWS	---	---	---	---	---	---	1.3 U
Barium	ug/l	2000	PDWS	19.2 IV	1.3 U	5 U	27.4 IV	15	---	13
Barium (Dissolved)	ug/l	2000	PDWS	---	---	---	---	---	---	18
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	---	0.25 U
Beryllium (Dissolved)	ug/l	4	PDWS						---	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	0.487 IV	0.82 U	0.82 U	0.12 U	---	0.27 I
Cadmium (Dissolved)	ug/l	5	PDWS	---	---	---	---	---	---	0.095 U
Chromium	ug/l	100	PDWS	3.82 IV	1.2 U	0.69 U	4.87 IV	0.6 U	---	2.5 U
Chromium (Dissolved)	ug/l	100	PDWS	---	---	---	---	---	---	2.5 U
Cobalt	ug/l	140	GCTL	0.308 I	0.26 U	0.5 U	0.546 I	0.18 I	---	0.48 I
Cobalt (Dissolved)	ug/l	140	GCTL	---	---	---	---	---	---	1.4
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	0.911 IV	3.3 I	---	1.2 I
Copper (Dissolved)	ug/l	1000	SDWS	---	---	---	---	---	---	3.4 I
Iron	ug/l	300	SDWS	21.2 I	22.5 I	20.8 I	255 V	61 I	---	300
Iron (Dissolved)	ug/l	300	SDWS	---	---	---	---	---	---	33 U
Lead	ug/l	15	PDWS	0.499 IV	0.17 U	0.5 U	1.24 IV	0.15 U	---	0.32 I
Lead (Dissolved)	ug/l	15	PDWS	---	---	---	---	---	---	0.2 U
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.015 U	0.22 U	---	0.14 I
Mercury (Dissolved)	ug/l	2	PDWS	---	---	---	---	---	---	0.072 U
Nickel	ug/l	100	PDWS	2.05 IV	1.44 I	0.907 I	3.08 IV	0.63 I	---	2.8
Nickel (Dissolved)	ug/l	100	PDWS	---	---	---	---	---	---	1.5
Selenium	ug/l	50	PDWS	1.7 U	1.7 U	3.1 U	3.1 U	0.9 I	---	1 U
Selenium (Dissolved)	ug/l	50	PDWS	---	---	---	---	---	---	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.103 IV	0.09 U	---	6.1
Silver (Dissolved)	ug/l	100	SDWS	---	---	---	---	---	---	0.25 U
Sodium	mg/l	160	PDWS	3.06	2.96 V	3.1 V	3.43 V	---	---	2.9
Sodium (Dissolved)	mg/l	160	PDWS	---	---	---	---	---	---	3.1
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.2 U	0.352 I	0.55 U	---	0.81 I
Thallium (Dissolved)	ug/l	2	PDWS	---	---	---	---	---	---	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	2.71 I	1.5 I	---	3.8 U
Vanadium (Dissolved)	ug/l	49	GCTL	---	---	---	---	---	---	3.8 U
Zinc	ug/l	5000	SDWS	7.83 IV	3.84 IV	16.6 IV	18.3 IV	6.5 U	---	8.3 U
Zinc (Dissolved)	ug/l	5000	SDWS	---	---	---	---	---	---	8.3 U
General Chemistry										
Ammonia as N	mg/l	2.8	GCTL	0.003 U	0.008 U	0.008 U	0.023	0.046	---	0.01 UJ
Chloride	mg/l	250	SDWS	4.6	4	4.8	4.7 I	4.7	---	5
Nitrate as N	mg/l	10	PDWS	0.26	0.13	0.23 V	0.24 I	0.25 I	---	0.21 I
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	0.13	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	210	390	200	200	210	---	200
Field Parameters										
Dissolved Oxygen	mg/l	NS	NS	0.96	1.2	0.87	1.11	1.13	3.45	1.18
Oxidation/Reduction Potential	mV	NS	NS	110.4	34	56.6	66	---	---	---
pH	SU	SDWS	6.5-8.5	7.04	7.11	7.18	6.84	6.73	7.15	6.91
Specific Conductance	umhos/cm	NS	NS	365	366	364	327	384	302	360
Temperature, Water	Deg C	NS	NS	25.56	24.23	23.51	24.03	22.9	23.7	25.5
Turbidity	NTU	NS	NS	0.34	2.06	1.18	1.75	4.2	0.95	10.2

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-12
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.28 U	0.35 U	0.21 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.33 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.18 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	1.5	1.4	2.4	1.8	1.2	1.4
2-Butanone	ug/l	4200	GCTL	1 U	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.45 I	0.39 I	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.3 U	1.7 I	0.22 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.27 I	0.27 U	0.28 I	0.28 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.23 I	0.65 I	0.22 U	0.65 U	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.32 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.47 U	0.47 U	0.2 U	0.5 U	0.5 U
Toluene	ug/l	40	SDWS	0.25 U	0.35 U	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.26 U	0.3 U	0.26 U	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.44 U	0.52 U	0.71 U	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.21 U	0.35 U	0.22 U	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	0.71 U	0.5 U	0.5 U
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	0.22 U	0.36 U	0.27 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U
Metals									
Antimony	ug/l	6	PDWS	2.63 IV	0.76 U	0.82 U	0.82 U	1.1 IV	2.3 U
Arsenic	ug/l	10	PDWS	4.36 I	2.17 I	4.03 I	3.8 I	4.8	3.7
Barium	ug/l	2000	PDWS	24.7 IV	1.3 U	5 U	34.5 IV	19	18
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	0.583 IV	0.82 U	0.82 U	0.12 U	0.095 U
Chromium	ug/l	100	PDWS	3.83 IV	1.2 U	0.69 U	3.22 IV	0.6 U	2.5 U
Cobalt	ug/l	140	GCTL	1.58 I	1.03 I	0.5 U	1.87 I	1.3	1.3
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	0.902 IV	1.2 U	1.1 I
Iron	ug/l	300	SDWS	6490	6100	9470	7940 V	7400	6800
Lead	ug/l	15	PDWS	0.644 IV	0.17 U	0.5 U	1.25 IV	0.15 U	0.25 I
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.015 U	0.22 U	0.072 U
Nickel	ug/l	100	PDWS	3.92 IV	2.76 I	3.78 I	4.12 IV	1.4	1.4
Selenium	ug/l	50	PDWS	1.7 U	1.7 U	3.1 U	3.1 U	0.6 U	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.102 IV	0.11 I	0.25 U
Sodium	mg/l	160	PDWS	2.72	2.56 V	2.65 V	3.19 V	---	2.8
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.2 U	0.201 I	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	0.5 U	0.8 U	3.8 U
Zinc	ug/l	5000	SDWS	11.2 IV	4.34 IV	13.5 IV	19 IV	6.5 U	8.7 I
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	0.53 V	0.68	0.81	0.67	0.52	0.37
Chloride	mg/l	250	SDWS	4.3	3.6	4	4 I	3.8	4.4
Nitrate as N	mg/l	10	PDWS	0.12	0.52	0.008 U	0.004 U	0.1 U	0.1 U
Nitrate-Nitrite (N)	mg/l	10	PDWS	0.12	0.52	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	330	340	390	360	320	340
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	0.1	0.18	0.11	0.24	0.45	0.31
Oxidation/Reduction Potential	mV	NS	NS	-74	-89.2	-124.7	-58.2	---	---
pH	SU	SDWS	6.5-8.5	6.56	6.65	6.62	6.85	6.43	6.5
Specific Conductance	umhos/cm	NS	NS	607	595	693	601	633	635
Temperature, Water	Deg C	NS	NS	25.97	25.19	24.06	25.05	23.7	25.9
Turbidity	NTU	NS	NS	2.65	3.23	4.31	2.25	4.65	4.91

NOTES:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-13
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Feb-07	Jul-07	Jan-08	Jul-08	Jan-09	Apr-09	Jul-09	Aug-09
Volatile Organics												
1,1-Dichloroethane	ug/l	70	GCTL	0.67 I	---	0.62 I	0.44 I	0.7 I	0.65 I	0.62 I	0.81 I	0.75 I
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	---	0.33 U	0.33 U	0.29 U	0.44 U	0.44 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	---	0.18 U	0.39 U	0.26 U	0.57 U	0.57 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	2	---	3.6	2.9	3	2.9	1.2	3.1	3.3
2-Butanone	ug/l	4200	GCTL	1 U	---	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	---	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	---	0.93 I	0.58 I	0.4 I	0.62 I	0.5 U	0.57 I	0.51 I
Carbon disulfide	ug/l	700	GCTL	0.97 U	---	1.2 I	0.87 I	0.48 I	0.85 U	0.85 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	---	0.27 U	0.27 U	0.28 U	0.63 U	0.63 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	1.9	---	2.6	1.9	2.1	2.4	2.2	2.9	2.7
Ethylbenzene	ug/l	30	SDWS	0.99 U	---	0.32 U	0.36 U	0.25 U	0.44 U	0.44 U	0.44 U	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	---	0.19 U	0.49 U	0.27 U	4 U	4 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	---	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	---	0.6 I	0.47 U	0.4 I	0.5 U	0.5 U	0.5 UJ	0.5 U
Toluene	ug/l	40	SDWS	0.25 U	---	0.35 U	0.38 U	0.26 U	0.51 U	0.51 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	---	0.28 I	0.3 I	0.26 U	0.5 U	0.5 U	0.58 I	0.5 U
Vinyl chloride	ug/l	1	PDWS	1.1	0.67 I	0.91 U	0.91 U	0.91 I	1.1	0.96 I	1.2	1.7
m,p-Xylene	ug/l	20	SDWS	0.58 I	---	1	0.52 U	0.71 U	---	---	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	---	0.24 I	0.35 U	0.22 U	---	---	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	---	1.3	0.52 U	0.71 U	---	---	---	---
Trihalomethanes (THMs)												
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	---	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	---	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	---	0.22 U	0.36 U	0.27 U	0.9 U	0.9 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	---	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U	0.34 U	0.34 U
Metals												
Antimony	ug/l	6	PDWS	2.73 IV	---	0.76 U	0.82 U	0.82 U	1.2 IV	---	2.3 U	---
Antimony (Dissolved)	ug/l	6	PDWS	---	---	---	---	---	0.68 IV	---	---	---
Arsenic	ug/l	10	PDWS	5.11 I	---	3.56 I	3.75 I	5.14 I	4.7	---	3.7	---
Arsenic (Dissolved)	ug/l	10	PDWS	---	---	---	---	---	4.5 V	---	---	---
Barium	ug/l	2000	PDWS	7.03 IV	---	1.3 U	5 U	21.5 IV	4.7 I	---	5.4	---
Barium (Dissolved)	ug/l	2000	PDWS	---	---	---	---	---	3 I	---	---	---
Beryllium	ug/l	4	PDWS	0.81 U	---	0.81 U	0.73 U	0.73 U	0.065 U	---	0.25 U	---
Beryllium (Dissolved)	ug/l	4	PDWS	---	---	---	---	---	0.065 U	---	---	---
Cadmium	ug/l	5	PDWS	0.3 U	---	0.3 U	0.82 U	0.82 U	0.12 U	---	0.095 U	---
Cadmium (Dissolved)	ug/l	5	PDWS	---	---	---	---	---	0.12 U	---	---	---
Chromium	ug/l	100	PDWS	4.03 IV	---	1.2 U	0.69 U	4.52 IV	0.6 U	---	2.5 U	---
Chromium (Dissolved)	ug/l	100	PDWS	---	---	---	---	---	0.6 U	---	---	---
Cobalt	ug/l	140	GCTL	4.91 I	---	5.32 I	5.54 I	6.88 I	6.3	---	6.6	---
Cobalt (Dissolved)	ug/l	140	GCTL	---	---	---	---	---	6.4	---	---	---
Copper	ug/l	1000	SDWS	0.63 U	---	0.63 U	0.5 U	0.874 IV	1.2 U	---	10	---
Copper (Dissolved)	ug/l	1000	SDWS	---	---	---	---	---	1.2 U	---	---	---
Iron	ug/l	300	SDWS	1350	---	2020	2360 V	2570 V	2400	---	2700	---
Iron (Dissolved)	ug/l	300	SDWS	---	---	---	---	---	2400	---	---	---
Lead	ug/l	15	PDWS	0.556 IV	---	0.17 U	0.5 U	1.31 IV	0.15 U	---	0.2 U	---
Lead (Dissolved)	ug/l	15	PDWS	---	---	---	---	---	0.15 U	---	---	---
Mercury	ug/l	2	PDWS	0.11 U	---	0.0092 U	0.009 U	0.015 U	0.22 U	---	0.072 U	---
Mercury (Dissolved)	ug/l	2	PDWS	---	---	---	---	---	0.22 U	---	---	---
Nickel	ug/l	100	PDWS	4.29 IV	---	6.74 I	6.01 I	5.48 IV	6.4	---	4.4	---
Nickel (Dissolved)	ug/l	100	PDWS	---	---	---	---	---	8.3	---	---	---
Selenium	ug/l	50	PDWS	1.7 U	---	1.7 U	3.1 U	3.1 U	0.6 U	---	1 U	---
Selenium (Dissolved)	ug/l	50	PDWS	---	---	---	---	---	0.6 U	---	---	---
Silver	ug/l	100	SDWS	0.215 I	---	0.2 U	0.072 U	0.123 IV	0.09 U	---	0.25 U	---
Silver (Dissolved)	ug/l	100	SDWS	---	---	---	---	---	0.09 U	---	---	---
Sodium	mg/l	160	PDWS	3.33	---	3.33 V	3.39 V	3.78 V	---	---	3.5	---
Sodium (Dissolved)	mg/l	160	PDWS	---	---	---	---	---	---	---	---	---
Thallium	ug/l	2	PDWS	0.29 U	---	0.29 U	0.2 U	0.2 U	0.55 U	---	0.5 U	---
Thallium (Dissolved)	ug/l	2	PDWS	---	---	---	---	---	0.55 U	---	---	---
Vanadium	ug/l	49	GCTL	0.38 U	---	0.38 U	0.5 U	0.645 I	0.8 U	---	3.8 U	---
Vanadium (Dissolved)	ug/l	49	GCTL	---	---	---	---	---	0.8 U	---	---	---
Zinc	ug/l	5000	SDWS	15.4 IV	---	13.9 IV	28.6 IV	22.4 IV	7.9 I	---	8.3 U	---
Zinc (Dissolved)	ug/l	5000	SDWS	---	---	---	---	---	9.5 I	---	---	---
General Chemistry												
Ammonia as N	mg/l	2.8	GCTL	0.003 U	---	0.008 U	0.008 U	0.021	0.068	---	0.01 U	---
Chloride	mg/l	250	SDWS	4.6	---	4.1	4.7	5.5	5.5	---	5.6	---
Nitrate as N	mg/l	10	PDWS	0.11	---	0.5	0.15	0.004 U	0.1 U	---	0.1 U	---
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	---	0.5	---	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	68	---	60	70	56	42	---	56	---
Field Parameters												
Dissolved Oxygen	mg/l	NS	NS	0.2	0.16	0.44	0.15	0.24	0.32	1.24	0.57	2.25
Oxidation/Reduction Potential	mV	NS	NS	169.9	220.5	-90.7	-5.3	57.4	---	---	---	---
pH	SU	SDWS	6.5-8.5	5.11	4.93	5.2	5.35	5.17	5.43	5.33	5.19	5.2
Specific Conductance	umhos/cm	NS	NS	89	81	86	87	88	99	71	89	67
Temperature, Water	Deg C	NS	NS	27.29	26.51	24.49	23.24	24.35	23.6	23.9	23.9	24.2
Turbidity	NTU	NS	NS	2.26	2.42	4.9	4.05	4.57	8.31	4.45	4.75	6.69

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-14
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.6 U	0.35 U	0.21 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.27 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.94 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	0.24 U	0.24 U	0.33 U	0.27 U	0.52 U	0.52 U
2-Butanone	ug/l	4200	GCTL	1 U	1 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	2.6 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 U	0.48 U	0.34 U	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.97 U	0.5 U	0.22 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.21 U	0.27 U	0.28 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.75 U	0.34 U	0.22 U	0.65 U	0.65 U
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.99 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	1 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.19 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.65 U	0.47 U	0.2 U	0.5 U	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	0.27 I	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.71 U	0.3 U	0.26 U	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.52 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.55 U	0.52 U	0.71 U	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.6 U	0.35 U	0.22 U	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	0.71 U	0.5 U	0.5 U
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.22 U	0.22 U	0.25 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.48 U	0.33 U	0.2 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	0.89 U	0.36 U	0.27 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.2 U	0.23 U	0.25 U	0.34 U	0.34 U
Metals									
Antimony	ug/l	6	PDWS	2.8 IV	0.76 U	0.82 U	0.82 U	1.5 IV	2.3 U
Arsenic	ug/l	10	PDWS	0.98 U	0.98 U	1.1 U	1.1 U	0.9 I	1.3 U
Barium	ug/l	2000	PDWS	26.1 IV	6 I	5 U	37.3 IV	20	21
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	0.3 I	0.24 I
Chromium	ug/l	100	PDWS	4.76 IV	1.2 U	0.69 U	3.08 IV	0.6 U	2.5 U
Cobalt	ug/l	140	GCTL	1.49 I	0.318 I	0.5 U	1.86 I	1.6	1.4
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	2.03 IV	1.2 U	1.1 U
Iron	ug/l	300	SDWS	148	113	105 V	160 V	100	120
Lead	ug/l	15	PDWS	0.527 IV	0.299 I	0.5 U	1.25 IV	0.15 U	0.2 U
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.015 U	0.22 U	0.072 U
Nickel	ug/l	100	PDWS	3.93 IV	2.34 I	3.74 I	4.23 IV	1.4	1.5
Selenium	ug/l	50	PDWS	1.7 U	1.73 I	3.1 U	3.1 U	0.6 U	1 U
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.119 IV	0.09 U	0.25 U
Sodium	mg/l	160	PDWS	2.83	2.49	2.73 V	3.2 V	---	2.5
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.276 I	0.361 I	0.55 U	0.5 U
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	1.18 I	1.1 I	3.8 U
Zinc	ug/l	5000	SDWS	18.1 IV	3.77 IV	11.4 IV	21.3 IV	6.5 U	8.3 U
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	0.003 I	0.008 U	0.008 U	0.022	0.042	0.01 U
Chloride	mg/l	250	SDWS	3.9	3.5	4.1	4.1 I	3.2	3.6
Nitrate as N	mg/l	10	PDWS	0.1	0.74	0.17	0.004 U	0.1 U	0.1 U
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	0.74 V	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	290	270	280	300	290	300
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	0.24	0.36	0.2	0.24	0.5	0.17
Oxidation/Reduction Potential	mV	NS	NS	28.4	12.6	-14.2	37.3	---	---
pH	SU	SDWS	6.5-8.5	6.71	6.84	6.83	6.58	6.51	6.77
Specific Conductance	umhos/cm	NS	NS	501	492	508	476	561	519
Temperature, Water	Deg C	NS	NS	25.39	23.74	23.02	24.1	23.2	23.9
Turbidity	NTU	NS	NS	1.57	2.19	0.76	3.37	3.56	4.86

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-15
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09	Aug-09
Volatile Organics										
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.6 U	0.35 U	0.36 I	0.52 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.27 U	0.33 U	0.29 U	0.44 U	0.44 U	0.44 UJ
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.94 U	0.39 U	0.26 U	0.57 U	0.57 U	0.57 UJ
1,4-Dichlorobenzene	ug/l	75	PDWS	0.32 I	0.24 U	0.53 I	0.54 I	0.58 I	0.52 U	0.59 IJ
2-Butanone	ug/l	4200	GCTL	1 U	1 U	2.5 U	1.3 U	8.4 U	8.4 U	8.4 UJ
Acetone	ug/l	6300	GCTL	2.6 U	2.6 U	0.74 U	1.5 U	9.9 U	9.9 U	9.9 UJ
Benzene	ug/l	1	PDWS	0.49 I	0.48 U	0.59 I	0.44 I	0.51 I	0.55 I	0.53 I
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.97 U	0.61 I	0.22 U	0.85 U	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.21 U	0.21 U	0.27 U	0.28 U	0.63 U	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	3.3	3.2	3.7	3.5	3.8	4.3	4.3
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.99 U	0.36 U	0.25 U	0.44 U	0.44 U	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	1 U	0.49 U	0.27 U	4 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.19 U	0.23 U	0.2 U	0.98 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.65 U	0.47 U	0.47 I	0.5 U	0.5 UJ	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	0.27 I	0.38 U	0.26 U	0.51 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	1.3	0.83 I	1.5	1.4	1.3	1.5	1.4
Vinyl chloride	ug/l	1	PDWS	0.91 I	0.64 I	0.91 U	0.22 U	0.95 I	1.1	1.2 J
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.55 U	0.52 U	0.71 U	---	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.6 U	0.35 U	0.22 U	---	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.52 U	0.71 U	0.5 U	0.5 U	0.71 I
Trihalomethanes (THMs)										
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.22 U	0.22 U	0.25 U	0.35 U	0.35 U	0.35 UJ
Bromoform	ug/l	NS	NS	0.48 U	0.48 U	0.33 U	0.2 U	0.58 U	0.58 U	0.58 UJ
Chloroform	ug/l	70	GCTL	0.89 U	0.89 U	0.36 U	0.27 U	0.9 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.2 U	0.23 U	0.25 U	0.34 U	0.34 U	0.34 UJ
Metals										
Antimony	ug/l	6	PDWS	3.01 IV	0.76 U	0.82 U	0.82 U	0.75 IV	2.3 U	---
Arsenic	ug/l	10	PDWS	4.52 I	2.59 I	4.07 I	4.79 I	5.2	5.7	---
Barium	ug/l	2000	PDWS	11.2 IV	1.3 U	5 U	18.4 IV	2.9 I	6.5	---
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U	---
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	0.12 U	0.095 U	---
Chromium	ug/l	100	PDWS	4.38 IV	1.2 U	0.69 U	3.04 IV	0.6 U	2.5 U	---
Cobalt	ug/l	140	GCTL	0.846 I	0.26 U	0.5 U	0.861 I	0.48 I	0.45 I	---
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	0.733 IV	1.2 U	11	---
Iron	ug/l	300	SDWS	1990	3290	3480 V	3830 V	3800	4000	---
Lead	ug/l	15	PDWS	0.627 IV	0.17 U	0.5 U	1.14 IV	0.15 U	0.2 U	---
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.015 U	0.22 U	0.072 U	---
Nickel	ug/l	100	PDWS	2.94 IV	4.65 I	2.89 I	3.56 IV	3.1	3.6	---
Selenium	ug/l	50	PDWS	8.26 I	7.36 I	7.33 I	8.88 I	4.6	6.1	---
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.241 I	0.112 IV	0.09 U	0.25 U	---
Sodium	mg/l	160	PDWS	1.97	1.61	1.86 V	2.27 V	---	1.7	---
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.2 U	0.2 U	0.55 U	0.5 U	---
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	0.5 U	0.8 U	3.8 U	---
Zinc	ug/l	5000	SDWS	22.3 IV	29.2 IV	44 IV	39.4 IV	23	21	---
General Chemistry										
Ammonia as N	mg/l	2.8	GCTL	0.038	0.025	0.016 I	0.056	0.083	0.012 I	---
Chloride	mg/l	250	SDWS	2.8	2.1	2.8	3.3 I	2.8	3	---
Nitrate as N	mg/l	10	PDWS	0.11	0.13	0.15	0.004 U	0.1 U	0.1 U	---
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	0.13 V	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	44	36	30	40	24	37	---
Field Parameters										
Dissolved Oxygen	mg/l	NS	NS	0.14	0.11	0.18	0.15	0.24	0.24	0.87
Oxidation/Reduction Potential	mV	NS	NS	258.8	-16.1	79.6	86.9	---	---	---
pH	SU	SDWS	6.5-8.5	4.44	4.71	4.86	4.63	4.51	4.19	3.61
Specific Conductance	umhos/cm	NS	NS	46	45	44	43	48	43	32
Temperature, Water	Deg C	NS	NS	26.13	23.2	22.14	23.77	22.6	24.2	23.3
Turbidity	NTU	NS	NS	3.53	1.25	3.31	2.78	1.98	4.43	2.04

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.
14. IJ = Analyte result detected below quantitation limit is estimated.

Summary of Detected Parameters, Compliance Monitoring Well MW-17
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Jan-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	0.6 U	0.28 U	0.35 U	0.21 U	0.52 U	0.52 U
1,2-Dichlorobenzene	ug/l	600	PDWS	0.27 U	0.33 U	0.33 U	0.29 U	0.44 U	0.44 U
1,2-Dichloroethane	ug/l	3	PDWS	0.94 U	0.18 U	0.39 U	0.26 U	0.57 U	0.57 U
1,4-Dichlorobenzene	ug/l	75	PDWS	1.1	1.5	1.7	1.7	1.1	0.89 I
2-Butanone	ug/l	4200	GCTL	1 U	2.5 U	2.5 U	1.3 U	8.4 U	8.4 U
Acetone	ug/l	6300	GCTL	2.6 U	0.74 U	0.74 U	1.5 U	9.9 U	9.9 U
Benzene	ug/l	1	PDWS	0.48 I	0.99 I	0.66 I	0.56 I	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	0.97 U	0.3 U	0.5 U	1.1 I	0.85 U	0.85 U
Chlorobenzene	ug/l	100	PDWS	0.49 I	0.54 I	0.67 I	0.67 I	0.63 U	0.63 U
cis-1,2-Dichloroethene	ug/l	70	PDWS	0.75 U	0.42 I	0.34 U	0.49 I	0.65 U	0.75 I
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.32 U	0.36 U	0.25 U	0.44 U	0.44 U
Methylene chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	0.19 U	0.18 U	0.23 U	0.2 U	0.98 U	0.98 U
Tetrachloroethene	ug/l	3	PDWS	0.65 U	0.47 U	0.47 U	0.27 I	0.5 U	0.5 UJ
Toluene	ug/l	40	SDWS	0.25 U	0.35 U	0.38 U	0.26 U	0.51 U	0.51 U
Trichloroethene	ug/l	3	PDWS	0.71 U	0.26 U	0.3 U	0.26 U	0.5 U	0.5 U
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.48 I	0.52 U	0.71 U	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.39 I	0.35 U	0.23 I	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.87 I	0.52 U	0.71 U	0.5 U	0.5 U
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	0.22 U	0.19 U	0.22 U	0.25 U	0.35 U	0.35 U
Bromoform	ug/l	NS	NS	0.48 U	0.28 U	0.33 U	0.2 U	0.58 U	0.58 U
Chloroform	ug/l	70	GCTL	0.89 U	0.22 U	0.36 U	0.27 U	0.9 U	0.9 U
Dibromochloromethane	ug/l	0.4	GCTL	0.2 U	0.23 U	0.23 U	0.25 U	0.34 U	0.34 U
Metals									
Antimony	ug/l	6	PDWS	3.25 IV	0.76 U	0.82 U	0.82 U	0.59 IV	2.3 U
Antimony (Dissolved)	ug/l	6	PDWS	---	---	---	---	0.52 IV	---
Arsenic	ug/l	10	PDWS	2.42 I	0.98 U	2.21 I	2.41 I	2.3 I	2.6
Arsenic (Dissolved)	ug/l	10	PDWS	---	---	---	---	2.2 IV	---
Barium	ug/l	2000	PDWS	9.7 IV	1.3 U	5 U	19.1 IV	11	9.2
Barium (Dissolved)	ug/l	2000	PDWS	---	---	---	---	2.9 I	---
Beryllium	ug/l	4	PDWS	0.81 U	0.81 U	0.73 U	0.73 U	0.065 U	0.25 U
Beryllium (Dissolved)	ug/l	4	PDWS	---	---	---	---	0.065 U	---
Cadmium	ug/l	5	PDWS	0.3 U	0.3 U	0.82 U	0.82 U	0.12 U	0.095 U
Cadmium (Dissolved)	ug/l	5	PDWS	---	---	---	---	0.12 U	---
Chromium	ug/l	100	PDWS	4.72 IV	1.2 U	0.69 U	2.96 IV	0.6 U	2.5 U
Chromium (Dissolved)	ug/l	100	PDWS	---	---	---	---	0.6 U	---
Cobalt	ug/l	140	GCTL	8.6 I	9.95 I	9.41 I	9.7 I	7.8	7.6
Cobalt (Dissolved)	ug/l	140	GCTL	---	---	---	---	7.4	---
Copper	ug/l	1000	SDWS	0.63 U	0.63 U	0.5 U	0.974 IV	1.2 U	1.1 U
Copper (Dissolved)	ug/l	1000	SDWS	---	---	---	---	1.2 U	---
Iron	ug/l	300	SDWS	5860	7570	7600 V	7960 V	5800	7300
Iron (Dissolved)	ug/l	300	SDWS	---	---	---	---	6100	---
Lead	ug/l	15	PDWS	0.597 IV	0.17 U	0.5 U	1.16 IV	0.22 I	0.2 U
Lead (Dissolved)	ug/l	15	PDWS	---	---	---	---	0.15 U	---
Mercury	ug/l	2	PDWS	0.11 U	0.0092 U	0.009 U	0.015 U	0.22 U	0.072 U
Mercury (Dissolved)	ug/l	2	PDWS	---	---	---	---	0.22 U	---
Nickel	ug/l	100	PDWS	2.88 IV	5.01 I	3.75 I	3.77 IV	1.6	2.8
Nickel (Dissolved)	ug/l	100	PDWS	---	---	---	---	1.5	---
Selenium	ug/l	50	PDWS	1.95 I	1.7 U	3.1 U	3.1 U	0.6 U	1 U
Selenium (Dissolved)	ug/l	50	PDWS	---	---	---	---	0.6 U	---
Silver	ug/l	100	SDWS	0.2 U	0.2 U	0.072 U	0.109 IV	0.09 U	0.25 U
Silver (Dissolved)	ug/l	100	SDWS	---	---	---	---	0.09 U	---
Sodium	mg/l	160	PDWS	3.78	3.75 V	3.62 V	4.07 V	---	3.2
Sodium (Dissolved)	mg/l	160	PDWS	---	---	---	---	---	---
Thallium	ug/l	2	PDWS	0.29 U	0.29 U	0.2 U	0.2 U	0.55 U	0.5 U
Thallium (Dissolved)	ug/l	2	PDWS	---	---	---	---	0.55 U	---
Vanadium	ug/l	49	GCTL	0.38 U	0.38 U	0.5 U	0.5 U	0.8 U	3.8 U
Vanadium (Dissolved)	ug/l	49	GCTL	---	---	---	---	0.8 U	---
Zinc	ug/l	5000	SDWS	15.5 IV	13.8 IV	21.6 IV	24.6 IV	7.8 I	8.3 I
Zinc (Dissolved)	ug/l	5000	SDWS	---	---	---	---	8.4 I	---
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	0.042	0.024	0.011 I	0.051	0.073	0.023
Chloride	mg/l	250	SDWS	3.2	2.5	3.3	3.9 I	3.9	4.3
Nitrate as N	mg/l	10	PDWS	0.11	0.63	0.15	0.004 U	0.1 U	0.1 U
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	0.63	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	44	66	30	56	30	46
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	0.11	0.09	0.22	0.16	0.42	0.21
Oxidation/Reduction Potential	mV	NS	NS	199.6	-18.6	32.6	24	---	---
pH	SU	SDWS	6.5-8.5	4.54	4.96	5.11	4.8	4.82	4.86
Specific Conductance	umhos/cm	NS	NS	63	68	66	65	64	61
Temperature, Water	Deg C	NS	NS	25.81	24.21	23.36	24.96	23.1	24.3
Turbidity	NTU	NS	NS	4.9	4.28	4.33	4.9	10.8	4.98

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Assessment Monitoring Well MW-18
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Feb-07	Jul-07	Jan-08	Mar-08	Jul-08	Jan-09	Jul-09
Volatile Organics										
1,1-Dichloroethane	ug/l	70	GCTL	---	---	---	---	---	0.52 U	---
1,2-Dichlorobenzene	ug/l	600	PDWS	---	---	---	---	---	0.44 U	---
1,2-Dichloroethane	ug/l	3	PDWS	---	---	---	---	---	0.57 U	---
1,4-Dichlorobenzene	ug/l	75	PDWS	---	---	---	---	---	0.52 U	---
2-Butanone	ug/l	4200	GCTL	---	---	---	---	---	8.4 U	---
Acetone	ug/l	6300	GCTL	---	---	---	---	---	9.9 U	---
Benzene	ug/l	1	PDWS	0.48 U	0.83 I	0.44 I	---	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	---	---	---	---	---	0.85 U	---
Chlorobenzene	ug/l	100	PDWS	---	---	---	---	---	0.63 U	---
cis-1,2-Dichloroethene	ug/l	70	PDWS	---	---	---	---	---	0.65 U	---
Ethylbenzene	ug/l	30	SDWS	---	---	---	---	---	0.44 U	---
Methylene chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	---	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	---	---	---	---	---	0.98 U	---
Tetrachloroethene	ug/l	3	PDWS	---	---	---	---	---	1.5	---
Toluene	ug/l	40	SDWS	---	---	---	---	---	0.51 U	---
Trichloroethene	ug/l	3	PDWS	---	---	---	---	---	0.5 U	---
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	1.1	0.91 U	0.22 I	0.71 I	0.91 I
m,p-Xylene	ug/l	20	SDWS	---	---	---	---	---	---	---
o-Xylene	ug/l	20	SDWS	---	---	---	---	---	---	---
Xylenes (Total)	ug/l	20	SDWS	---	---	---	---	---	0.5 U	---
Trihalomethanes (THMs)										
Bromodichloromethane	ug/l	0.6	GCTL	---	---	---	---	---	0.35 U	---
Bromoform	ug/l	NS	NS	---	---	---	---	---	0.58 U	---
Chloroform	ug/l	70	GCTL	---	---	---	---	---	0.9 U	---
Dibromochloromethane	ug/l	0.4	GCTL	---	---	---	---	---	0.34 U	---
Metals										
Antimony	ug/l	6	PDWS	---	---	---	---	---	---	---
Arsenic	ug/l	10	PDWS	---	---	---	---	---	---	---
Barium	ug/l	2000	PDWS	---	---	---	---	---	---	---
Beryllium	ug/l	4	PDWS	---	---	---	---	---	---	---
Cadmium	ug/l	5	PDWS	---	---	---	---	---	---	---
Chromium	ug/l	100	PDWS	---	---	---	---	---	---	---
Cobalt	ug/l	140	GCTL	---	---	---	---	---	---	---
Copper	ug/l	1000	SDWS	---	---	---	---	---	---	---
Iron	ug/l	300	SDWS	---	---	---	---	---	---	---
Lead	ug/l	15	PDWS	---	---	---	---	---	---	---
Mercury	ug/l	2	PDWS	---	---	---	---	---	---	---
Nickel	ug/l	100	PDWS	---	---	---	---	---	---	---
Selenium	ug/l	50	PDWS	---	---	---	---	---	---	---
Silver	ug/l	100	SDWS	---	---	---	---	---	---	---
Sodium	mg/l	160	PDWS	---	---	---	---	---	---	---
Thallium	ug/l	2	PDWS	---	---	---	---	---	---	---
Vanadium	ug/l	49	GCTL	---	---	---	---	---	---	---
Zinc	ug/l	5000	SDWS	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/l	5000	SDWS	---	---	---	---	---	---	---
General Chemistry										
Ammonia as N	mg/l	2.8	GCTL	---	---	---	---	---	---	---
Chloride	mg/l	250	SDWS	---	---	---	---	---	---	---
Nitrate as N	mg/l	10	PDWS	---	---	---	---	---	---	---
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	---	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	---	---	---	---	---	---	---
Field Parameters										
Dissolved Oxygen	mg/l	NS	NS	1.61	1.4	0.52	1.5	1.47	2.13	2.05
Oxidation/Reduction Potential	mV	NS	NS	383.7	-140.1	164.9	-99.8	-7	---	---
pH	SU	SDWS	6.5-8.5	6.07	5.87	5.71	5.81	5.76	5.28	5.74
Specific Conductance	umhos/cm	NS	NS	673	494	269	248	205	204	168
Temperature, Water	Deg C	NS	NS	24.58	26.21	21.84	20.34	26.59	22.3	28
Turbidity	NTU	NS	NS	13.7	53.5	45	28.9	14.2	92	31.6

NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

Summary of Detected Parameters, Assessment Monitoring Well MW-19
Citrus County Central Class I Landfill

Parameter	Units	MCL	Standard	Feb-07	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09
Volatile Organics									
1,1-Dichloroethane	ug/l	70	GCTL	---	---	---	---	0.52 U	---
1,2-Dichlorobenzene	ug/l	600	PDWS	---	---	---	---	0.44 U	---
1,2-Dichloroethane	ug/l	3	PDWS	---	---	---	---	0.57 U	---
1,4-Dichlorobenzene	ug/l	75	PDWS	---	---	---	---	0.52 U	---
2-Butanone	ug/l	4200	GCTL	---	---	---	---	8.4 U	---
Acetone	ug/l	6300	GCTL	---	---	---	---	9.9 U	---
Benzene	ug/l	1	PDWS	0.48 U	0.35 I	0.34 U	0.3 U	0.5 U	0.5 U
Carbon disulfide	ug/l	700	GCTL	---	---	---	---	0.85 U	---
Chlorobenzene	ug/l	100	PDWS	---	---	---	---	0.63 U	---
cis-1,2-Dichloroethene	ug/l	70	PDWS	---	---	---	---	0.65 U	---
Ethylbenzene	ug/l	30	SDWS	---	---	---	---	0.44 U	---
Methylene chloride	ug/l	5	PDWS	1 U	0.19 U	0.49 U	0.27 U	4 U	4 U
Styrene	ug/l	100	PDWS	---	---	---	---	0.98 U	---
Tetrachloroethene	ug/l	3	PDWS	---	---	---	---	0.5 U	---
Toluene	ug/l	40	SDWS	---	---	---	---	0.51 U	---
Trichloroethene	ug/l	3	PDWS	---	---	---	---	0.5 U	---
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.91 U	0.91 U	0.22 U	0.5 U	0.5 U
m,p-Xylene	ug/l	20	SDWS	---	---	---	---	---	---
o-Xylene	ug/l	20	SDWS	---	---	---	---	---	---
Xylenes (Total)	ug/l	20	SDWS	---	---	---	---	0.5 U	---
Trihalomethanes (THMs)									
Bromodichloromethane	ug/l	0.6	GCTL	---	---	---	---	0.35 U	---
Bromoform	ug/l	NS	NS	---	---	---	---	0.58 U	---
Chloroform	ug/l	70	GCTL	---	---	---	---	0.9 U	---
Dibromochloromethane	ug/l	0.4	GCTL	---	---	---	---	0.34 U	---
Metals									
Antimony	ug/l	6	PDWS	---	---	---	---	---	---
Arsenic	ug/l	10	PDWS	---	---	---	---	---	---
Barium	ug/l	2000	PDWS	---	---	---	---	---	---
Beryllium	ug/l	4	PDWS	---	---	---	---	---	---
Cadmium	ug/l	5	PDWS	---	---	---	---	---	---
Chromium	ug/l	100	PDWS	---	---	---	---	---	---
Cobalt	ug/l	140	GCTL	---	---	---	---	---	---
Copper	ug/l	1000	SDWS	---	---	---	---	---	---
Iron	ug/l	300	SDWS	---	---	---	---	---	---
Lead	ug/l	15	PDWS	---	---	---	---	---	---
Mercury	ug/l	2	PDWS	---	---	---	---	---	---
Nickel	ug/l	100	PDWS	---	---	---	---	---	---
Selenium	ug/l	50	PDWS	---	---	---	---	---	---
Silver	ug/l	100	SDWS	---	---	---	---	---	---
Sodium	mg/l	160	PDWS	---	---	---	---	---	---
Thallium	ug/l	2	PDWS	---	---	---	---	---	---
Vanadium	ug/l	49	GCTL	---	---	---	---	---	---
Zinc	ug/l	5000	SDWS	---	---	---	---	---	---
General Chemistry									
Ammonia as N	mg/l	2.8	GCTL	---	---	---	---	---	---
Chloride	mg/l	250	SDWS	---	---	---	---	---	---
Nitrate as N	mg/l	10	PDWS	---	---	---	---	---	---
Nitrate-Nitrite (N)	mg/l	10	PDWS	---	---	---	---	---	---
Total Dissolved Solids	mg/l	500	SDWS	---	---	---	---	---	---
Field Parameters									
Dissolved Oxygen	mg/l	NS	NS	5.41	0.99	5.75	5.11	5.51	5.23
Oxidation/Reduction Potential	mV	NS	NS	433.4	62.6	132.9	85.1	---	---
pH	SU	SDWS	6.5-8.5	5.88	6.41	6.54	5.96	6.46	6.01
Specific Conductance	umhos/cm	NS	NS	139	1.68	117	91	93	68
Temperature, Water	Deg C	NS	NS	26.26	27.25	23.2	24.7	23.8	23.4
Turbidity	NTU	NS	NS	0.99	4.1	11.5	8.4	6.04	4.87

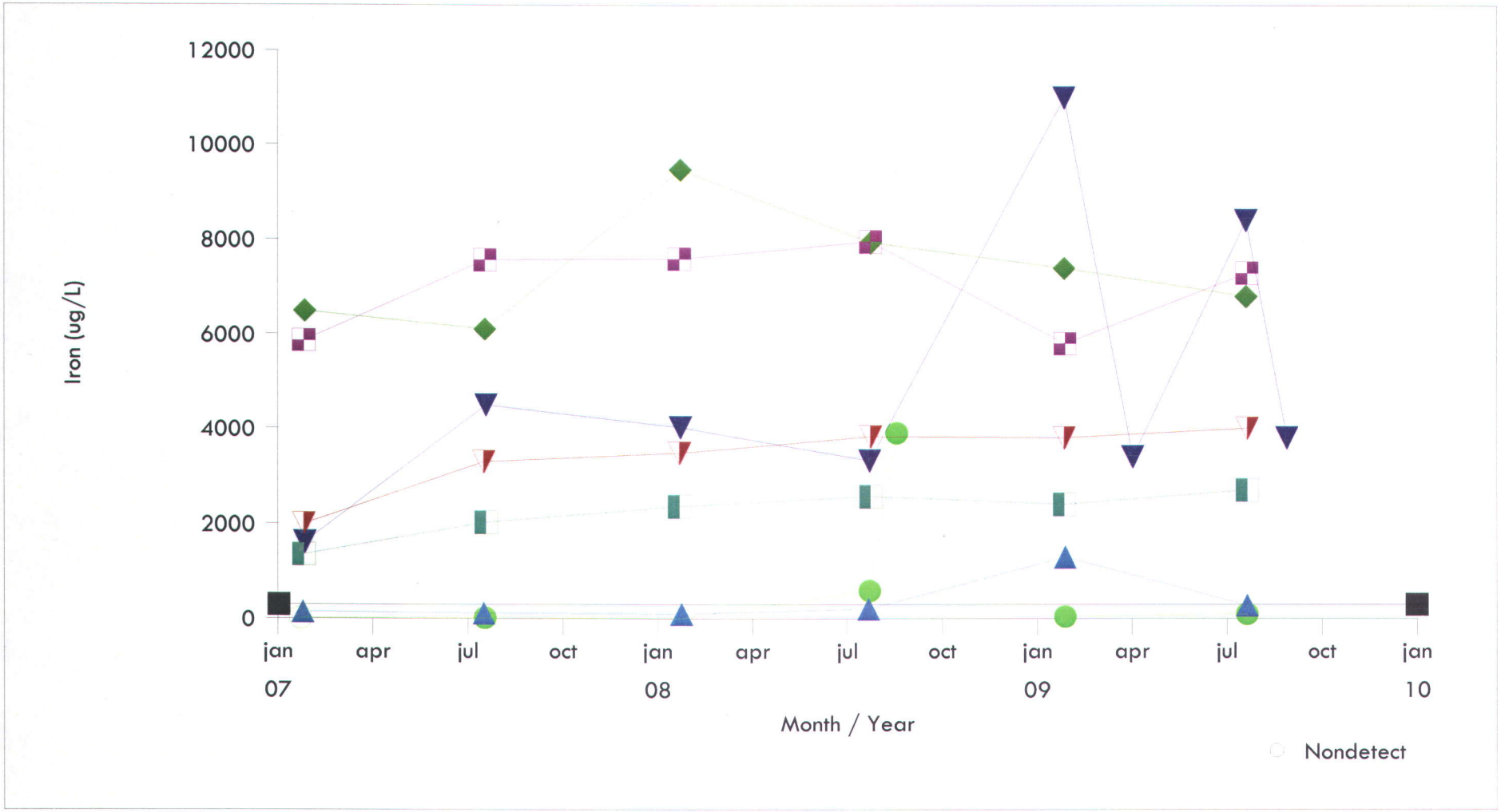
NOTES:
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.).
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.).
3. GCTL = Groundwater Clean-up Target Level (62-777 F.A.C.).
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/l = milligrams per liter.
7. ug/l = micrograms per liter.
8. NTU = nephelometric turbidity units.
9. Yellow shaded values indicate parameter concentrations exceeded primary, secondary Drinking Water Standards or groundwater cleanup target levels.
10. I = Analyte detected below quantitation limits.
11. U = Analyte concentration was below the laboratory detection limit (value shown).
12. V = Analyte was detected in the sample and associated method blank.
13. UJ = Analyte undetected result is estimated.

APPENDIX D

GRAPHS OF WATER QUALITY TRENDS

Citrus County Central Class I

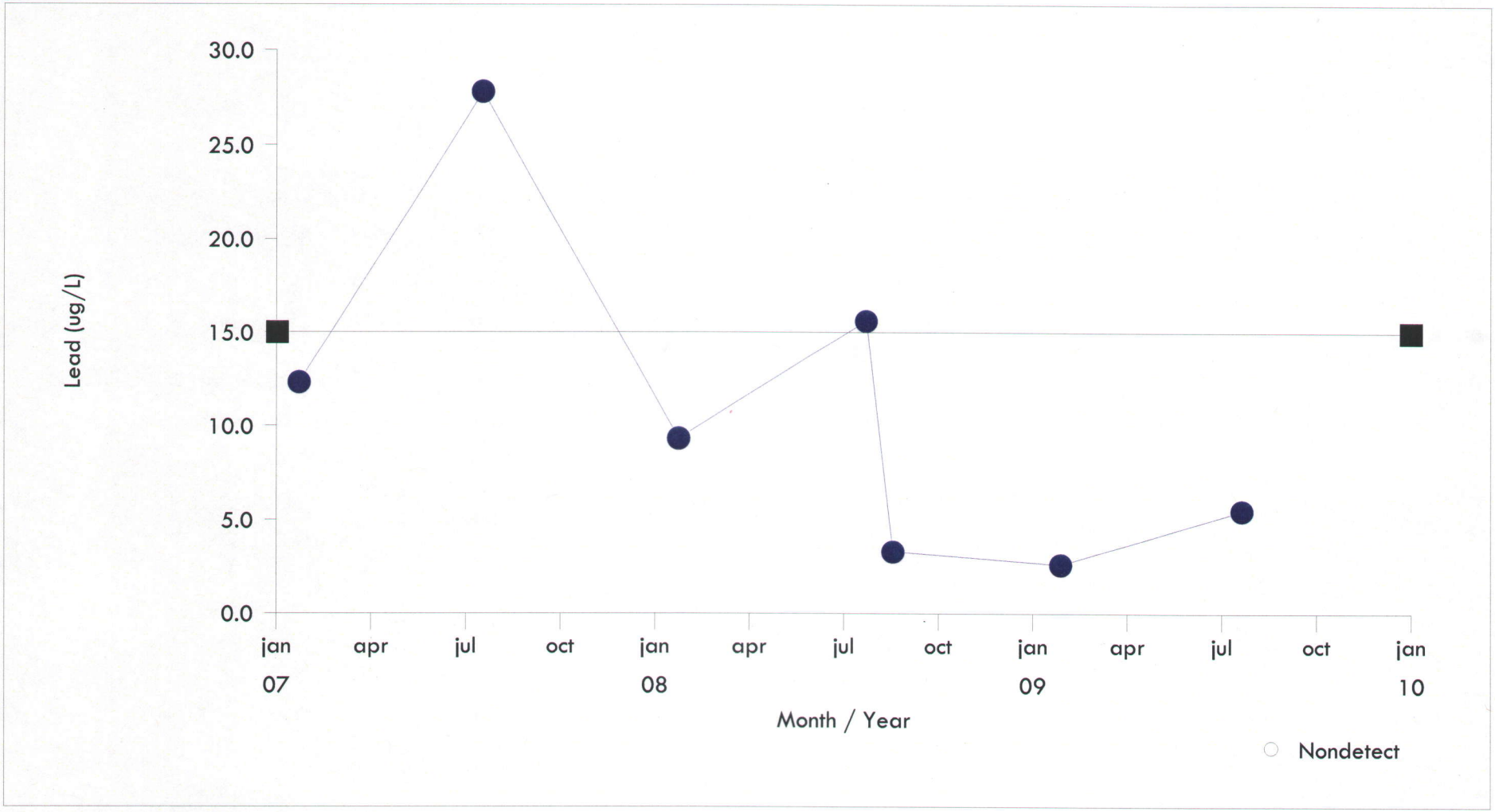
Chart D-1. Time Series Plot for Iron



Prepared by: SCS Engineers

Citrus County Central Class I

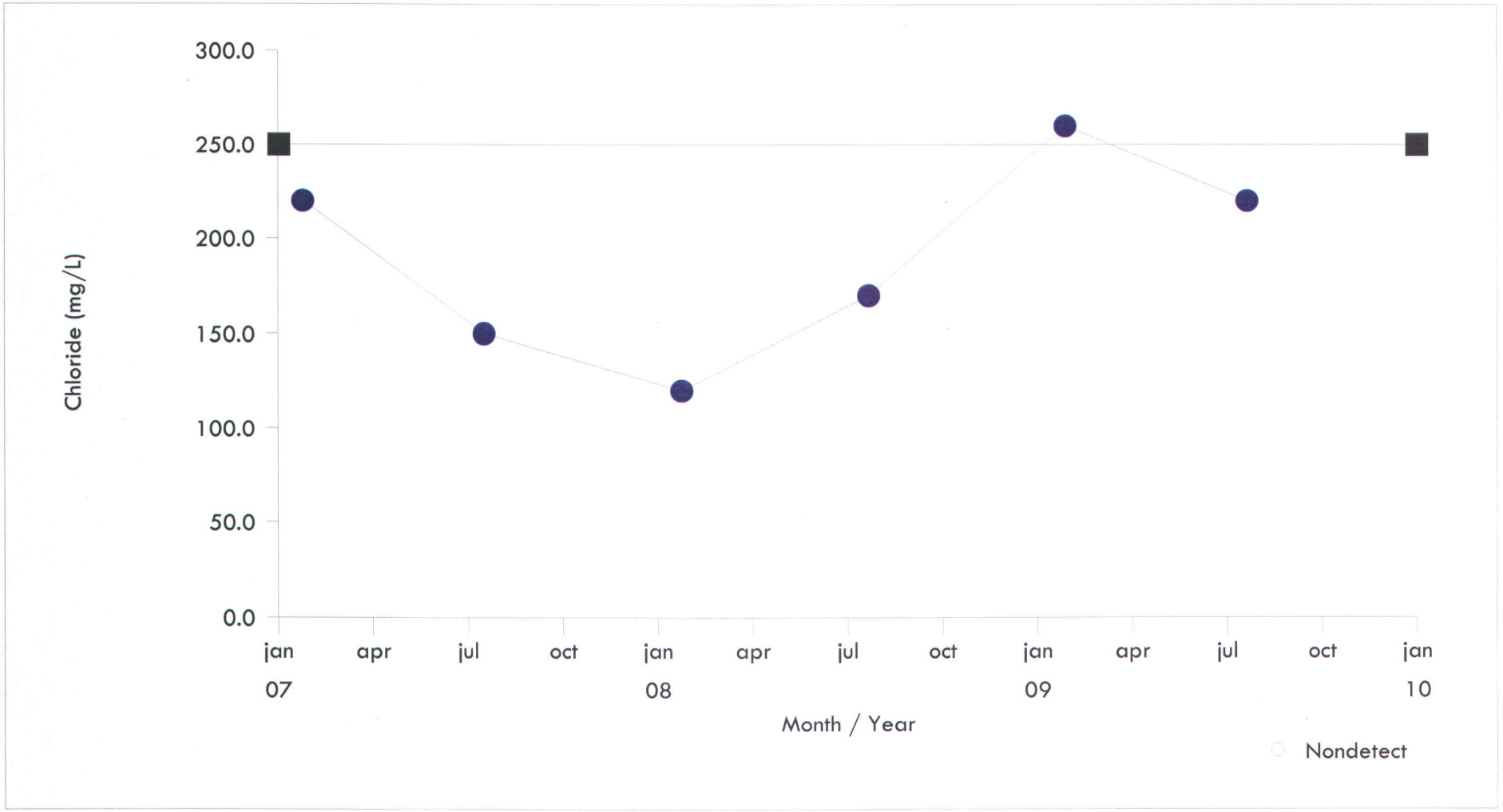
Chart D-2. Time Series Plot for Lead



Prepared by: SCS Engineers

Citrus County Central Class I

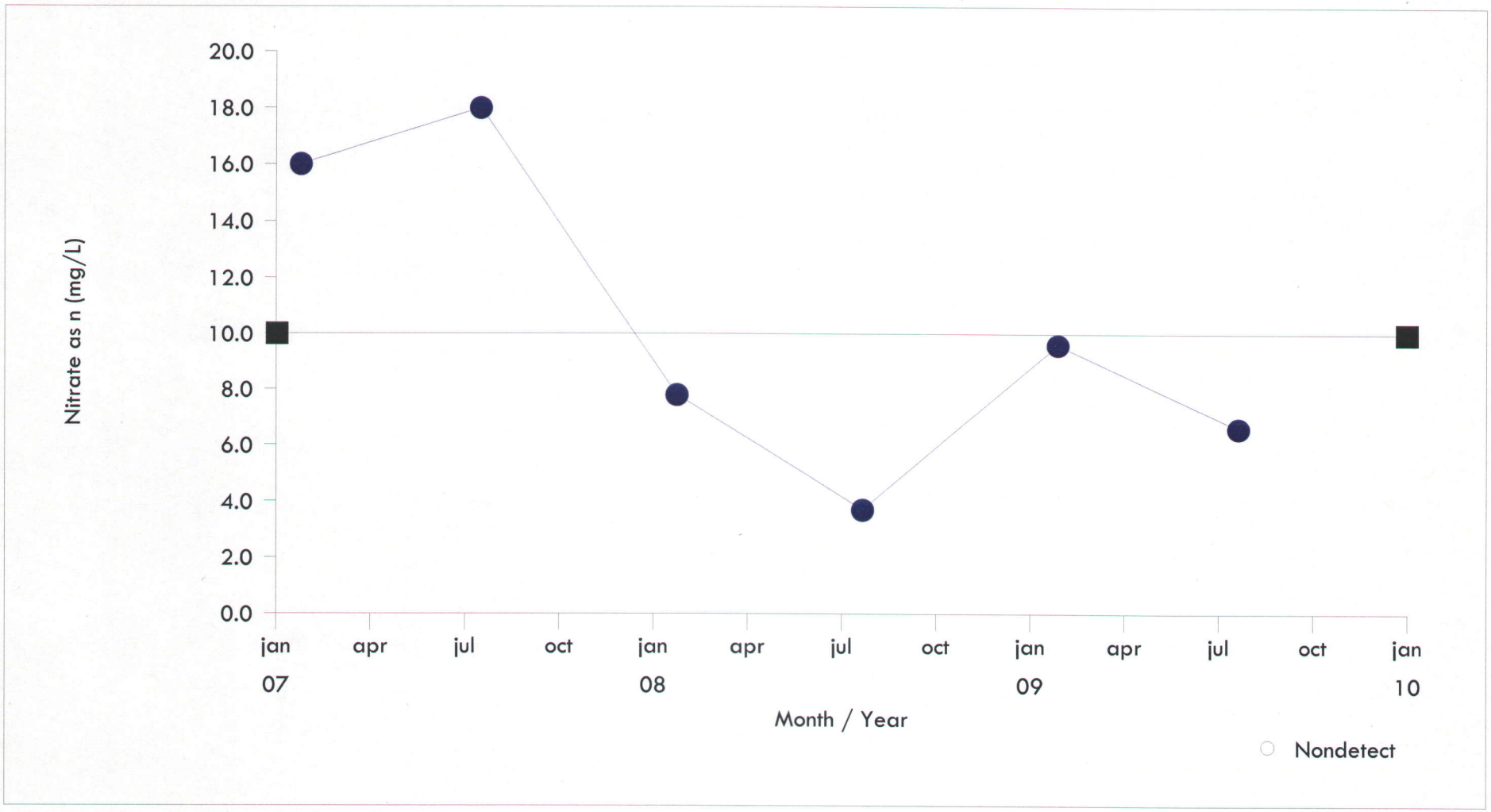
Chart D-3. Time Series Plot for Chloride



Prepared by: SCS Engineers

Citrus County Central Class I

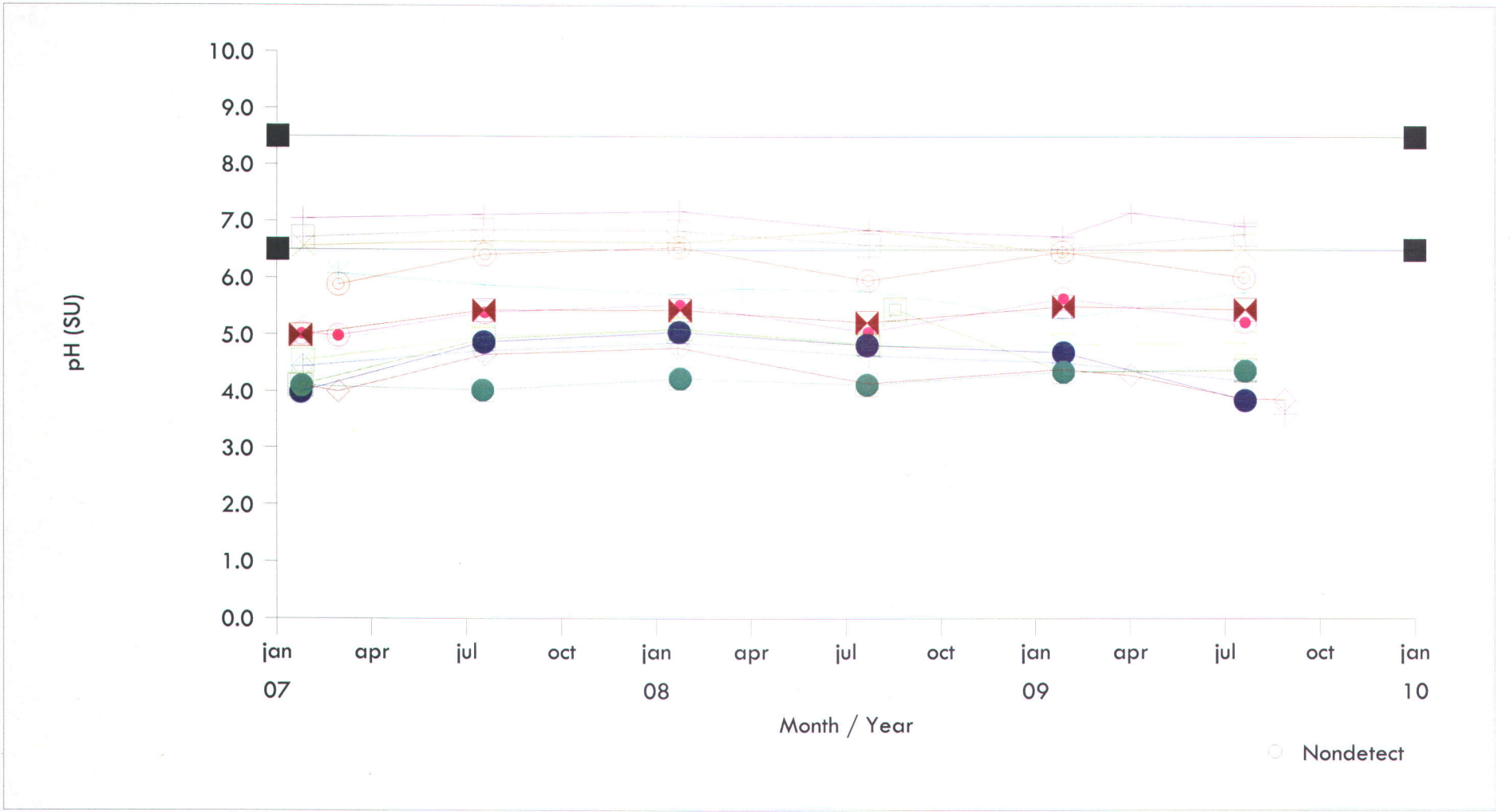
Chart D-4. Time Series Plot for Nitrate as n



Prepared by: SCS Engineers

Citrus County Central Class I

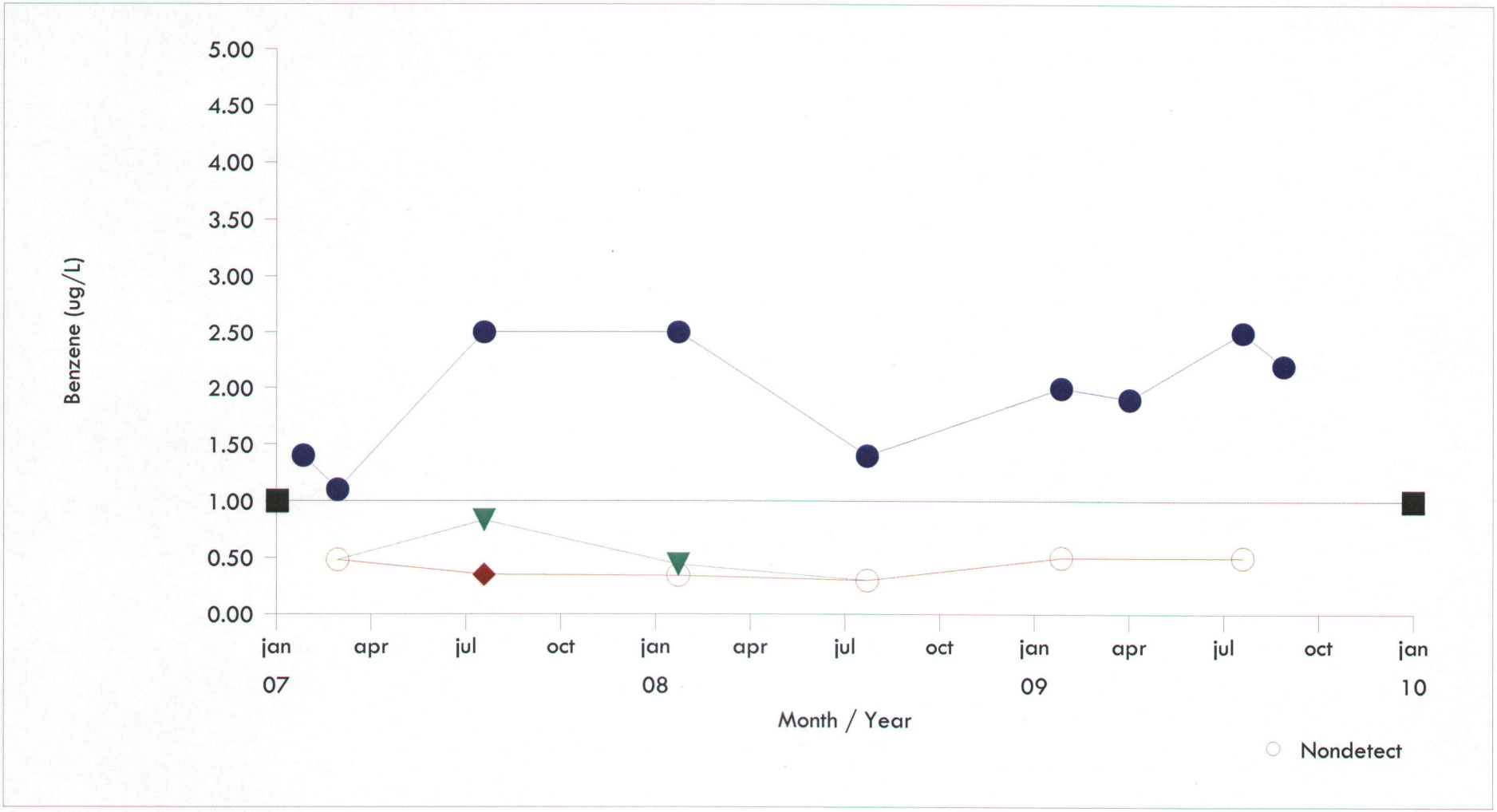
Chart D-5. Time Series Plot for pH



Prepared by: SCS Engineers

Citrus County Central Class I

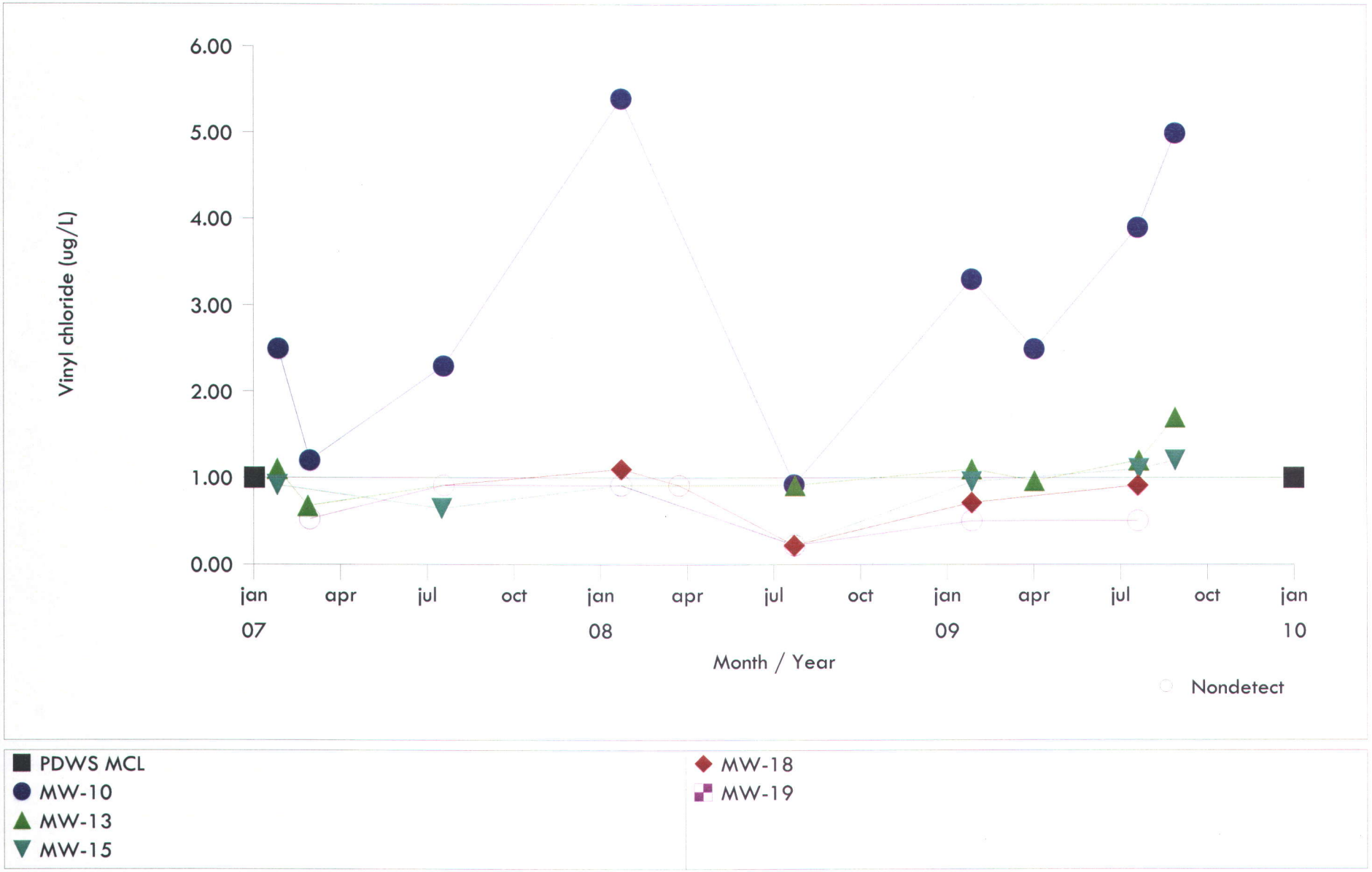
Chart D-6. Time Series Plot for Benzene



Prepared by: SCS Engineers

Citrus County Central Class I

Chart D-7. Time Series Plot for Vinyl chloride



Prepared by: SCS Engineers

APPENDIX E

LEACHATE QUALITY DATA

Summary of Detected Parameters, Leachate Effluent

Parameter	Units	MCL	Standard	Sampling Date												
				Jan-07	Apr-07	Jul-07	Oct-07	Jan-08	Apr-08	Jul-08	Oct-08	Jan-09	Apr-09	Jul-09	Sep-09	Oct-09
Volatile Organics															Resample	
1,1-Dichloroethane	ug/l	70	GCTL	---	---	0.6 U	---	---	---	0.21 U	---	---	---	0.52 U	---	---
1,1-Dichloropropene	ug/l	NS	NS	---	---	---	---	---	---	---	---	---	---	0.31 U	---	---
1,2-Dichlorobenzene	ug/l	600	PDWS	---	---	0.27 U	---	---	---	0.29 U	---	---	---	1 U	---	---
1,2-Dichloroethane	ug/l	3	PDWS	---	---	0.94 U	---	---	---	0.26 U	---	---	---	0.57 U	---	---
1,4-Dichlorobenzene	ug/l	75	PDWS	---	---	0.24 U	---	---	---	0.27 U	---	---	---	1.1 U	---	---
2-Butanone	ug/l	4200	GCTL	---	---	1 U	---	---	---	1.7 I	---	---	---	8.4 U	---	---
4-Methyl-2-pentanone	ug/l	560	GCTL	---	---	1.6 U	---	---	---	0.67 U	---	---	---	3.8 U	---	---
Acetone	ug/l	6300	GCTL	---	---	10	---	---	---	13	---	---	---	21	---	---
Benzene	ug/l	1	PDWS	0.48 U	0.48 U	0.48 U	0.32 U	0.34 U	0.34 U	0.3 U	0.5 U	1 U	0.5 U	0.5 U	---	0.5 U
Carbon disulfide	ug/l	700	GCTL	---	---	0.97 U	---	---	---	0.22 U	---	---	---	0.85 U	---	---
Chlorobenzene	ug/l	100	PDWS	---	---	0.21 U	---	---	---	0.28 U	---	---	---	0.63 U	---	---
cis-1,2-Dichloroethene	ug/l	70	PDWS	---	---	0.75 U	---	---	---	0.22 U	---	---	---	0.65 U	---	---
Ethylbenzene	ug/l	30	SDWS	0.99 U	0.99 U	0.99 U	0.32 U	0.36 U	0.36 U	0.25 U	0.5 U	1 U	0.5 U	0.44 U	---	0.44 U
Methylene chloride	ug/l	5	PDWS	---	---	1 U	---	---	---	0.27 U	---	---	---	4 U	---	---
Naphthalene	ug/l	14	GCTL	---	---	---	---	---	---	---	---	---	---	1.2 U	---	---
Styrene	ug/l	100	PDWS	---	---	0.19 U	---	---	---	0.2 U	---	---	---	0.98 U	---	---
Tetrachloroethene	ug/l	3	PDWS	---	---	0.65 U	---	---	---	0.2 U	---	---	---	0.5 U	---	---
Toluene	ug/l	40	SDWS	0.25 U	0.26 I	0.25 U	0.35 U	0.38 U	0.38 U	0.26 U	0.5 U	1 U	0.5 U	0.51 U	---	0.51 U
Trichloroethene	ug/l	3	PDWS	---	---	0.71 U	---	---	---	0.26 U	---	---	---	0.5 U	---	---
Vinyl chloride	ug/l	1	PDWS	0.52 U	0.52 U	0.52 U	0.91 U	0.91 U	0.91 U	0.22 U	0.53 U	1.1 U	0.53 U	0.5 U	---	0.5 U
m,p-Xylene	ug/l	20	SDWS	0.55 U	0.55 U	0.55 U	---	---	---	0.71 U	---	---	---	---	---	---
o-Xylene	ug/l	20	SDWS	0.6 U	0.6 U	0.6 U	---	---	---	0.22 U	---	---	---	---	---	---
Xylenes (Total)	ug/l	20	SDWS	0.6 U	0.6 U	0.6 U	0.6 U	0.52 U	0.52 U	0.71 U	1 U	2.1 I	1 U	0.5 U	---	0.5 U
Trihalomethanes																
Bromodichloromethane	ug/l	0.6	GCTL	8.2	24	29	3.3	0.22 U	---	15	---	14	---	410	0.35 U	---
Bromoform	ug/l	NS	NS	2.2	5.8	4	0.86 I	0.9 I	---	4.8	---	2.9	---	71	0.58 U	---
Chloroform	ug/l	70	GCTL	5.2	15	39	2.6	6.1	---	12	---	11	---	370	0.90 U	---
Dibromochloromethane	ug/l	0.4	GCTL	6.5	17	20	2.3	3.6	---	10	---	6.9	---	280	0.58 U	---
Total Trihalomethanes	ug/l	100*	Permit	22.1	61.8	92	9.06	10.6	---	41.8	---	34.8	---	1131	Not Detected	---
Metals																
Antimony	ug/l	6	PDWS	---	---	0.76 U	---	---	---	0.975 I	---	---	---	---	---	---
Arsenic	ug/l	10	PDWS	---	---	20	---	---	---	19.6	---	---	---	9.1 I	---	---
Barium	ug/l	2000	PDWS	---	---	1.3 U	---	---	---	43.7 IV	---	---	---	58	---	---
Beryllium	ug/l	4	PDWS	---	---	0.81 U	---	---	---	0.73 U	---	---	---	0.5 U	---	---
Cadmium	ug/l	5	PDWS	---	---	0.3 U	---	---	---	0.82 U	---	---	---	1 U	---	---
Chromium	ug/l	100	PDWS	---	---	6.08 I	---	---	---	4.71 IV	---	---	---	5.8 I	---	---
Cobalt	ug/l	140	GCTL	---	---	21.1	---	---	---	13.5	---	---	---	11	---	---
Copper	ug/l	1000	SDWS	---	---	6.17 I	---	---	---	5.38 I	---	---	---	14	---	---
Iron	ug/l	300	SDWS	---	---	117	---	---	---	67.1 V	---	---	---	68 I	---	---
Lead	ug/l	15	PDWS	---	---	5.91	---	---	---	1.2 IV	---	---	---	2 U	---	---
Mercury	ug/l	2	PDWS	---	---	0.009 U	---	---	---	0.015 U	---	---	---	0.072 U	---	---
Nickel	ug/l	100	PDWS	---	---	75.1	---	---	---	59.6	---	---	---	46	---	---
Selenium	ug/l	50	PDWS	---	---	1.7 U	---	---	---	3.1 U	---	---	---	5 U	---	---
Silver	ug/l	100	SDWS	---	---	0.2 U	---	---	---	0.092 I	---	---	---	1 U	---	---
Sodium	mg/l	160	PDWS	631	660	661 V	443	634	746	497 V	570	800	820	430	---	570
Thallium	ug/l	2	PDWS	---	---	1.77	---	---	---	0.549 I	---	---	---	5 U	---	---
Vanadium	ug/l	49	GCTL	---	---	3.27 I	---	---	---	3.52 IV	---	---	---	2.5 U	---	---
Zinc	ug/l	5000	SDWS	---	---	28.6 IV	---	---	---	31.2 IV	---	---	---	0.020 I	---	---
General Chemistry																
Ammonia as N	mg/l	2.8	GCTL	0.17	0.18	0.32	0.045	1.8	0.63	0.057	0.094	1.1	0.19	0.16	---	0.010 U
Chloride	mg/l	250	SDWS	1100	1100 V	1100	740 V	1000 V	1200	830	940	1300	1500	710	---	910
Cyanide	mg/l	0.2	PDWS	---	---	0.010 U	---	---	---	0.010 U	---	---	---	0.014	---	---
Total Dissolved Solids	mg/l	500	SDWS	2400	2800	2900	1800	2500	2600	2100	2400	2800	3000	1800	---	2000
Field Parameters																
Dissolved Oxygen	mg/l	NS	NS	5.03	3.31	1.37	0.43	2.64	3.1	18.5	2.96	0.93	2.78	1.34	0.3	0.72
Oxidation/Reduction Potential	mV	NS	NS	265.5	115.9	103.7	177.2	129.8	174.5	32.6	190.7	---	---	---	---	---
pH	S.U.	6.5-8.5	SDWS	7.61	8.01	7.94	7.9	7.84	7.98	9.01	7.87	7.79	7.68	7.49	7.94	7.83
Specific Conductivity	umhos/cm	NS	NS	4193	4440	4529	3132	4220	4424	3178	3929	4907	4820	3462	2786	3772
Temperature	Deg C	NS	NS	17.92	24.32	28.97	25.64	18.52	16.83	32.5	26.55	17.35	24.83	31.5	27.9	27.9
Turbidity	NTUs	NS	NS	2.9	3.2	7.64	0.54	4.57	9.01	15.9	1.07	1.65	5	---	6.67	4.73

NOTES:
1. NS = No numeric standard has been set for this analyte.
2. --- = Parameter not analyzed.
3. mg/l = milligrams per liter.
4. ug/l = micrograms per liter.
5. NTU = nephelometric turbidity units.
6. Yellow shaded values indicate parameter concentrations exceeded Toxicity Standards.
7. I = Analyte detected below quantitation limits.
8. U = Analyte concentration was below the laboratory detection limit (value shown).
9. V = Analyte was detected in the sample and associated method blank.
10. * = Permit MCL.

Summary of Detected Parameters, Lift Station Composite

Parameter	Units	EPA Toxicity Characteristic	Jul-07	Jul-08	Jul-09
Metals					
Antimony	ug/l	NS	0.76 U	0.842 I	---
Arsenic	ug/l	5000	45.2	22.2	50
Barium	ug/l	100,000	15 I	51.2 IV	38
Beryllium	ug/l	NS	0.81 U	0.73 U	0.5 U
Cadmium	ug/l	1000	2.88 IV	1.83 I	1 U
Chromium	ug/l	5000	8.05 I	5.01 IV	12
Cobalt	ug/l	NS	16.8	4.62 I	17
Copper	ug/l	NS	0.63 U	1.79 I	3.5 I
Iron	ug/l	NS	39100	41100 V	20000
Lead	ug/l	5000	7.28	1.28 IV	2 U
Mercury	ug/l	200	0.009 U	0.015 U	0.072 I
Nickel	ug/l	NS	59.9	21.5	68
Selenium	ug/l	1000	1.7 U	3.1 U	5 U
Silver	ug/l	5000	0.22 I	0.127 I	1 U
Sodium	mg/l	NS	535 V	252 V	600
Thallium	ug/l	NS	1.2	0.555 I	5 U
Vanadium	ug/l	NS	4.9 I	2.95 IV	5.7 I
Zinc	ug/l	NS	5.2 IV	14.9 I	11 I
General Chemistry					
Alkalinity (as CaCO3)	mg/l	NS	1800	970	1800
Ammonia as N	mg/l	NS	740	120	380
Bicarbonate	mg/l	NS	1800	970	1800
Chloride	mg/l	NS	730	380	810
Nitrate as N	mg/l	NS	0.61	1.4	---
Nitrate/Nitrite-Nitrogen	mg/l	NS	0.61 V	---	0.98
Total Dissolved Solids	mg/l	NS	2500	1300	2600

NOTES:

1. NS = No numeric standard has been set for this analyte.
2. --- = Parameter not analyzed.
3. mg/l = milligrams per liter.
4. ug/l = micrograms per liter.
5. NTU = nephelometric turbidity units.
6. Yellow shaded values indicate parameter concentrations exceeded Toxicity Standards.
7. I = Analyte detected below quantitation limits.
8. U = Analyte concentration was below the laboratory detection limit (value shown).
9. V = Analyte was detected in the sample and associated method blank.

Summary of Detected Parameters, Master Lift

Parameter	Units	EPA Toxicity Characteristic	Jul-07	Jul-08	Jul-09
Volatile Organics					
1,1-Dichloroethane	ug/l	NS	0.6 U	0.21 U	0.52 U
1,1-Dichloropropene	ug/l	NS	1.4	0.27 U	0.31 U
1,2-Dichlorobenzene	ug/l	NS	0.27 U	0.29 U	1.1 U
1,2-Dichloroethane	ug/l	500	0.94 U	0.26 U	0.57 U
1,2-Dichloropropane	ug/l	NS	0.97 U	0.4 U	0.52 U
1,4-Dichlorobenzene	ug/l	7500	10	0.27 U	10
2-Butanone	ug/l	NS	1 U	1.3 U	8.4 U
4-Methyl-2-pentanone	ug/l	NS	1.6 U	0.67 U	3.8 U
Acetone	ug/l	NS	26	1.5 U	17 I
Benzene	ug/l	500	2	0.3 U	1.9
Bromodichloromethane	ug/l	NS	0.22 U	0.25 U	0.35 U
Bromoform	ug/l	NS	0.48 U	0.2 U	0.58 U
Carbon disulfide	ug/l	NS	0.97 U	0.22 U	0.85 U
Chlorobenzene	ug/l	100,000	2.8	0.28 U	2.7
Chloroform	ug/l	600	0.89 U	0.62 I	0.9 U
cis-1,2-Dichloroethene	ug/l	NS	0.75 U	0.22 U	1.6
Dibromochloromethane	ug/l	NS	0.2 U	0.25 U	0.34 U
Ethylbenzene	ug/l	NS	40	0.25 U	60
Methylene chloride	ug/l	NS	1 U	0.27 U	4 U
Naphthalene	ug/l	NS	32	0.27 U	16
Styrene	ug/l	NS	0.21 I	0.2 U	0.98 U
Tetrachloroethene	ug/l	NS	0.65 U	0.2 U	0.5 U
Toluene	ug/l	NS	4.5	0.26 U	9.3
trans-1,3-Dichloropropene	ug/l	NS	0.20 U	0.20 U	0.14 U
Trichloroethene	ug/l	NS	0.71 U	0.26 U	0.5 U
Vinyl chloride	ug/l	200	0.52 U	0.22 U	0.5 U
m,p-Xylene	ug/l	NS	9.7	0.71 U	---
o-Xylene	ug/l	NS	5.8	0.22 U	---
Xylenes (Total)	ug/l	NS	16	0.71 U	42
Field Parameters					
Dissolved Oxygen	mg/l	NS	0.77	3.13	0.79
Oxidation/Reduction Potential	mV	NS	4.1	43.7	---
pH	S.U.	NS	7.07	7.02	6.97
Specific Conductivity @ 25 C	umhos/cm	NS	10327	3806	6795
Temperature	Deg C	NS	33.42	30.95	31.7
Turbidity	NTU	NS	2.43	19.9	---

NOTES:

1. NS = No numeric standard has been set for this analyte.
2. --- = Parameter not analyzed.
3. mg/l = milligrams per liter.
4. ug/l = micrograms per liter.
5. NTU = nephelometric turbidity units.
6. Yellow shaded values indicate parameter concentrations exceeded Toxicity Standards.
7. I = Analyte detected below quantitation limits.
8. U = Analyte concentration was below the laboratory detection limit (value shown).
9. V = Analyte was detected in the sample and associated method blank.

Summary of Detected Parameters, Phase 2 Primary

Parameter	Units	EPA Toxicity Characteristic	Jul-07	Jul-08	Jul-09
Volatile Organics					
1,1-Dichloroethane	ug/l	NS	5.8	3.9 I	0.52 U
1,1-Dichloropropene	ug/l	NS	0.89 U	1.4 U	0.31 U
1,2-Dichlorobenzene	ug/l	NS	0.27 U	1.4 U	1.1 U
1,2-Dichloroethane	ug/l	500	19	8.7	3.9
1,2-Dichloropropane	ug/l	NS	0.97 U	2 U	1.2
1,4-Dichlorobenzene	ug/l	7500	4.1	14	10
2-Butanone	ug/l	NS	67	84	140
4-Methyl-2-pentanone	ug/l	NS	9	3.4 U	13
Acetone	ug/l	NS	59	95	81
Benzene	ug/l	500	25	34	14
Bromodichloromethane	ug/l	NS	0.22 U	1.2 U	0.6 I
Bromoform	ug/l	NS	0.48 U	1 U	0.58 U
Carbon disulfide	ug/l	NS	0.97 U	1.1 U	0.85 U
Chlorobenzene	ug/l	100,000	1	2.4 I	0.63 U
Chloroform	ug/l	600	0.89 U	1.4 U	0.9 U
cis-1,2-Dichloroethene	ug/l	NS	3.6	1.1 U	4.4
Dibromochloromethane	ug/l	NS	0.2 U	1.2 U	0.34 U
Ethylbenzene	ug/l	NS	56	62	46
Methylene chloride	ug/l	NS	7.5	1.4 U	4 U
Naphthalene	ug/l	NS	0.88 I	2.8 I	16
Styrene	ug/l	NS	2.8	2.2 I	4
Tetrachloroethene	ug/l	NS	0.65 U	1 U	0.91 I
Toluene	ug/l	NS	76	39	34
trans-1,3-Dichloropropene	ug/l	NS	0.20 U	1 U	0.56 I
Trichloroethene	ug/l	NS	0.71 U	1.3 U	0.52 I
Vinyl chloride	ug/l	200	13	17	5.6
m,p-Xylene	ug/l	NS	52	84	---
o-Xylene	ug/l	NS	17	18	---
Xylenes (Total)	ug/l	NS	69	100	80
Field Parameters					
Dissolved Oxygen	mg/l	NS	2.47	0.62	0.79
Oxidation/Reduction Potential	mV	NS	13.9	-84.1	---
pH	S.U.	NS	6.22	6.47	6.97
Specific Conductivity	umhos/cm	NS	1681	1953	6795
Temperature	Deg C	NS	29.27	31.85	31.7
Turbidity	NTU	NS	26.3	31.1	---

NOTES:

1. NS = No numeric standard has been set for this analyte.
2. --- = Parameter not analyzed.
3. mg/l = milligrams per liter.
4. ug/l = micrograms per liter.
5. NTU = nephelometric turbidity units.
6. Yellow shaded values indicate parameter concentrations exceeded Toxicity Standards.
7. I = Analyte detected below quantitation limits.
8. U = Analyte concentration was below the laboratory detection limit (value shown).
9. V = Analyte was detected in the sample and associated method blank.

Summary of Detected Parameters, Sludge

Parameter	Units	EPA Toxicity Characteristic	Jul-07	Jul-08	Jul-09
Metals					
Barium	ug/l	100,000	65 U	121 I	240 IV
General Chemistry & Field Parameters					
pH	S.U.	NS	5.72	5.7	5.7
Total Solids	% by Volume	NS	1.69	0.612	---

NOTES:

1. NS = No numeric standard has been set for this analyte.
2. --- = Parameter not analyzed.
3. mg/l = milligrams per liter.
4. ug/l = micrograms per liter.
5. NTU = nephelometric turbidity units.
6. Yellow shaded values indicate parameter concentrations exceeded Toxicity Standards.
7. I = Analyte detected below quantitation limits.
8. U = Analyte concentration was below the laboratory detection limit (value shown).
9. V = Analyte was detected in the sample and associated method blank.

SECTION N

SPECIAL WASTE HANDLING REQUIREMENTS

N.1 MOTOR VEHICLES

Motor vehicles are not currently accepted for disposal at the Citrus County Central Landfill. Should motor vehicles be accepted for disposal in the future they will be handled and disposed of in compliance with applicable rules and regulations. There are no changes to this section.

N.2 SHREDDED WASTE

Citrus County Central Landfill does not shred waste neither does it accept any shredded waste. There are no changes to this section.

N.3 ASBESTOS

Asbestos can be disposed in the Citrus County Central Landfill after special arrangements are made with landfill personnel. Quantity and scheduled shipment date are coordinated. Any friable asbestos is wet-wrapped. A location is prepared separate from the landfill working face. The disposal location within the landfill is recorded and the disposed asbestos is covered with daily soil cover. There are no changes to this subsection.

N.4 CONTAMINATED SOIL

Contaminated soil can be disposed in the Citrus County Central Landfill after special arrangements are made with landfill personnel. Quantity and scheduled shipment date are coordinated. Only petroleum-contaminated soil treated in accordance with chapter 62-775, FAC, is accepted. In addition, analysis results showing that the soil is non-hazardous is required prior to disposal. The contaminated soil is disposed of at the landfill working face and the location in the landfill is recorded. There are no changes to this subsection.

N.5 BIOLOGICAL WASTE

Citrus County Landfill does not accept biological wastes. There are no changes to this subsection.

SECTION O

LANDFILL GAS MANAGEMENT SYSTEM REQUIREMENTS

O.1 LANDFILL GAS MANAGEMENT SYSTEM

The LFG management system at the site currently consists of passive vents in the old closed 60-acre landfill, which serves to minimize the potential for off-site migration of LFG. Phases 1/1A, and 2 of the 80-acre active landfill was issued a construction permit (Permit No. 21375-017-SC/08) for a gas collection and control system (GCCS) and is currently under construction. Construction of the GCCS, which includes the installation of vertical extraction wells, tie-ins to the leachate collection removal system (LCRS) risers, and a header/lateral system that will route collected landfill gas (LFG) to a blower/flare station; shall be nearly complete at the time of this application submittal and a certification of construction completion shall be submitted to the Department in the near future.

The GCCS proposed for the Class I landfill is a voluntary active LFG collection and control system that is being installed to proactively reduce methane emissions to the atmosphere. This system is not required by the Federal New Source Performance Standards (NSPS).

O.1.a Concentrations of Combustible Gases

Landfill gas migration is currently being controlled by the existing LFG management system. The permitted GCCS in the lined Class I landfill will further reduce the potential for subsurface LFG migration and odors.

O.1.b Site-specific Design

Based on observations at the site, the current LFG management system in place at the 60-acre closed area appears to be adequate for the design of the landfill. The permitted GCCS in the lined Class I landfill is a voluntary active LFG collection and control system that is being installed to proactively reduce methane emissions to the atmosphere.

O.1.c Reducing Gas Pressure

Based on review of the available data and observations of the performance of the system, excessive pressures do not appear to be present within the 60-acre closed landfill area. The additional wells in the lined Class I landfill will reduce internal gas pressures of the landfill which will further reduce the potential for subsurface lateral migration of LFG.

O.1.d Liner, Leachate Control System or Final Cover Non-Interference

Based on on-site observations and discussions with County staff, there is no evidence that LFG is interfering with the function of any of the systems located at the closed 60-acre area. The

permitted GCCS will not interfere with the bottom liner and leachate collection system. The vertical LFG extraction wells will terminate a minimum of 15 feet above the liner system.

O.2 LANDFILL GAS MONITORING

No changes to the LFG migration monitoring plan are being proposed with this application. Gas monitoring is performed in accordance with Rule 62-701.530, F.A.C. The results of the quarterly monitoring are submitted to FDEP.

O.3 LANDFILL GAS REMEDIATION AND ODOR REMEDIATION PLANS

No changes to the landfill gas remediation and odor remediation plans are being proposed with this application. In the event that methane is detected in concentrations that exceed the regulatory limit during quarterly monitoring, Citrus County shall submit to FDEP a gas remediation plan within seven days of detection and the remedy will be completed within 60 days of the exceedance detection, or as approved by FDEP.

In the event that an objectionable odor caused by LFG is detected, a routine odor-monitoring program will be implemented. If the odor monitoring program confirms the existence of objectionable odors, then an odor remediation plan shall be submitted to FDEP. Upon approval by FDEP, the odor remediation plan shall be implemented within 30 days.

O.4 LANDFILL GAS RECOVERY FACILITIES

The permitted GCCS will route collected LFG to the candlestick flare where the gas will be combusted.

O.4.a Application Information

The information required by Rule 62-701.320(7) and 62-701.330(3), F.A.C. was included in both the permit forms and this engineering report of the solid waste construction permit application for a landfill gas collection and control system submitted April 22, 2009.

O.4.b Closure Information

Waste disposal activities are on-going at the site. At landfill closure, the closure plan will address any integration of the GCCS with the intended end use, which has not yet been determined.

O.4.c Gas Generation and Condensate Management

The permitted GCCS is designed to recover and combust a portion of the LFG generated by the landfill. Even though the GCCS is not required per the NSPS or as part of a landfill closure, the GCCS was designed to handle future generation rates in accordance with Rule 62-701.530,

F.A.C. Please refer to the construction permit application for a landfill gas collection and control system submitted April 22, 2009 for the gas generation and condensate management.

O.4.d Condensate Sampling, Analyzing, and Data Reporting

Collected condensate will drain from the self-draining traps back into the waste mass and eventually into the leachate collection system. Condensate from the condensate sump will be pumped into the leachate holding tank. Leachate sampling takes place at the landfill and as a result the County will not conduct condensate sampling.

O.4.e Closure Plan

Waste disposal activities are on-going at the site. At landfill closure, the closure plan will address any integration of the GCCS with the intended end use. The GCCS Closure Plan will be submitted with the final GCCS design and will contain the following:

1. A closure report
2. A closure design plan
3. A closure operations plan
4. Closure procedures
5. A plan for long-term care
6. Demonstration of proof of financial responsibility for long-term care

O.4.f Closure Costs

The closure cost estimate for the permitted voluntary LFG collection and control system includes conversion of the LFG extraction points to passive vents. The closure and long-term care costs associated with the GCCS are included in the financial assurance documentation located in Attachment S-1.

SECTION P

LANDFILL CLOSURE REQUIREMENTS

P.1 CLOSURE SCHEDULE REQUIREMENTS

P.1.a Notice of Closure to FDEP

In accordance with Rule 62-701.600(2)(a), F.A.C. at least one year prior to the projected date when wastes will no longer be accepted at the Citrus County Central Landfill, Citrus County BOCC will provide to FDEP and the local pollution control agency a written notice with a schedule for cessation of waste acceptance and closure of the landfill. However, if unforeseen circumstances do not allow the one year notification, notice will be provided as soon as the need to close the facility becomes apparent

P.1.b Notice to Users

In accordance with Rule 62-701.600(2)(b), F.A.C. at least 120 days prior to the date when wastes will no longer be accepted at the Citrus County Central Landfill the following steps will be taken:

1. All users will be notified of the intent to close, date of closing, alternative disposal sites and the person responsible for the closing.

2. Signs will be posted at the entrance of the facility containing the above information. These signs will be maintained throughout the closing period.

However, if unforeseen circumstances do not allow the 120 day notice, notice will be provided as soon as the need to close the facility becomes apparent.

P.1.c Notice to Public

In accordance with Rule 62-701.600(2)(c), F.A.C. within 10 days prior to the date when wastes will no longer be accepted at the Citrus County Central Landfill, a notice of intent to close the facility will be published in the legal advertising section of a newspaper of general circulation in Citrus County, as required by Rule 62-701.600(2)(c), F.A.C. Proof of publication in the newspaper will then be provided to FDEP within seven days of the publication.

P.2 CLOSURE PERMIT GENERAL REQUIREMENTS

Citrus County BOCC will submit an application to FDEP for final closure of the Citrus County Central Landfill at least 90 days before the date when wastes will no longer be accepted. The application will include Item Numbers P.2.a and P.2.b listed below.

P.2.a Closure Application

At least 90 days before the date when wastes will no longer be accepted, the Citrus County BOCC will submit an application for final closure to the FDEP.

P.2.b Closure Plan

This Operations Permit Renewal Application includes a Closure Plan that includes the following:

1. A closure report
2. A closure design plan
3. A closure operation plan
4. Closure procedures
5. A plan for long-term care
6. Demonstration of proof of financial responsibility for long term care

Refer to Attachment P-1 for the Closure Plan.

P.3 CLOSURE REPORT REQUIREMENTS

At least 90 days before the date when wastes will no longer be accepted at the Citrus County Central Landfill, the Citrus County BOCC will submit a report for final closure to FDEP with the application for final closure pursuant to Rule 62-701.600, F.A.C. The report will include the information required in Items Numbers P.3.a, P.3.b, P.3.c, P.3.d and P.3.e listed below.

P.3.a General Information Requirements

The report of final closure will address the following:

1. Identification of the landfill.
2. Location, description, and vicinity map.
3. Total acreage of waste disposal areas and total acreage of landfill property.
4. Legal description of property on which the landfill is located.
5. History of the landfill to include dates of construction and a description of the location and sequence of fill operations.

6. Identification of the types of wastes disposed of in the completed landfill based on records, composition studies, operator memory, major waste depositors, special handling records, and other services.

P.3.b Geotechnical Report and Water Quality Monitoring Plan

A geotechnical investigation report and water quality monitoring plan will be prepared for submittal with the closure permit application required by Rule 62-701.330(3), F.A.C.

P.3.c Land Use

An updated land use information report will be prepared for submittal with the closure permit application indicating identification of adjacent landowners, zoning, present land use, and roads, highways right-of-ways, or easements.

P.3.d Gas Migration

A report on actual or potential gas migration at the Citrus County Central Landfill including detailed descriptions of test and investigational methods will be prepared.

P.3.e Effectiveness of Landfill Design

Per Rule 62-701.600(4)(e), F.A.C. a report that assesses the effectiveness of the landfill design and operation will be conducted that includes:

- Results of geotechnical investigation.
- Effects of surface water runoff, drainage patterns and storm water controls.
- Extent and effects of methane gas migration, lower explosive limit percentage readings in migration paths and description of the gas venting system.
- Condition of existing cover, thickness and types of soils or materials used for cover and effectiveness of cover material as a leachate control mechanism.
- The nature and characteristics of the waste disposed of at the landfill.

P.4 CLOSURE DESIGN REQUIREMENTS

A closure design plan consisting of engineering plans and a report on closing procedures that apply to the final closing of the waste disposal units will be submitted at least 90 days before the date when wastes will no longer be accepted. The design will include:

1. Plan drawing showing phases of site closing.
2. Drawings showing existing topography as proposed final grades.
3. Provisions to close units when they reach approved final dimensions.

4. Final elevations before settlement.

5. Final Side Slope Design.

6. Final cover installation plan to including:

   (a) CQA plan for installing and testing final cover.

   (b) Schedule for installing final cover after final receipt of waste.

   (c) Description of drought-resistant species to be used in the vegetative cover.

   (d) Top gradient design to maximize runoff and minimize erosion.

   (e) Provisions for cover material to be used for final cover maintenance.

7. Final Cover Design - the final cover design will comply with Chapter 62-701.600(5)(g). The design will address:

   (a) Protective soil layer design.

   (b) Barrier soil layer design.

   (c) Erosion control vegetation.

   (d) Geomembrane/soil barrier layer design.

   (e) Geosynthetic clay liner design if used.

   (f) Stability analysis of the cover system and the disposed waste.

8. Proposed method of storm water control according to Chapter 62-25 F.A.C.

9. Proposed method of access control.

10. Description of proposed final use of the closed landfill if applicable.

11. Description of the proposed gas management system, which complies with the current Rule.

P.5 CLOSURE OPERATION PLAN

A Closure Plan will be submitted at least 90 days before the date when wastes will no longer be accepted. The plan will include:

1. Detailed description of actions that will be taken to close the landfill.

2. Time schedule for completion of closing and long term care.

3. Description of method for demonstrating financial responsibility.

4. Listing of any additional equipment and/or personnel needed to complete closure.

5. Development and implementation of the water quality monitoring plan required by the Rule.

6. Development and implementation of a routine gas monitoring program as required in the Rule.

P.6 TEMPORARY CLOSURE

Temporary closure of the landfill is proposed to minimize leachate generation in the disposal area and to facilitate the timely use of available earth construction material at the site. Temporary closure will be accomplished concurrent with waste placement in the landfill. Areas that have reached final elevations will receive a 12-inch thick intermediate earth cover or temporary cover until such time that final cover is placed over the area.

ATTACHMENT P-1

CLOSURE PLAN

ATTACHMENT P-1

CLOSURE PLAN

INTRODUCTION

The Closure Plan for the Citrus County Central Landfill is consistent with the closure requirements of Rule 62-701 F.A.C.

The Citrus County Central Landfill Class I disposal area consisting of Phases 1, 1A, 2 and 3 covers an area of approximately 31 acres. It is anticipated that closure construction will occur when final elevations are reached for this area. The County may at some point in the future, desire to perform a partial closure prior to complete filling of the permitted area. Should the County desire to pursue this approach, the County will submit an application for a Closure Construction Permit.

CLOSURE PLAN

General

Closure activities will include:

- Placement of a liner bedding layer
- Installation of a capping system
- Construction of drainage culverts and control structures
- Placement of final cover and the establishment of vegetative cover

Closure activities will be completed by a qualified contractor or by County forces. The Contractor will be selected by competitive bid process and will be required to supply all equipment and personnel for the closure construction.

Closure Performance Standard

The Closure Plan has been developed for closing the landfill in a manner that will minimize the need for further maintenance. Closure will also minimize threats to human health and the environment from waste constituents or waste byproducts, such as leachate and landfill gas (LFG).

Closure of the Citrus County Central Landfill is designed to control the release of solid waste and waste decomposition products. The design features that control these releases are:

- A final cap that minimizes surface water and stormwater infiltration into the landfill. This cap will consist of existing intermediate cover, six (6) inches of soil liner bedding, a flexible membrane liner (FML), a geonet/geotextile drainage layer, a soil protective layer consisting of eighteen (18) inches of common fill sandy soil, and a

six (6) inch topsoil layer that will support the local species of grasses. The FML will be composed of the same or similar material type as the base liner.

- A LFG management system will consist of vertical gas vents that are installed in the waste.

In addition, closure will minimize the need for post-closure maintenance because of the following design features:

- Promotion of positive drainage by using top slopes of 4 percent and side slopes of a maximum of 3 horizontal to 1 vertical.
- Vegetation of the top surface and slopes via installation of sod.
- Allowance in the design for settlement of all closure components that will be located over waste. This feature will be achieved by using components that are flexible and that tolerate settlement (e.g., flexible pipes).

Performance standards will be met through the proper design and construction of the final cap, of the grading and erosion protection measures, of the stormwater management system features, and of the LFG management control system. All construction activities will be documented and proper quality control and quality assurance will be performed. To determine the stability of the closure cap system, side slope stability calculations were performed. These calculations were included in Attachment J-2 of the Phase 3 Expansion Construction Permit Application. The calculations show that the closure system is stable as designed. It is anticipated that the first closure project will include Phases 1/1A, 2 and parts of Phase 3.

Closure of Landfill Disposal Areas

The Citrus County Central Landfill continues to accept waste in Phases 1/1A and 2. Intermediate cover elevations are to be brought to final design elevation to allow for settlement and to provide room for the final cap system.

Temporary drainage and erosion control features, including swales and/or let down pipes and energy dissipators will be installed as specific areas reach final grade.

Closure Cap Design

The Citrus County Central Landfill individual disposal units will be closed and secured with a final cap designed to accomplish the following goals:

- Reduce or minimize infiltration of precipitation through the top surface of the landfill (the primary goal of the final cap).
- Minimize amount of maintenance.
- Control landfill decomposition byproducts (e.g., leachate, LFG).

- Promote efficient drainage while preventing excess erosion of the final cover.
- Allow for settling and subsidence while maintaining the integrity of the cap system.
- Control vectors (e.g., rats, birds).

The layers included in the proposed closure cap and their associated thicknesses are described below from top to bottom. The final topographic contours of the closed landfill through Phase 3 are included in the Final Buildout of Phases 1/1A, 2 and 3 Plan included in Attachment E-1.

- The **vegetative cover** will consist of a commercially grown sod.
- The **topsoil layer** will consist of six (6) inches of soil capable of supporting the local species of sod grasses. This may include on-site soils amended with composted yard waste mulch fines.
- The **protective soil layer** will consist of 18-inches of local sandy soils. It is a protective covering over the cap and will provide secondary support to the vegetative layer.
- The **drainage layer** above the low permeability cap will consist of 200 mil thick geocomposite drainage product. Its function will be to promote positive drainage of rainfall infiltration from the protective layer off the low permeability cap to stormwater collection features.
- The **low permeability layer** will consist of a 40-mil textured FML. The FML will significantly reduce the amount of infiltration passing through the topsoil and cover soil layers and into the waste material. The reduction in the amount of infiltration through the waste will ultimately reduce the amount of leachate generated.
- The **bedding layer** will consist of a minimum of 6-inches of clean sandy soil prepared from the existing intermediate cover.

The top slopes of the cover will be four (4) percent, and the maximum side slopes will be 3 horizontal to 1 vertical.

Surface and Stormwater Management System

Each aspect of the surface water and stormwater management system is discussed below:

- **Hydrology:** The land surrounding the landfill is highly pervious. The majority of the surface water flow into the existing detention area quickly percolates into the ground.
- **Erosion Control:** The final slopes on top of the closed landfill will be designed for 4 percent. The sideslopes will be a maximum 3 horizontal to 1 vertical, with a perimeter road and curb installed along the toe of slope of the landfill for access and

erosion control. Benches are spaced at a maximum of 40 vertical feet intervals to minimize sheet flow distances.

- **Runoff Control System:** Landfill surface water runoff is generated from the top and sideslopes of the landfill. All stormwater falling on the sideslopes will be allowed to sheet flow down the next bench a maximum of 120 feet. The benches will intercept runoff flowing down the sideslopes of the landfill to minimize erosion. The benches will convey runoff to drop inlets constructed at appropriate intervals. A series of stormwater pipes will be installed to convey the stormwater to the DRA or perimeter ditch. Surface water runoff from the landfill reaching the toe of the slope will be controlled by a perimeter curb. The curb will intercept surface water runoff from the landfill, and discharge it to the DRA via notches and paved flumes. All stormwater pipes will be installed with FDOT standard energy dissipating U-type endwalls. This surface water management system will be designed to accommodate a 24-hr, 25-yr storm event.

In summary, the stormwater control system will include:

- Stormwater collection swales to collect runoff from the landfill and convey it off to minimize erosion.
- Energy dissipators.
- Sideslope benches with swales.
- Culverts and control structure systems.
- The existing perimeter ditches and dry retention area.

CLOSURE/POST-CLOSURE COST ESTIMATE

Attachment S-1 lists the closure cost estimates for the current operation phases including Phase 3.

RECORDATION

Immediately after the closure of all disposal units at the Citrus County Landfill, the County shall record a notation on the deed to the landfill facility property and notify the Department that the notation has been recorded and a copy has been placed in the operating record. The notation on the deed shall notify any potential purchaser of the property that the land was used as a landfill facility and its use is restricted under the closure plan approved by the FDEP.

SECTION Q

CLOSURE PROCEDURES

This section is not applicable for this permit application since it does not include landfill closure. Prior to closure, Citrus County will apply for a permit for closure in accordance with the requirements of this section.

Q.1 SURVEY MONUMENTS

Several survey monuments already exist at the Citrus County Central Landfill and additional survey monuments are not required for the Phase 3 expansion.

Q.2 FINAL SURVEY REPORT

A final topographic survey will be performed after closure is complete to confirm that final contours and elevations are in accordance with the plans as approved in the closure permit.

Q.3 CERTIFICATION OF CLOSURE CONSTRUCTION COMPLETION

A certification of closure construction completion, signed, dated, and sealed by a professional engineer will be provided to the FDEP upon completion of closure in accordance with Rule 62-701.610(4), FAC.

Q.4 DECLARATION TO THE PUBLIC

After closing operations are inspected and approved by the FDEP, a declaration to the public in the deed records in the office of Clerk of Citrus County, Florida will be published in accordance with Rule 62-701.610(5), FAC.

Q.5 OFFICIAL DATE OF CLOSING

In accordance with Rule 62-701.610(6), FAC, the FDEP will determine the official date of closing.

Q.6 USE OF CLOSED LANDFILL AREAS

Consultation with the FDEP is required prior to conducting activities at closed landfills in accordance with Rule 62-701.610(7), FAC.

Q.7 RELOCATION OF WASTES

Permission from the FDEP is required to move waste from one point to another within the footprint of the waste disposal area in accordance with Rule 62-701.610(8), FAC.

SECTION R

LONG-TERM CARE REQUIREMENTS

R.1 GAS COLLECTION AND MONITORING

The gas collection and monitoring system will be maintained for the duration of the long-term care period as required by Rule 62-701.620(5), FAC.

R.2 RIGHT OF PROPERTY ACCESS

No changes are proposed; in accordance with Rule 62-701.620(4), F.A.C, the Citrus County BOCC will retain the right of entry to the landfill property for the long-term care period, after termination of solid waste operations, for inspection, monitoring and maintenance of the site.

R.3 SUCCESSORS IN INTEREST

No changes are proposed; if any person or entity, other than the Citrus County BOCC, acquires the ownership or operation of the landfill, they shall be subject to all requirements of the landfill permit and applicable regulations, including maintenance, and provide proof of financial responsibility as required by Rule 62-701.620(5) FAC.

R.4 REPLACEMENT OF MONITORING DEVICES

No changes are proposed; if a monitoring well or monitoring point cited by the permit is destroyed or becomes inoperable, the landfill owner or operator shall immediately upon discovery, notify the FDEP in writing. Inoperative monitoring devices shall be replaced with functioning devices within 60 days of the discovery or as required by Rule 62-701.620(7), FAC.

R.5 COMPLETION OF LONG-TERM CARE

Upon completion of the long-term care period, the owner or operator will certify to the FDEP that the long-term care was completed in accordance with the closure plan as permitted. The certification will be signed and sealed by a professional engineer.

SECTION S

FINANCIAL RESPONSIBILITY REQUIREMENTS

S.1 COST ESTIMATES

Citrus County is required by Rule 62-701.630, FAC, to provide FDEP a description of the financial mechanism that demonstrates proof of financial assurance for closure and long-term care of the facility.

Each year, closure and long-term care cost estimates will be prepared for the facility in accordance with Rule 62-701.630(3) and (4), FAC. In preparing the closure cost estimates, the following assumptions are to be made:

- The closure cost estimates include the permitted areas of the landfill
- Construction of the closure will be performed under contract by a private contractor
- The cost estimates are prepared for the time period during the landfill operation when the extent and manner of the landfill's operation make closing the most expensive
- The closure cost estimate assumes a geomembrane cover system over all of Phase 3
- Long-term care costs include land surface care, landfill gas control, leachate control, groundwater and surface water monitoring, and administration

Refer to Attachment S-1 for the Financial Assurance calculations.

S.2 ANNUAL COST ESTIMATES

An annual cost adjustment will be provided to FDEP in accordance with Rule 62-701.630(4) FAC. The estimate will address closure and long-term care costs, as well as corrective action costs, if required.

S.3 FUNDING MECHANISMS

Citrus County BOCC has a financial funding mechanism for the closure and long-term care of Citrus County Central Landfill currently on file with FDEP. To comply with the requirements of Rule 62-701.630(4), F.A.C., Citrus County submits annual adjustments to FDEP for the cost estimates for the closure and long term-care of the Citrus County Central Landfill.

ATTACHMENT S-1

FINANCIAL ASSURANCE COST ESTIMATE

DEP Form #	62-701.900(28)
Form Title	Financial Assurance Cost Estimate Form
Effective Date	05-27-01
DEP Application No.	(Filled by DEP)

Florida Department of Environmental Protection

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

FINANCIAL ASSURANCE COST ESTIMATE FORM

Date: **February 1, 2010** Date of FDEP Approval: _____

I. GENERAL INFORMATION:

Facility Name: Citrus County Central Landfill WACS or GMSID #.: SWD/53/49723

Permit / Application No.: _____ Expiration Date: _____

Facility Address: State Road 44, 3 miles east of Lecanto

Permittee: Citrus County Board of County Commissioners

Mailing Address: P.O. box 340 Lecanto, FL 34460

Latitude: 28 51'07" Longitude: 82 26'12" or UTM: _____

Solid Waste Disposal Units Included in Estimate:

Phase / Cell	Acres	Date Unit Began Accepting Waste	Design Life of Unit From Date of Initial Receipt of Waste
3	6.65		NA
2	6	Mid- 2005	10
1/1A	19.1	1991	14
Old LF	60		Closed

Total Landfill Acreage included in this estimate. 31.2 Closure 91.2 Long-Term Care

Type of Landfill: X Class I _____ Class III _____ C&D Debris

II. TYPE OF FINANCIAL ASSURANCE DOCUMENT (Check Type)

_____ Letter of Credit *

_____ Performance Bond *

_____ Guaranty Bond *

_____ Insurance Certificate

X Escrow Account

_____ Financial Test

*Indicates mechanisms that require use of a Standby Trust Fund Agreement

III. ESTIMATE ADJUSTMENT

40 CFR Part 264 Subpart H as adopted by reference in Rule 62-701.630, Florida Administrative Code sets forth the method of annual cost estimate adjustment. Cost estimates may be adjusted by using an inflation factor or by recalculating the maximum costs of closure in current dollars. Select on of the methods of cost estimate adjustment below.

(a) Inflation Factor Adjustment

Inflation adjustment using an inflation factor may only be made when a Department approved closure cost estimate exists and no changes have occurred in the facility operation which would necessitate modification to the closure plan. The inflation factor is derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year. The inflation factor may also be obtained from the Solid Waste Financial Coordinator at (850)-488-0300.

This adjustment is based on the Department approved closure cost estimate dated: _____

Latest Department Approved Closure Cost Estimate:		Current Year Inflation Factor		Inflation Adjusted Closure Cost Estimate:
_____	x	_____	=	$0.00

This adjustment is based on the Department approved long-term care cost estimate dated: _____

Latest Department Approved Annual Long-Term Care Cost Estimate:		Current Year Inflation Factor		Inflation Adjusted Annual Long-Term Care Cost Estimate
_____	x	_____	=	$0.00

Number of Years of Long Term Care Remaining: x 30

Inflation Adjusted Long-Term Care Cost Estimate: = $0.00

(b) Recalculate Estimates (see section V)

IV. CERTIFICATION BY ENGINEER

This is to certify that the Financial Assurance Cost Estimates pertaining to the engineering features of the this solid waste management facility have been examined by me and found to conform to engineering principals applicable to such facilities. In my professional judgement, the cost Estimates are a true, correct and complete representation of the financial liabilities for closing and long-term care of the facility and comply with the requirements of Florida Administrative Code (F.A.C.), Rule 62-701.630 and all other Department of Environmental Protection rules, and statutes of the State of Florida. It is understood that the Financial Assurance Cost Estimates shall be submitted to the Department annually, revised or adjusted as required by Rule 62-701.630(4), F.A.C.

2/1/10
Signature of Engineer

Dominique H. Bamlett, P.E., Senior Project Engineer
Name & Title (please type)

Florida Registration Number (affix seal)

SCS Engineers
4041 Park Oaks Blvd. Suite 100
Tampa, Florida 33610
Mailing Address

813-621-0080
Telephone Number

Signature of Owner/Operator

Casey Stephens, Director, Div of Solid Waste Mgmt.
Name & Title (please type)

(352) 527-7670
Telephone Number

V. RECALCULATE ESTIMATED CLOSING COST

For the time period in the landfill operation when the extent and manner of its operation makes closing **most expensive**.

**** Third Party Estimate / Quote must be provided for each item**
**** Costs must be for a third party providing all material and labor**

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
1. Proposed Monitoring Wells	(Do not include wells already in existence.)			
	EA			$0
2. Slope and Fill (bedding layer between waste and barrier layer): N/A				
Fine Grading	SY	170,176	$0.17	$28,930
Placement and Spreading	CY	56,725	$1.85	$104,941
Compaction	CY	56,725	$0.46	$26,094
Off Site Material (12")	CY	56,725	$4.50	$255,263
Delivery	CY			$0
			Subtotal Slope and Fill:	$415,000
3. Cover Material (Barrier Layer):				
Off-Site Clay	CY	0.00	$0.00	$0
Synthetics - 40 mil	SF	1,531,581	$0.58	$888,317
Synthetics - GCL	SY	0.00	$0.00	$0
Synthetics - Geonet (Geocomposite)	SF	1,531,581	$0.58	$888,317
Synthetics - Other	SY	0	$0.00	$0
			Subtotal Barrier Layer Cover:	$1,777,000
4. Top Soil Cover: (18" protective soil + 6" topsoil)				
Off-Site Material	CY	113,450	$4.50	$510,525
Delivery +Spread	CY	113,450	$2.45	$277,953
Delivery +Spread	CY			$0
			Subtotal Top Soil Cover	$788,000

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
5. Vegetative Layer				
Sodding	SY	170,176	$2.19	$372,685
Hydroseeding	AC	0.00	$0.00	$0
Fertilizer	AC	0	$0.00	$0
Mulch	AC	0.00	$0.00	$0
Other	SY	0	$0.00	$0
			Subtotal Vegetative Layer:	$373,000
6. Stormwater Control System:				
Earthwork	CY	4,206	$4.50	$18,927
Grading	SY	0	$0.00	$0
Piping	LF	5,317	$11.74	$62,406
Ditches	LF	0.00	$0.00	$0
Berms	LF	5678	$1.81	$10,277
Control Structures	EA	14	$3,608.00	$50,512
Other	LS	1	$9,625.00	$9,625
			Subtotal Stormwater Controls:	$152,000
7. Gas Controls: Passive				
Vents (2 per acre)	EA	70	$5,307.50	$371,525
Self -Igniter Flares	EA			$0
Monitoring Probes	EA	1	$2,775.00	$2,775
NSPS/Title V requirements	LS			$0
			Subtotal Passive Gas Control:	$374,000

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
8. Gas Control: Active Extraction	**N/A**			
Traps	EA	0	$0.00	$0
Sump	EA	0	$0.00	$0
Flare Assembly	EA	0	$0.00	$0
Flame Arrestor	EA	0	$0.00	$0
Mist Eliminator	EA	0	$0.00	$0
Flow Meter	EA	0	$0.00	$0
Blowers	EA	0	$0.00	$0
Collection System	LF	0	$0.00	$0
Other (describe)		0	$0.00	$0
			Subtotal Active Gas Extraction:	$0
9. Security System				
Fencing	LF	0	$0.00	$0
Gate(s)	EA	0	$0.00	$0
Sign(s)	EA	0	$0.00	$0
			Subtotal Security System:	$0
10. Engineering:				
Closure Plan report	LS	1	$182,745	$182,745
Certified Engineer	LS		$0.00	$0
NSPS/Title V Air Permit	LS	1	$2,553.00	$2,553
Final Survey	LS	1	$8,139.00	$8,139
Certification of Closure	LS	1	$13,050	$13,050
Other (detail)	LS		$0.00	$0
			Subtotal Engineering:	$206,000

11. Professional Services

	Contract Management		Quality Assurance		
	Hours	LS	Hours	LS	TOTAL
P.E. Supervisor	160	17,920	40	4,480	$22,400
On-Site Engineer	480	40,800	200	17,000	$57,800
Office Engineer	200	17,000	200	17,000	$34,000
On-site Technician			840	50400	$50,400
Administrative cost	60	3,240			$3,240
Reimbursables		27,639		6,026	$33,665

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
Quality Assurance Testing	LS	1	40,000	$40,000

Subtotal Professional Services: $242,000

Subtotal of 1-11 Above: $4,327,000

12. Contingency 15 % of Total 15.00%

Closing Cost Subtotal: $4,976,050

13. Site Specific Costs (explain)

Mobilization (10% of Sub-Total 1-11)	$432,700
Waste Tire Facility	$9,775
Materials Recovery Facility	$0
Special Wastes	$0
Leachate Disposal for One Year	$24,724
Other (Bonds & Insurance 2% of Sub-Total 1-11)	$86,540

Subtotal Site Specific Costs: $553,740

TOTAL CLOSING COSTS: $5,529,790

VI. ANNUAL COST FOR LONG-TERM CARE (Check Term Length)

_____ 5 years _____ 20 years **X** 30 years _____ Other

See 62-701.600(1)a.1., 62-701.620(1), 62-701.630(3)a. and 62-701.730(11)b. F.A.C. for required term length. For landfills certified closed and Department accepted, enter the remaining long-term care length as "Other" and provide years remaining.

**** Third Party Estimate / Quote must be provided for each item**
**** Costs must be for a third party providing all material and labor**

All items must be addressed. Attach a detailed explanation for all items marked not applicable (N/A).

DESCRIPTION	Sampling Frequency (events/yr.)	Number of Wells	$/Well/Event	$ / Year
1. Groundwater Monitoring (62-701.510(6), and (8)(a))				
Monthly (Gradient)	12			$0
Quarterly	4		$0.00	$0
Semi-Annual	2	**14**	$941.79	**$26,370**
Annual	1	**14**	$422.86	**$5,920**
		Subtotal Groundwater Monitoring:		**$32,290**
2. Surface Water Monitoring (62-701.510(4), and (8)(b))				
Monthly	12			$0
Quarterly	4			$0
Semi-Annual	2			$0
Annual	1			$0
		Subtotal Surface Water Monitoring:		$0
3. Gas Monitoring				
Monthly	12		$0.00	$0.00
Quarterly	4	**19**	$56.06	**$4,261**
Semi-Annual	2		$0.00	$0.00
Annual	1		$0.00	$0.00
			Subtotal Gas Monitoring:	**$4,261**

DESCRIPTION	Sampling Frequency (events/yr.)	Number of Wells	$/Well/Event	$ / Year
4. Leachate Monitoring (62-701.510(5), (6)(b) and 62-701.510(8)(c))				
Monthly	12	0	$0.00	$0.00
Quarterly	4	**3**	**$321.43**	**$3,857**
Semi-Annual	2	0	$0.00	$0.00
Annual	1	1	$1,064	$1,064
Weekly	52	0	$0.00	$0.00
			Subtotal Leachate Monitoring:	**$4,921**

DESCRIPTION	UNIT	QUANTITY	UNIT COST	ANNUAL COST
5. Leachate Collection/Treatment Systems Maintenance				
Maintenance				
Collection Pipes	LS	1.0	$7,150	$7,150
Sumps, Traps	EA	0	$0.00	$0.00
Lift Stations	EA	10	$275	$2,750
Cleaning	LS	0	$0.00	$0.00
Tanks	EA	4	$625	$2,500
Impoundments				
Liner Repair	SY	0	$0.00	$0
Sludge Removal	CY			$0
Treatment Systems	CY	0	$0.00	$0
Batch Plant	EA	0	$0.00	$0
Spray Aerators	EA	0	$0.00	$0
Disposal				
On-site Impoundment	1000 gallon	432	**$57.23**	**$24,730**
			Sub-Total Leachate Collection /Treatment System Maintenance:	**$37,130**

6. Leachate Collection/Treatment Systems Administrative:

Operation		Hours	$/Hour	Total
Ops.Supervisor (1 day per month for reports)	HR	96	$95.00	$9,120
On-Site Engineer	HR	0	$0.00	$0.00
Office Engineer	HR	32	$112	$3,584
On-site Technician (WWTP Operator 12 hrs./week)	HR	312	$85.00	$26,520
Materials	LS	0	$0.00	$0.00
		Subtotal Leachate Collection/Treatment System Administrative:		$39,224

7. Maintenance of Groundwater Monitoring Wells

Monitoring Wells	EA	15	$32.00	$480
Replacement	EA	1.0	$1,037	$1,037
Abandonment	EA			$0.00
		Subtotal Groundwater Monitoring Well Maintenance:		$1,517

DESCRIPTION	UNIT	QUANTITY	UNIT COST	ANNUAL COST

8. Gas System Maintenance

Piping, Vents	EA	57	$120	$6,840
Blowers	EA	0	$0.00	$0.00
Flaring Units	EA	7	$120	$840
Meters, Valves	EA	0	$0.00	$0.00
Compressors	EA	0	$0.00	$0.00
Flame Arrestors	EA	0	$0.00	$0.00
Replace monitoring probes	EA	1	$185	$185.00
			Subtotal Gas System:	$7,865

9. Landscape

Mowing	AC	145	$50.52	$7,330
Fertilizer	AC	0	$0.00	$0.00
			Subtotal Landscape Maintenance:	$7,330

DESCRIPTION	UNIT	QUANTITY	UNIT COST	ANNUAL COST
10. Erosion Control & Cover Maintenance				
Sodding	SY	0	$0.00	$0
Regrading	LS	1	$213	$213
Liner Repair	LS	1	$1,769	$1,769
Clay	CY	0	$0.00	$0.00
			Subtotal Erosion Control and Cover Maintenance:	$1,982
11. Storm Water Management System Maintenance				
Conveyance Maintenance	LS	1	$9,421	$9,421
			Subtotal Storm Water System Maintenance:	$9,421
12. Security System Maintenance				
Fences	LF	50	$13.08	$654
Gate(s)	EA			$0
Sign(s)	EA			$0
			Subtotal Security System:	$654
13. Utilities	LS			$0
14. Administrative				
Site Manager	HR	48	$112	$5,376
On-Site Engineer	HR			$0
Office Engineer	HR	0	$0.00	$0.00
Clerical	HR	48	$54	$2,592
Other (consulting)		1	$2,040.00	$2,040
			Subtotal Administrative:	$10,008
15. Contingency	% of Total	156,603	5%	$8,000
			Subtotal Contingency:	$8,000

16. Site Specific Costs (explain)	UNIT COST	
	LS	
	LS	$0
ANNUAL LONG-TERM CARE COST ($/Year):		**$164,603**
NUMBER OF YEARS OF LONG-TERM CARE		30
TOTAL LONG-TERM CARE COST ($):		**$4,938,076**

SCS ENGINEERS

SHEET 1 of 16

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

OBJECTIVE: To estimate the closing cost for Citrus County Central Landfill Phase 3. The 7-acre closed landfill re-closure portion and the permanent gas system had already been constructed and are therefore not included in the closure cost estimate.

REFERENCES:

- 2008 RS Means
- Quote from Crystal River Quarries, Inc.
- E-mail from Bob Trexler (Geo-Synthetics, Inc.)
- FDOT Long Range Estimating System
- E-mail from Dan Dietrich, EI (Advanced Drainage Systems, Inc.)
- Cost Estimate by Landfill Service
- SCS Engineers Fee Schedule
- Enterprise Car Rental Rate
- Huss Drilling Cost Estimate
- E-mail from Susan Metcalfe (Citrus County)
- Orange County Schedule of Values

SCS ENGINEERS

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

1. PROPOSED MONITORING WELLS

No new monitoring wells.

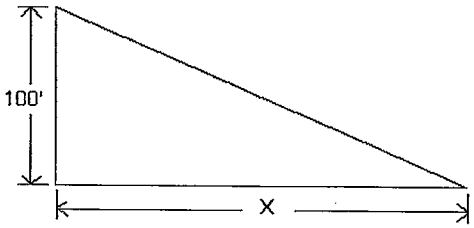
2. SLOPE AND FILL (PHASE I, IA, II AND III)

Area per CADD = 1,465,407 sf (See Attachment 1)

Sideslope factor

Flat top area = 262,251 sf

Sideslope = 1,465,407 sf - 262,251 sf = 1,203,156 sf



slope = 1/3 = rise/run = 100/run

x = 100 x 3 = 300 ft

$y = (100^2 + 300^2)^{1/2} = 316.25$ ft

Percent to add to footprint tp account for sideslopes

$$= \frac{316.25 \text{ ft} - 300 \text{ ft}}{300 \text{ ft}} \times 100\% = 5.5\%$$

Revised area = (1,203,156 sf x 105.5%) + 262,251 sf
= 1,269,329 sf + 262,251 sf
= 1,531,581 sf
= 170,176 sy

Geomembrane Bedding = 12 " depth

Volume of geomembrane bedding:

Volume = (1,531,581 sf) x (12 in) x (1 ft/12 in) x (1 cy/27 cf)
= 56,725 cy

Fine Grading

Area = 170,176 sy

Unit cost = $0.17/sy (See Attachment 2)

Total cost = 170,176 sy x $0.17/sy = **$28,930**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

Placement and Spreading

Volume = 56,725 cy

Unit cost = $1.85/cy (See Attachment 3)

Total cost: 56,725 cy x $1.85/cy = **$104,941**

Compaction

Volume = 56,725 cy

Unit cost = $0.46/cy (See Attachment 4)

Total cost: 56,725 cy x $0.46/cy = **$26,094**

Off-site Material (12")

Cost of off-site soils: $ 4.5/cy (material and freight) (Attachment 5)

Reference: Crystal River Quaries, Frank Colitz
2961 S. Levanto Hwy
Lecanto, FL 34461
352-746-4300
Alternate # 352-795-2409

Total cost: $ 4.50/cy x 56,725 cy = **$ 255,263**

3. COVER MATERIAL (BARRIER LAYER)

Synthetics - 40 mil

Area = 1,531,581 sf

Unit cost:

Material	$ 0.30/sf	(See Attachment 6)
Installation	$ 0.28/sf	
	$ 0.58/sf	

Total Cost: 1,531,581 sf x $ 0.58/sf = **$ 888,317**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	BY	DATE
Fiancial Assurance	JPB	12/23/2009
Closing Cost	CHECKED	DATE

Synthetics - Geocomposite

Area = 1,531,581 sf

Unit cost:

Material	$ 0.38/sf	(See Attachment 6)
Installation	$ 0.20/sf	
	$ 0.58/sf	

Total cost: 1,531,581 sf x $ 0.58/sf = **$ 888,317**

4. TOP SOIL COVER

Area = 1,531,581 sf

Thickness of cover soil = 2 feet

Volume = 1,531,581 sf x 2 feet = 3,063,162 cf
= 113,450 cy

Off-site Material

Cost of off-site soils: $ 4.50/cy (material and freight) (Attachment 5)

Reference: Crystal River Quaries, Frank Colitz
2961 S. Levanto Hwy
Lecanto, FL 34461
352-746-4300
Alternate # 352-795-2409

Total cost: $ 4.50/cy x 113,450 cy = **$ 510,525**

Delivery + Spread

Unit Cost: $ 2.45/cy (See Attachment 7)

Total cost: 113,450 cy x $ 2.45/cy = **$277,953**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

5. VEGETATIVE LAYER

Area = 170,176 sy

Unit cost: $ 2.19/sy (See Attachment 8)

Total cost: 170,176 sy x $ 2.19/sy = **$ 372,685**

6. STORMWATER CONTROL SYSTEM

Earthwork

Cost of off-site soils: $ 4.50/cy (material and freight) (Attachment 5)

Reference: Crystal River Quaries, Frank Colitz
2961 S. Levanto Hwy
Lecanto, FL 34461
352-746-4300
Alternate # 352-795-2409

Volume of berms:

Cross-sectional area = (2 ft x 20 ft) / 2 = 20 sf
(See Attachment 8 for diagram)

Total length of stormwater berms = 5,678 ft

Total volume = 20 sf x 5,678 ft = 113,560 cf/27 = 4,206 cy

Total cost: $ 4.50/cy x 4,206 cy = **$ 18,927**

Piping

Total lengths (See Attachment 9):
12" ADS Pipes = 1,832 ft
18" ADS Pipes = 2,235 ft
24" ADS Pipes = 1,250 ft

Unit costs (See Attachment 10):
12" ADS Pipe = $ 5.90/ft
18" ADS Pipe = $ 10.90/ft
24" ADS Pipe = $17.25/ft

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT Fiancial Assurance Closing Cost	**BY** JPB	**DATE** 12/23/2009
	CHECKED	**DATE**

Total costs:

12" ADS Pipe = 1,832 ft x $ 5.90/ft =	$10,808.80
18" ADS Pipe = 2,235 ft x $ 10.90/ft =	$24,361.50
24" ADS Pipe = 1,250 ft x $ 17.25/ft =	$21,562.50
	$56,723.80

Total length of all downchute pipes = 5,317 ft

Unit cost: $ 56,723.80/5,317 ft = $ 10.67/ft

Total cost: 5,317 ft x $ 10.67/ft = $ 56,732.39

Assume 10% for installation cost

Total cost (material and installation) = $ 56,732.39 x 1.10 = **$ 62,405.63**

Berms

Cross-sectional area = (2 ft x 20 ft)/2 = 20 sf (See Attachment 11 for diagram)

Total length of stormwater berms = 5,678 ft

Total Volume = 20 sf x 5,678 ft = 113,560 cf/27 = 4,206 cy

Unit cost: 4,206 cy x $ 2.45/cy = $ 10,304.70

Unit cost per lf = $ 10,304.70/5,678 ft = $ 1.81/ft

Total cost: 5,678 ft x $ 1.81/ft = **$ 10,277**

Control Structures

Energy Dissipators: 14

Unit cost: $ 3,280.00 each (See Attachment 12)

Total cost: 14 x $ 3,280.00 = $ 45,920

Assume 10% for installation cost

Total cost (material and installation) = $ 45,920 x 1.10 = **$ 50,512**

On a per EA basis = $ 50,512/14 = $ 3,608

Other: Catch Basin

Number of inline drain: 5
Number of drain basin: 4

Unit cost (Attachment 13):
30" Nyloplast inline drain: $ 750/each
30" Nylopast drain basin: $ 1,250/each

Total cost:

5 x $ 750 =	$3,750
4 x $ 1,250 =	$5,000
	$8,750

Assume 10% for installation cost
Total cost (material and installation) = $ 8,750 x 1.10 = **$ 9,625**

7. GAS CONTROLS PASSIVE

Vents:
Assume 2 gas vents per acre will be installed
35 acres: 2 x 35 = 70 vents

Assume each vent will be 55 ft
70 x 55 = 3,850 ft

Unit cost: $ 96.50/lf (See Attachment 14)
Total cost: 3,850 ft x $ 96.50 = **$ 371,525**

Unit cost per vent: $ 371,525/70 = $ 5,307.50 each

Monitoring Probes:

1 new monitoring probe

Cost to install 1 monitoring probe = **$ 2,775.00** (See Attachment 15)

NSPS/Title V requirements: (See sheet 13 of 19 closing cost)

8. GAS CONTROL: ACTIVE EXTRACTION

This landfill does not have an active landfill gas collection and control system. Hence Item 8 is not applicable.

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

9. SECURITY SYSTEM

Citrus County Central Landfill has fencing and gates for the entry/exit of garbage trucks and residential vehicles that haul waste to the landfill. Hence, no new security system arrangements need to be made.

10. ENGINEERING

10(a). Closure Plan Report

10(a)(i). Closure Plan Report Production
(Assume 2 months to complete)

Man Power	Hours	Rate *	Comments
Staff Engineer	80	$85/hr	Closure design/specs
Drafting	50	$70/hr	Design drawings
Sr. Proj. Engineer	40	$112/hr	Oversee closure design/specs
Admin.	25	$54/hr	Word process
Proj. Director	15	$185/hr	Check/sign/seal

Reimbursables

Faxes: (6 pg/wk) x (4 wk/1 month) x 2 months x 2 copies = 96 pages

Unit Cost: $5 - First page
$1 - Each additional page (See Attachment 16)

96 pages - $5.00 + ($1 x 95) = $100.00

Xerox:

(5 pg/letter) x (2 letters/wk) x (4 wks/1 month) x 2 months x 4 copies = 320 pgs

Unit cost: $0.10/page (See Attachment 16)

320 x $0.10 = $32.00

Notes:

* See Attachment 16

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

CAD Reproductions: 100 sheets

Unit cost: $2.00/sheet

100 x $2.00 = $200.00

CAD Usage: 50 hrs.

Unit cost: $20/hr (See Attachment 16)

50 hrs x $20/hr = $1,000

Permits: $7,500 for Class I Landfill Closure Report

Survey: $3,500/ac (See Attachment 17)

Total area in acres: 35 acres

Total cost: $5,700/ac x 35 acres = $122,500

Sum of Reimbursables = $131,332
G & A = $19,700
$151,032

Total cost for Closure Plan Report: $18,905 + $151,032 = **$169,937**

10(a)(ii). FDEP Coordination (Assume 1 month to respond)

Manpower	Hours	Rate *	Comments
Staff Engineer	20	$85/hr	Response to FDEP
Drafting	16	$70/hr	Changes to drawing
Sr. Project Engineer	12	$112/hr	Check responses
Project Director	8	$185/hr	Check/sign/seal
	Total =	$5,644	

Notes:

* See Attachment 16

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT Fiancial Assurance Closing Cost	**BY** JPB	**DATE** 12/23/2009
	CHECKED	**DATE**

Reimbursables

Faxes: (2 pages/wk) x (4 wk/1 month) x 1 month x 2 copies = 16 pages

Unit cost: $5 - first page
$1 - each additional page (See Attachment 16)

Total cost of faxes: $5 + (15 x $1) = $20

CAD Reproductions: 50 sheets

Unit cost: $2.00/sheet

50 x $2.00 = $100.00

Computer Time - CADD: 10 hours

Unit cost: $20/hr (See Attachment 16)

10 hrs x $20/hr = $200

Sum of Reimbursables : $320
G & A : $48 (15% Reimbursables)
$368

Total for 10(ii) = $5,644 + $368 = $6,012

10(a)(iii). Bidding

Manpower	Hours	Rate *	Comments
Staff Engineer	20	$85/hr	Response to bidders/questions
Sr. Project Engineer	18	$112/hr	Review response to bidders ques.
Proj. Director	4	$185/hr	Check/sign/seal
Drafting	8	$70/hr	Reproduce bid drawings
Admin	8	$54/hr	
	Total =	$5,448	

Notes:

* See Attachment 16

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

Reimbursables

Faxes: (2 pg/fax) x 12 faxes x 2 copies = 48 pages

Unit cost: $5 - first page
$1 - each additional page (See Attachment 16)

Total cost of faxes: $5 + (47 x $1) = $52

Xerox: 200 pages (bid pages) x 12 (bidders) = 2,400 pages

Unit cost: $0.10/sheet (See Attachment 16)

Total cost of xerox: 2,400 x $0.10 = $240

CAD Reproduction: 20 pages x 12 bidders = 240 pages

Unit cost: $2.00/page

Total cost of CADD Reproduction: 240 x $2.00 = $480

Computer CAD Time: 8 hr

Unit cost: $20/hr (See Attachment 16)

Total cost of CAD Time: 8 x $20 = $160

Shipping: 12 bid packages x ($20/package) = $240

Total Reimbursables : $1,172
G & A : $176 (15% Reimbursables)
$1,348

Total for 10(a)(iii) Bidding = $5,448 + $1,348 + $1,348 = $6,796

Total for Closure Plan Report = 10(a)(i) + 10(a)(ii) + 10(a)(iii)
= $169,937 + $6,012 + $6,796
= **$182,745**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

10.b. NSPS/Title V Air Permit

Manpower	Hours	Rate *	Comments
Staff Engineer	16	$85/hr	Produce Report
Sr. Proj. Engineer	5	$135/hr	Review Report
Proj. Director	1	$185/hr	Sign/seal
	Total :	$2,220	

$2,220.00
Reimbursables (15%) $333.00 +
Total: **$2,553.00**

10.c. Final Survey

Manpower	Hours	Rate *	Comments
Staff Engineer	16	$85/hr	Coordination with surveyor
Sr. Proj. Engineer	2	$112/hr	Review work order to the surveyor

Reimbursables
Aerial Survey: $5,700 (See Attachment 17)
15% Reimbursables: $855
$6,555

Total for final survey = $1,584 + $6,555 = **$8,139**

10.d Certification of Closure

Manpower	Hours	Rate *	Comments
Staff Engineer	80	$85/hr	Prepare closure report
Drafting	25	$70/hr	Any re-design/as-built
Sr. Proj. Engineer	16	$112/hr	Review closure report
Admin. Assistance	10	$54/hr	Production support
Project Director	4	$185/hr	Check, sign, seal
	Total =	**$11,622**	

Notes:

* See Attachment 16

SCS ENGINEERS

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

Reimbursables

Faxes: (1 fax/wk) x (2 pg/fax) x 8 wks x 3 copies = 48

Unit cost: $5.00 - first page
$1.00 - each additional sheet (See Attachment 16)

Total cost to fax: $5 + (47 x $1.00) = $52.00

Xerox: 250 pages (Certificate of Closure Report) x 8 copies = 2,000 pages

Unit cost: $0.10/page (See Attachment 16)

Total cost to xerox: 2,000 x $0.10 = $200

Graphics: (CAD Reproduction)

15 sheet x 8 copies = 120 sheets

Unit cost: $2.00/sheet

Total cost of graphics: 120 x $2.00 = $240

Computer CAD Time: 25 hours

Unit cost: $40/hr

Total cost of CAD usage: 25 x $20 = $500

Postage: $100, equipment supplies = $250

Total reimbursables = $1,242
G & A = $186 (15% Reimbursables)
Total = $1,428

Total for Item 10.d = $11,622 + $1,428 = **$13,050**

Notes:

* See Attachment 16

SCS ENGINEERS

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

11. PROFESSIONAL SERVICES

11a. Contract Management

Assume 3 months for closure
3 months x (4 wks/mo) x(5 days/wk) x (8 hr/day) = 480 hrs

Manpower	Hours	Rate *	Comments
Sr. Proj. Engineer	160	$112/hr	Proj. management
Staff Eng. (on-site)	480	$85/hr	On-site full time
Office Engineer	200	$85/hr	Proj. technical support
Admin.	60	$54/hr	Office support
	Total =	$78,960	

Reimbursables

Rental car: 3 months x (30 days/month) x ($39/day) ** = $3,510

Cell phone: 180 days x ($5/day) = $900

Meals: 180 days x ($28/day) = $5,040

Lodging: 180 days x (80/day) = $14,400

Fax: (4 pages/wk) x we wks x 3 copies = 144

Unit cost to fax: $5 - 1st page
$1 - each additional page (See Attachment 16)

Total cost to fax: $5 + (143 x $1.00) = $148

Xerox: (10 page/wk) x 12 wks x 3 copies = 360

Unit cost to xerox: $0.10/page (See Attachment 16)

Total cost to xerox: 360 x $0.10 = $36

Notes:
* See Attachment 16
** See Attachment 18

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Closing Cost	**CHECKED**	**DATE**

Total Reimbursables = $24,034
G & A = $3,605 (15% Reimbursables)
$27,639

Total for 11.a = $78,960 + $27,639 = **$106,599**

11.b Quality Assurance (Assume 1 month for liner installation)

Manpower	Hours	Rate *	Comments
Staff Engineer	200	$85/hr	Construction QA (on-site)
Office Engineer	200	$85/hr	Office, technical support
Sr. Proj. Eng.	40	$112/hr	P.E. Supervisor
	Total =	$38,480	

Reimbursables:

Equipment and supplies = $2,000
Meals = 30 days x $28/day = $840
Lodging = 30 days x $80/day = $2,400

Total reimbursables = $5,240
15% reimbursables = $786
Total = $6,026

On-site Technician:

(10 hr/day) x (7 days/wk) x (4 wk/1 mo) x 3 mo = 840 hours

Unit cost: $60/hr (See Attachment 16)

Total cost: 840 hours x $60/hr = $50,400

Total for 11.b = $38,480 + $6,026 + $50,400 = **$94,906**

Total for 11 = cost for 11a + cost for 11b
= $106,599 + $94,906
= **$201,505**

Notes:

* See Attachment 16

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	BY	DATE
Fiancial Assurance	JPB	12/23/2009
Closing Cost	CHECKED	DATE

Quality Assurance Testing:

Assume a lump sum cost of **$40,000**

12. CONTINGENCY

15% of Items 1-11 = 0.15 x $4,312,000 = $646,800

CLOSING COST SUBTOTAL: $4,312,000 + $646,800 = **$4,958,800**

13. SITE SPECIFIC COSTS

Mobilization (10% of Items 1-11) = 0.10 x $4,306,000 = **$430,600**

Waste Tire Facility = **$9,775** (See Attachment 18)

Leachate Disposal for one year:

Total closure area = 31.2 acres + 7 acres = 38.2 acres

Average leachate flow = 31 gpd/ac

A letter dated July 8, 2005 from SCS Engineers to FDEP included back-up calculations for the closure cost estimate based on adding to the cost for one year of offsite leachate disposal at the post-closure annual average generation rate.

In addition, this average leachate rate was approved in 2005 (letter dated July 12, 2005) and in 2006 (letter dated Oct. 31, 2006).

31 gpd/ac x 365 days/yr x 38.2 ac = 432,233 gal/yr

Hauling: $0.05/gal x 432,233 gal/yr = $21,612

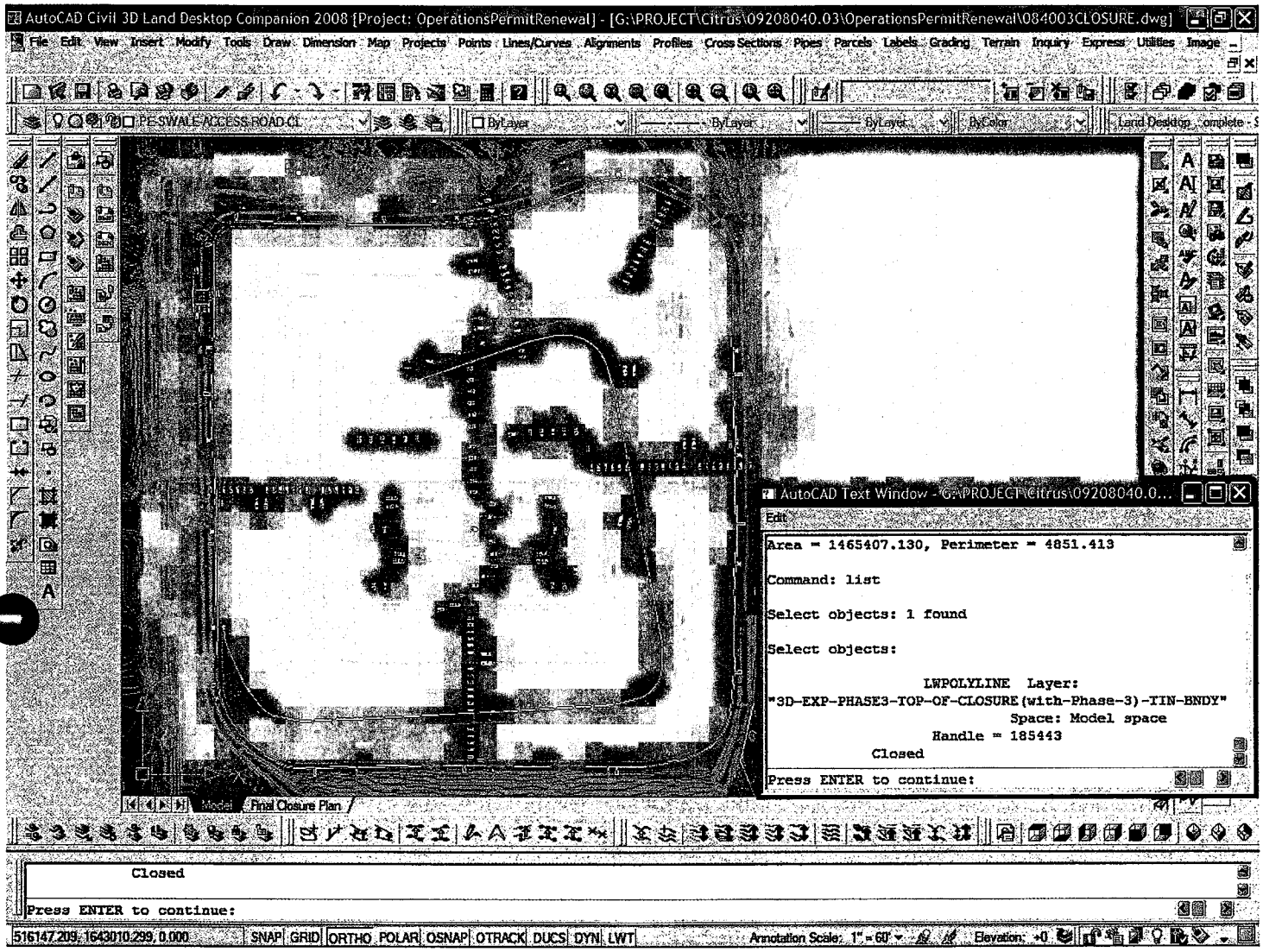
Disposal: $0.0072/gal x 432,233 gal/yr = $3,112

Cost of leachate disposal for one year: $21,612 + $3,112 = **$24,724**

Other (Bonds and Insurance 2% of Sub-total 1-11)
= 0.02 x $4,306,000 = **$86,120**

Subtotal Site Specific Costs: **$551,220**

TOTAL CLOSING COSTS: $5,510,740


AutoCAD Civil 3D Land Desktop Companion 2008 [Project: OperationsPermitRenewal] - [G:\PROJECT\Citrus\09208040.03\OperationsPermitRenewal\084003CLOSURE.dwg]
File Edit View Insert Modify Tools Draw Dimension Map Projects Points Lines/Curves Alignments Profiles Cross Sections Pipes Parcels Labels Grading Terrain Inquiry Express Utilities Image
PE-SWALE-ACCESS ROAD-CL
ByLayer
ByLayer
ByLayer
ByColor
Land Desktop Complete
AutoCAD Text Window - G:\PROJECT\Citrus\09208040.0...
Edit
Area = 1465407.130, Perimeter = 4851.413
Command: list
Select objects: 1 found
Select objects:
LWPOLYLINE Layer: "3D-EXP-PHASE3-TOP-OF-CLOSURE(with-Phase-3)-TIN-BNDY"
Space: Model space
Handle = 185443
Closed
Press ENTER to continue:
Model
Final Closure Plan
Closed
Press ENTER to continue:
516147.209, 1643010.299, 0.000
SNAP GRID ORTHO POLAR OSNAP OTRACK DUCS DYN LWT
Annotation Scale: 1" = 60'
Elevation: 0

ATTACHMENT 2

31 14 Earth Stripping and Stockpiling

31 14 13 – Soil Stripping and Stockpiling

31 14 13.23 Topsoil Stripping and Stockpiling

		Crew	Daily Output	Labor-Hours	Unit	2008 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
0010	**TOPSOIL STRIPPING AND STOCKPILING**									
0020	200 H.P. dozer, ideal conditions	B-10B	2300	.005	C.Y.		.19	.47	.66	.80
0050	Adverse conditions	"	1150	.010			.38	.93	1.31	1.60
0100	300 HP dozer, ideal conditions	B-10M	3000	.004			.15	.46	.61	.73
0200	Adverse conditions	"	1650	.007			.27	.84	1.11	1.34
0300	Loam or topsoil, remove and stockpile on site									
1400	6" deep, 200' haul	B-10B	865	.014	C.Y.		.51	1.24	1.75	2.13
1420	300' haul		520	.023			.85	2.06	2.91	3.56
1430	500' haul		225	.053			1.95	4.76	6.71	8.20
1440	Alternate method: 6" deep, 200' haul		5090	.002	S.Y.		.09	.21	.30	.36
1450	500' haul		1325	.009	"		.33	.81	1.14	1.40
1460										

31 22 Grading

31 22 16 – Fine Grading

31 22 16.10 Finish Grading

0010	**FINISH GRADING**									
0012	Finish grading area to be paved with grader, small area	B-11L	400	.040	S.Y.		1.40	1.34	2.74	3.61
0016	Finish grading lagoon bottoms		4	4	M.S.F.		140	134	274	360
0100	Large area		2000	.008	S.Y.		.28	.27	.55	.72
0200	Grade subgrade for base course, roadways		3500	.005	"		.16	.15	.31	.41
0210	Fine grade, top of lagoon banks for compaction		30	.533	M.S.F.		18.70	17.80	36.50	48
1020	For large parking lots	B-32C	5000	.010	S.Y.		.34	.36	.70	.92
1050	For small irregular areas	"	2000	.024			.85	.91	1.76	2.30
1100	Fine grade for slab on grade, machine	B-11L	1040	.015			.54	.51	1.05	1.39
1150	Hand grading	B-18	700	.034			1.06	.05	1.11	1.71
1200	Fine grade granular base for sidewalks and bikeways	B-62	1200	.020			.66	.12	.78	1.14
1250	Hand grade select gravel	2 Clab	60	.267	C.S.F.		8.05		8.05	12.55
3000	Hand grade select gravel, including compaction, 4" deep	B-18	555	.043	S.Y.		1.34	.07	1.41	2.16
3100	6" deep		400	.060			1.86	.10	1.96	3
3120	8" deep		300	.080			2.47	.13	2.60	3.99
3300	Finishing grading slopes, gentle	B-11L	8900	.002			.06	.06	.12	.17
3310	Steep slopes		7100	.002			.08	.08	.16	.20
3317	Steep slopes, large quantities		64	250	M.S.F.		8.75	8.35	17.10	22.50

31 23 Excavation and Fill

31 23 16 – Excavation

31 23 16.13 Excavating, Trench

0010	**EXCAVATING, TRENCH**									
0011	Or continuous footing									
0020	Common earth with no sheeting or dewatering included									
0050	1' to 4' deep, 3/8 C.Y. excavator	B-11C	150	.107	B.C.Y.		3.74	1.90	5.64	7.80
0060	1/2 C.Y. excavator	B-11M	200	.080			2.80	1.70	4.50	6.15
0062	3/4 C.Y. excavator	B-12F	270	.059			2.11	2.04	4.15	5.45
0070	4' to 6' deep, 1/2 C.Y. excavator	B-11M	200	.080			2.80	1.70	4.50	6.15
0100	5/8 C.Y. excavator	B-12Q	250	.064			2.28	1.99	4.27	5.65
0102	3/4 C.Y. excavator	B-12F	300	.053			1.90	1.83	3.73	4.91
0104	1 C.Y. hydraulic excavator	B-12A	400	.040			1.42	1.62	3.04	3.96
0106	1-1/2 C.Y. excavator	B-12B	540	.030			1.05	1.54	2.59	3.30
0108	1/2 C.Y. excavator, truck mounted	B-12J	200	.080			2.85	4.66	7.51	9.50

	31 23 23.17 General Fill	Crew	Daily Output	Labor-Hours	Unit	2008 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
0010	**GENERAL FILL**									
0011	Spread dumped material, no compaction									
0020	By dozer, no compaction	B-10B	1000	.012	L.C.Y.		.44	1.07	1.51	1.85
0100	By hand	1 Clab	12	.667	"		20		20	31.50
0150	Spread fill, from stockpile with 2-1/2 C.Y. F.E. loader									
0170	130 H.P., 300' haul	B-10P	600	.020	L.C.Y.		.73	1.49	2.22	2.76
0190	With dozer 300 H.P., 300' haul	B-10M	600	.020	"		.73	2.31	3.04	3.66
0400	For compaction of embankment, see Div. 31 23 23.23									
0500	Gravel fill, compacted, under floor slabs, 4" deep	B-37	10000	.005	S.F.	.29	.15	.01	.45	.57
0600	6" deep		8600	.006		.44	.18	.02	.64	.77
0700	9" deep		7200	.007		.73	.21	.02	.96	1.15
0800	12" deep		6000	.008		1.02	.25	.02	1.29	1.53
1000	Alternate pricing method, 4" deep		120	.400	E.C.Y.	22	12.75	1.08	35.83	45
1100	6" deep		160	.300		22	9.55	.81	32.36	39.50
1200	9" deep		200	.240		22	7.65	.65	30.30	36.50
1300	12" deep		220	.218		22	6.95	.59	29.54	35.50
1500	For fill under exterior paving, see Div. 32 11 23.23									
1600	For flowable fill, see Div. 03 31 05.35									

	31 23 23.18 Hauling									
0010	**HAULING**									
0011	Excavated or borrow, loose cubic yards									
0012	no loading included, highway haulers									
0020	8 C.Y. dump truck, 1/4 mile round trip, 5.0 loads/hr.	B-34A	195	.041	L.C.Y.		1.26	1.58	2.84	3.68
0030	1/2 mile round trip, 4.1 loads/hr.		160	.050			1.53	1.93	3.46	4.49
0040	1 mile round trip, 3.3 loads/hr.		130	.062			1.88	2.37	4.25	5.50
0100	2 mile round trip, 2.6 loads/hr.		100	.080			2.45	3.09	5.54	7.20
0150	3 mile round trip, 2.1 loads/hr.		80	.100			3.06	3.86	6.92	9
0200	4 mile round trip, 1.8 loads/hr.		70	.114			3.50	4.41	7.91	10.25
0210	12 C.Y. dump truck, 1/4 mile round trip 3.7 loads/hr.	B-34B	288	.028			.85	1.75	2.60	3.24
0220	1/2 mile round trip, 3.2 loads/hr.		250	.032			.98	2.01	2.99	3.73
0250	1 mile round trip 2.7 loads/hr.		210	.038			1.17	2.38	3.56	4.43
0400	2 mile round trip, 2.2 loads/hr.		180	.044			1.36	2.79	4.15	5.15
0450	3 mile round trip, 1.9 loads/hr.		170	.047			1.44	2.96	4.40	5.50
0500	4 mile round trip, 1.6 loads/hr.		125	.064			1.96	4.02	5.98	7.45
0540	5 mile round trip, 1 load/hr.		78	.103			3.14	6.45	9.59	11.95
0560	10 mile round trip, 0.60 load/hr.		58	.138			4.22	8.65	12.87	16.10
0600	20 mile round trip, 0.4 load/hr.		39	.205			6.30	12.90	19.20	24
0620	16.5 C.Y. dump trailer, 1 mile round trip, 2.6 loads/hr.	B-34C	280	.029			.87	2.02	2.89	3.57
0700	2 mile round trip, 2.1 loads/hr.		225	.036			1.09	2.51	3.60	4.44
0900	3 mile round trip, 1.8 loads/hr.		193	.041			1.27	2.93	4.20	5.20
1100	4 mile round trip, 1.6 loads/hr.		172	.047			1.42	3.28	4.70	5.80
1110	5 mile round trip, 1 load/hr.		108	.074			2.27	5.25	7.52	9.25
1120	10 mile round trip, .60 load/hr.		80	.100			3.06	7.05	10.11	12.50
1130	20 mile round trip, .4 load/hr.		54	.148			4.53	10.45	14.98	18.50
1150	20 C.Y. dump trailer, 1 mile round trip, 2.5 loads/hr.	B-34D	325	.025			.75	1.78	2.53	3.12
1160	2 mile round trip, 2 loads/hr.		260	.031			.94	2.22	3.16	3.90
1170	3 mile round trip, 1.7 loads/hr.		221	.036			1.11	2.61	3.72	4.58
1240	4 mile round trip, 1.5 loads/hr.		195	.041			1.26	2.96	4.22	5.20
1245	5 mile round trip, 1.1 load/hr.		143	.056			1.71	4.04	5.75	7.10
1250	10 mile round trip, .75 load/hr.		110	.073			2.23	5.25	7.48	9.20
1255	20 mile round trip, .5 load/hr.		78	.103			3.14	7.40	10.54	13
1260	Hauling in medium traffic, add								20%	20%

ATTACHMENT 4

	31 23 23.20 Hauling	Crew	Daily Output	Labor-Hours	Unit	2008 Bare Costs Material	Labor	Equipment	Total
1628	cycle 1 mile	B-34B	168	.048	L.C.Y.		1.46	2.99	4.45
1630	cycle 2 miles		156	.051			1.57	3.22	4.79
1632	cycle 4 miles		132	.061			1.85	3.81	5.66
1634	cycle 6 miles		120	.067			2.04	4.19	6.23
1636	cycle 8 miles		108	.074			2.27	4.66	6.93
1640	25 MPH ave, cycle 4 miles		144	.056			1.70	3.49	5.19
1642	cycle 6 miles		132	.061			1.85	3.81	5.66
1644	cycle 8 miles		120	.067			2.04	4.19	6.23
1650	30 MPH ave, cycle 4 miles		144	.056			1.70	3.49	5.19
1652	cycle 6 miles		132	.061			1.85	3.81	5.66
1654	cycle 8 miles		120	.067			2.04	4.19	6.23
1660	35 MPH ave, cycle 4 miles		156	.051			1.57	3.22	4.79
1662	cycle 6 miles		144	.056			1.70	3.49	5.19
1664	cycle 8 miles		132	.061			1.85	3.81	5.66
1666	cycle 10 miles		120	.067			2.04	4.19	6.23
1668	cycle 20 miles		84	.095			2.91	6	8.91
1670	cycle 40 miles		60	.133			4.08	8.40	12.48
1672	40 MPH, cycle 6 miles		144	.056			1.70	3.49	5.19
1674	cycle 8 miles		132	.061			1.85	3.81	5.66
1676	cycle 10 miles		120	.067			2.04	4.19	6.23
1678	cycle 20 miles		96	.083			2.55	5.25	7.80
1680	cycle 30 miles		72	.111			3.40	7	10.40
1682	cycle 40 miles		60	.133			4.08	8.40	12.48
1684	cycle 50 miles		60	.133			4.08	8.40	12.48
1694	45 MPH ave, cycle 8 miles		144	.056			1.70	3.49	5.19
1696	cycle 10 miles		132	.061			1.85	3.81	5.66
1698	cycle 20 miles		96	.083			2.55	5.25	7.80
1700	cycle 30 miles		84	.095			2.91	6	8.91
1702	cycle 40 miles		72	.111			3.40	7	10.40
1704	cycle 50 miles		60	.133			4.08	8.40	12.48
1706	50 MPH ave, cycle 10 miles		132	.061			1.85	3.81	5.66
1708	cycle 20 miles		108	.074			2.27	4.66	6.93
1710	cycle 30 miles		84	.095			2.91	6	8.91
1712	cycle 40 miles		72	.111			3.40	7	10.40
1714	cycle 50 miles		60	.133			4.08	8.40	12.48
2000	Hauling, 8 CY truck, small project cost per hour	B-34A	8	1	Hr.		30.50	38.50	69
2100	12 CY Truck	B-34B	8	1	"		30.50	63	93.50

31 23 23.23 Compaction

	COMPACTION								
5000	Riding, vibrating roller, 6" lifts, 2 passes	B-10Y	3000	.004	B.C.Y.		.15	.16	.31
5020	3 passes		2300	.005			.19	.20	.39
5040	4 passes		1900	.006			.23	.25	.48
5060	12" lifts, 2 passes		5200	.002			.08	.09	.17
5080	3 passes		3500	.003			.13	.13	.26
5100	4 passes		2600	.005			.17	.18	.35
5600	Sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes	B-10G	2400	.005			.18	.42	.60
5620	3 passes		1735	.007			.25	.58	.83
5640	4 passes		1300	.009			.34	.77	1.11
5680	12" lifts, 2 passes		5200	.002			.08	.19	.27
5700	3 passes		3500	.003			.13	.29	.42
5720	4 passes		2600	.005			.17	.39	.56
6000	Towed sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes	B-10D	10000	.001			.04	.15	.19

ATTACHMENT 5

CRYSTAL RIVER QUARRIES, INC.

P.O. BOX 216
Crystal River, Florida
34423-0216

TELEPHONES
Office (352) 795-2409
(352) 795-2828 Fax (352) 795-6499

FAX COVER PAGE

DATE: 10/2/08

TO: Dominique Brandt
SCS Eng.
Fax 1-813-623-6757

FROM: Frank Clift

RE: Overburden Price / delivered price

Number of pages transmitted
(Including cover page)
1

The price of overburden from my Company's Location Mine to the Citrus County Landfill will be $4.50 per cubic yard. This price will be good to January 1, 2009.

In case message is not received as transmitted, please call
(352) 795-2409 Fax (352)795-6499

ATTACHMENT 6

Belen, Joyce

[redacted]m: Bramlett, Dominique
[redacted]t: Thursday, May 29, 2008 2:47 PM
[redacted] Belen, Joyce
Cc: Banks, John
Subject: FW: Citrus Co

FYI.
Thanks, Dom

Dominique H. Bramlett, P.E.
SCS ENGINEERS
4041 Park Oaks Blvd, Suite 100
Tampa, FL 33610
Phone: (813) 621-0080
Fax: (813) 623-6757
Email: dbramlett@scsengineers.com
Website: www.scsengineers.com

From: Bob Trexler [mailto:bobt@geo-synthetics.com]
Sent: Thursday, May 29, 2008 2:41 PM
To: Bramlett, Dominique
Subject: RE: Citrus Co

[redacted] Trexler
[redacted]-Synthetics, Inc.
9227 Memorial Pines Way
Spring, TX 77379
Office Phone: 281-257-2405
Cell Phone: 262-442-3101
FAX #: 281-257-4235
bobt@geo-synthetics.com
www.geo-synthetics.com/installation

Dominique,
Please use the following prices for your budgetary pricing update on the Citrus County LF Closure. Please also keep in mind that the pricing I am giving you today, 5/29/08, are based on current raw material prices. When the actual project is closer to going Iout for formal bnids, I would recommend that you get a new estimate, as petrolium based raw materials like liners and geocomposites can skyrocket rather rapidly as you are seeing at the pumps. Your current budgetary prices are as follows:

Price to supply only approximately 1,412,471 sq ft of 40 mil textured LLDE liner at .30 per sq ft delivered. Price for installation only at .28 per sq ft.

Price to supply only approximately 1,074,051 sq ft of 200 mil net with 2 sides of 6 oz geotextile bonded at .38 per sq ft. Price for installation at .20 per sq ft.

[redacted]ase let me know if you have any additional questions.

Regards,

ATTACHMENT 7

	31 23 23.18 Hauling	Crew	Daily Output	Labor-Hours	Unit	2008 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
1400	Heavy traffic, add				L.C.Y.				30%	
[illegible]00	Grading at dump, or embankment if required, by dozer	B-10B	1000	.012	↓		.44	1.07	1.51	[illegible]
[illegible]800	Spotter at fill or cut, if required	1 Clab	8	1	Hr.		30.50		30.50	47
2000	Off highway haulers									
2010	22 C.Y. rear/bottom dump, 1000' rnd trip, 4.5 loads/hr.	B-34F	645	.012	L.C.Y.		.38	1.69	2.07	2.45
2020	1/2 mile round trip, 4.2 loads/hr.		600	.013			.41	1.81	2.22	2.63
2030	1 mile round trip, 3.9 loads/hr.		555	.014			.44	1.96	2.40	2.84
2040	2 mile round trip, 3.3 loads/hr.	↓	470	.017			.52	2.32	2.84	[illegible]
2050	34 C.Y. rear or bottom dump, 1000' round trip, 4 loads/hr.	B-34G	885	.009			.28	1.61	1.89	[illegible]
2060	1/2 mile round trip, 3.8 loads/hr.		840	.010			.29	1.70	1.99	[illegible]
2070	1 mile round trip, 3.5 loads/hr.		775	.010			.32	1.84	2.16	[illegible]
2080	2 mile round trip, 3.0 loads/hr.	↓	665	.012			.37	2.14	2.51	2.93
2090	42 C.Y. rear or bottom bump, 1000' round trip, 3.8 loads/hr.	B-34H	1040	.008			.24	1.46	1.70	1.96
2100	1/2 mile round trip, 3.6 loads/hr.		980	.008			.25	1.55	1.80	2.09
2110	1 mile round trip, 3.3 loads/hr.		900	.009			.27	1.69	1.96	2.27
2120	2 mile round trip, 2.8 loads/hr.	↓	765	.010			.32	1.98	2.30	[illegible]
2130	60 C.Y. rear or bottom dump, 1000' round trip, 3.6 loads/hr.	B-34J	1400	.006			.17	1.40	1.57	[illegible]
2140	1/2 mile round trip, 3.4 loads/hr.		1325	.006			.18	1.48	1.66	[illegible]
2150	1 mile round trip, 3.1 loads/hr.		1200	.007			.20	1.63	1.83	[illegible]
2160	2 mile round trip, 2.6 loads/hr.	↓	1015	.008	↓		.24	1.93	2.17	2.49
3000	Rough terrain or steep grades, add to above								100%	
4500	Dust control, light	B-59	1	8	Day		245	400	645	820
4501	Heavy	"	.50	16			490	805	1,295	1,650
4600	Haul road maintenance	B-86A	1	8	↓		320	535	855	1,075
4700	Highway hauling beyond 20 miles, per loaded mile, minimum				Mile				1.32	1.45
[illegible]50	Maximum				"				2.40	2.64
	[illegible] 23 23.19 Backfill, Airport Subgrade									
0010	**BACKFILL, AIRPORT SUBGRADE**									
0100	Backfill, dozer, sand & gravel, 12" depth ,300' haul, no compaction	B-10M	4500	.003	S.Y.		.10	.31	.41	.49
0200	13" depth		4155	.003			.11	.33	.44	.53
0300	14" depth		3860	.003			.11	.36	.47	.57
0400	15" depth		3600	.003			.12	.39	.51	.61
0500	16" depth		3375	.004			.13	.41	.54	.65
0600	17" depth		3175	.004			.14	.44	.58	.69
0700	18" depth		3000	.004			.15	.46	.61	.73
0800	19" depth		2845	.004			.15	.49	.64	.78
0900	20" depth		2700	.004			.16	.51	.67	.81
1100	22" depth		2455	.005			.18	.57	.75	.89
1200	23" depth		2350	.005			.19	.59	.78	.93
1300	24" depth		2250	.005			.20	.62	.82	.98
1400	26" depth		2075	.006			.21	.67	.88	1.06
1500	28" depth		1930	.006			.23	.72	.95	1.14
1600	30" depth		1800	.007			.24	.77	1.01	1.22
1700	32" depth		1690	.007			.26	.82	1.08	1.30
1800	34" depth		1590	.008			.28	.87	1.15	1.38
1900	36" depth		1500	.008			.29	.93	1.22	1.47
2000	38" depth		1420	.008			.31	.98	1.29	1.55
2100	40" depth		1350	.009			.33	1.03	1.36	1.63
2200	42" depth		1285	.009			.34	1.08	1.42	1.71
[illegible]00	44" depth		1230	.010			.36	1.13	1.49	1.78
[illegible]00	46" depth		1175	.010			.37	1.18	1.55	1.87
2500	48" depth	↓	1125	.011	↓		.39	1.23	1.62	1.95

ATTACHMENT 8

1/2

Date: 2/5/2007 1:18:58 PM

FDOT Long Range Estimating System - Production
R4: Project Details Composite Report
By Version

Project: WIDART-4-UN-BB **Letting Date:** 01/2099

Description: WIDEN EXISTING 2 LANE ARTERIAL TO 4 LANES UNDIVIDED, ADD 1 LANE TO EACH SIDE, 5' PAVED SHOULDERS.

District: 09 **County:** 99 DISTRICT/STATE WIDE

Project Manager: DALE STANLEY

Version 1-P Project Grand Total **$2,770,042.99**

Description: WIDEN EXISTING 2 LANE ARTERIAL TO 4 LANES UNDIVIDED, ADD 1 LANE TO EACH SIDE, 5' PAVED SHOULDERS, RESURFACE EXISTING 2 LANES.

Pay Items

Pay Item	Description	Total Unit Quantity	Weighted Avg. Unit Price	Total Amount
101-1	MOBILIZATION	10.00 %		$247,276.64
102-1	MAINTENANCE OF TRAFFIC	10.00 %		$224,796.94
104-4	MOWING	1.20 AC	$76.93	$92.32
104-10-1	HAY OR STRAW BALE (18" X 18" X 36")	528.00 EA	$7.53	$3,975.84
104-11	TURBIDITY BARRIER FLOATING	100.00 LF	$10.54	$1,054.00
104-12	TURBIDITY BARRIER STAKED	100.00 LF	$3.96	$396.00
104-13-1	SILT FENCE STAKED (TYPE III)	10,560.00 LF	$1.35	$14,256.00
104-15	PREVENTION DEVICE SOIL TRACKING	1.00 EA	$3,121.06	$3,121.06
110-1-1	CLEARING & GRUBBING	9.71 AC	$15,887.81	$154,270.64
120-1	EXCAVATION REGULAR	4,840.00 CY	$7.24	$35,041.60
120-2-2	EXCAVATION BORROW (TRUCK MEASURE)	24,733.87 CY	$22.04	$545,134.49
160-4	STABILIZATION TYPE B	25,813.33 SY	$4.45	$114,869.32
285-704	BASE OPTIONAL (BASE GROUP 04)	6,253.87 SY	$13.10	$81,925.70
285-709	BASE OPTIONAL (BASE GROUP 09)	14,467.20 SY	$18.52	$267,932.54

327-70-15	MILL EXIST ASPH PAVT (2 3/4" AVG DEPTH)	14,080.00 SY	$2.84	$39,987.20
334-1-23	SUPERPAVE ASPH CONC (TRAF C)(PG76-22)	322.67 TN	$98.19	$31,682.97
334-1-24	SUPERPAVE ASPH CONC (TRAF D)(PG76-22)	5,420.80 TN	$103.24	$559,643.39
337-7-22	ASPH CONC FC(INC BIT) FC-5(PG76-22)	1,157.38 TN	$122.48	$141,755.90
400-2-2	CONC CLASS II (ENDWALLS)	36.00 CY	$1,190.26	$42,849.36
425-1-541	INLETS (DT BOT) (TYPE D) (<10')	1.00 EA	$4,421.37	$4,421.37
425-2-71	MANHOLES (J-7) (<10')	1.00 EA	$7,182.00	$7,182.00
430-171-140	PIPE CULV(OPT MATL) (ROUND)(42"SS)	56.00 LF	$169.00	$9,464.00
430-171-142	PIPE CULV(OPT MATL) (ROUND)(54"SS)	200.00 LF	$239.47	$47,894.00
430-172-138	PIPE CULV(OPT MATL) (ROUND)(36"CD)	64.00 LF	$131.86	$8,439.04
430-174-129	PIPE CULV(OPT MATL) (ROUND)(24"SD)	152.00 LF	$99.78	$15,166.56
430-942-38	PIPE DESILTING (36" CD)	168.00 LF	$10.90	$1,831.20
430-944-29	PIPE DESILTING (24" SD)	800.00 LF	$6.46	$5,168.00
430-984-129	MITERED END SECT (OPTIONAL RD) (24" SD)	10.00 EA	$1,971.43	$19,714.30
546-72-51	RUMBLE STRIP (GROUND-IN) (16" MIN. W)	2.00 PM	$1,102.57	$2,205.14
550-10-220	FENCING, TYPE B(5.1-6.0) STANDARD	600.00 LF	$12.93	$7,758.00
550-60-234	GATE (TYPE B) SLIDING/CANT(18.1-20' OPEN)	1.00 EA	$1,889.92	$1,889.92
570-2	SEED & MULCH	32,853.33 SY	$0.29	$9,527.47
570-3	SEED GRASS (PERMANENT TYPE)	407.27 LB	$4.41	$1,796.06
570-4	MULCH MATERIAL	27.15 TN	$110.61	$3,003.06
575-1	SODDING	8,690.67 SY	$2.19	$19,032.57
700-40-1	SIGN SINGLE POST (LESS THAN 12)	2.00 AS	$269.84	$539.68
700-40-2	SIGN SINGLE POST (12 - 25)	20.00 AS	$897.64	$17,952.80
700-41-10	SIGN MULTI POST (50 OR LESS)	2.00 AS	$3,307.06	$6,614.12
700-46-11	SGN EXISTING (REMOVE) (SINGLE POST)	20.00 AS	$25.71	$514.20

Name: N1-2L	From Node: N1-2L	Length(ft): 19.00	
Group: BASE	To Node: N1-2	Count: 1	
		Friction Equation: Average Conveyance	
UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic	
Geometry: Circular	Circular	Flow: Both	
Span(in): 12.00	12.00	Entrance Loss Coef: 0.50	
Rise(in): 12.00	12.00	Exit Loss Coef: 0.00	
Invert(ft): 146.500	144.100	Bend Loss Coef: 0.50	
Manning's N: 0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec: Use dn	
Bot Clip(in): 0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N1-2R	From Node: N1-2R	Length(ft): 19.00	
Group: BASE	To Node: N1-2	Count: 1	
		Friction Equation: Average Conveyance	
UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic	
Geometry: Circular	Circular	Flow: Both	
Span(in): 12.00	12.00	Entrance Loss Coef: 0.50	
Rise(in): 12.00	12.00	Exit Loss Coef: 0.00	
Invert(ft): 146.500	144.100	Bend Loss Coef: 0.50	
Manning's N: 0.035000	0.035000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec: Use dn	
Bot Clip(in): 0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N1/1-2	From Node: N1-1	Length(ft): 125.00	
Group: BASE	To Node: N1-2	Count: 1	
		Friction Equation: Average Conveyance	
UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic	
Geometry: Circular	Circular	Flow: Both	
Span(in): 18.00	18.00	Entrance Loss Coef: 0.00	
Rise(in): 18.00	18.00	Exit Loss Coef: 0.00	
Invert(ft): 179.100	144.100	Bend Loss Coef: 0.50	
Manning's N: 0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec: Use dn	
Bot Clip(in): 0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N1/2-S-1	From Node: N1-2	Length(ft): 110.00	
Group: BASE	To Node: S-1	Count: 1	
		Friction Equation: Average Conveyance	
UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic	
Geometry: Circular	Circular	Flow: Both	
Span(in): 24.00	24.00	Entrance Loss Coef: 0.00	
Rise(in): 24.00	24.00	Exit Loss Coef: 1.00	
Invert(ft): 144.100	115.880	Bend Loss Coef: 0.00	
Manning's N: 0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec: Use dn	
Bot Clip(in): 0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N10/1-2		From Node:	N10-1	
Group:	BASE		To Node:	N10-2	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	18.00	18.00			
Rise(in):	18.00	18.00			
Invert(ft):	179.100	144.100			
Manning's N:	0.012000	0.012000			
Top Clip(in):	0.000	0.000			
Bot Clip(in):	0.000	0.000			

Length(ft):	140.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N10/2-S10		From Node:	N10-2	
Group:	BASE		To Node:	S-10	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	18.00	18.00			
Rise(in):	18.00	18.00			
Invert(ft):	144.100	117.900			
Manning's N:	0.012000	0.012000			
Top Clip(in):	0.000	0.000			
Bot Clip(in):	0.000	0.000			

Length(ft):	110.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.00
Exit Loss Coef:	1.00
Bend Loss Coef:	0.00
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11-3L		From Node:	N11-3L	
Group:	BASE		To Node:	N11-3	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			
Span(in):	12.00	12.00			
Rise(in):	12.00	12.00			
Invert(ft):	181.500	179.100			
Manning's N:	0.012000	0.012000			
Top Clip(in):	0.000	0.000			
Bot Clip(in):	0.000	0.000			

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-3R		From Node:	N11-3R	
Group:	BASE		To Node:	N11-3	
	UPSTREAM	DOWNSTREAM			
Geometry:	Circular	Circular			

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both

Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	181.500	179.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-4L	From Node: N11-4L	Length(ft):	19.00
Group:	BASE	To Node: N11-4	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11-4R	From Node: N11-4R	Length(ft):	19.00
Group:	BASE	To Node: N11-4	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	12.00	12.00	Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00	Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N11/2-3	From Node: N11-2	Length(ft):	75.00
Group:	BASE	To Node: N11-3	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	18.00	18.00	Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00	Exit Loss Coef:	0.00
Invert(ft):	203.000	179.100	Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11/3-4	From Node: N11-3	Length(ft): 130.00
Group:	BASE	To Node: N11-4	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N11/4-S11	From Node: N11-4	Length(ft): 120.00
Group:	BASE	To Node: S-11	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	144.100	118.400	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N12/1-2	From Node: N12-1	Length(ft): 160.00
Group:	BASE	To Node: N12-2	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00	Exit Loss Coef: 0.00
Invert(ft):	179.100	144.100	Bend Loss Coef: 0.50
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N12/2-S12	From Node: N12-2	Length(ft): 110.00
Group:	BASE	To Node: S-12	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.00
Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	144.100	117.600	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn

Bot Clip(in): 0.000 0.000 Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N13/1-2 From Node: N13-1 Length(ft): 125.00
Group: BASE To Node: N13-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N13/2-S-13 From Node: N13-2 Length(ft): 117.00
Group: BASE To Node: S-13 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	144.100	117.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N2-2L From Node: N2-2L Length(ft): 19.00
Group: BASE To Node: N2-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N2-2R From Node: N2-2R Length(ft): 19.00

Group: BASE To Node: N2-2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N2/1-2 From Node: N2-1
Group: BASE To Node: N2-2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Length(ft): 127.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N2/2-4 From Node: N2-2
Group: BASE To Node: N2-4

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	144.100	119.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Length(ft): 91.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N2/4-S-2 From Node: N2-4
Group: BASE To Node: S-2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	119.000	115.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Length(ft): 18.00
Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N3/2-S-3	From Node:	N3-2	Length(ft):	67.00
Group:	BASE	To Node:	S-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	1.00
Invert(ft):	123.000	115.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N4/1-3	From Node:	N4-1	Length(ft):	136.00
Group:	BASE	To Node:	N4-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	1.00
Invert(ft):	179.100	139.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N4/3-DRA	From Node:	N4-3	Length(ft):	106.00
Group:	BASE	To Node:	DRA	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.50
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00
Invert(ft):	139.000	114.000		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N6/1-3	From Node:	N6-1	Length(ft):	104.00
Group:	BASE	To Node:	N6-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.00

Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	179.100	149.000	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N6/3-DRA | From Node: N6-3 | Length(ft): 139.00
Group: BASE | To Node: DRA | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	149.000	114.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N8-3L | From Node: N8-3L | Length(ft): 19.00
Group: BASE | To Node: N8-3 | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name: N8-3R | From Node: N8-3R | Length(ft): 19.00
Group: BASE | To Node: N8-3 | Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	12.00	12.00
Rise(in):	12.00	12.00
Invert(ft):	146.500	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N8/2-3	From Node:	N8-2
Group:	BASE	To Node:	N8-3
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	18.00	18.00	
Rise(in):	18.00	18.00	
Invert(ft):	180.000	144.100	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	132.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N8/3-S-8	From Node:	N8-3
Group:	BASE	To Node:	S-8
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	24.00	24.00	
Rise(in):	24.00	24.00	
Invert(ft):	144.100	116.620	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	107.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.00
Exit Loss Coef:	1.00
Bend Loss Coef:	0.00
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9-3L	From Node:	N9-3L
Group:	BASE	To Node:	N9-3
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	12.00	12.00	
Rise(in):	12.00	12.00	
Invert(ft):	181.500	179.100	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-3R	From Node:	N9-3R
Group:	BASE	To Node:	N9-3
	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	
Span(in):	12.00	12.00	
Rise(in):	12.00	12.00	
Invert(ft):	181.500	179.100	
Manning's N:	0.012000	0.012000	
Top Clip(in):	0.000	0.000	
Bot Clip(in):	0.000	0.000	

Length(ft):	19.00
Count:	1
Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.50
Exit Loss Coef:	0.00
Bend Loss Coef:	0.50
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-4L	From Node:	N9-4L	Length(ft):	19.00
Group:	BASE	To Node:	N9-4	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9-4R	From Node:	N9-4R	Length(ft):	19.00
Group:	BASE	To Node:	N9-4	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	12.00	12.00		Entrance Loss Coef:	0.50
Rise(in):	12.00	12.00		Exit Loss Coef:	0.00
Invert(ft):	146.500	144.100		Bend Loss Coef:	0.50
Manning's N:	0.120000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular: Beveled ring, 45° bevels

Name:	N9/2-3	From Node:	N9-2	Length(ft):	55.00
Group:	BASE	To Node:	N9-3	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	18.00	18.00		Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00		Exit Loss Coef:	0.00
Invert(ft):	208.000	179.100		Bend Loss Coef:	0.50
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	N9/3-4	From Node:	N9-3	Length(ft):	124.00
Group:	BASE	To Node:	N9-4	Count:	1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	179.100	144.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.50
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: N9/4-S-9
Group: BASE
From Node: N9-4
To Node: S-9
Length(ft): 110.00
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	144.100	117.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: S/2-3
Group: BASE
From Node: S-2
To Node: S-3
Length(ft): 70.00
Count: 2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	115.000	115.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 1.00
Exit Loss Coef: 0.50
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: S12-S-W1
Group: BASE
From Node: S-12
To Node: S-W1
Length(ft): 40.00
Count: 2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	117.600	117.500
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 1.00
Exit Loss Coef: 0.50
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

ATTACHMENT 10

Belen, Joyce

From: Bramlett, Dominique
Sent: Thursday, May 29, 2008 4:52 PM
To: Belen, Joyce
Cc: Banks, John
Subject: FW: Citrus cost estimate

Joyce,
Here is the cost for the pipes and inlets.
Thanks, Dom-

Dominique H. Bramlett, P.E.
SCS ENGINEERS
4041 Park Oaks Blvd, Suite 100
Tampa, FL 33610
Phone: (813) 621-0080
Fax: (813) 623-6757
Email: dbramlett@scsengineers.com
Website: www.scsengineers.com

From: Dan Dietrich [mailto:Dan.Dietrich@ads-pipe.com]
Sent: Thursday, May 29, 2008 4:46 PM
To: Bramlett, Dominique
Subject: RE: Citrus cost estimate

Dominique,

Here's a estimate for the following materials:

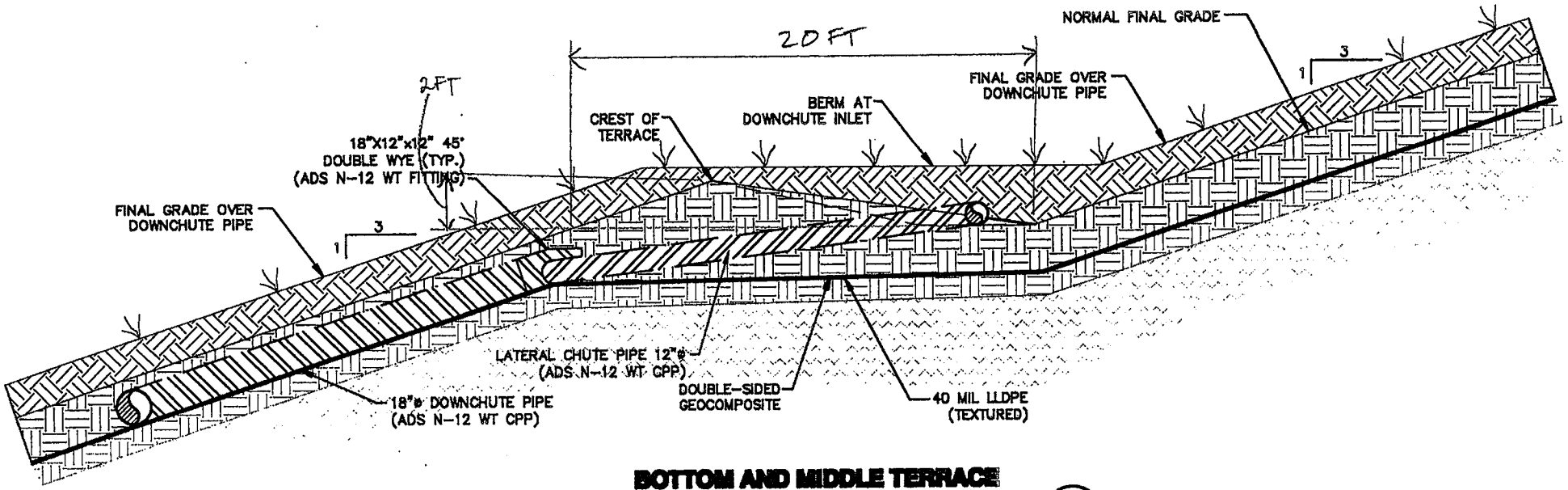
4" N-12 WT pipe	.90/ft
6" N-12 WT pipe	2.00/ft
8" N-12 WT pipe	3.45/ft
10" N-12 WT pipe	5.20/ft
12" N-12 WT pipe	5.90/ft
15" N-12 WT pipe	7.80/ft
18" N-12 WT pipe	10.90/ft
24" N-12 WT pipe	17.25/ft
30" N-12 WT pipe	25.25/ft

30" Nyloplast Inline Drain	750/ea
30" Nyloplast Drain Basin (Height<5')	1250/ea

Give me a call if you have any further questions. Thanks.

Dan Dietrich, E.I.
Sales Engineer
Advanced Drainage Systems, Inc.
Cell: (813) 569-8082
Fax: (813) 354-3575
www.ads-pipe.com
www.stormtech.com

From: Bramlett, Dominique [mailto:DBramlett@SCSEngineers.com]
Sent: Thursday, May 29, 2008 2:55 PM
To: Dan Dietrich



BOTTOM AND MIDDLE TERRACE INLET DOWNCHUTE PIPES SECTION A 11 11

ATTACHMENT 11

ATTACHMENT 12

Florida Department of Transportation
Item Average Unit Cost
From 2007/01/01 to 2007/12/31

Contract Type: ('CC') STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0100 To: 1999999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430200 40	1	$4,000.00	$12,000.00	3.000	EA	N	FLARED END SECTION, CONCRETE, 42"
0430200 42	2	$5,750.00	$17,250.00	3.000	EA	N	FLARED END SECTION, CONCRETE, 54"
0430600025	1	$4,564.37	$18,257.48	4.000	EA	N	U-ENDWALL, STD 260, 1:6 SLP, 18"
0430600125	1	$4,216.38	$4,216.38	1.000	EA	N	U-ENDWALL, STD 260, 1:4 SLP, 18"
0430602125	2	$3,665.38	$10,996.14	3.000	EA	N	U-ENDWALL,W \GRATE,STD 260,1:4 SLP,18"
0430602129	1	$4,700.00	$14,100.00	3.000	EA	N	U-ENDWALL,W \GRATE,STD 260,1:4 SLP,24"
0430610125	2	$1,471.90	$35,325.54	24.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 18"
0430610129	1	$1,399.78	$15,397.58	11.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 24"
0430610133	1	$1,507.45	$3,014.90	2.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 30"
0430610323	1	$1,000.00	$2,000.00	2.000	EA	N	U-ENDWALL,STD 261,1:2 SLP, 15"
0430611025	2	$3,030.53	$12,122.12	4.000	EA	N	U-ENDWALL,STD 261,BAFFLES,1:6 SLP, 18"
0430611125	5	$2,016.70	$78,651.31	39.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 18"
0430611129	1	$2,800.00	$8,400.00	3.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 24"
0430611133	1	$3,800.00	$3,800.00	1.000	EA	N	U-ENDWALL /BAFFLES,STD 261, 1:4 SLP,30"
0430611225	5	$4,376.26	$30,633.85	7.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:3 SLP,18"
0430611323	2	$2,000.00	$6,000.00	3.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,15"
0430611325	7	$2,467.42	$118,435.94	48.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,18"
0430611329	3	$3,280.00	$22,960.00	7.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:2 SLP,24"
0430611333	1	$2,128.26	$2,128.26	1.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:2 SLP,30"
0430612025	2	$3,838.33	$103,634.84	27.000	EA	N	U-ENDWALL, GRATE, STD 261,1:6 SLP,18"
0430612029	1	$5,349.09	$10,698.18	2.000	EA	N	U-ENDWALL, GRATE, STD 261,1:6 SLP,24"
0430612033	1	$4,500.00	$4,500.00	1.000	EA	N	U-ENDWALL, GRATE, STD 261,1:6 SLP, 30"
0430613025	1	$4,921.16	$4,921.16	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:6 SLP,18"
0430613029	1	$3,107.50	$3,107.50	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:6 SLP,24"
0430613125	1	$4,921.16	$4,921.16	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:4 SLP,18"
0430613133	2	$3,585.00	$14,340.00	4.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:4 SLP,30"
0430613225	1	$2,500.00	$2,500.00	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:3 SLP,18"
0430613233	1	$3,938.00	$3,938.00	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:3 SLP,30"
0430721425	2	$69.43	$90,741.65	1,307.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 18" SS
0430721429	2	$74.97	$392,856.00	5,240.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 24" SS
0430721433	1	$85.00	$222,870.00	2,622.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 30" SS
0430721438	1	$93.00	$123,690.00	1,330.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 36" SS
0430821 33	1	$535.00	$3,210.00	6.000	EA	N	CLEANING & SEALING EXIST PIPE JNT,30" SS
0430821 44	1	$2,500.00	$32,500.00	13.000	EA	N	CLEANING & SEALING EXIST PIPE JNT,66",SS
0430830	14	$280.74	$200,027.07	712.500	CY	N	PIPE FILLING AND PLUGGING

Attachment - 13

Bramlett, Dominique

From: Dan Dietrich [Dan.Dietrich@ads-pipe.com]
Sent: Thursday, May 29, 2008 4:46 PM
To: Bramlett, Dominique
Subject: RE: Citrus cost estimate

Dominique,

Here's a estimate for the following materials:

4" N-12 WT pipe	.90/ft
6" N-12 WT pipe	2.00/ft
8" N-12 WT pipe	3.45/ft
10" N-12 WT pipe	5.20/ft
12" N-12 WT pipe	5.90/ft
15" N-12 WT pipe	7.80/ft
18" N-12 WT pipe	10.90/ft
24" N-12 WT pipe	17.25/ft
30" N-12 WT pipe	25.25/ft

30" Nyloplast Inline Drain	750/ea
30" Nyloplast Drain Basin (Height<5')	1250/ea

Give me a call if you have any further questions. Thanks.

Dan Dietrich, E.I.
Sales Engineer
Advanced Drainage Systems, Inc.
Cell: (813) 569-8082
Fax: (813) 354-3575
www.ads-pipe.com
www.stormtech.com

From: Bramlett, Dominique [mailto:DBramlett@SCSEngineers.com]
Sent: Thursday, May 29, 2008 2:55 PM
To: Dan Dietrich
Cc: Belen, Joyce
Subject: Citrus cost estimate

Dan,
Please provide me cost estimates for ADS pipe (4-inch through 30-inch) and 30-inch diameter inlets (3ft in depth and 4ft in depth).
Thanks, Dominique

Dominique H. Bramlett, P.E.
SCS ENGINEERS
4041 Park Oaks Blvd, Suite 100
Tampa, FL 33610
Phone: (813) 621-0080
Fax: (813) 623-6757
Email: dbramlett@scsengineers.com
Website: www.scsengineers.com

ATTACHMENT 14

Work Completed to Date

DRAFT as of 5/1/08

Schedule of Values
JOB # 12207037.00
Orange County - Class III, Cell I

A	B	C	D	E	F	G	H	I
TEM # BID ITEM	UNITS	BID QUANTITY	UNIT COST	ORIGINAL CONTRACT AMOUNT	QUANTITY THIS MONTH	TOTAL THIS MONTH	QUANTITY TO DATE	TOTAL TO DATE
[redacted]a Mobilization	ls	1	$20,000.00	$20,000.00	0.00	$0.00	0.00	$0.00
001b Demobilization	ls	1	$10,000.00	$10,000.00	0	$0.00	0.00	$0.00
2 Indemnification	ls	1	$100.00	$100.00	0	$0.00	0.00	$0.00
3 Project Survey	ls	1	$14,500.00	$14,500.00	0	$0.00	0.00	$0.00
004a 36" Bore w/6" PVC Casing	lf	2,250	$96.50	$217,125.00	0	$0.00	0.00	$0.00
004b Boring Refusal	lf	215	$65.00	$13,975.00	0	$0.00	0.00	$0.00
004c Hourly Drilling Rate	Hour	40	$750.00	$30,000.00	0	$0.00	0.00	$0.00
004d Drilling Standby Time	Hour	40	$625.00	$25,000.00	0	$0.00	0.00	$0.00
004e Gas Extraction Well Wellhead	ea	43	$1,150.00	$49,450.00	0	$0.00	0.00	$0.00
005a 4" HDPE SDR 17 Pipe	lf	4,400	$17.00	$74,800.00	0	$0.00	0.00	$0.00
005b 6" HDPE SDR 17 Pipe	lf	1,130	$21.00	$23,730.00	0	$0.00	0.00	$0.00
005c 8" HDPE SDR 17 Pipe	lf	2,750	$26.00	$71,500.00	0	$0.00	0.00	$0.00
005d 2" HDPE Airline, SDR 11, Pipe	lf	1,200	$2.00	$2,400.00	0	$0.00	0.00	$0.00
005e 2" HDPE Forcemain, SDR 11 Pipe	lf	500	$2.00	$1,000.00	0	$0.00	0.00	$0.00
006a 8" Flange	ea	1	$1,300.00	$1,300.00	0	$0.00	0.00	$0.00
006a 10" Flange	ea	1	$1,450.00	$1,450.00	0	$0.00	0.00	$0.00
006b Cut-in to Existing - 2" Header	ea	1	$1,270.00	$1,270.00	0	$0.00	0.00	$0.00
006b Cut-in to Existing - 4" Header	ea	2	$1,300.00	$2,600.00	0	$0.00	0.00	$0.00
006b Cut-in to Existing - 6" Header	ea	7	$1,500.00	$10,500.00	0	$0.00	0.00	$0.00
006b Cut-in to Existing - 8" Header	ea	9	$1,650.00	$14,850.00	0	$0.00	0.00	$0.00
[redacted] 6" Valve	ea	1	$1,900.00	$1,900.00	0	$0.00	0.00	$0.00
006c 8" Valve	ea	1	$2,500.00	$2,500.00	0	$0.00	0.00	$0.00
006d CMP Road Casing	lf	190	$65.00	$12,350.00	0	$0.00	0.00	$0.00
006e 12" Condensate Trap	ea	1	$10,500.00	$10,500.00	0	$0.00	0.00	$0.00
006f Discharge Tie-In - 4"	ea	3	$3,800.00	$11,400.00	0	$0.00	0.00	$0.00
006g Abandonment Cut & Cap	ea	3	$1,200.00	$3,600.00	0	$0.00	0.00	$0.00
7 Project Record Documentation	ls	1	$3,700.00	$3,700.00	0	$0.00	0.00	$0.00
8 Seeding and Mulching	ls	1	$13,500.00	$13,500.00	0.00	$0.00	0.00	$0.00
Totals				$645,000.00		$0.00		$0.00

ATTACHMENT 15

HD HUSS Drilling

Client:SCS Engineers
Attn:Joyce Belen
Date:7/24/08
Fax / Email: (813)623-6757
Quote Page 1 of 1
Cost Estimate for drilling:Citrus County Landfill-Lecanto
HDI #0835-08

				EST /UNIT	PRICE	TOTAL
MOBILIZATION/DEMOBILIZATION			Lecanto			$ 600.00
MONITORING PROBE (Includes: Screen, Riser, Seal & Grout)						
	Diameter 1" **(1x80')**			80.0 /ft	20.00 /ft	$ 1,600.00
STANDARD PENETRATION TESTING						
SPT	5' Interval	0 - 50'	(NONE)	0.0 /ft	10.00 /ft	$ -
		50' - 100'	(NONE)	0.0 /ft	14.00 /ft	$ -
SPT	Continuous	0 - 50'	(NONE)	0.0 /ft	16.00 /ft	$ -
		50 - 100'	(NONE)	0.0 /ft	20.00 /ft	$ -
AUGER BORINGS (S.Stem 3")				0.0 /ft	8.00 /ft	$ -
SURFACE CASING (6" PVC)				0.0 /ft	35.00 /ft	$ -
WELL COMPLETION OPTIONS						
12" Manhole Cover w/4" Concrete Square Pad				0.0 /ea	150.00 /ea	$ -
8" Manhole Cover w/4" Concrete Square Pad				0.0 /ea	125.00 /ea	$ -
4" PVC Concrete Filled Bollards				4.0 /ea	75.00 /ea	$ 300.00
6" Square Protective Casing w/Square Pad				1.0 /ea	250.00 /ea	$ 250.00
1" Seals				1.0 /ea	25.00 /ea	$ 25.00
ADDITIONAL ITEMS						
Drilling by the Hour				0.0 /hr	225.00 /hr	$ -
Well Development Moyno-Rig pump or Sub.			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Steam Decontamination			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Jack Hammer Rental				0.0 /dy	115.00 /dy	$ -
Stand By Time				0.0 /hr.	175.00 /hr.	$ -
Site Clean Up/Drumming Cuttings			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Concrete/Asphalt Cutting & Removal				0.0 /hr.	175.00 /hr.	$ -
Drums (DOT 17H)			(ESTIMATE)	0.0 /ea.	50.00 /ea.	$ -
Hotel & Per Diem (3 man crew)				0.0 /dy	300.00 /dy	$ -
Permits **(S.W.F.W.M.D)**				0.0 /ea	75.00 /ea	$ -
			Total Estimate			$ 2,775.00

*This bid is an estimate only and the invoice will reflect the actual work performed.

File Name: Bid-Short2.xls

35920 STATE ROAD 52 • DADE CITY, FL 33525 • (352) 567-9500 • (352) 567-6646

ATTACHMENT 16 1/2

SCS ENGINEERS FEE SCHEDULE

(Effective July 1, 2008 through June 30, 2009)

	Rate/Hour ($)
Principal/Office Director	195
Project Director	185
Senior Project Advisor	145
Senior Project Manager	145
Project Manager	135
Senior Project Professional	112
Senior Superintendent	110
Project Professional	92
Designer	98
O&M Superintendent	95
Staff Professional	85
Senior Technician 2	85
Senior Technician 1	65
Associate Staff Professional	72
Draftsperson	70
Technician	60
Office Services Manager	75
Secretarial/Clerical	54

1. The hourly rates are effective through June 30, 2009. Work performed thereafter is subject to a new Fee Schedule issued for the period beginning July 1, 2009.

2. The above rates include salary, overhead, administration, and profit. Other direct expenses, such as analyses of air, water and soil samples, reproduction, travel, subsistence, subcontractors, computers, and other reimbursable fees, are billed in accordance with the attached reimbursables fee schedule or cost, plus 15 percent for administration.

3. For special situations, such as expert court testimony, hourly rates for principals of the firm will be on an individually-negotiated basis.

ATTACHMENT 16 3/2

SCS ENGINEERS
REIMBURSABLES FEE SCHEDULE
(Effective July 1, 2008 through June 30, 2009)

ADMINISTRATION/MILEAGE	Unit Cost ($)	Unit
Reimbursable		
Vehicle Mileage	0.585	mile
Truck Usage	$70	day
Faxes	5	1st Page
	1	each additional page
Reproduction (Xerox)	0.10	each
Reproduction (Color Copies)	1.25	each
CAD Usage	20	hour

EQUIPMENT/FIELD SUPPLIES	Rate ($)	Unit
Sampling Trailer, Field Equipped	200	Day

Field-equipped sampling trailer includes equipment and supplies for soil and groundwater sampling, decontamination, health and safety, logs, packing and shipping, and miscellaneous uses.

Pontoon Boat	400	Day
Calibration:		
Conductivity Standards *	1	Ounce
Isobutylene *	1	Liter
Methane in Air OVA Calibration Gas *	1	Liter
Pentane in Air *	1	Liter
pH Buffer Solutions (4,7,10) *	1	Ounce
Decontamination Equipment:		
Brushes *	5	Day
Distilled/Deionized Water *	1	Gallon
Isopropyl Alcohol *	1	Ounce
Liquinox Soap Concentrate *	1	Ounce
Plastic Buckets *	5	Day
Poly Sheeting *	1	Square Foot

ATTACHMENT 14

02 21 Surveys

02 21 13 Site Surveys

02 21 13.09 Topographical Surveys

		Crew	Daily Output	Labor-Hours	Unit	2008 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
0010	TOPOGRAPHICAL SURVEYS									
0050	Topographical surveying, conventional, minimum	A-7	3.30	7.273	Acre	17	305	21	343	505
0100	Maximum	A-8	60	53.333	"	52	2,175	115	2,342	3,500

02 21 13.13 Boundary and Survey Markers

0010	BOUNDARY AND SURVEY MARKERS									
0300	Lot location and lines, large quantities, minimum	A-7	2	12	Acre	30	500	34.50	564.50	840
0320	Average	"	1.25	19.200		48	800	55	903	1,350
0400	Small quantities, maximum	A-8	1	32	▼	64	1,300	69	1,433	2,150
0600	Monuments, 3' long	A-7	10	2.400	Ea.	30	100	6.90	136.90	195
0800	Property lines, perimeter, cleared land	"	1000	.024	L.F.	.03	1	.07	1.10	1.65

02 21 13.16 Aerial Surveys

0010	AERIAL SURVEYS									
1500	Aerial surveying, including ground control, minimum fee, 10 acres				Total					5,700
1510	100 acres				▼					9,500
1550	From existing photography, deduct									1,370
1600	2' contours, 10 acres				Acre					460
1650	20 acres				▼					315
1800	50 acres									95
1850	100 acres				▼					85
2150	For 1" contours and									
2160	dense urban areas, add to above				Acre					40%
3000	Inertial guidance system for									
3010	locating coordinates, rent per day				Ea.					4,000

02 32 Geotechnical Investigations

02 32 13 Subsurface Drilling and Sampling

02 32 13.10 Boring and Exploratory Drilling

0010	BORING AND EXPLORATORY DRILLING									
0020	Borings, initial field stake out & determination of elevations	A-6	1	16	Day		615	69	684	1,025
0100	Drawings showing boring details				Total		233.10		233.10	340.20
0200	Report and recommendations from P.E.						525		525	766.50
0300	Mobilization and demobilization, minimum	B-55	4	6	▼		180	231	411	535
0350	For over 100 miles, per added mile		450	.053	Mile		1.60	2.06	3.66	4.74
0600	Auger holes in earth, no samples, 2-1/2" diameter		78.60	.305	L.F.		9.15	11.80	20.95	27
0650	4" diameter		67.50	.356			10.65	13.70	24.35	31.50
0800	Cased borings in earth, with samples, 2-1/2" diameter		55.50	.432		17.40	12.95	16.70	47.05	57.50
0850	4" diameter	▼	32.60	.736		27.50	22	28.50	78	95.50
1000	Drilling in rock, "BX" core, no sampling	B-56	34.90	.458			15.60	37	52.60	64.50
1050	With casing & sampling		31.70	.505		17.40	17.15	41	75.55	90.50
1200	"NX" core, no sampling		25.92	.617			21	50	71	87
1250	With casing and sampling	▼	25	.640	▼	21	22	51.50	94.50	114
1400	Borings, earth, drill rig and crew with truck mounted auger	B-55	1	24	Day		720	925	1,645	2,150
1450	Rock using crawler type drill	B-56	1	16	"		545	1,300	1,845	2,250
1500	For inner city borings add, minimum									10%
1510	Maximum									20%

02 32 19 Exploratory Excavations

02 32 19.10 Test Pits

0010	TEST PITS									
0020	Hand digging, light soil	1 Clab	4.50	1.778	C.Y.		54		54	83.50
0100	Heavy soil	"	2.50	3.200	▼		97		97	151

LAURA

Enterprise ...
Rates
ATTACHMENT 1B

LORIAA CUSTOMER RATES SIS081A/C1

ust# G90097 SCS ENGINEERS** GRBR: 4209 Default Type:
illing Type: RATES

Car Class	Rate Amount	Rate Type Description	Unlimited Miles	Free Miles	Excess Mileage Charge
CCAR	32.99	Daily	Y		
CCAR	181.99	Weekly	Y		
CCAR	719.99	Monthly	N	2500	20
ICAR	35.99	Daily	Y		
ICAR	198.99	Weekly	Y		
ICAR	775.99	Monthly	N	2500	20
SCAR	38.99	Daily	Y		
SCAR	214.99	Weekly	Y		
SCAR	839.99	Monthly	N	2500	20
STAR	56.99	Daily	N	150	20

large SUV 69.99 daily

3=Exit F4=Prompt F6=Prompt/Address F12=Previous F21=Billing Contact
22=Business Contact

only standard size and bigger have cruise control

ATTACHMENT 10

Belen, Joyce

From: Bramlett, Dominique
Sent: Friday, July 25, 2008 4:26 PM
To: Belen, Joyce
Subject: FW: leachate costs

-----Original Message-----
From: Susan Metcalfe [mailto:Susan.Metcalfe@bocc.citrus.fl.us]
Sent: Friday, July 25, 2008 3:20 PM
To: Bramlett, Dominique
Subject: RE: leachate costs

Dominique
Site Specific Costs - FDEP form item 13
Waste Tire Facility
This is to clean out the storage area one time. Maximum storage = 115 tons. Current bid price (Wheelabrator 07/08) $85/ton . Line item total $9775.

Leachate Disposal 1 year.
I don't have the leachate generation numbers for after closure, but the rates I gave you yesterday are correct. 12 x $698.50 (CC Utilities monthly base rate charge) + hauling x gallons at $0.05 per gallon (Clean Harbors 7/07 bid price good for 3 years) + disposal x gallons at $0.0072 per gallon.

Leachate collection/treatment system maintenance - FDEP form item 5 I don't remember why we [redacted] an additional amount for disposal here. Please do the math as described above and maybe [redacted] will find that they wanted the transport in item 13 and disposal in item 5.

Site Specific Costs - FDEP form item 16
Ground Water Remediation - as I recall we decided not to include the costs of well construction, initial sampling and Site Assessment Report prep here. This was the amount to add for routine monitoring costs for 2 more wells to the existing number of wells. Do we have the current correct # (14 wells that require sampling) in the form Section VI Item 1? If so, I would leave the +2 here in remediation at a unit cost of (JEA is calculating this and will have it by early next week). I'm sure that the unit cost in the last form is NOT correct.

(That unit cost should be applied in Section VI Item 1 to be consistent)

Susie

SCS ENGINEERS

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance Long-term Care Cost	JPB	12/23/2009
	CHECKED	**DATE**

OBJECTIVE: To estimate the long-term care cost for Citrus County Central Landfill Phase 3 and 7-acre Closed Landfill Re-closure portion.

REFERENCES:

- Task Authorization Eight to Master Agreement (April 26, 2005)
- Plan showing existing and future landfill gas monitoring probes
- SCS Engineers Fee Schedule
- Driving Map
- Car rental rates
- Quote by Ralph Calistri (Florida Jetclean)
- Quotes by Huss Drilling
- 2008 RS Means
- E-mail from Bob Trexler (Geo-Synthetics, Inc.)
- E-mail from Dan Dietrich, EI (Advanced Drainage Systems, Inc.)
- FDOT Item Average Unit Cost

SCS ENGINEERS

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT Fiancial Assurance Long-term Care Cost	BY JPB	DATE 12/23/2009
	CHECKED	DATE

1. GROUNDWATER MONITORING

$17,685 includes * - Quarterly leachate effluent
Semi-annual effluent
Semi-annual groundwater

$4,500 includes * - Quaterly leachate effluent

$23,605 includes * - Annual leachate influent
Annual effluent
Annual sludge
Semi-annual effluent
Semi-annual groundwater
Quarterly leachate effluent

We can deduce the cost of the semi-annual effluent/groundwater testing by subtracting line item 3 from line item 2.

$17,685 - $4,500 = $13,185/event <--- semi-annual testing
$13,185/14 = $941.79/well
$13,185/event/well x $941.79/well x 2 events per year = **$26,370**

We can deduce the cost of the annual testing by subtracting line item 4 from line item 2.

$23,605 - $17,685 = $5,920/event <--- annual testing
$5,920/14 = **$422.86/well**

Quarterly is Item 3 and Item 4

2. SURFACE WATER MONITORING

No long-term care costs anticipated for surface water monitoring.

Note: * See Attachment 1 page 4

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Long-term Care Cost	**CHECKED**	**DATE**

3. GAS MONITORING

Quarterly monitoring: Total number of gas probes for monitoring = 19
(See Attachment 2)

Unit cost:
Assume 8-hour day for gas probe monitoring (3 hr + monitoring time)

8 hr/day x $77/hr (See Attachment 3) = $616.00

2 hours for staff to do report and 1 hour internal review by upper management: (See Attachment 3)

$54/hr x 2 hours = $108

$145/hr x 1 hour = $145

Vehicle mileage:
152.8 miles (to site & return, see Attachment 4) + 20 miles (drive on site)
= 172.8 miles

Cost for mileage = 172.8 miles x $0.585/mile (See Attachment 3) = $101.09

Car rental: $39.00/day (See Attachment 5)

Total: $616.00 + $108 + $145 + $101.09 + $39.00 = $1,009.09

Unit cost/probe/event = $1,009.09/18 = $56.06

Total cost = $56.06/probe event x 19 probes x 4 sampling events per year
= **$4,261**

4. LEACHATE MONITORING

Quarterly Leachate Monitoring

Unit cost: (See Attachment 1, page 4 of 4)

Quarterly leachate effluent: $4,500 per event

$4,500/14 = $321.43/event well

3 locations x $321.43/event/event x 4 events = **$3,857.16**

SCS ENGINEERS

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT Fiancial Assurance Long-term Care Cost	**BY** JPB	**DATE** 12/23/2009
	CHECKED	**DATE**

Annual Leachate Monitoring

As per 62-701.510(6)('c), routine leachate sampling should be done on an annual basis.

Assume it would take 4 hours to perform testing:
2 hours (drive back and forth) + 2 hours to test

Cost to test 1 well for leachate influent: $616.00
(See Attachment 15 for price quote from Test America)

Cost for additional charges:

Composting fee for leachate: $25.00

Equipment; $50.00 (daily)

Services - Sampling
$75.00/hour x 4 hours = $300.00

Travel: $0.50/mile
Total miles per trip: $73.39 (See Attachment 16)
Total travel cost (back and forth):
$0.50/mile x 73.39 miles x 2 = $73.39

Total cost for additional services:
$25.00 + $50.00 + $300.00 + $73.39 = $448.39

Cost for annual leachate sampling: $1,064

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Long-term Care Cost	**CHECKED**	**DATE**

5. LEACHATE COLLECTION/TREATMENT SYSTEMS MAINTENANCE

Maintenance: 1,300 feet 8" collection pipes
500 feet 24" HDPE risers
4 tanks

Quote from Ralph Calistri of Florida Jetclean (See Attachment 6) shows a total cost of $9,900.00 to clean and video-tape 1,300 feet of 8" collection pipes and 500 feet of 24" HDPE risers. For calculation purposes, the total cost is divided by the total length of both the collection pipes and HDPE risers (which are counted as "lift stations").

Total cost of high pressure water-jetting and explosion-proof video inspection of roughly 1,800 feet new 8" and 24" leachate collection piping: $9,900.00

$9,900/1,800 ft = $5.50/ft (Attachment 6)

Collection Pipes

Total length of 8" collection pipes = 1,300 ft
Unit cost: $5.50/ft

Total cost: 1,300 ft x $5.50/ft = **$7,150**

Lift Station

Total length of 24" HDPE risers = 500 ft
Unit cost: $5.50/ft

Total cost: 500 ft x $5.50/ft = **$2,750**

Ph. I & IA: 4, Ph. 2: 3, Ph. 3: 3
Number of risers = 10
Unit cost: $2,750/10 = **$275**

Tanks (includes pump stations)

Number of tanks: 4
Cost to clean tanks: **$2,500**

Unit cost per tank: $2,500/4 = $625

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	BY	DATE
Fiancial Assurance	JPB	12/23/2009
Long-term Care Cost	CHECKED	DATE

Disposal - On-site Impoundment (per 1,000 gallon)

Quantity: 432

Refer to Item 13 of closing cost = **$24,724** (includes hauling and disposal)

$24,724/432 = $57.23

Sub-Total Leachate Collection/Treatment System Maintenance: **$37,130**

6. LEACHATE COLLECTION/TREATMENT SYSTEMS ADMINISTRATIVE

Operations Supervisor

Assume 1 day/month for preparing monthly progress reports for operations supervisor.

1 day/month x 8 hr/day x 12 months/year = 96 hours

Rate = $95.00 Hourly rate for O & M Superintendent (See Attachment 3)

Total = 96 x $95.00 = **$9,120**

Office Engineer

Assume an office engineer visits the site quarterly to oversee the maintenance operations.

Total hours = 8 hr/day x 4 days/year = 32 hours

Rate = $112/hr (See Attachment 3)

Total = 32 x $112.00 = **$3,584**

On-site Technician

Assume on-site technician spends 1 hour per day, 6 days per week to do maintenance work.

Hours = 1 hour/day x 6 days/week x 52 weeks/year = 312 hours

Rate = $85/hr Hourly rate for Senior Technician (See Attachment 3)

Total = 312 hours x $85/hr = **$26,520**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance Long-term Care Cost	JPB	12/23/2009
	CHECKED	**DATE**

Total Operations Cost:

$9,120 + $3,584 + $26,520 = **$39,224**

7. MAINTENANCE OF GROUNDWATER MONITORING WELL

Monitoring Wells

Assume monitoring wells require regular maintenance check every six months.

Labor: Assume it takes 4 hours and 1 Technician routine maintenance of all wells.

Rate: $60.00/hr (See Attachment 3)

Total cost = 1 Tech. x 4 hrs/6 months x 12 months/yr x $60/hr. Tech.
= **$480.00**

Total number of groundwater monitoring wells = 15 (See Attachment 1)

Monitoring cost per well = $480/15 = $32/well

Replacement

Assume 1 GW monitoring well is replaced every five years.

Assume depth of well to be 120 ft.

- See Attachment 17 for a monitoring well completion report from April 3, 2007 showing a typical well depth of 120 feet.

Cost to install a groundwater monitoring well = $5,185.00
(See Attachment 7)

Annual cost: $5,185.00/5 = **$1,037**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	BY	DATE
Fiancial Assurance Long-term Care Cost	JPB	12/23/2009
	CHECKED	DATE

8. GAS SYSTEM MAINTENANCE

Piping, Vents

Total vents = 44 Old LF
+ 70 Phase I, IA, II and III
114

Assume half of these vents need maintenance every year = 57 vents

Cost of Maintenance: Assume it takes 1 hour per vent for 2 technicians to check the vent for any maintenance issues.

Total cost = 1 hr/vent x 2 Technicians x 57 vents x $60/hr. Tech. *
= $6,840

Unit cost = $6,840/57 vents = **$120/vent**

Flaring Units

Assume 10% of the total flaring units need maintenance per year.

Total flaring units that need maintenance = 70 x 0.1 = 7 units

Assume it takes 2 hours for 1 Technician per unit for maintenance

Total = 7 units x 2 hrs/unit x $60/hr. Tech * = $840

Unit cost = $840/7 units = $120/unit

Replace Monitoring Probes

Assume the monitoring probe will be replaced twice within the next 30 years.

Unit cost to replace 1 monitoring probe = $2,775.00 (See Attachment 8)

Cost to replace 2 monitoring wells = 2 x $2,775.00
= $5,550.00

Annual cost: $5,550.00/30 = **$185.00**

Note: * See Attachment 3

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance	JPB	12/23/2009
Long-term Care Cost	**CHECKED**	**DATE**

9. LANDSCAPE

Mowing

Total area = 145 acres

Unit cost: RS Means 2008 Heavy Construction Cost Data (Attachment 9)

Cost: $0.58/1,000 sf

Total cost = $0.58/1,000 sf x 145 ac x 43,560 sf/ac = **$3,663**

Assume mowing twice per year = $3,663 x 2 = $7,326

Unit cost: $7,326/145 ac = $50.52/ac

Total cost = $50.52 x 145 = **$7,330**

10. EROSION CONTROL AND COVER MAINTENANCE

Regrading

Assume 1% of total acreage = 0.01 x 125,172 sy = 1,252 sy

Unit cost: $0.17/sy (See Attachment 10)

Total cost: 1,252 sy x $0.17/sy = **$213**

Liner Repair

Assume 1% of the liner is repaired every 5 years.

Area = 1,524,573 sf x 0.01 = 15,246 sf

Unit cost: $0.30 - Material
$0.28 - Installation
$0.58
(See Attachment 11)

Total cost every 5 years = 15,246 sf x $0.58/sf
= $8,843

Total annual cost: $8,843/5 = **$1,769**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	**BY**	**DATE**
Fiancial Assurance Long-term Care Cost	JPB	12/23/2009
	CHECKED	**DATE**

11. STORMWATER MANAGEMENT SYSTEM MAINTENANCE

Conveyance Maintenance

A. Pipes

Assume 500 ft of pipe to be replaced per year

Unit cost: (See Attachment 12)
Average unit cost of 12", 18" and 24" ADS pipes
= ($5.90/ft + $10.90/ft + $17.25/ft)/3
= $17.03/ft

Total cost: 500 ft x $17.03/ft = $8,515

B. Control Structures

Energy dissipator - Assume 1 replaced every 5 years

Unit cost: $3,280.00 each (See Attachment 13)

Annual cost: $3,280/5 = $656

Catch Basin

Assume 1 replaced every 5 years

Unit cost: $1,250/each (See Attachment 12)

Annual cost: $1,250/5 = $250

Total cost for Item 11:

$8,515 + $656 + $250 = **$9,421**

12. SECURITY SYSTEM MAINTENANCE

Fences: Estimate 50 lf of fence requires repair or replacement.

Unit cost: $13.08/lf (See Attachment 14)

Total cost: 50 lf x $13.08 = **$654**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT Fiancial Assurance Long-term Care Cost	**BY** JPB	**DATE** 12/23/2009
	CHECKED	**DATE**

13. UTILITIES

No cost included for this item. Cost associated with pumps are included in leachate treatment system maintenance cost (Item 5).

14. ADMINISTRATIVE

Assume 4 hours/month for site manager to oversee all the site operations.

Total hours = 4 hours/month x 12 months/year = 48 hours/year

Rate: $112/hr (See Attachment 3, hourly rate for Senior Proj. Professional)

Total = 48 hours/year x $112/hr = **$5,376**

Clerical

Assume 4 hr/month administrative support for typing reports/other computer support.

Total hours = 4 hours/month x 12 months/year = 48 hr/yr

Rate = $54/hr (See Attachment 3)

Total = 48 hr/yr x $54/hr = **$2,592**

Office

Assume 24 hours for planning and issue resolution

Hourly rate for an office engineer = $85/hr

Total cost = $85/hr x 24 hours = $2,040

Subtotal Administrative:

$5,376 + $2,592 + $2,040 = **$10,008**

15. CONTINGENCY

5% of Items 1-14 = 0.05 x $156,603
= $7,830.15
= **$8,000**

CLIENT	PROJECT	JOB NO.
Citrus County	Citrus County	09208040.03
SUBJECT	BY	DATE
Fiancial Assurance	JPB	12/23/2009
Long-term Care Cost	CHECKED	DATE

16. Site specific costs: none

Annual long-term care cost ($/year): $164,603

Number of years of long-term care: 30

Total long-term care cost: $4,938,076

ATTACHMENT 1
1/4

TASK AUTHORIZATION EIGHT
TO MASTER AGREEMENT
FOR SOLID WASTE ENGINEERING,
PLANNING AND ENVIRONMENTAL SERVICES
RFQ 077-04 SWM

This Task Authorization Eight to Master Agreement dated April 26, 2005, between Citrus County ("County") and Jones, Edmunds & Associates, Inc. ("Engineer"), is the scope of services and fees to provide environmental services related to performing compliance monitoring and reporting for the County's solid waste management facility located in Lecanto, Florida.

WITNESSETH:

WHEREAS, the County desires to retain the Engineer for this service, and

WHEREAS, THE Engineer is willing to provide such services;

NOW THEREFORE, the parties covenant and agree as follows:

I. SCOPE OF SERVICES:

The Citrus County Central Landfill is operated under the Florida Department of Environmental Protection (FDEP) permit 21375008-SO/01. The FDEP permit requires routine compliance monitoring of the active and closed landfills. This task authorization addresses the effort necessary to comply with the FDEP compliance monitoring requirements as specified in the current permit.

The Engineer will provide the specific services as outlined in this paragraph, as follows:

- Collection and analysis of leachate influent samples (annual).
- Collection and analysis of leachate effluent samples (quarterly, semiannual, annual).
- Collection and analysis of leachate sludge samples (annual).
- Collection and analysis of groundwater samples (semiannual). This includes monitoring wells MW-1R, MW-2, MW-3, MW-6, MW-7, MW-10, MW-11, MW-12, MW-13, MW-14, M2-15, MW-17, MW-18 and MW-19.
- All analyses shall be for the parameters listed in the FDEP permit dated April 24, 2007.
- Measurement of groundwater elevations within all monitoring wells during semiannual sampling event as required by the facility permit. This includes monitoring wells MW-1R, MW-2, MW-3, MW-6, MW-7, MW-10, MW-AA, MW-12, MW-13, M2-14, MW-15, MW-17 and water-level-only wells MW-4R, MW-5, MW-8R, MW-AA, MW-B, MW-E, MW-9, MW-16, PZ-1 and PZ-2.

- Compilation and reporting of monthly leachate data on a quarterly basis. Data to be provided to Jones Edmunds by the County (see exclusion below).
- Preparation of compliance monitoring reports (quarterly, semiannual, annual).
- Preparation of semiannual groundwater contour maps as required by the facility permit.
- Submittal of analytical data to FDEP in Validator electronic format and hard copy to the County.
- Respond to FDEP questions concerning compliance monitoring (including typical report review questions, should substantial additional effort be necessary we will contact you as to how to proceed).

The following items are specifically excluded from the scope of services:

1. Daily and monthly leachate sampling and analysis as required by the FDEP permit is not included. It is assumed that the County will continue to collect this data without assistance from Jones Edmunds. However, Jones Edmunds will incorporate this data into the quarterly leachate monitoring reports as listed above. Recording and reporting of leachate volumes will continue to be performed by the County with no assistance from Jones Edmunds.
2. The County is not required to submit a Groundwater Monitoring Plan Evaluation (GWMPE) during the time frame of this authorization. The next GWMPE is due to the FDEP February 1, 2010. Therefore, no effort has been included for preparation of a GWMPE.
3. Landfill gas monitoring is not included in this scope of services. It is assumed that gas monitoring as required by the FDEP will be performed by the County or others.

II. COMPENSATION:

For consideration of providing the services outlined in the Scope of Services, the Engineer will be paid in accordance with "not to exceed cost" fee method pursuant to the master agreement.

The total not to exceed fee will be $\$$ 49,930.00 . (See attached schedule.)

III. TIME OF PERFORMANCE:

The Engineer shall complete the Scope of Services as outlined herein between October 1, 2007 and September 30, 2008.

ATTACHMENT 1
3/4

APPROVED
SEP 11 2007
BOARD OF COUNTY COMMISSIONERS

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their duly qualified representative, this _____ day of _____, 2007.

"COUNTY"

Citrus County Board of County Commissioners

Witness:

By: _____

By: _____
Dennis Damato
Chairman

"ENGINEER"

Jones, Edmunds & Associates, Inc.

Witness:

By: _____

By: _____
Robert C. Edmunds, P.E.
Executive Vice President

DMT 8/17/07

Table 1

Citrus County

Task Authorization 8 - 2007/2008 Landfill Compliance Monitoring and Reporting

Prepared by JDL -January, 2003

TASK	Project Manager	Senior Prof Sci	Project Scientist	Scientist Intern	Senior CADD tech	CADD Tech	Technician	Clerical	Labor Fee	Laboratory Sub	ODC's	TOTALS
Contract rate	150	180	120	90	90	75	70	50				
1) Fourth Quarter 2007 - Quarterly leachate effluent	6		2	16			8	3	$ 3,290	$ 350	$ 500	$ 4,140
2) First Quarter 2008 - Quarterly leachate effluent, semiannual effluent, semiannual groundwater	10	1	6	28	1	3	50	4	$ 8,936	$ 7,750	$ 1,000	$ 17,686
3) Second Quarter 2008 - Quarterly leachate effluent	6		2	20			8	3	$ 3,650	$ 350	$ 500	$ 4,500
4) Third Quarter 2008 - Annual leachate influent, quarterly effluent, semiannual effluent, annual effluent, annual sludge, semiannual groundwater	10	1	6	36	1	3	60	4	$ 10,355	$ 12,250	$ 1,000	$ 23,605
									$ -	$ -		$ -
TOTAL HOURS	32	2	16	100	2	6	126	14	$26,230	$20,700	$3,000	$49,930

$4,500 → QUARTERLY LEACHATE EFFLUENT

$17,685 → QUARTERLY LEACHATE EFFLUENT
+ SEMI-ANNUAL EFFLUENT

$23,605 → QUARTERLY LEACHATE EFFLUENT
+ SEMI-ANNUAL EFFLUENT
+ ANNUAL LEACHATE EFFLUENT

ATTACHMENT 2

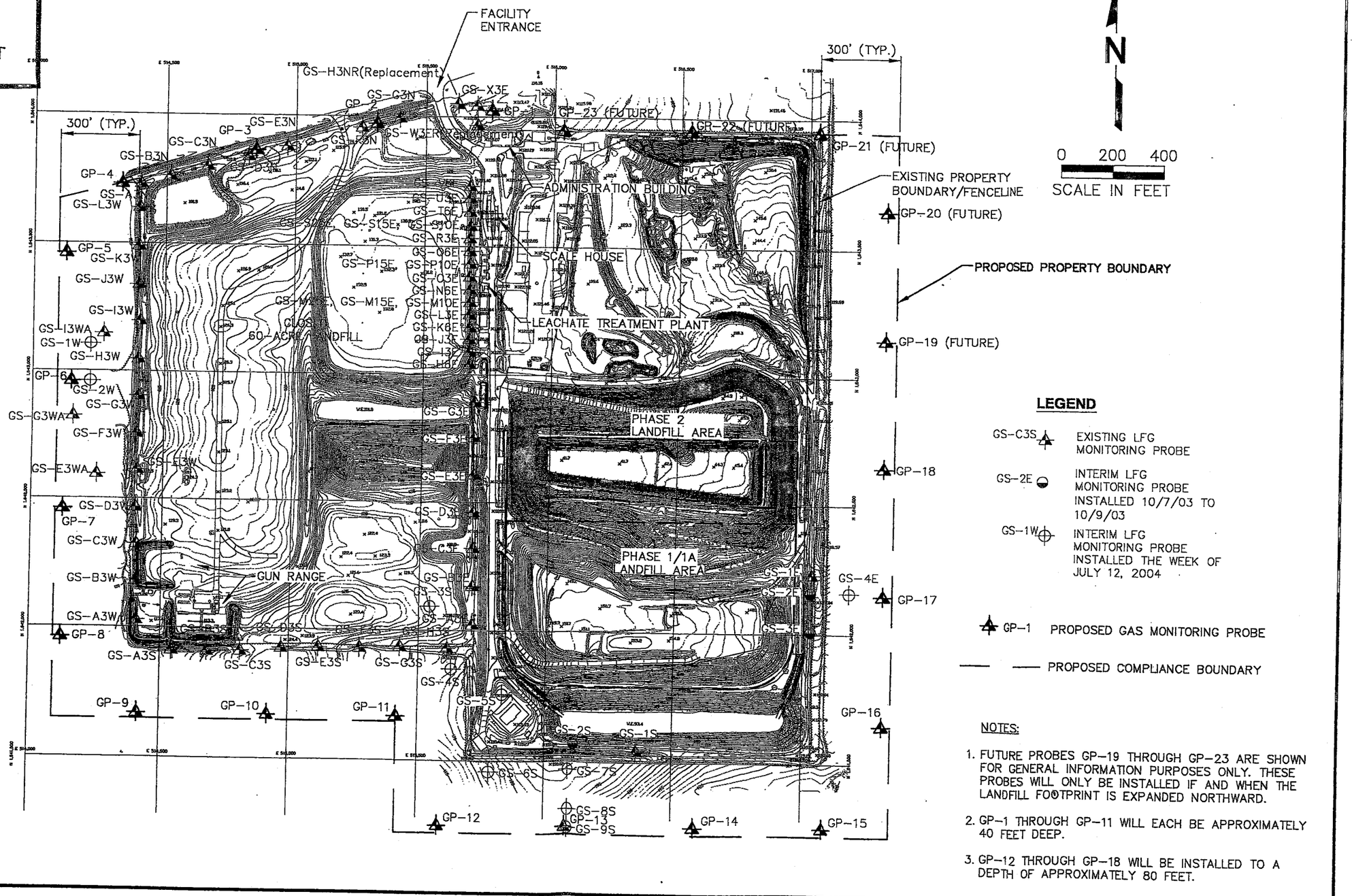
4/4

ATTACHMENT 2

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

JUL 21 2005

SOUTHWEST DISTRICT
TAMPA



LEGEND

- GS-C3S — EXISTING LFG MONITORING PROBE
- GS-2E — INTERIM LFG MONITORING PROBE INSTALLED 10/7/03 TO 10/9/03
- GS-1W — INTERIM LFG MONITORING PROBE INSTALLED THE WEEK OF JULY 12, 2004
- GP-1 — PROPOSED GAS MONITORING PROBE
- —— PROPOSED COMPLIANCE BOUNDARY

NOTES:

1. FUTURE PROBES GP-19 THROUGH GP-23 ARE SHOWN FOR GENERAL INFORMATION PURPOSES ONLY. THESE PROBES WILL ONLY BE INSTALLED IF AND WHEN THE LANDFILL FOOTPRINT IS EXPANDED NORTHWARD.
2. GP-1 THROUGH GP-11 WILL EACH BE APPROXIMATELY 40 FEET DEEP.
3. GP-12 THROUGH GP-18 WILL BE INSTALLED TO A DEPTH OF APPROXIMATELY 80 FEET.

SCS ENGINEERS

G:\PROJECT\09199056.13\99331#site071905.dwg Jul 21, 2005 - 10:47am Layout Name: Figure 9-1 By: 2569gav

Attachment 9-1. Existing and Proposed Landfill Gas Monitoring Probe Locations, Central Landfill, Citrus County, Florida.

ATTACHMENT 3
1/2

SCS ENGINEERS FEE SCHEDULE

(Effective July 1, 2008 through June 30, 2009)

	Rate/Hour ($)
Principal/Office Director	195
Project Director	185
Senior Project Advisor	145
Senior Project Manager	145
Project Manager	135
Senior Project Professional	112
Senior Superintendent	110
Project Professional	92
Designer	98
O&M Superintendent	95
Staff Professional	85
Senior Technician 2	85
Senior Technician 1	65
Associate Staff Professional	72
Draftsperson	70
Technician	60
Office Services Manager	75
Secretarial/Clerical	54

1. The hourly rates are effective through June 30, 2009. Work performed thereafter is subject to a new Fee Schedule issued for the period beginning July 1, 2009.

2. The above rates include salary, overhead, administration, and profit. Other direct expenses, such as analyses of air, water and soil samples, reproduction, travel, subsistence, subcontractors, computers, and other reimbursable fees, are billed in accordance with the attached reimbursables fee schedule or cost, plus 15 percent for administration.

3. For special situations, such as expert court testimony, hourly rates for principals of the firm will be on an individually-negotiated basis.

ATTACHMENT 3
2/2

SCS ENGINEERS
REIMBURSABLES FEE SCHEDULE
(Effective July 1, 2008 through June 30, 2009)

ADMINISTRATION/MILEAGE	Unit Cost ($)	Unit
Reimbursable		
Vehicle Mileage	0.585	mile
Truck Usage	$70	day
Faxes	5	1st Page
	1	each additional page
Reproduction (Xerox)	0.10	each
Reproduction (Color Copies)	1.25	each
CAD Usage	20	hour

EQUIPMENT/FIELD SUPPLIES	Rate ($)	Unit
Sampling Trailer, Field Equipped	200	Day

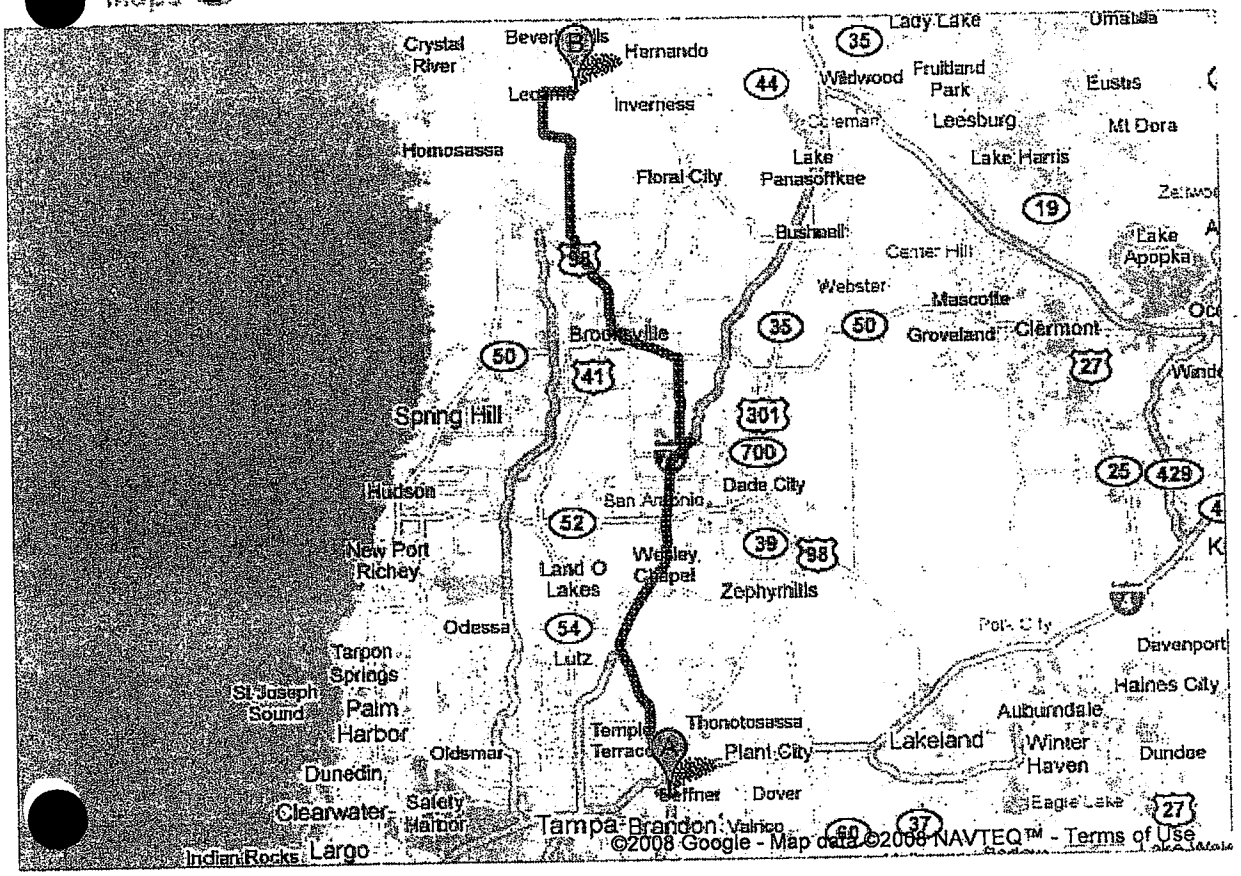
Field-equipped sampling trailer includes equipment and supplies for soil and groundwater sampling, decontamination, health and safety, logs, packing and shipping, and miscellaneous uses.

Pontoon Boat	400	Day
Calibration:		
Conductivity Standards *	1	Ounce
Isobutylene *	1	Liter
Methane in Air OVA Calibration Gas *	1	Liter
Pentane in Air *	1	Liter
pH Buffer Solutions (4,7,10) *	1	Ounce
Decontamination Equipment:		
Brushes *	5	Day
Distilled/Deionized Water *	1	Gallon
Isopropyl Alcohol *	1	Ounce
Liquinox Soap Concentrate *	1	Ounce
Plastic Buckets *	5	Day
Poly Sheeting *	1	Square Foot

ATTACHMENT 4

1/2

Google Maps



Park Oaks Blvd
Tampa, FL 33610

Drive: 76.4 mi – about 1 hour 34 mins

1.	Head **south** on **Park Oaks Blvd** toward **Dr Martin Luther King Jr Blvd E**	305 ft
2.	Turn **right** at **Dr Martin Luther King Jr Blvd E**	0.5 mi
3.	Make a **U-turn** at **Cragmont Dr**	1.1 mi
4.	Turn **left** to merge onto **I-75 N**	33.6 mi
5.	Take exit **293** for **CR-41 N**	0.1 mi
6.	Turn **right** at **Blanton Rd/CR-41 N**	1.0 mi
7.	Slight **right** at **Lake Iola Rd**	1.0 mi
8.	Continue on **Spring Lake Hwy**	6.1 mi
9.	Turn **left** at **US-98 N**	5.7 mi
10.	Turn **left** at **US-41 S/US-98 N** Continue to follow US-98 N	1.0 mi
11.	Turn **right** at **US-98**	7.8 mi
12.	Turn **right** at **Citrus Way**	3.1 mi
	Continue on **S Lecanto Hwy**	12.6 mi
14.	Turn **right** at **W Gulf to Lake Hwy**	2.7 mi

ATTACHMENT 4 2/2

230 W Gulf to Lake Hwy
Lecanto, FL 34461

These directions are for planning purposes only. You may find that construction projects, traffic, or other events may cause road conditions to differ from the map results.

Map data ©2008 NAVTEQ™

LAURA

Enterprise Rates ATTACHMENT 5

FLORIDA CUSTOMER RATES SIS081A/C1

Cust# G90097 SCS ENGINEERS** GRBR: 4209 Default Type:
Billing Type: RATES

Car Class	Rate Amount	Rate Type Description	Unlimited Miles	Free Miles	Excess Mileage Charge
CCAR	32.99	Daily	Y		
CCAR	181.99	Weekly	Y		
CCAR	719.99	Monthly	N	2500	20
ICAR	35.99	Daily	Y		
ICAR	198.99	Weekly	Y		
ICAR	775.99	Monthly	N	2500	20
SCAR	38.99	Daily	Y		
SCAR	214.99	Weekly	Y		
SCAR	839.99	Monthly	N	2500	20
STAR	56.99	Daily	N	150	20

F3=Exit F4=Prompt F6=Prompt/Address F12=Previous F21=Billing Contact
F22=Business Contact

large SUV 75.99 daily

only standard size and bigger have cruise control

ATTACHMENT 6
1/5

Belen, Joyce

From: floridajetclean@tampabay.rr.com
Sent: Wednesday, July 23, 2008 1:21 PM
To: Belen, Joyce
Subject: Re: Citrus County Central Landfill
Attachments: SCS Citrus County Phase 3.doc

Importance: High

Please find our proposal attached. We are anticipating the need to use our normal high-pressure jetting equipment for the 8" lines and a larger machine, producing higher flows but less pressure, for the 24" pipes. As such, the price reflects the likely need to use both machines for the cleaning. We can re-evaluate and adjust once on site.

Thanks.

Ralph Calistri - Florida Jetclean
---- "Belen wrote:
> Ralph,
>
> I'm working on Financial Assurance cost estimates for Citrus County
> Central Landfill. Can you give me a maintenance cost to clean and
> videotape a total of 1,300 feet of 8" collection pipes and 500 feet of
> 24" HDPE risers? The permit requires this job to be done no later
> than August 1, 2009. Please contact me if you have further questions.
> Thank you.

[redacted]

> Joyce Belen, E.I.
>
> Staff Professional
>
>
>
> SCS ENGINEERS
>
> 4041 Park Oaks Blvd
>
> Suite 100
>
> Tampa, FL 33610
>
> Phone: (813) 621-0080
>
> Fax: (813) 623-6757
>
> E-mail: jbelen@scsengineers.com <mailto:rdever@scsengineers.com>
>
> http://www.scsengineers.com <http://www.scsengineers.com/>
>

[redacted]

ATTACHMENT 6
2/5

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING – VACUUM EXTRACTION – PIPELINE TV INSPECTION - PIPE LOCATING – NO DIG REPAIRS

19019 Fern Meadow Loop
Lutz, FL 33558
www. floridajetclean.com

TEL : 800-226-8013
FAX : 813-926-4616

PROPOSAL

DATE : 7/23/2008
TO : Joyce Belen – SCS Engineers
FROM : Ralph Calistri (floridajetclean@tampabay.rr.com)
SUBJECT : Citrus County Landfill Phase 3 Expansion

Thank you for your inquiry. We confirm our capability and interest in carrying out this work for SCS Engineers at the Citrus County Landfill.

FLORIDA JETCLEAN specializes in leachate collection system maintenance and inspection, and has developed a considerable amount of specific expertise in this field over the last 12 years. Our company has worked at an extensive number of landfills in Florida, Georgia, the Carolinas, Delaware, and westward to Arkansas. We have worked with most engineering companies active in this field, and have also fostered excellent working relationships with the regulatory authorities. We use modified jetting equipment designed to achieve extended pipe distances found in landfill environments and our explosion proof camera equipment complies with OSHA and regulatory mandates for methane environments. Substantial references are available on request.

Based on the information provided in your email, we quote as follows:

High-pressure water-jetting and explosion-proof video-inspection of roughly 1,800' of new 8" & 24" leachate collection piping at the above location $ 9,900.00

The proposal is subject to the following :

- The above pipe cleaning covers normal routine silt removal. Pipes affected by heavy, irregular, silting may require additional hourly billing.
- An adequate, no charge, on site water supply for jetcleaning.
- Continuity of access allowing work to be carried out on a single mobilization
- Exposed and opened cleanouts/manholes at ground level
- Standby time chargeable at $200.00 per hour should delays not of our making delay progress e.g. bad weather, access problems, high leachate flow levels etc.
- Pricing is unrelated to actual or achieved footages but on the number of setups required and the time we anticipate being on site.
- Current technology limitations may preclude the use of tractor video systems (range 1250') in 8" lines restricted to cleanout access. If a push video system has to be used, we will be limited to a maximum 500' from each point of entry.

ATTACHMENT 6
3/5

- Our equipment and procedures fully meet OSHA and DEP requirements. In particular our video inspection equipment is certified Class 1, Division 1, Groups C & D (i.e. explosion proof). This is mandated in methane piping by OSHA.
- Video log and report together with video tapes will be provided after completion.

Regards,

Ralph Calistri – Florida Jetclean

ATTACHMENT 6
4/5

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING – VACUUM EXTRACTION – PIPELINE TV INSPECTION - PIPE LOCATING – NO DIG REPAIRS

19019 Fern Meadow Loop
Lutz, FL 33558
www. floridajetclean.com

TEL : 800-226-8013
FAX : 813-926-4616

PROPOSAL

DATE : 7/23/2008
TO : Joyce Belen – SCS Engineers
FROM : Ralph Calistri (floridajetclean@tampabay.rr.com)
SUBJECT : Putnam County Landfill – Phase 2, Cell 3 Expansion

Thank you for your inquiry. We confirm our capability and interest in carrying out this work for SCS Engineers at the Putnam County Landfill.

FLORIDA JETCLEAN specializes in leachate collection system maintenance and inspection, and has developed a considerable amount of specific expertise in this field over the last 12 years. Our company has worked at an extensive number of landfills in Florida, Georgia, the Carolinas, Delaware, and westward to Arkansas. We have worked with most engineering companies active in this field, and have also fostered excellent working relationships with the regulatory authorities. We use modified jetting equipment designed to achieve extended pipe distances found in landfill environments and our explosion proof camera equipment complies with OSHA and regulatory mandates for methane environments. Substantial references are available on request.

Based on the information provided in your email, we quote as follows:

1) High-pressure water-jetting and explosion-proof video-inspection of roughly 8,374' of new 8" leachate collection piping at the above location $ 15,073.00

2) Vacuum truck to remove silt and debris from pump stations or sump areas upon completion (if required) $ 2,500.00 / day

The proposal is subject to the following :

- The above pipe cleaning covers normal routine silt removal. Pipes affected by heavy, irregular, silting may require additional hourly billing.
- An adequate, no charge, on site water supply for jetcleaning.
- No debris pumping included. Water generated by jetcleaning activities will be flushed downstream toward sump areas and pump stations. Vacuum extraction from these areas is available at additional charge designated above.
- Continuity of access allowing work to be carried out on a single mobilization
- Exposed and opened cleanouts/manholes at ground level

- Standby time chargeable at $200.00 per hour should delays not of our making delay progress e.g. bad weather, access problems, high leachate flow levels etc.
- Pricing is unrelated to actual or achieved footages but on the number of setups required and the time we anticipate being on site.
- Current technology limitations may preclude the use of tractor video systems (range 1250') in 8" lines restricted to cleanout access. If a push video system has to be used, we will be limited to a maximum 500' from each point of entry.
- Our equipment and procedures fully meet OSHA and DEP requirements. In particular our video inspection equipment is certified Class 1, Division 1, Groups C & D (i.e. explosion proof). This is mandated in methane piping by OSHA.
- Video log and report together with video tapes will be provided after completion.

Regards - Ralph Calistri – Florida Jetclean

ATTACHMENT 7

Client:SCS Engineers
Attn:Joyce Belen
Date:7/24/08
Fax / Email: (813)623-6757
Quote Page 1 of 1
Cost Estimate for drilling:Citrus County Landfill-Lecanto
HDI #0839-08

				EST /UNIT	PRICE	TOTAL
MOBILIZATION/DEMOBILIZATION			Lecanto			$ 600.00
***If rock is encountered an additional $20.00/ft will be charged**						
MONITORING WELLS (Includes: Screen, Riser, Seal & Grout)						
	Diameter 2" **(1x120')**	0 - 50'		50.0 /ft	24.00 /ft	$ 1,200.00
		50' - 100'		70.0 /ft	28.00 /ft	$ 1,960.00
STANDARD PENETRATION TESTING						
SPT	5' Interval	0 - 50'	(NONE)	0.0 /ft	10.00 /ft	$ -
		50' - 100'	(NONE)	0.0 /ft	14.00 /ft	$ -
SPT	Continuous	0 - 50'	(NONE)	0.0 /ft	16.00 /ft	$ -
		50 - 100'	(NONE)	0.0 /ft	20.00 /ft	$ -
AUGER BORINGS (S.Stem 3")				0.0 /ft	8.00 /ft	$ -
SURFACE CASING (6" PVC)				0.0 /ft	35.00 /ft	$ -
WELL COMPLETION OPTIONS						
12" Manhole Cover w/4" Concrete Square Pad				0.0 /ea	150.00 /ea	$ -
8" Manhole Cover w/4" Concrete Square Pad				0.0 /ea	125.00 /ea	$ -
4" PVC Concrete Filled Bollards				4.0 /ea	75.00 /ea	$ 300.00
4" Square Protective Casing w/Square Pad				1.0 /ea	200.00 /ea	$ 200.00
2" Sanitary Locking Seals				1.0 /ea	25.00 /ea	$ 25.00
ADDITIONAL ITEMS						
Drilling by the Hour				0.0 /hr	225.00 /hr	$ -
Well Development Moyno-Rig pump or Sub.			(ESTIMATE)	2.0 /hr.	175.00 /hr.	$ 350.00
Steam Decontamination			(ESTIMATE)	1.0 /hr.	175.00 /hr.	$ 175.00
Jack Hammer Rental				0.0 /dy	115.00 /dy	$ -
Stand By Time				0.0 /hr.	175.00 /hr.	$ -
Site Clean Up/Drumming Cuttings			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Concrete/Asphalt Cutting & Removal				0.0 /hr.	175.00 /hr.	$ -
Drums (DOT 17H)			(ESTIMATE)	0.0 /ea.	50.00 /ea.	$ -
Hotel & Per Diem (3 man crew)				1.0 /dy	300.00 /dy	$ 300.00
Permits **(S.W.F.W.M.D)**				1.0 /ea	75.00 /ea	$ 75.00
					Total Estimate	$ 5,185.00

*This bid is an estimate only and the invoice will reflect the actual work performed.

File Name: Bid-Short2.xls

35920 STATE ROAD 52 • DADE CITY, FL 33525 • (352) 567-9500 • (352) 567-6646

ATTACHMENT 8

HD HUSS Drilling

Client:SCS Engineers
Attn:Joyce Belen
Date:7/24/08
Fax / Email: (813)623-6757
Quote Page 1 of 1
Cost Estimate for drilling:Citrus County Landfill-Lecanto
HDI #0835-08

				EST /UNIT	PRICE	TOTAL
MOBILIZATION/DEMOBILIZATION			Lecanto			$ 600.00
MONITORING PROBE (Includes: Screen, Riser, Seal & Grout)						
Diameter 1" **(1x80')**				80.0 /ft	20.00 /ft	$ 1,600.00
STANDARD PENETRATION TESTING						
SPT	5' Interval	0 - 50'	(NONE)	0.0 /ft	10.00 /ft	$ -
		50' - 100'	(NONE)	0.0 /ft	14.00 /ft	$ -
SPT	Continuous	0 - 50'	(NONE)	0.0 /ft	16.00 /ft	$ -
		50 - 100'	(NONE)	0.0 /ft	20.00 /ft	$ -
AUGER BORINGS (S.Stem 3")				0.0 /ft	8.00 /ft	$ -
SURFACE CASING (6" PVC)				0.0 /ft	35.00 /ft	$ -
WELL COMPLETION OPTIONS						
12" Manhole Cover w/4" Concrete Square Pad				0.0 /ea	150.00 /ea	$ -
8" Manhole Cover w/4" Concrete Square Pad				0.0 /ea	125.00 /ea	$ -
4" PVC Concrete Filled Bollards				4.0 /ea	75.00 /ea	$ 300.00
6" Square Protective Casing w/Square Pad				1.0 /ea	250.00 /ea	$ 250.00
1" Seals				1.0 /ea	25.00 /ea	$ 25.00
ADDITIONAL ITEMS						
Drilling by the Hour				0.0 /hr	225.00 /hr	$ -
Well Development Moyno-Rig pump or Sub.			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Steam Decontamination			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Jack Hammer Rental				0.0 /dy	115.00 /dy	$ -
Stand By Time				0.0 /hr.	175.00 /hr.	$ -
Site Clean Up/Drumming Cuttings			(ESTIMATE)	0.0 /hr.	175.00 /hr.	$ -
Concrete/Asphalt Cutting & Removal				0.0 /hr.	175.00 /hr.	$ -
Drums (DOT 17H)			(ESTIMATE)	0.0 /ea.	50.00 /ea.	$ -
Hotel & Per Diem (3 man crew)				0.0 /dy	300.00 /dy	$ -
Permits **(S.W.F.W.M.D)**				0.0 /ea	75.00 /ea	$ -
				Total Estimate		$ 2,775.00

*This bid is an estimate only and the invoice will reflect the actual work performed.

File Name: Bid-Short2.xls

35920 STATE ROAD 52 • DADE CITY, FL 33525 • (352) 567-9500 • (352) 567-6646

ATTACHMENT 9

32 01 Operation and Maintenance of Exterior Improvements

32 01 90 – Operation and Maintenance of Planting

		Crew	Daily Output	Labor-Hours	Unit	Material	2008 Bare Costs Labor	Equipment	Total	Total Incl O&P
32 01 90.19 Mowing										
	Traffic safety flashing truck for highway/airport median mowing	A-2B	1	8	Day		235	179	414	560
4000	Lawn mowing, improved areas, 16" hand push	1 Clab	48	.167	M.S.F.		5.05		5.05	7.85
4050	Power mower, 18" - 22"		65	.123			3.72		3.72	5.80
4100	22" - 30"		110	.073			2.20		2.20	3.42
4150	30" - 32"		140	.057			1.73		1.73	2.69
4160	Riding mower, 36" - 44"	B-66	300	.027			1.01	.73	1.74	2.32
4170	48" - 58"	"	480	.017			.63	.46	1.09	1.45
4175	Mowing with tractor & attachments									
4180	3 gang reel, 7'	B-66	930	.009	M.S.F.		.32	.24	.56	.75
4190	5 gang reel, 12'		1200	.007			.25	.18	.43	.58
4200	Cutter or sickle-bar, 5', rough terrain		210	.038			1.44	1.04	2.48	3.32
4210	Cutter or sickle-bar, 5', smooth terrain		340	.024			.89	.64	1.53	2.05
4220	Drainage channel, 5' sickle bar		5	1.600	Mile		60.50	43.50	104	139
4250	Lawnmower, rotary type, sharpen (all sizes)	1 Clab	10	.800	Ea.		24		24	37.50
4260	Repair or replace part		7	1.143	"		34.50		34.50	54
5000	Edge trimming with weed whacker		5760	.001	L.F.		.04		.04	.07
32 01 90.23 Pruning										
0010	**PRUNING**									
0020	1-1/2" caliper	1 Clab	84	.095	Ea.		2.88		2.88	4.48
0030	2" caliper		70	.114			3.46		3.46	5.40
0040	2-1/2" caliper		50	.160			4.84		4.84	7.55
0050	3" caliper		30	.267			8.05		8.05	12.55
0060	4" caliper, by hand	2 Clab	21	.762			23		23	36
0070	Aerial lift equipment	B-85	38	1.053			34	22	56	77
0080	6" caliper, by hand	2 Clab	12	1.333			40.50		40.50	62.50
0110	Aerial lift equipment	B-85	20	2			64.50	42	106.50	146
0200	9" caliper, by hand	2 Clab	7.50	2.133			64.50		64.50	100
0210	Aerial lift equipment	B-85	12.50	3.200			103	67	170	233
0300	12" caliper, by hand	2 Clab	6.50	2.462			74.50		74.50	116
0310	Aerial lift equipment	B-85	10.80	3.704			119	77.50	196.50	270
0400	18" caliper by hand	2 Clab	5.60	2.857			86.50		86.50	134
0410	Aerial lift equipment	B-85	9.30	4.301			139	90	229	315
0500	24" caliper, by hand	2 Clab	4.60	3.478			105		105	164
0510	Aerial lift equipment	B-85	7.70	5.195			167	109	276	380
0600	30" caliper, by hand	2 Clab	3.70	4.324			131		131	203
0610	Aerial lift equipment	B-85	6.20	6.452			208	135	343	470
0700	36" caliper, by hand	2 Clab	2.70	5.926			179		179	279
0710	Aerial lift equipment	B-85	4.50	8.889			287	186	473	645
0800	48" caliper, by hand	2 Clab	1.70	9.412			285		285	445
0810	Aerial lift equipment	B-85	2.80	14.286			460	299	759	1,050
32 01 90.24 Shrub Pruning										
2000	**SHRUB PRUNING**									
2050	Prune, shrub bed	1 Clab	7	1.143	M.S.F.		34.50		34.50	54
2100	Shrub under 3' height		190	.042	Ea.		1.27		1.27	1.98
2150	4' height		90	.089			2.69		2.69	4.18
2200	Over 6'		50	.160			4.84		4.84	7.55
2250	Prune trees from ground		20	.400			12.10		12.10	18.80
2300	High work		8	1			30.50		30.50	47
32 01 90.26 Watering										
0010	**WATERING**									
0020	Water lawn or planting bed with hose, 1" of water	1 Clab	16	.500	M.S.F.		15.15		15.15	23.50
0050	50' soaker hoses, in place		82	.098			2.95		2.95	4.59

31 14 Earth Stripping and Stockpiling

ATTACHMENT 10

31 14 13 – Soil Stripping and Stockpiling

	31 14 13.23 Topsoil Stripping and Stockpiling	Crew	Daily Output	Labor-Hours	Unit	2008 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
	TOPSOIL STRIPPING AND STOCKPILING									
0020	200 H.P. dozer, ideal conditions	B-10B	2300	.005	C.Y.		.19	.47	.66	.80
0100	Adverse conditions	"	1150	.010			.38	.93	1.31	1.60
0200	300 HP dozer, ideal conditions	B-10M	3000	.004			.15	.46	.61	.73
0300	Adverse conditions	"	1650	.007			.27	.84	1.11	1.34
1400	Loam or topsoil, remove and stockpile on site									
1420	6" deep, 200' haul	B-10B	865	.014	C.Y.		.51	1.24	1.75	2.13
1430	300' haul		520	.023			.85	2.06	2.91	3.56
1440	500' haul		225	.053			1.95	4.76	6.71	8.20
1450	Alternate method: 6" deep, 200' haul		5090	.002	S.Y.		.09	.21	.30	.36
1460	500' haul		1325	.009	"		.33	.81	1.14	1.40

31 22 Grading

31 22 16 – Fine Grading

	31 22 16.10 Finish Grading								
0010	**FINISH GRADING**	B-11L	400	.040	S.Y.	1.40	1.34	2.74	3.61
0012	Finish grading area to be paved with grader, small area		4	4	M.S.F.	140	134	274	360
0016	Finish grading lagoon bottoms		2000	.008	S.Y.	.28	.27	.55	.72
0100	Large area		3500	.005	"	.16	.15	.31	.41
0200	Grade subgrade for base course, roadways		30	.533	M.S.F.	18.70	17.80	36.50	48
0210	Fine grade, top of lagoon banks for compaction	B-32C	5000	.010	S.Y.	.34	.36	.70	.92
0220	For large parking lots	"	2000	.024		.85	.91	1.76	2.30
0250	For small irregular areas	B-11L	1040	.015		.54	.51	1.05	1.39
0400	Fine grade for slab on grade, machine	B-18	700	.034		1.06	.05	1.11	1.71
0450	Hand grading	B-62	1200	.020		.66	.12	.78	1.14
0600	Fine grade granular base for sidewalks and bikeways	2 Clab	60	.267	C.S.F.	8.05		8.05	12.55
0650	Hand grade select gravel	B-18	555	.043	S.Y.	1.34	.07	1.41	2.16
3000	Hand grade select gravel, including compaction, 4" deep		400	.060		1.86	.10	1.96	3
3100	6" deep		300	.080		2.47	.13	2.60	3.99
3120	8" deep	B-11L	8900	.002		.06	.06	.12	.17
3300	Finishing grading slopes, gentle		7100	.002		.08	.08	.16	.20
3310	Steep slopes		64	.250	M.S.F.	8.75	8.35	17.10	22.50
3317	Steep slopes, large quantities								

31 23 Excavation and Fill

31 23 16 – Excavation

	31 23 16.13 Excavating, Trench								
0010	**EXCAVATING, TRENCH**								
0011	Or continuous footing								
0020	Common earth with no sheeting or dewatering included								
0050	1' to 4' deep, 3/8 C.Y. excavator	B-11C	150	.107	B.C.Y.	3.74	1.90	5.64	7.80
0060	1/2 C.Y. excavator	B-11M	200	.080		2.80	1.70	4.50	6.15
0062	3/4 C.Y. excavator	B-12F	270	.059		2.11	2.04	4.15	5.45
0070	4' to 6' deep, 1/2 C.Y. excavator	B-11M	200	.080		2.80	1.70	4.50	6.15
0100	5/8 C.Y. excavator	B-12Q	250	.064		2.28	1.99	4.27	5.65
0101	3/4 C.Y. excavator	B-12F	300	.053		1.90	1.83	3.73	4.91
0150	1 C.Y. hydraulic excavator	B-12A	400	.040		1.42	1.62	3.04	3.96
0151	1-1/2 C.Y. excavator	B-12B	540	.030		1.05	1.54	2.59	3.30
0200	1/2 C.Y. excavator, truck mounted	B-12J	200	.080		2.85	4.66	7.51	9.50

ATTACHMENT 11

Belen, Joyce

[redacted]om: Bramlett, Dominique
[redacted]t: Thursday, May 29, 2008 2:47 PM
[redacted]: Belen, Joyce
Cc: Banks, John
Subject: FW: Citrus Co

FYI.
Thanks, Dom

Dominique H. Bramlett, P.E.
SCS ENGINEERS
4041 Park Oaks Blvd, Suite 100
Tampa, FL 33610
Phone: (813) 621-0080
Fax: (813) 623-6757
Email: dbramlett@scsengineers.com
Website: www.scsengineers.com

From: Bob Trexler [mailto:bobt@geo-synthetics.com]
Sent: Thursday, May 29, 2008 2:41 PM
To: Bramlett, Dominique
Subject: RE: Citrus Co

[redacted]o Trexler
Geo-Synthetics, Inc.
9227 Memorial Pines Way
Spring, TX 77379
Office Phone: 281-257-2405
Cell Phone: 262-442-3101
FAX #: 281-257-4235
bobt@geo-synthetics.com
www.geo-synthetics.com/installation

Dominique,
Please use the following prices for your budgetary pricing update on the Citrus County LF Closure. Please also keep in mind that the pricing I am giving you today, 5/29/08, are based on current raw material prices. When the actual project is closer to going Iout for formal bnids, I would recommend that you get a new estimate, as petrolium based raw materials like liners and geocomposites can skyrocket rather rapidly as you are seeing at the pumps. Your current budgetary prices are as follows:

Price to supply only approximately 1,412,471 sq ft of 40 mil textured LLDE liner at .30 per sq ft delivered. Price for installation only at .28 per sq ft.

Price to supply only approximately 1,074,051 sq ft of 200 mil net with 2 sides of 6 oz geotextile bonded at .38 per sq ft. Price for installation at .20 per sq ft.

[redacted]ease let me know if you have any additional questions.

Regards,

ATTACHMENT 12

Bramlett, Dominique

From: Dan Dietrich [Dan.Dietrich@ads-pipe.com]
Sent: Thursday, May 29, 2008 4:46 PM
To: Bramlett, Dominique
Subject: RE: Citrus cost estimate

Dominique,

Here's a estimate for the following materials:

4" N-12 WT pipe	.90/ft
6" N-12 WT pipe	2.00/ft
8" N-12 WT pipe	3.45/ft
10" N-12 WT pipe	5.20/ft
12" N-12 WT pipe	5.90/ft
15" N-12 WT pipe	7.80/ft
18" N-12 WT pipe	10.90/ft
24" N-12 WT pipe	17.25/ft
30" N-12 WT pipe	25.25/ft

12 → 794 ft x $5.90
8 → 2,717 ft x $3.45
24 → 3,453 ft x $17.25

= $

30" Nyloplast Inline Drain	750/ea
30" Nyloplast Drain Basin (Height<5')	1250/ea x 9

Give me a call if you have any further questions. Thanks.

Dan Dietrich, E.I.
Sales Engineer
Advanced Drainage Systems, Inc.
Cell: (813) 569-8082
Fax: (813) 354-3575
www.ads-pipe.com
www.stormtech.com

From: Bramlett, Dominique [mailto:DBramlett@SCSEngineers.com]
Sent: Thursday, May 29, 2008 2:55 PM
To: Dan Dietrich
Cc: Belen, Joyce
Subject: Citrus cost estimate

Dan,
Please provide me cost estimates for ADS pipe (4-inch through 30-inch) and 30-inch diameter inlets (3ft in depth and 4ft in depth).
Thanks, Dominique

Dominique H. Bramlett, P.E.
SCS ENGINEERS
4041 Park Oaks Blvd, Suite 100
Tampa, FL 33610
Phone: (813) 621-0080
Fax: (813) 623-6757
Email: dbramlett@scsengineers.com
Website: www.scsengineers.com

Florida Department of Transportation
Item Average Unit Cost
From 2007/01/01 to 2007/12/31

Contract Type: ('CC') STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0100 To: 1999999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430200 40	1	$4,000.00	$12,000.00	3.000	EA	N	FLARED END SECTION, CONCRETE, 42"
0430200 42	2	$5,750.00	$17,250.00	3.000	EA	N	FLARED END SECTION, CONCRETE, 54"
0430600025	1	$4,564.37	$18,257.48	4.000	EA	N	U-ENDWALL, STD 260, 1:6 SLP, 18"
0430600125	1	$4,216.38	$4,216.38	1.000	EA	N	U-ENDWALL, STD 260, 1:4 SLP, 18"
0430602125	2	$3,665.38	$10,996.14	3.000	EA	N	U-ENDWALL,W \GRATE,STD 260,1:4 SLP,18"
0430602129	1	$4,700.00	$14,100.00	3.000	EA	N	U-ENDWALL,W \GRATE,STD 260,1:4 SLP,24"
0430610125	2	$1,471.90	$35,325.54	24.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 18"
0430610129	1	$1,399.78	$15,397.58	11.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 24"
0430610133	1	$1,507.45	$3,014.90	2.000	EA	N	U-ENDWALL,STD 261,1:4 SLP, 30"
0430610323	1	$1,000.00	$2,000.00	2.000	EA	N	U-ENDWALL,STD 261,1:2 SLP, 15"
0430611025	2	$3,030.53	$12,122.12	4.000	EA	N	U-ENDWALL,STD 261,BAFFLES,1:6 SLP, 18"
0430611125	5	$2,016.70	$78,651.31	39.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 18"
0430611129	1	$2,800.00	$8,400.00	3.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 24"
0430611133	1	$3,800.00	$3,800.00	1.000	EA	N	U-ENDWALL /BAFFLES,STD 261, 1:4 SLP,30"
0430611225	5	$4,376.26	$30,633.85	7.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:3 SLP,18"
0430611323	2	$2,000.00	$6,000.00	3.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,15"
0430611325	7	$2,467.42	$118,435.94	48.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,18"
0430611329	3	$3,280.00	$22,960.00	7.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:2 SLP,24"
0430611333	1	$2,128.26	$2,128.26	1.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:2 SLP,30"
0430612025	2	$3,838.33	$103,634.84	27.000	EA	N	U-ENDWALL, GRATE, STD 261,1:6 SLP,18"
0430612029	1	$5,349.09	$10,698.18	2.000	EA	N	U-ENDWALL, GRATE, STD 261,1:6 SLP,24"
0430612033	1	$4,500.00	$4,500.00	1.000	EA	N	U-ENDWALL, GRATE, STD 261,1:6 SLP, 30"
0430613025	1	$4,921.16	$4,921.16	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:6 SLP,18"
0430613029	1	$3,107.50	$3,107.50	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:6 SLP,24"
0430613125	1	$4,921.16	$4,921.16	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:4 SLP,18"
0430613133	2	$3,585.00	$14,340.00	4.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:4 SLP,30"
0430613225	1	$2,500.00	$2,500.00	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:3 SLP,18"
0430613233	1	$3,938.00	$3,938.00	1.000	EA	N	U-ENDWALL,BAF& GRATE,STD 261,1:3 SLP,30"
0430721425	2	$69.43	$90,741.65	1,307.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 18" SS
0430721429	2	$74.97	$392,856.00	5,240.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 24" SS
0430721433	1	$85.00	$222,870.00	2,622.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 30" SS
0430721438	1	$93.00	$123,690.00	1,330.000	LF	N	PI SLOT OR PERF CULV, OPTIONAL, 36" SS
0430821 33	1	$535.00	$3,210.00	6.000	EA	N	CLEANING & SEALING EXIST PIPE JNT,30" SS
0430821 44	1	$2,500.00	$32,500.00	13.000	EA	N	CLEANING & SEALING EXIST PIPE JNT,66",SS
0430830	14	$280.74	$200,027.07	712.500	CY	N	PIPE FILLING AND PLUGGING

ATTACHMENT 13

Florida Department of Transportation
Item Average Unit Cost
From 2007/01/01 to 2007/12/31

Contract Type: ('CC') STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0100 To: 1999999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0550 10150	2	$11.57	$1,216,727.68	105,185.600	LF	N	FENCING, TYPE A, 8.1-10.0', STANDARD
0550 10220	20	$13.08	$498,877.75	38,130.000	LF	N	FENCING, TYPE B, 5.1-6.0, STANDARD
0550 10221	1	$18.25	$85,008.50	4,658.000	LF	N	FENCING, TYPE B, 5.1-6.0, W/ BARB ATTMT
0550 10222	14	$16.46	$1,290,275.97	78,369.600	LF	N	FENCING, TYPE B, 5.1-6.0, W/ VINYL COAT
0550 10228	3	$12.91	$13,413.00	1,039.000	LF	N	FENCING, TYPE B, 5.1-6.0, RESET EXISTING
0550 10240	2	$32.62	$21,987.00	674.000	LF	N	FENCING, TYPE B, 7.1-8.0', STANDARD
0550 10250	1	$19.50	$4,446.00	228.000	LF	N	FENCING, TYPE B, 8.1-10.0', STANDARD FEA
0550 10343	1	$100.00	$156,000.00	1,560.000	LF	N	FENCING, TYPE R, 7.1-8.0, W/FULL ENCLOS
0550 10353	2	$405.11	$195,262.46	482.000	LF	N	FENCING, TYPE R, 8.1-10', W/FULL ENCLOS
0550 10918	1	$73.50	$1,470.00	20.000	LF	N	FENCING,SPECIAL TYP, 0.0-5.0', RESET EXI
0550 10929	2	$29.23	$201,074.00	6,880.000	LF	N	FENCING, SPECIAL TYPE, 5.1-6.0', SPECIAL
0550 60124	1	$1,100.00	$1,100.00	1.000	EA	N	FENCE GATE,TYP A, DBL, 18.1-20.' OPENING
0550 60127	1	$2,500.00	$2,500.00	1.000	EA	N	FENCE GATE,TYP A,DBL, > THAN 30' OPENING
0550 60211	2	$865.00	$1,730.00	2.000	EA	N	FENCE GATE,TYP B,SGL, 0- 6.0' OPENING
0550 60212	1	$1,500.00	$4,500.00	3.000	EA	N	FENCE GATE,TYP B,SGL,6.1-12.0' OPENING
0550 60222	3	$1,337.78	$12,040.00	9.000	EA	N	FENCE GATE,TYP B, DBL, 6.1-12.0' OPENING
0550 60223	3	$2,023.36	$20,233.63	10.000	EA	N	FENCE GATE,TYP B, DBL,12.1-18.0' OPENING
0550 60224	5	$1,295.18	$22,018.11	17.000	EA	N	FENCE GATE,TYP B, DBL,18.1-20.0' OPENING
0550 60225	5	$2,356.67	$35,350.00	15.000	EA	N	FENCE GATE,TYP B, DBL, 20.1-24' OPENING
0550 60227	1	$6,300.00	$6,300.00	1.000	EA	N	FENCE GATE,TYP B,DBL, > THAN 30' OPENING
0550 60232	1	$1,200.00	$1,200.00	1.000	EA	N	FENCE GATE,TYP B,SLIDE/CANT,6.1-12'OPEN
0550 60233	4	$3,037.50	$18,225.00	6.000	EA	N	FENCE GATE,TYP B,SLIDE/CANT,12.1-18'OPEN
0550 60234	3	$2,334.00	$11,670.00	5.000	EA	N	FENCE GATE,TYP B,SLIDE/CANT,18.1-20'OPEN
0550 60235	2	$4,250.00	$8,500.00	2.000	EA	N	FENCE GATE,TYP B,SLIDE/CANT,20.1-24'OPEN
0550 60236	1	$3,700.00	$33,300.00	9.000	EA	N	FENCE GATE,TYP B,SLIDE/CANT,24.1-30'OPEN
0550 60925	2	$3,295.20	$16,476.00	5.000	EA	N	GATE, SPECIAL, DOUBLE, 20.1-24' OPENING
0550 60933	1	$6,558.00	$6,558.00	1.000	EA	N	GATE,SPECIAL,SLIDING/CANT, 12.1-18' OPEN
0550 60934	1	$7,580.00	$15,160.00	2.000	EA	N	FENCE GATE,SPL,SLIDE/CANT,18.1-20'OPEN
0550 60935	1	$7,500.00	$22,500.00	3.000	EA	N	FENCE GATE,SPL,SLIDE/CANT,20.1-24'OPEN
0555 1 1	52	$20.67	$3,389,539.19	163,946.000	LF	N	DIRECTIONAL BORE, LESS THAN 6"
0555 1 2	41	$24.95	$1,127,550.58	45,200.000	LF	N	DIRECTIONAL BORE, 6" TO < 12"
0555 1 3	2	$131.96	$47,770.00	362.000	LF	N	DIRECTIONAL BORE, 12" TO < 18"
0555 1 6	1	$802.00	$789,970.00	985.000	LF	N	DIRECTIONAL BORE, 36" TO < 48"
0556 1 2	3	$251.65	$124,065.00	493.000	LF	N	JACK AND BORE, CASE DIA 6"TO<12"
0556 1 4	4	$232.07	$381,760.70	1,645.000	LF	N	JACK AND BORE, CASE DIA 18"TO<24"

ATTACHMENT 14

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ATTACHMENT 15

1/3

TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634

Tel: (813) 885-7427
Fax: (813) 885-7049
www.testamericainc.com

May 30, 2008

Ms. Dominique Bramlett
SCS Engineers
4041 Park Oaks Blvd
Suite 100
Tampa, FL 33610
DBramlett@SCSEngineers.com

Subject: Request for Proposal
Citrus County Landfill
Quote Number: 66002177

Dear Ms. Dominique Bramlett,

On behalf of TestAmerica Laboratories, Inc., and its affiliates, I am pleased to submit pricing for the Citrus County Landfill. TestAmerica is eager to support this commitment by making our personnel and analytical laboratory resources available to you. As the largest environmental laboratory company in the world TestAmerica offers a full range of analytical services in one company.

We thank you for choosing TestAmerica Laboratories, and we look forward to working with you for this project. The following quotation contains a detailed price breakdown, as well as any notes and clarifications pertaining to your project. This quotation is subject to TestAmerica's Standard Terms and Conditions, unless otherwise agreed upon in writing. Should you have any further questions or require additional information about our analytical services, please feel free to contact me at 813-885-7427 or via email at the address listed below.

Sincerely,

Tina Fritz
Customer Service Manager
tina.fritz@testamericainc.com
813-918-9088

TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634

ATTACHMENT 15.
2/3

Prepared for:
Ms. Dominique Bramlett
SCS Engineers
4041 Park Oaks Blvd
Suite 100
Tampa, FL 33610
DBramlett@SCSEngineers.com

Prepared by Fritz, Tina
Date 5/30/2008
Expiration Date 8/29/2008
Est. Start Date

Project: Citrus County Landfill *Quote Number: 66002177 - 0*

Surface Water - Stormwater Discharge **TAT: 10_Days (Business Days)**

Matrix	Method	Test Description	Quantity	Unit Price	Extended Price
Water	365.4	Total Phosphorus	1	$ 25.00	$ 25.0(
Water	353.2	Nitrogen, Nitrate	1	$ 25.00	$ 25.0(
Water	SM 5310C	Total Organic Carbon	1	$ 40.00	$ 40.0(
Water	351.2	Nitrogen, Total Kjeldahl	1	$ 30.00	$ 30.0(
Water	Total Nitrogen	Total Nitrogen	1	$ 10.00	$ 10.0(
Water	SM 5220D	Chemical Oxygen Demand	1	$ 25.00	$ 25.0(
Water	SM 9222D	Fecal Coliform (6 hour hold time)	1	$ 40.00	$ 40.0(
Water	SM 5210B	5 Day BOD test	1	$ 40.00	$ 40.0(
Water	SM 2540C	Total Dissolved Solids	1	$ 18.00	$ 18.0(
Water	SM 2540D	Total Suspended Solids	1	$ 18.00	$ 18.0(
Water	200.7 Rev 4.4	Appendix 1 Metals + Iron	1	$ 100.00	$ [redacted].0(
Water	8260B	8260 Appendix I Compounds	1	$ 90.00	$ [redacted].0(
Water	8011	EDB and DBCP	1	$ 60.00	$ 60.0(

Surface Water - Stormwater Discharge **TAT: 10_Days (Business Days)** **(to be analyzed by Pensacola)**

Matrix	Method	Test Description	Quantity	Unit Price	Extended Price
Water	1631E	Low Level Mercury and Field Blank	1	$ 180.00	$ 180.0(
		Total Surface Water - Stormwater Discharge			**$ 741.0(**

Leachate Influent **TAT: 10_Days (Business Days)**

Matrix	Method	Test Description	Quantity	Unit Price	Extended Price
Water	350.1	Ammonia	1	$ 20.00	$ 20.0(
Water	353.2	Nitrogen, Nitrate	1	$ 25.00	$ 25.0(
Water	SM 2540C	Total Dissolved Solids	1	$ 18.00	$ 18.0(
Water	200.7 Rev 4.4	Appendix 1 Metals + Iron and Sodium	1	$ 100.00	$ 100.0(
Water	8260B	8260 Appendix I Compounds	2	$ 90.00	$ 180.0(
Water	8011	EDB and DBCP	1	$ 60.00	$ 60.0(
Water	SM 2320B	Bicarbonate	1	$ 15.00	$ 15.0(
Water	300.0	Chloride	1	$ 18.00	$ 18.0(

Leachate Influent **TAT: 10_Days (Business Days)** **(to be analyzed by Pensacola)**

Matrix	Method	Test Description	Quantity	Unit Price	Extended Price

ATTACHMENT 15
3/3

TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634

Prepared for:

[redacted]. Dominique Bramlett
SCS Engineers
4041 Park Oaks Blvd
Suite 100
Tampa, FL 33610
DBramlett@SCSEngineers.com

Prepared by	Fritz, Tina
Date	5/30/2008
Expiration Date	8/29/2008
Est. Start Date	

Project: Citrus County Landfill *Quote Number: 66002177 - 0*

Leachate Influent **TAT: 10_Days (Business Days)** **(to be analyzed by Pensacola)**

Matrix	Method	Test Description	Quantity	Unit Price	Extended Price
Water	1631E	Low Level Mercury and Field Blank	1	$ 180.00	$ 180.0
		Total Leachate Influent			**$ 616.0**

Quote Other Charges

Description	Quantity	Unit Price	Extended Price
Compositing fee for Leachate Influent	1	$ 25.00	$ 25.0
Equipment - Decon - Daily	1	$ 50.00	$ 50.0
Services - Sampling (hourly)	1	$ 75.00	$ 75.0
Travel - Mileage (estimated per trip)	100	$ 0.50	$ 50.0
Total Other Charge			**$ 200.0**

Total Other Charges	**$ 200.0**
Total Analysis Charges	**$ 5,579.0**
Grand Total for Quote 66002177	**$ 5,779.0**

**Quoted charges do not include sales tax. Applicable sales tax will be added to invoices where required by law.

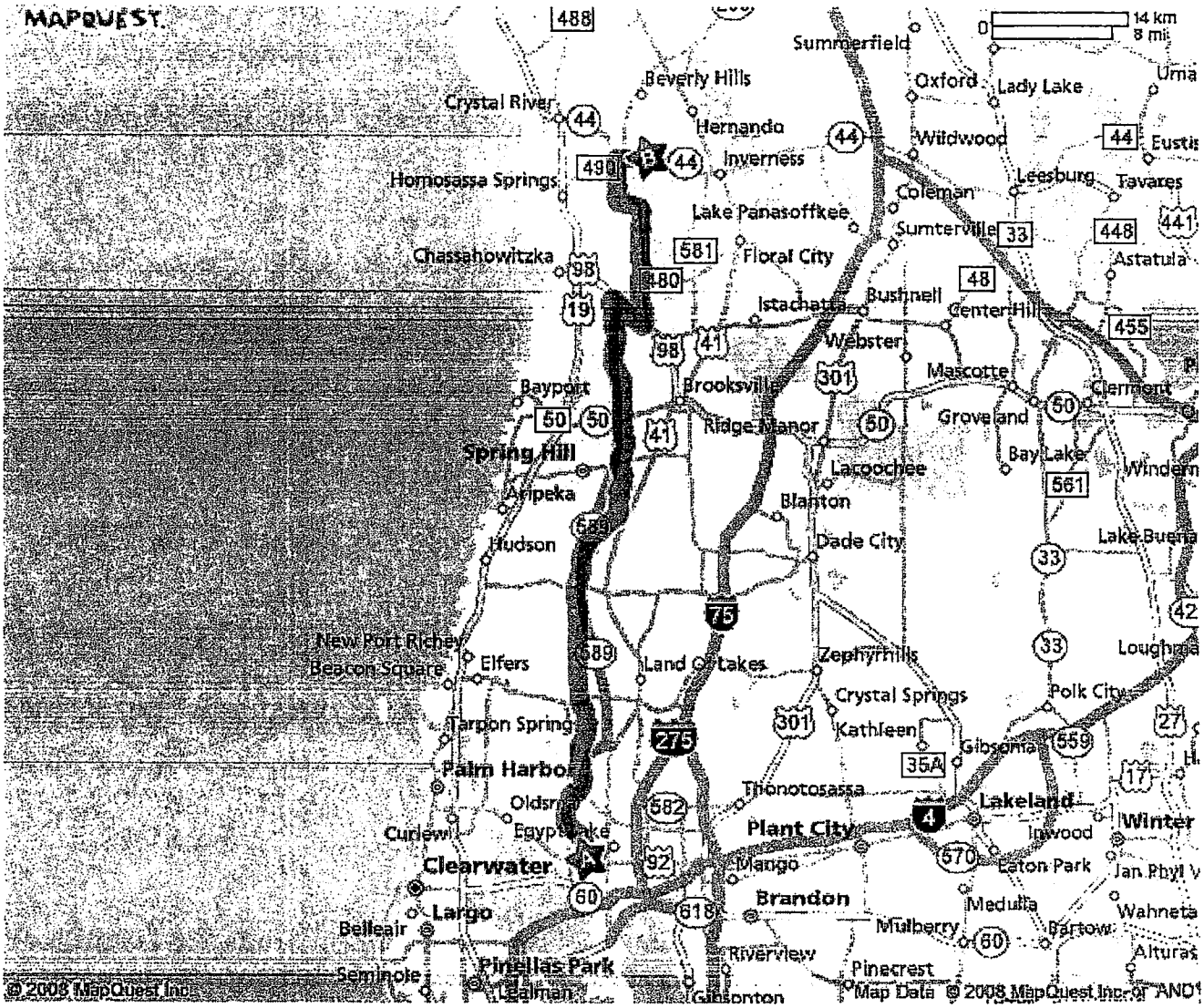
Issued on: 5/30/2008

ATTACHMENT 16

Estimated Time: 1 hour 20 minutes Estimated Distance: 73.39 miles

B: 230 W Gulf to Lake Hwy, Lecanto, FL 34461-9201

Total Time: 1 hour 20 minutes Total Distance: 73.39 miles



Directions and maps are informational only. We make no warranties on the accuracy of their content, road conditions or route usability or expeditiousness. You assume all risk of use. MapQuest and its suppliers shall not be liable to you for any loss or delay resulting from your use of MapQuest. Your use of MapQuest means you agree to our Terms of Use

ATTACHMENT 17

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 4/3/2007

INSTALLATION NAME: Citrus County Central Landfill

DEP PERMIT NUMBER: 21375-008-SO/01 GMS NUMBER:

WELL NUMBER: MW-18 WELL NAME: MW-18

DESIGNATION: Background Detection Compliance X Assessment

LATITUDE/LONGITUDE: N 1643745.78 E 514731.67

AQUIFER MONITORED: Floridan

INSTALLATION METHOD: Mud rotary

INSTALLED BY: Huss Drilling

TOTAL DEPTH: 120 ft (bls) DEPTH OF SCREEN: 100-120 ft (bls)

SCREEN LENGTH: 20 ft SCREEN SLOT SIZE: 0.01 in SCREEN TYPE: sch.40 slotted PVC

NG DIAMETER: 2 in CASING TYPE: sch. 40 PVC

LENGTH OF CASING: 100 ft FILTER PACK MATERIAL: 20/30 clean silica sand

TOP OF CASING ELEVATION (MSL): 115.98 ft

GROUND SURFACE ELEVATION (MSL): 116.28 ft

COMPLETION DATE: 1/23/2007

DESCRIBE WELL DEVELOPMENT: Initial development by air sparging was conducted by the drillers, additional development with a Grundfos pump Was conducted before initial sampling.

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): 5.81 ft

DATE AND TIME MEASURED: 2/28/2007 12:36 PM

REMARKS: (soils information, stratigraphy, etc.) :

REPORT PREPARED BY: Troy Hays, Jones Edmunds & Associates, 352-377-5821
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface