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Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex
Class I Landfill
Phase II Expansion Construction/Operation
Permit Application
Volume 2 of 2 - Appendices

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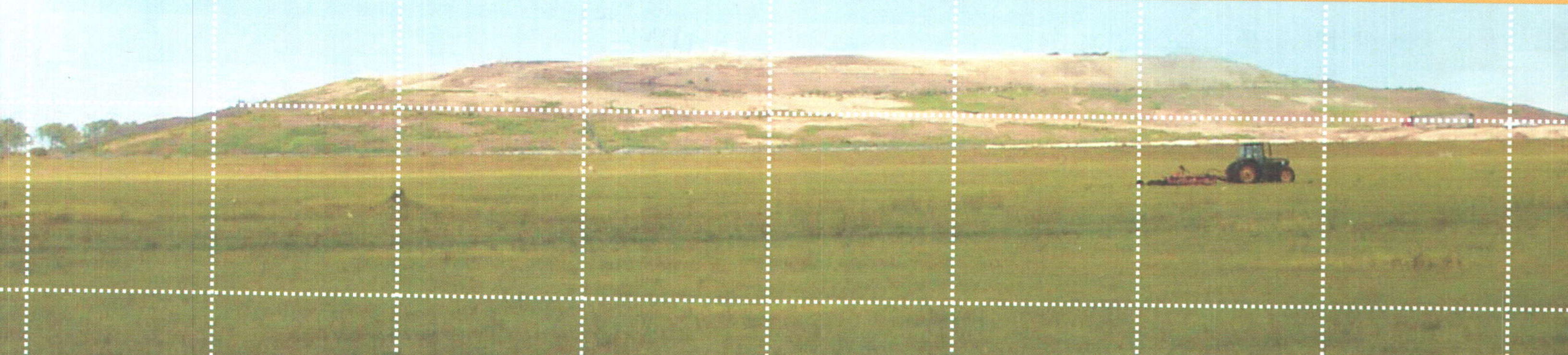

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Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex Operations Plan

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OPERATIONS PLAN

L.1 TRAINING

In accordance with Rule 62-701.500(1), Florida Administrative Code (F.A.C.), key supervisory staff at the CCSWDC Landfill have received Landfill Operator Certification training. The training plan can be found in Attachment L-1. Sarasota County staff or a qualified landfill operations contractor will operate the facility. Sarasota County will require the operating entity to provide at least one trained landfill operator certified in accordance with Chapter 62-701.32(15), F.A.C. and at least one trained spotter at each working face during operation when the landfill receives waste to detect unauthorized wastes from each load.

The spotters will be responsible for guiding vehicles and promoting an efficient operation during normal operation hours. The spotters shall also be responsible for enforcing provisions for controlling the waste received. These provisions are described in Section L.2.c.

The facility will be operated in compliance with all applicable regulations governing the operation of solid waste management facilities and surface water management facilities.

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 plans and operational standards.

L.2 LANDFILL OPERATIONS PLAN

L.2.a Designation of Responsible Persons

The Central County Solid Waste Disposal Complex (CCSWDC) is owned by Sarasota County and operated under the direction of the Sarasota County Solid Waste Operations Unit. ~~Frank Coggins, Solid Waste Operations~~Lois E. Rose, Manager Solid Waste, will be the designated responsible person for the operation of the CCSWDC. A list of the landfill personnel is given below as well as typical training required for each position:

VEOLIA ENVIRONMENTAL SERVICES:

- General Manager (1) (Operator)
- Lead Equipment Operator (1) (Operator)
- Equipment Operator (7)
- Laborer/Spotter (1) (Spotter)
- Laborer (1) (Spotter)
- Mechanic (1)

SARASOTA COUNTY:

- Solid Waste Operations Manager (1) (Operator)
- Engineer (1)
- Administrative Coordinator (1)
- Senior Secretary (1)
- Operations I Supervisor (1) (Operator)
- Environmental Services Inspector (2) (Operator)
- Environmental Specialist (1)
- Equipment Operator III (4)

L.2.b Contingency Operations for Emergencies

L.2.b.(1) Emergency Provisions

Emergency conditions at the landfill site may occur as a result of a natural disaster (hurricane, tornado, flooding, etc.) or fire. In the event emergency conditions will interrupt operations at the facility, the contingency plan will be implemented (see Attachment L-2). Refuse is not normally delivered to the site during emergency conditions; however, should a major storm occur, the following actions shall be taken:

- Daily cover shall be applied to all exposed refuse before a major storm arrives, if possible.
- All landfill equipment shall be parked near any natural wind screens such as earthen mounds and berms.
- All lightweight signs and equipment shall be secured.
- When operation resumes, work shall commence in dry areas only (up from the active face). Refuse shall not be deposited in standing water.
- Contract agreements with local contractors, equipment suppliers, or cooperative lending agreements with other County departments will be pursued for backup equipment, if necessary.

Small fires on the working face will be controlled by a bulldozer, landfill compactor and a water wagon and ample cover material to extinguish the fire. On-site stockpiles of soil cover material will always be available for suppressing fires. In the event an uncontrollable fire does occur at the landfill site, the Nokomis Fire Department will be contacted. The Nokomis Fire Department presently maintains a fire station at 111 Pavonia Road in Nokomis, approximately 7.5 miles from the proposed facility. This station has equipment capable of obtaining water from surface sources for fire fighting.

The large stormwater retention basins adjacent to the landfill will serve as the water source for fire fighting purposes. In the event of a fire or other emergency, the solid waste operations manager or his designee will notify the FDEP within twenty-four (24) hours by telephone and within seven (7) days a written report will be submitted describing the origins of the emergency, actions taken, result of the actions taken, and an analysis of the success or failure of the actions.

Waste will continue to be accepted and disposal operations will continue in the event of a fire. Operations will be moved a safe distance from the fire location so as not to pose a hazard to operating personnel or customers.

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

As described in Sections L.11.a. and L.11.b, the Contractor will provide adequate equipment on-site to ensure proper operation of the landfill and for excavating, spreading, compacting, and covering waste. As part of an agreement with a maintenance contractor, the Contractor will receive loaner equipment within forty-eight (48) hours of equipment breakdown, if required. These basic emergency procedures should protect the landfill and equipment, and allow reactivation of the operation in an orderly and timely manner. Two mobile electrical generators are maintained on-site to provide power during outages for the administration building, scale house, and maintenance building.

In case of an accidental spill of oil, fuel, leachate or chemicals, the spill will be minimized by controlling the source immediately (e.g., by closing valve, turning-off switch, or taking any other necessary action). The affected area will be controlled by diverting vehicular traffic. Runoff from the affected area will be controlled by building a berm, plugging drain or ditch, or adding absorbent material. The affected area will be cleaned, and the effectiveness of the cleanup confirmed by sampling, as needed depending on the nature of the spilled material. For spill countermeasures of secondary containment at the Leachate Holding Tank refer to Section L.2.h.2, Leachate Management System.

L.2.b.(2) Wet Weather Operations

Steps to be taken for accommodating wet weather solid waste disposal include: 1) set-aside elevated tipping areas with limestone or shell approaches or other acceptable base material as needed to allow uninhibited vehicular movement; 2) set-aside elevated sandy cover material, and 3) erect containment berms around wet weather tipping areas in accordance with Section L.2.h.3.

In order to avoid an excessive accumulation of standing water in the area of the working face, a small area of daily cover will be removed by grading to allow direct percolation to the underlying refuse and leachate collection system. Pumping equipment is available on-site, if required to remove ponded leachate by pumping it to either a tanker truck for proper treatment and disposal, or to a leachate collection manhole.

L.2.c Controlling the Type of Waste Received at the Site

The automated accounting system, clerks at the scalehouse, and the site security fence discourage unauthorized entry and disposal of unauthorized waste. A sign located at the entrance states the general regulations including the types of prohibited solid waste.

A trained spotter at the working face will visually inspect the waste as it is deposited. If unauthorized special waste (i.e., lead-acid batteries, used oil, yard trash, white goods, and whole tires) is found at the working face, as part of routine operations, the waste would be segregated and removed for recycling, as described in Attachment L-13.

White goods and electronic wastes are accepted at the facility for recycling but are not allowed at the working face for disposal. Special wastes not authorized for disposal are accepted for staging at the CCSWDC until they are removed from the site for offsite recycling. These materials shall be stored in the designated white goods and recyclables storage area located near the southeast corner of Phase I as shown on Sheet G-03, Overall Site Plan and Phasing Plan, provided with the Permit Drawings.

Electronic products that are discovered at the working face will be removed and stored in a safe area within the active working area (bermed area). At the end of the day, at a minimum, these materials will be transported directly to the designated storage area. Undamaged electronic wastes recovered for recycling shall be stored in an undamaged condition and records for all quantities received by each recycler shall be kept along with the receipts with the name and address of each recycler. Recovered electronic wastes that have been damaged and will not be recycled will be removed and stored in a designated 30-foot x 45-foot covered concrete pad area adjacent to the Contractor's maintenance building located as shown on Sheet G-03, Overall Site Plan and Phasing Plan, provided with the Permit Drawings. The damaged waste shall be placed inside a watertight container.

White goods will be removed from the working face and taken to the white goods storage area located south of Phase I as shown on Sheet G-03, Overall Site Plan and Phasing Plan, provided in the Permit Drawings. White goods shall be removed from the site at least monthly. Refrigeration units will be stored in an upright position until all liquids, CFCs and Freon are removed.

Other unauthorized waste and small quantity household hazardous waste such as lead-acid batteries, fluorescent tubes, pesticides, solvents, cadmium batteries, and thermometers, which are discovered at the working face, will be removed and stored in the designated 30 foot by 45 foot covered concrete pad adjacent to the maintenance building. This facility is only for temporary storage of material removed from the working face and is not a designated public household hazardous waste disposal facility or transfer station. These wastes will be placed on a 4-drum spill pallet. These pallets will be made up of 100 percent polyethylene with UV inhibitors and have spill reservoirs which meet the uniform fire code capacity requirements. Two pallets will be placed in the designated area. These materials will be collected each month by hazardous materials disposal companies or removed for alternate disposal or recycling. Unauthorized special wastes will be removed from the site monthly. The maximum on-site storage for special wastes will be as follows:

- 1000 electronic devices on e-waste slab.
- 30 batteries in a secondary containment covered tray.
- 2 - 250 gallon containers for used oil with double containment (at the Citizen Convenience Center).
- 20 gallons of used oil placed upright in undamaged container (at the Contractor's maintenance building).
- 1250 white goods, and lawnmowers, will be placed upright until all liquids, CFCs, and Freon are removed.

Sarasota County will accept contaminated soil for the purpose of landfilling (disposal) at CCSWDC in accordance with the criteria included in Attachment L-4. Waste tires encountered during operations will be placed in a container at the working face that will be removed at the end of the working day and stored in the area designated for waste tire processing within the CCSWDC. The waste tire processing facility is located within the future Phase V landfill area as shown on Sheet G-03, Overall Site Plan and Phasing Plan, provided with the Permit Drawings.

At least one trained spotter will be at each working face when wastes are received at the landfill. Normally, one working face will be operating at the landfill. There may be occasions where two or more working faces are required such as when the first lift of waste is placed in a new cell, during high volume periods such as after a storm, or when the size of a working face is limited such as at the corner of a cell. The spotters will be trained in accordance with Rule 62-701.320(15) and in accordance with the training plan described in Attachment L-1 to recognize unauthorized waste. Each load of waste will be visually inspected at ground level by the spotter as well as by the equipment operators spreading the waste. The spotters and equipment operators will look for containers and other indicators of unauthorized waste. Upon detection of unauthorized waste, the spotters will require the hauler to remove the material for disposal at a proper facility. If the hauler has departed, the spotter will remove the material from the working face for temporary storage at the designated 30 foot by 45 foot covered concrete pad adjacent to the maintenance building and ultimate removal from the site for proper disposal or recycling.

If any hazardous waste is detected in the load, the hauler shall be informed immediately of the violation. In the event of discovery of hazardous materials, the procedures outlined in Items 3, 4, 5, and 6 of Section L.6 will be followed if any prohibited wastes are discovered.

If unauthorized waste (i.e., hazardous, PCBs, untreated biomedical, or free liquid) are found at the landfill working face, the waste will be isolated and the contractor's general manager or designee would be promptly notified. The contractor's general manager or designee is trained in the proper procedure to follow including notification to the FDEP. Similarly, if suspect waste is found the waste will be isolated, identified if possible, and the County's operation manager or designee will be notified. The County's operation manager or designee will prepare a suspect waste report and ensure that the waste is properly disposed. The waste load inspection form contained in Attachment L-5 is used for this purpose. Hazardous waste will be isolated and restricted from access until it is removed and properly disposed of from the CCSWC Landfill by a licensed hazardous waste contractor. Hazardous wastes will be removed from the site within 48 hours.

Special waste such as asbestos will be accepted and managed in accordance with the requirements of 62-701.520(3), F.A.C. The asbestos waste haulers will be required to notify the County who will notify the landfill contract operator in advance and provide information on the estimated volume and delivery date of the asbestos. All incoming asbestos material will be required to comply with all applicable permit conditions and be wet down and properly wrapped or bagged. The uncompacted asbestos material will be covered with a minimum 6-inch layer of soil upon disposal. If additional asbestos deliveries are scheduled on the same day, the asbestos may remain uncovered until the end of the work day. The disposal location will be recorded in accordance with 40 C.F.R., Part 61.154, and a record of the asbestos location will be maintained.

Waste oil that is collected for the purpose of recycling is accepted at the CCSWDC near the main entrance. Waste oil is stored in a secure container until removed from the site for recycling purposes. Lawn mowers are accepted at the CCSWDC as long as they are drained of all fluids and are managed as white goods. After inspection for fluids, lawn mowers are stored in the white goods area until collected by the scrap metal vendor who collects white goods. Waste oil, lawn mowers, and yard trash will be managed as described in the Landfill Recycling Plan, Attachment L-13. The yard waste processing facility location is south of Phase I as shown on Sheet G-03, Overall Site Plan and Phasing Plan, provided with the Permit Drawings. The facility is permitted under a separate yard waste processing facility registration.

The Citizen's Convenience Center is located near the entrance of the landfill and consists of spaces for three 20-cubic yard roll off containers for MSW and used tires, a drop off for electronics, and a household chemical collection center. The roll off containers and electronics storage areas are located on concrete pads covered with permanent canopies that prevent the accumulation of water in the containers during inclement weather. Household chemicals are stored in a pre-manufactured hazardous waste storage unit. The Citizen's Convenience Center has a full time attendant and is in operation from 8:00 A.M. to 5:00 P.M. six days per week. The attendant meets customers at the entrance, directs them to the appropriate area of the facility, and monitors the waste for unacceptable materials. The roll-off containers are emptied daily.

The electronics drop off at the Citizen's Convenience Center is manned by a full time attendant who unloads all vehicles that come into the facility. The electronics are from residential curbside collection routes and may include, but are not limited to, televisions, computers, monitors, copiers, etc. The electronics are physically unloaded and placed on pallets or the concrete pad and wrapped in cellophane. Electronics typically will remain at the facility for less than one week but may remain for up to two weeks. Any debris from the operation is swept up and placed in a closed drum for disposal. All unacceptable materials are refused. A vendor will remove the electronics to a recycler by backing semi-trailers up to the slab and loading the pallets onto the truck with pallet jacks or fork lifts.

L.2.d Weighing or Measuring Incoming Wastes

All waste entering the landfill site will be weighed. A minimum of three (3) electronic 50-ton scales are installed at the entrance facility. An Information Management System (IMS) is linked to the scales to facilitate accurate data collection and measurement of incoming materials.

L.2.e Vehicle Traffic Control and Unloading

Directional signs will be placed to safely direct vehicles to the current waste unloading area. These signs will have large legible letters and will be cleaned when necessary. Signs will be strategically placed so that the route is clear to the drivers. Speed limit, safety, and prohibitive practice signs will be placed as necessary to encourage a safe, clean operating area. Unloading will be permitted only at the designated working face. On the fill area, temporary signs, barricades, and flagged stakes will be used to direct vehicles to the proper tipping area. Haulers will be responsible for unloading their own vehicles. Wastes requiring special handling will be coordinated with and unloaded under the direct supervision of landfill contract operation personnel.

L.2.f Method and Sequence of Filling Waste

The overall phasing plan for the facilities is depicted on Sheet G-03, Overall Site Plan and Phasing Plan, provided with the Permit Drawings. The layout for the five (5) cells (designated disposal units) constructed as part of Phase I is shown in Attachment L-14. Staging plans for the remainder of Phase I as previously approved by FDEP are also provided in Attachment L-14. The layout for the four (4) cells proposed for Phase II of the Class I landfill is shown on Sheet C-01, Basegrade Plan, provided with the Permit Drawings. A detailed staging plan for the fill sequencing within Phase II is provided on Sheets C-07, C-08, and C-09 provided with the Permit Drawings. Phase II will be constructed in stages with Cells 1 and 2 being constructed before Cells 3 and 4. Sheets C-01A, C-02A, and C-03A of the permit drawings show Phase II with only Cells 1 and 2 constructed. Sheet C-13A shows the temporary liner termination between Cells 2 and 3. The typical height for each lift is 10 feet. The temporary roads and swales for access and surface water drainage will be phased in as the Phase II area is filled. The maximum width of the working face will be 200 feet. However, the landfill operations may be conducted with a working face width of less than 200 feet.

Temporary Gas Vent Removal

Four temporary gas vents were installed within the bottom liner system during Phase II construction. These gas vents were required when naturally occurring gas within the soil beneath Phase II began to collect beneath the liner and cause the liner system to lift off of the subgrade in several locations. The vents are located near the center of Cells 2 and 3 close to the ridge line between the two cells. Attachment L-15 contains information on the construction and locations of the gas vents.

Prior to the placement of waste within either Cell 2 or Cell 3, the temporary gas vents located in the cell will need to be removed and the liner system repaired. The County will notify the FDEP Southwest District office at least two (2) weeks prior to vent removal/liner repair. Vent removal and liner repair will be performed in accordance with the following procedures:

1. Remove rain cover in vicinity of vent and excavate protective cover soil near repair area;
2. Remove protective casing from standpipe;
3. Remove clamp from primary liner boot, cut primary liner outside of boot weld, and lift boot over standpipe;
4. Remove clamp from secondary liner boot, cut secondary liner outside of boot weld, and lift boot over standpipe;

5. Remove any hydrated or damaged geosynthetic clay liner (GCL) as necessary to allow removal of vent pipe;

6. Remove vent pipe, being careful not to damage in-place liner components or subgrade;

7. Inspect subgrade, replace any soft soil with material meeting requirements of Phase II project specifications, and provide smooth surface for placement of overlying geosynthetics;

8. Patch GCL, secondary liner, secondary geocomposite, primary liner, and primary geocomposite in accordance with the requirements of Phase II project specifications and CQA Plan with the exception that no laboratory or field testing beyond vacuum testing of liner welds will be required of the repair materials due to the limited extent of the repairs;

9. Replace protective cover material over repair; and,

10. Replace rain cover if needed.

All repairs shall be performed by a company approved by a liner manufacturer to perform liner installation. All repairs shall be observed by a third party inspector who will submit documentation to the FDEP Southwest District office that the repairs were performed in general accordance with the Phase II specifications and CQA Plan.

Filling in New Cell

The initial lift of solid waste shall be deposited in each new Phase II cell (designated disposal unit) beginning at the south end of the landfill cell.

Waste will be placed within the designated edge of waste shown on the Engineering Drawings. The edge of waste will be located by measuring 5 feet inward from the edge of liner markers on the north and west sides of Phase II including the temporary liner termination for Cell 2. The edge of waste will be located by measuring 12 feet inward from the edge of liner markers on the south side of Phase II. Periodic inspections will be made to ensure that the markers are in place and the edge of waste is located the required distance from the edge of the liner.

The initial lift of solid waste will progress to the north across the entire width of the landfill cell. The working face will primarily move in an east/west direction across the width of the landfill cell. Selected solid waste loads consisting of solid waste containing no rigid objects will be used for at least the first 4 feet of the first lift, and it will be filled to an elevation of approximately 40 feet NGVD within the Phase II cells.

The method of waste disposal for each lift is described as follows. All incoming solid waste will be directed to the working face and placed against the side slope of the previous day's refuse. The first row of waste in a new lift will be placed against the toe of a containment berm to provide a guide for the placement of refuse for the remaining rows. A slope of not more than 3 to 1 will be maintained. The working face shall be less than 200 feet wide. A maneuvering area shall be provided for large private and commercial vehicles.

Solid waste will be placed at the working face and spread in 2-foot layers. The spreading of refuse will be a continuous operation.

In compliance with 62-701.500(10), F.A.C., the stormwater management systems will be operated and maintained as necessary to meet applicable standards of Chapters 62-701, 62-302, and 62-25, F.A.C. The stormwater management system at the CCSWDC Class I landfill is designed to avoid mixing of stormwater with leachate. Stormwater or other surface water which comes into contact with the landfilled solid waste or mixes with leachate will be considered leachate and subjected to applicable requirements.

The filling of the remaining disposal capacity within Phase I will generally follow the FDEP approved staging plans provided in Attachment L-14. The filling of each lined cell within the Phase II area will follow the sequence outlined below: (Refer to Sheets C-07 through C-09, Landfill Staging Plans, provided with the Permit Drawings).

The cell area initially will be filled with a 4 to 16 foot lift to bring the daily cover grade to an elevation of approximately 40 feet NGVD which is higher than the cell's lined external containment berms in order to promote stormwater runoff. The lower lift thickness will be placed in the high end (south) of the cells and the greater lift thickness will be placed on the low end (north).

Filling of each cell will generally progress from the south end of the cell to the north end while providing a slope on the cover to allow storm water drainage as shown on the Staging Plans, Sheets C-07 through C-09, Landfill Staging Plans, provided with the Permit Drawings. Only select waste containing no rigid materials will be used within the first 4 feet of the initial lift in a cell.

Subsequent waste lifts will be added to a cell in accordance with the landfill staging plans before opening new cells to waste disposal.

The surface runoff from unused portions of cells will be directed away from solid waste by grading and using temporary diversion berms.

Areas on the top and sides of each lift will be adequately covered and stabilized to maximize surface runoff away from the bermed, sloped working area and towards the stormwater drainage areas to minimize leachate generation, as shown on Sheets C-07 through C-09, Landfill Staging Plans, provided with the Permit Drawings. Intermediate cover will be applied to internal top and side slopes and completed external slopes within seven (7) days if the area will not receive more waste within 180 days. The top of lifts will be sloped to promote storm water drainage. Intermediate covered areas that will not be landfilled or covered with final cover within 6 months will be sodded (external slopes) or seeded and mulched (internal and top slopes) to avoid slope erosion. Storm water collected within the bermed working area will be considered leachate and will be collected and disposed as such. Efficient use of these techniques will decrease leachate volumes.

L.2.g Waste Compaction and Application of Cover

Cover material for daily operations of the landfill will be obtained from the designated stockpile area and compost generated from yard waste recycling. Compost used with soil for cover material shall be free of waste. Cover material will be deposited in the stockpile area location shown on Sheet G-03, Overall Site Plan and Phasing Plan, provided with the permit drawings. The designated stockpile area will have stockpiles no higher than 25 feet with 3:1 side slopes in order to minimize erosion. Additional soil obtained from offsite borrow areas will be placed within the stockpile area during the operational life of the facility. A silt fence will be installed around the stockpile area and side slopes will be grassed to further reduce and control erosion.

Waste will be spread in layers approximately two feet thick on the working face and compacted to approximately one foot in thickness before application of the next layer. The solid waste will be compacted with a minimum of three to five passes of a compactor. Initial, intermediate and final cover will be applied as detailed in Sections L.2.f, L.7.f, L.7.g, and L.7.h., of this Operations Plan.

L.2.h Operations of Gas, Leachate, and Stormwater Controls

L.2.h.(1) Landfill Gas System

THE CCSWDC is located near the center of a 6,000 acre site. The minimum distance from the Class I landfill to the nearest property line is 1,800 feet. This distance represents a substantial buffer to allow for dispersion of odors normally associated with MSW landfill operations. Therefore, it is not anticipated that collection of landfill gas will be necessary for odor control. The landfill gas monitoring plan is described in Section L.9, Gas Monitoring Program.

In order to comply with air quality requirements, a Non-Methane Organic Compound (NMOC) emission report will be submitted to the implementing authority on an annual basis following the requirements of New Source Performance Standards (NSPS). Within twelve (12) months after reporting NMOC emissions greater than or equal to 50 Mg/year (megagram per year), a detailed landfill gas collection and controls system design plan submittal shall be made to the NSPS implementing agency. Within eighteen (18) months after this submittal, the installation of the landfill gas collection and control system shall be completed. Based on Tier 2 sampling and model projections (see Attachment H.5 of the Engineering Report), the CCSWDC Class I landfill is not expected to exceed the threshold until 2010. At a minimum, a landfill gas management system design will be developed to coincide with the initial closure construction for Phase I of the landfill. Operation of the Landfill Gas System is provided in greater detail in Attachment L-15, LFGCCS Operation and Maintenance Plan.

L.2.h.(2) Leachate Management System

Phase I Collection System

The existing Phase I Class I landfill leachate collection system consists of a geonet drainage layer and perforated collection pipe above the composite liner system to collect and convey leachate. The leachate that is conveyed to sumps will be pumped to an existing 1,800,000 gallon on-site leachate holding tank. A typical detail for the Phase I sumps is provided in Figure 2 of Attachment L-3. The leachate collection piping system consists of 8-inch diameter perforated HDPE pipe sloped in such a manner that leachate flowing through the solid waste of the landfill will be collected and transported by gravity to a sump and leachate pump. The discharge line from the sump pump connects to a HDPE header line via a valve vault. Provisions for sampling the leachate as well as monitoring flows and pressure are provided in the valve boxes (locations shown in Attachment L-14).

Phase II Collection System

The proposed Phase II Class I landfill leachate collection system consists of a geonet composite drainage layer and perforated collection pipe above the double synthetic liner system to collect and convey leachate. The leachate that is collected within the Phase II cells will be pumped to the on-site leachate holding tank. The leachate collection piping system consists of 8-inch diameter perforated HDPE pipe sloped in such a manner that leachate flowing through the solid waste of the landfill will be collected and transported by gravity to a metering manhole located on the north perimeter berm of each cell. At the metering manhole, leachate flows from each cell are measured using a Parshall flume and an ultrasonic water level sensor. Each metering manhole drains by gravity to a duplex leachate pump station located adjacent to Cell No: 2. The discharge from the leachate pump station will be directed through a new HDPE leachate forcemain that will be installed along the north and west sides of Phase II, the west and south sides of future Phase III and the south side of future Phase IV. Provisions for sampling the Phase II leachate as well as monitoring flows and pressure are provided in the valve vault located adjacent to the leachate pump station as shown on the details provided on Sheet C-17, Leachate Collection System Details, of the Permit Drawings. Any stormwater accumulated in an unused cell will be pumped out from the cell using portable pumps and discharged to the stormwater system. Prior to waste disposal within a cell, the valve connecting the leachate collection pipe within the cell to the manhole will be in the closed position to prevent stormwater from draining to the leachate pump station. Immediately prior to solid waste being deposited into a new landfill cell, the valve at the manhole will be opened to allow the free flow of leachate to the pump station.

Leachate collected within the geocomposite drainage layer of the leak detection system of Phase II will be drained by gravity to a leak detection manhole located on the north perimeter berm of each cell. The discharge valve at the leak detection manhole will normally be closed to allow the quantity of leakage to be measured. An ultrasonic water level sensor calibrated to the storage volume within the manhole at a given level will be used to measure leakage rate. After the leakage rate has been determined, the leachate within the leak detection manholes will subsequently be drained by gravity to the leachate pump station and the valve closed for another measurement. The leak detection system has been designed such that a leak developing within the most remote part of a cell will flow to the leak detection manhole within twelve hours. A Leakage Action Rate (LAR) of 100 gallons/acre/day has been established for the Phase II cells, which corresponds to the EPA Guidance and FDEP experience with facilities with similar liner systems. At this rate, the 470 gallon storage volume within the leak detection manhole will be exhausted within 8.75 hours. For leakage rates greater than 100 gallons/acre/day, measures should be initiated to find and repair or minimize leaks within the primary liner system.

The following procedures will be initiated if the LAR of 100 gallons/acre/day is exceeded:

1. Increase monitoring of the leakage quantity from the cell(s) affected. This consists of increasing the frequency of monitoring liquid levels within the leak detection manhole(s) to determine the time required to fill the five-foot storage volume in the manholes. It is anticipated that readings will be made at least daily after the LAR is exceeded and the calculated leakage rates will be recorded.

2. Immediately notify FDEP once it is ascertained that the LAR is being exceeded and provide a plan on how the County intends to address the exceedence.

3. Attempt to locate and fix sources of leaks to the extent practical. Measures to locate leaks could include inspecting the leak detection manhole to determine whether groundwater is leaking into it, observing the surface of the cell to determine if there are indications as to where leaks may be located such as large protrusions of waste that may have penetrated the liner system, and video taping the leak detection pipe to determine where large inflows are occurring. If the location of a leak can be identified and excavation of waste is practical, then the liner will be exposed and repaired.

4. Adjust operational practices as needed to reduce the likelihood of future damage to the liner such as increasing the thickness of the initial layer of select waste on the cell bottom.

5. If leaks can not be specifically located or if it is not practical to find them, adjust operations to try to reduce the leakage to below the LAR. This could include measures to reduce the generation of leachate such as grading the landfill to promote runoff, installing drains and berms to direct runoff away from the landfill, the installation of additional intermediate or temporary cover, installing temporary geomembrane rain covers, or accelerating the placement of final cover in areas that have reached final elevation.

Currently there are no plans to use rain cell covers to collect stormwater within unused portions of the cells in Phase II.

Phase I/Phase II Overlay Liner System

An overlay liner system will be constructed over the west sideslope of Phase I prior to the placement of waste against this slope as a result of the construction of Phase II. The purpose of the overlay liner system is to reduce the quantity of leachate entering the Phase I leachate collection system from the Phase II expansion by directing it to the Phase II leachate collection system. This will be accomplished by hydraulically separating the newer waste above it from the older waste beneath the overlay liner system.

The overlay liner system will consist of (from the top down) 2 feet of protective cover material, a geonet composite drainage layer, a textured 60-mil HDPE liner, and a minimum of 12 inches of intermediate cover placed over the waste. The protective cover may be installed in stages as required by operations in order to avoid having the material washout during storms. Alternately, the protective cover may be placed all at once if a rain cover is installed over it to prevent washouts. The rain cover would be removed prior to the placement of waste against the overlay liner system.

The rain cover on the overlay liner system, if installed, will include rain gutters to divert stormwater off the rain cover to temporary downdrains that will direct the stormwater to the perimeter drainage channel located north of Phase I. The locations of the rain gutters and temporary downdrains are shown on Sheets C-3 and C-3A of the Engineering Drawings. Details of these features are included on Sheet C-13B of the Engineering Drawings. Calculations demonstrating that the rain gutters and downdrains are capable of transmitting the flow generated from the 25-year design storm are included in Attachment H.2 of the Phase II Permit Application Engineering Report.

Leachate percolating through the newer waste located above the overlay liner system will be captured by the liner and directed to the base of the overlay liner system by means of the geonet composite drainage layer. A stone-filled trench drain with an 8-inch diameter perforated HDPE pipe located at the Phase I/Phase II divider berm will collect the leachate and direct it to the low point within Cell 1 of Phase II where it will flow out of the cell with the rest of the leachate collected within Cell 1. From there, the leachate will flow as previously described for the Phase II collection system.

Leachate Disposal System: General Description

Leachate that is generated from the landfill cells will be pumped to the existing 1,800,000 gallon leachate storage tank. The leachate accumulated in the storage tank will be removed by a leachate pumping station that will pump through a 4-inch PVC force main to a connection to the Sarasota County wastewater collection system south of the landfill on Knights Trail Road. The Sarasota County wastewater collection system in this area flows to the City of Venice Water Reclamation Facility (WRF) for treatment.

The leachate pumping and force main system is the primary disposal method for the CCSWDC leachate. Transfer pumps that discharge to tanker trucks for hauling to the Bee Ridge WRF will serve as a secondary emergency disposal location.

The following information provides a description of the above ground leachate storage tank in accordance with the requirements of 62-701.400(6)(c).

The existing leachate storage tank has a total capacity of 1.8 million gallons. The exposed plan area of the secondary containment system surrounding the existing leachate storage tank is 5,419 square feet. This will allow 27,000 gallons of water to accumulate after an 8-inch rainfall event. All liquid accumulating in the secondary containment system will be tested for specific conductance. Specific conductance of the stormwater in the secondary containment shall not be more than 50 percent above the specific conductance of water in the nearest downstream stormwater pond (Stormwater Pond No. 6) or shall not exceed 1,275 *u*mhos/cm, whichever is greater. If the specific conductance is greater than these criteria or if a visible sheen is present, then the stormwater will be pumped directly into the leachate storage tank and managed as leachate.

A log of discharges from the secondary containment system will be maintained. The date, specific conductance measurements, and visual sheen observations shall be recorded.

An electronic water level sensor will automatically determine when the storage tank reaches 90 percent capacity (1.62 million gallons) and a high water alarm will be activated. An electric actuated shutoff valve in the fill line will be activated to prevent overfilling the tank when the capacity reaches 1.8 million gallons in the tank. The electric actuated shutoff valve will be tested by inducing a false signal from the level sensor and confirming proper operation on a weekly schedule. The exposed tank exterior will be inspected weekly by visual observation. The inspection will include looking for leaks, corrosion, or other maintenance deficiencies. This will be accomplished by inspection from platforms at the top of the 20-foot high secondary containment wall, positioned 120 degrees apart around the circumference of the tank. The tank interior will be inspected annually when the tank is empty or at least once every three years. If any failures are detected, the tank construction company shall be contacted immediately and appropriate repairs conducted based on the nature of the problem. Leachate will be managed in accordance with the Contingency Plan (Section L.8.e) when the tank is out of service. Reports of the above inspections will be maintained by the County (the most recent inspection report is included as Attachment L-7).

The leachate pumping station will have automatic controls with the following set points:

	Elevation
High water alarm	40
Lag pump on	28
Lead pump on	27
Pumps off	26
Tank bottom	22

The set points can be modified by adjusting the pump control system. The duplex pumps will automatically alternate operation each time the pump is stopped by the level control system. The pumping station is equipped with a data logger to record flow, pH, and conductivity on a continuous basis.

Leachate Monitoring

A detailed plan for leachate monitoring is provided in the site Water Quality Monitoring Plan. Modifications to leachate monitoring requirements for the Phase II expansion are contained in Appendix C of this Permit Application.

L.2.h.(3) Stormwater System

The stormwater management system for this project consists of a series of swales, culverts, and detention ponds. The system is designed to comply with all of the requirements of both Chapters 62-25 F.A.C. and 40 D-4 F.A.C. The stormwater management system for CCSWDC was constructed under a permit issued by the Southwest Florida Water Management District in 1993. All components of the system were installed during Phase I construction. An Environmental Resource Permit (ERP) application has been submitted to FDEP for the existing system and is currently under review.

~~Currently there are no plans to use rain cell covers to collect rainwater within unused portions of the cells in Phase II. However, a rain cover will be installed at the temporary liner termination between Cells 2 and 3 as shown on sheet C-13A of the Engineering Drawings to protect the liner system from erosion until Cell 3 is constructed. As previously described, a rain cover may also be installed over the protective cover layer of the Phase I/Phase II overlay liner system to protect it from erosion until waste is placed against the slope.~~

All cells within Phase II as well as the Phase I/Phase II overlay liner system were constructed with a rain cover to avoid erosion of the protective cover, limit plant growth, and assist with the management of stormwater until waste is deposited within the cells. The rain cover consists of a 20-mil scrim-reinforced polyethylene liner held in place with sand bags. Specifications for the rain cover installed during Phase II construction are provided in Attachment L-16.

Stormwater collected on the rain cover will flow north to the sump areas within each cell. Any collected stormwater that has not been in contact with solid waste or otherwise contaminated by leachate will be pumped out of the cells and into the perimeter channel which is part of the permitted stormwater management system. Any stormwater collected by the rain cover that has been in contact with solid waste or which has received discharges of leachate will be considered leachate and will either be allowed to enter the leachate collection system within the cell or will be pumped out of the cell into one of the leachate collection manholes located on the north perimeter berm of Phase II. The impacted stormwater will then flow by gravity to the Phase II leachate pump station where it will be pumped to the leachate storage tank. If it is not clear whether stormwater has been impacted by leachate, the County will collect samples of the stormwater for analysis to determine whether it meets the requirements for discharge into the stormwater management system as contained within the current Environmental Resource Permit (ERP).

Pumping of stormwater off of the rain cover in Cells 1 and 2 will be accomplished with portable pumps that will be positioned on the north perimeter berm as needed. The pump discharge will be directed to a portion of the perimeter drainage channel lined with riprap in order to avoid erosion of the channel. Since Cells 3 and 4 will be idle for a long period prior to receiving waste, a semi-permanent dewatering system will be installed for these cells. The system will consist of a single manually operated electric pump mounted on a concrete pad that will be located on the north perimeter berm of Cell 3. The concrete pad will be 8 inches thick, therefore its installation will not damage the geosynthetic components within the anchor trench which are protected with approximately 2 feet of soil cover. The suction and discharge piping will consist of 8-inch diameter DR-18 PVC pipe. The suction piping will be buried along the top of the berm but will emerge out of the ground after turning south opposite of the Cell 3 and Cell 4 sump areas in order to avoid damage to the liner system and anchor trenches. The suction piping will continue into the sump areas and will be raised above the surface of the rain cover by means of small concrete pads onto which the pipe will be strapped. The rain cover will be protected from the concrete pads by placing a layer of geocomposite drainage layer (GDL) between the bottom of the pad and the rain cover. The discharge piping from the pump will also be 8-inch diameter DR-18 PVC pipe. It will be buried soon after leaving the pump and discharge into the perimeter channel north of the pump on a riprap pad to prevent erosion. Preliminary drawings of the Cells 3 and 4 rain cover dewatering system are included in Attachment L-17.

The rain cover will be removed prior to the placement of waste within a cell. The rain cover within a cell may be removed either all at once or in stages depending on how long it is anticipated it will take to place the first lift of waste within the cell. If the rain cover is removed in stages, then stormwater may be collected in the areas with remaining rain cover in accordance with the previously described procedures.

All stormwater runoff will be conveyed via perimeter drainage channels to detention facilities. Ditch blocks located in the perimeter channels at strategic locations act as sediment traps and will require periodic maintenance.

The ultimate discharge of the detention facilities will be to Old Cow Pen Slough or isolated wetlands through fixed control weirs and spreader swales.

As the filling of the waste progresses, temporary stormwater letdown structures will be installed to facilitate drainage without erosion. Temporary stormwater diversion berms will be installed around the top perimeter of each lift and connected to the temporary letdown structures. The temporary letdowns will be located, in the approximate locations as shown on Sheets C-07 through C-09, Landfill Staging Plans, provided with the Permit Drawings. Stormwater will be directed to these temporary letdown structures by sloping the top of each lift to promote drainage as shown on the staging plans.

Sediment collection provided by perimeter ditches and ditch blocks will minimize siltation of the main retention areas. In addition, the active fill area(s) will be surrounded by berms to capture stormwater that comes in contact with waste and to prevent run-on and mixing with the stormwater from outside the active fill area. Stormwater collected within the berms surrounding the active fill area(s) is considered to be leachate and will be allowed to percolate into the landfill for collection by the leachate collection system. This leachate may also be pumped to a leachate cleanout pipe or leachate manhole as a means of discharging it to the leachate collection system. This water will be filtered through a screen on the pump intake prior to discharge to a cleanout pipe or manhole.

Operation and Maintenance Procedures

The stormwater management system for the CCSWDC consists of a variety of treatment and conveyance methods. The treatment system for the main solid waste handling and disposal areas includes seven wet detention basins. Conveyance to these ponds is through a series of letdown structures, perimeter channels and swales, and culverts. Stormwater collection along the entrance road is provided by the roadside swales. All portions of the stormwater system will be visually inspected by the County weekly and immediately following a storm event of 0.5 inch or greater. The inspections will identify buildup of debris, surface sheen, erosion and sedimentation, and overgrown or exotic vegetation, and structural problems. Any problems identified by these inspections will be corrected within three (3) days. The wet detention basins will be inspected to estimate quantities of sediment within each pond. If the sediment occupies 30 percent of the volume below the normal pool elevation, the sediment will be removed and disposed of in the landfill. Vegetation in all portions of the conveyance systems will be removed on an as needed basis to prevent blockage.

L.2.i Groundwater Monitoring Plan

Revisions to the existing groundwater monitoring network required for the Phase II expansion are discussed in the Water Quality Monitoring Plan Addendum contained in Appendix C of this application. This plan complies with Chapter 62-701 F.A.C. Monitoring well locations are shown on Figure 1 in Appendix C.

L.2.j Maintaining Leachate Collection System

Leachate collection system maintenance will include daily inspection of all leachate pump stations, metering manholes and leak detection manholes. All pump running data as well as leachate level and flow data will be recorded and checked for irregularities. Pumps are pulled and checked for operational parameters at least once every two years. An example leachate pump data form is provided in Attachment L-8. The leachate collection system will be cleaned and inspected as described in part L.8.h of this Operations Plan.

L.3 LANDFILL OPERATION RECORD

The Administrative office located adjacent to the scale facilities at the entrance of the CCSWDC is shown on Sheet G-03, Overall Site Plan and Phasing Plan of the permit drawings. The office provides facilities for employees including a training/meeting room, sanitary facilities, and first aid equipment. Similar additional facilities are located at the Equipment Maintenance building. Files are located in the Administrative office to contain the operating record for the facilities as required by regulatory agencies/permits. Items that will be stored in the operation record include:

- This Operations Plan.
- All permits for the facility.
- All records and drawings used for developing permit applications.
- All monitoring information, calibration and maintenance records, and copies of reports required by permit (maintained for at least 10 years).
- Background water quality records.
- Annual estimates of the remaining life of the constructed landfill and other permitted landfill areas.
- All monthly waste records which shall include tonnages received for Class I, C&D, yard waste and recyclables.
- Asbestos location records.
- All monitoring reports for groundwater, stormwater, leachate and landfill gas.
- Waste tire processing records.
- Copies of all notifications required by 62-701 F.A.C.
- On-site precipitation record.
- DEP inspection reports.
- Load checking reports.
- Leachate storage tank inspection reports.
- All training verifications.
- All other reports related to the design, operation, monitoring and permitting for the facilities.

L.4 LANDFILL WASTE REPORTS

Each month, a summary report of waste tonnage received for Class I waste, C&D debris, yard waste, and recyclables will be compiled. Copies of the monthly report will be submitted to FDEP quarterly or upon request.

L.5 EFFECTIVE BARRIER/ACCESS CONTROL

Access control at CCSWDC includes a perimeter fence with a locking access gate at the scalehouse, which is the only entrance/exit for the facility. The access gate normally will be kept open during hours of operations and an attendant will be at the scalehouse during those times. When CCSWDC is not in operation, this access gate normally will be kept closed and locked.

L.6 LOAD CHECKING PROGRAM

At least three random loads of Class I Municipal Solid Waste (MSW) delivered to the landfill each week will be examined in accordance with the following procedure:

Mechanism For Inspections

(1) Specific locations within the active landfill cell are to be dedicated to load examination. The areas should be relatively free from extraneous debris and capable of maintaining isolation of the material for one calendar week.

(2) The inspection of the load shall be controlled by a Contracting Operator employee. Training of contract personnel shall continue on an ongoing basis. In accordance with Rule 62-701.500(6)(a), FAC, a minimum of three random loads will be checked at the active working face(s) each week. The selected driver will be directed to discharge his/her load at a designated location adjacent to the working face. If any unauthorized special waste (i.e., lead-acid batteries, used oil, yard trash, white goods, and whole tires) is found by the random inspection, or as part of routine operations, the waste will be segregated and removed from the site for recycling as described in Section L.2.c. These special wastes will be stored as described in Section L.2.c. and removed from the site within 30 days.

(3) The inspection form (see Attachment L-5) shall be filled out and signed off by the inspector. The inspector will identify and note all unauthorized waste found during random load inspection, estimated quantity, and the action taken. The inspector will sign the inspection form that will be retained at the CCSWDC. It shall be the County's responsibility to file/store/distribute the reports.

(4) The Sarasota County Solid Waste Operations Unit or the Solid Waste's Hazardous Waste Section will investigate violations found during the inspection process. The Contract Operator will remove or clean-up the disposed materials.

(5) Violations involving hazardous waste dumping will be handled by the Sarasota County Solid Waste's Hazardous Waste Section. Every attempt will be exhausted to place responsibility on the generator relative to having the hazardous waste in question removed from the landfill at the expense of the generator. In the event that generator responsibility cannot be determined and that the waste appears to be from a commercial source, it will be the Contract Operator's responsibility to segregate and secure the waste and pay all costs relative to safely disposing of said waste.

(6) A list of offenders will be compiled by the Solid Waste's Hazardous Waste Section and the list will be provided to the County with updates on a periodic basis.

L.7 PROCEDURES FOR SPREADING & COMPACTING WASTE AT THE LANDFILL

The following guidelines will provide an efficient and environmentally sound method of operation for the CCSWDC.

- Portable litter fencing will be placed at the working face where needed to reduce windblown litter.
- Cracks or eroded sections in the surface of any filled and covered area will be repaired and a regular maintenance program will be followed to eliminate pockets or depressions that may develop as waste settles.
- If 12 inches of intermediate cover (free of waste) has been placed over a partially filled area, it will be removed and either reused or stockpiled for later use prior to the placement of a new lift.
- Tire chips, tarps, soil, or a mixture of soil/mulch may be used for initial cover. Stormwater runoff will not be allowed from waste filled areas covered with tire chips or tarp. Runoff from outside of the bermed working face area will be considered stormwater only if the flow passes over areas that have no exposed waste and have been adequately covered with at least 6 inches of compacted soil (or a mixture of soil/mulch), free of waste and stabilized to control erosion.
- Sufficient cover material will be stockpiled near the working face to provide an adequate supply for initial cover operations. In some areas, daily stockpiling near the working face may not be necessary because of the proximity of the on-site soil stockpile area.

L.7.a Waste Layer Thickness and Compaction Frequencies

Waste will be spread in layers of approximately two feet thick on the working face and compacted to approximately one foot in thickness before application of the next layer. The solid waste will be compacted with a minimum of three to five passes of a compactor.

L.7.b First Layer of Waste

Selected solid waste loads consisting of solid waste containing no large rigid objects will be used for at least the first four feet of the first lift of a new cell in order to protect the liner and leachate collection system. The first lift will be 4 to 16 feet in height to bring the daily cover grade to an elevation of approximately 40 feet NGVD which is higher than the cell's lined external containment berms in order to promote shedding of stormwater. Waste will be deposited at the inside toe of the cell's lined external containment berm on the south end of the cell and spread to the north. No solid waste will be placed beyond the litter fences. For the initial lift, hauling vehicles will reach the working face by traveling on top of the previously deposited waste and depositing the loads at the top of the working face. The fill will be spread and compacted "down slope" to prevent vehicles from traveling on the protective sand layer. Also see Section L.2.f. in this Operations Plan.

L.7.c Slopes, Side Grades, and Lift Height

The typical height for each lift is 10 feet. All incoming solid waste will be directed to the working face and placed against the toe of the side slope of the previous day's refuse. The first row of waste in a new lift will be placed against the toe of the containment berm to provide a guide for the placement of refuse for the remaining rows. A maximum slope of 3 to 1 will be maintained on the working face. All top slope areas will be sloped to drain stormwater off of the landfill.

Waste will be placed within the designated edge of waste shown on the Engineering Drawings. The edge of waste will be located by measuring 7 feet inward from the edge of liner markers on the north and west sides of Phase II including the temporary liner termination for Cell 2. The edge of waste will be located by measuring 14 feet inward from the edge of liner markers on the south side of Phase II. Periodic inspections will be made to ensure that the markers are in place and the edge of waste is located the required distance from the edge of the liner.

L.7.d Maximum Width of Working Face

Maximum width of the working face will be 200 feet. This will provide a sufficient area for maneuvering large private and commercial vehicles as well as minimize the exposed area and the unnecessary use of cover material.

L.7.e Initial Cover

For the Class I landfill, a minimum of six inches of compacted initial cover consisting of native sandy soils, top soil, soil-yard waste compost mixture, shredded tires, or other FDEP approved initial cover will be applied to the top of the lift and to the working face at the end of each day. Attachment L-10 provides a description and specification for initial cover materials previously approved for this facility. A 2-inch layer of shredded yard waste may be applied when needed to the initial cover to minimize erosion during rainy weather. The application of initial cover over the landfilled waste will assure control of disease vector breeding/animal attraction, odors, waste combustion (fire), blowing litter, and moisture infiltration.

The initial cover material will be spread over the exposed waste and, with the exception of tarps, compacted by the equipment used to spread the cover (likely a bulldozer or scraper). The initial cover material will not be removed prior to placement of successive lifts of waste, with the exception of tarps, which would be removed prior to placement of successive lifts. To enhance the infiltration of leachate through the waste, the initial cover material may be broken up in place by a dozer blade or equipment traffic immediately prior to the placement of the subsequent lift of waste. Any remaining litter and cleanings from equipment will be placed at the bottom of the completed cell and covered.

Before moving the working face, the area that will remain inactive will be covered with compacted cover soil (free of waste) or a mixture of 50 percent unscreened wood mulch and 50 percent soil, with sufficient thickness (minimum 6-inches) to prevent erosion and the mixing of leachate with stormwater.

L.7.f Application of Initial Cover

Initial cover will be applied at the end of each working day, except when solid waste will be placed on the working face within 18 hours or when a temporary cover such as a tarpaulin is used to cover the working face.

L.7.g Intermediate Cover

Intermediate cover consisting of at least 1 foot of compacted native sandy soils or composted yard trash screened through ½-inch mesh mixed with 25 percent soil, by volume, will be applied within 7 days if final cover or an additional lift is not to be applied within 180 days. Intermediate covered areas that will not be landfilled or covered with final cover within 6 months will be sodded (external slopes) or seeded and mulched (internal and top slopes) to avoid slope erosion. Also see Section L.2.f. in this Operation Plan.

To conserve the intermediate cover material, a portion of the intermediate cover will be removed immediately before placement of additional solid waste on top of the lift or before placement of additional waste. The intermediate cover material (free of waste) will be stripped and reused as intermediate cover material. The stripped intermediate cover will be pushed ahead as needed for the perimeter containment berms constructed around the active working face area. The intermediate cover areas will be graded to promote drainage and seeded to prevent erosion.

Components of the landfill gas collection system may be installed in areas that receive intermediate cover. The locations of all underground piping associated with these systems will be marked to avoid damage to them during landfill operation and intermediate cover maintenance activities. Above ground structures such as well heads, and valves, will be kept readily visible by such measures as clearing vegetation, painting components bright colors, and installing protective posts and flagging. These measures should protect the above ground structures from damage during routine intermediate cover maintenance activities such as mowing, grass repair, and washout repair.

L.7.h Final Cover

Following the receipt of a closure permit, final cover will be applied to the Class I landfill on the completed portions of Phase I or Phase II of the landfill operation. The perimeter sideslopes of all completed cells will have a slope of 3:1.

The cap and final cover will consist of a minimum of 12 inches of intermediate cover soil, a geomembrane layer that complies with Department rules, a geocomposite drainage layer, and 24 inches of local common soil of which upper 6 inches will be capable of supporting vegetative cover. Specifications for the local common soil will be provided with the closure permit application.

Components of the landfill gas collection system may be installed in areas that receive final cover. The locations of all underground piping associated with these systems will be marked to avoid damage to them during landfill operation and final cover maintenance activities. Above ground structures such as well heads, and valves, will be kept readily visible by such measures as clearing vegetation, painting components bright colors, and installing protective posts and flagging. Protective posts shall be installed such that they do not damage the final cover system. These measures should protect the above ground structures from damage during routine final cover maintenance activities such as mowing, grass repair, and washout repair.

L.7.i Scavenging and Salvaging Control Devices

Scavenging and salvaging is not allowed on the working face at CCSWDC. In the event spotters working in this area observe scavenging or salvaging activities on the working face, the landfill manager will be notified.

L.7.j Litter Control Devices

Litter will be controlled by requiring covered loads, efficient unloading and cover operations, litter fences, perimeter fencing, and by routine clean-up. Litter outside the working area will be picked up within twenty-four (24) hours.

A small litter fence will be placed at the limit of each landfill cell area for the full length of the active working area of the cell.

L.7.k Erosion Control Procedures

Erosion control procedures at CCSWDC mainly consist of stormwater management for active cell areas and in areas surrounding the landfill cells. Stormwater management for used portions of active cells where initial or intermediate cover over the waste has been placed in accordance with FDEP requirements, is achieved by:

- Grading the waste-in-place with an adequate slope and adequately covering the waste to divert stormwater away from the working face.

- Use of terraces and letdown pipes (see Figures L-2 through L-8 in Attachment L-3 for proposed Phase I locations and Sheets C-07 through C-09, Landfill Staging Plans, in the permit drawings for proposed Phase II locations).
- Maintaining internal and external berms.

Of critical importance will be maintaining the stormwater management system during the filling sequence. As each lift is constructed, temporary stormwater diversion berms will be constructed.

A containment berm will isolate the working face from the remaining covered areas. Stormwater which accumulates behind the containment berm in the area of the working face is leachate and will be retained and allowed to percolate into the landfill where it will eventually be collected in the leachate collection system.

Other berms will divert stormwater from top slopes to let down structures and will serve as erosion control to protect recently covered side slopes. These external berms will be sodded to minimize erosion and will be directly connected to the temporary letdown structures to facilitate proper management of stormwater runoff.

Sediments that reach the perimeter channels will collect behind the ditch blocks and will require periodic removal. Within 30 days after applying intermediate cover to side slopes that have reached designed dimensions, sod shall be applied. As filling progresses above the proposed first drainage terrace, the first set of temporary letdown structures will be constructed. This operating procedure will minimize the amount of erosion and sediment accumulation that must periodically be removed from the perimeter ditches.

Areas provided with intermediate cover, or other areas that discharge to the stormwater management system that exhibit significant erosion, will be repaired as follows:

- If greater than 50 percent of the soil cover material has eroded, then the area will be repaired within 7 days.
- If waste or liner is exposed, then the area will be repaired by the end of the next working day.

L.8 PROCEDURE FOR LEACHATE MANAGEMENT

L.8.a Leachate Monitoring, Sampling, and Analysis

The sump pumps located in Cells 1 through 5 of Phase I will operate in an automatic mode based on the liquid level in the sump. Figure L-2 in Attachment L-3 shows the operation levels for the sump pumps. The pressure transducer located at the end of the pump housing accurately measures the level of liquid in the sump and provides a digital readout of this level at the control panel mounted on the valve box at the top of each cell's lined external containment berm. As shown on Figure L-2, the high water alarm will result if leachate levels rise to cause 12 inches of head on the liner system adjacent to the sump area.

Two additional pump units will be provided for backup of the Phase I sump pumps. This allows for removal of each pump on a regular scheduled basis to perform preventative maintenance. When a sump pump is removed for schedule maintenance, a spare pump will be reinstalled immediately while the maintenance is being performed. Each pump will receive preventive maintenance in accordance with the manufacturer's recommendations at a frequency based on run time.

Cells 1 through 4 of Phase II will drain by gravity to a duplex leachate pump station located north of Cell 2. The pump station will operate in an automatic mode based on the liquid level within the wet well. Sheet C-17, Leachate Collection System Details, of the Permit Drawings shows the operation levels for the pumps. The pressure transducers located at the end of the pump housing accurately measure the level of liquid within the wet well and provide a digital readout of this level at the control panel mounted adjacent to the pump station. As shown on Sheet C-17, Leachate Collection System Details, the duplex pumps will operate on a lead/lag basis.

Additional details on leachate sampling locations, sampling and analysis schedule, and data submission is provided in the Water Quality Monitoring Plan Addendum provided in Appendix C of the permit application.

L.8.b Leachate Collection and Removal System

Phase I Collection System

The existing Phase I Class I landfill leachate collection system consists of a geonet drainage layer and perforated collection pipe above the composite liner system to collect and convey leachate. The leachate that is conveyed to sumps will be pumped to an on-site leachate holding tank. A typical detail for the Phase I sumps is provided in Figure L-2 of Attachment L-3. The leachate collection piping system consists of 8-inch diameter perforated HDPE pipe sloped in such a manner that leachate flowing through the solid waste of the landfill will be collected and transported by gravity to a sump and leachate pump. The discharge line from the sump pump connects to a HDPE header line via a valve vault. Provisions for sampling the leachate as well as monitoring flows and pressure are provided in the valve boxes.

Phase II Collection System

The proposed Phase II Class I landfill leachate collection system consists of a geonet composite drainage layer and perforated collection pipe above the double synthetic liner system to collect and convey leachate. The leachate that is collected within the Phase II cells will be pumped to an on-site leachate holding tank. The leachate collection piping system consists of 8-inch diameter perforated HDPE pipe sloped in such a manner that leachate flowing through the solid waste of the landfill will be collected and transported by gravity to a metering manhole located on the north perimeter berm of each cell. At the metering manhole, leachate flows from each cell are measured using a Parshall flume and an ultrasonic water level sensor. Each metering manhole drains by gravity to a duplex leachate pump station located adjacent to Cell No. 2. The discharge from the leachate pump station will be directed through a new HDPE leachate forcemain that will be installed along the north and west sides of Phase II, the west and south sides of future Phase III and the south side of future Phase IV. Provisions for sampling the Phase II leachate as well as monitoring flows and pressure are provided in the valve vault located adjacent to the leachate pump station as shown on the details provided on Sheet C-17 of the Permit Drawings. Any stormwater accumulated in an unused cell will be pumped out from the cell using portable pumps and discharged to the stormwater system. Prior to waste disposal within a cell, the valve connecting the leachate collection pipe within the cell to the manhole will be in the closed position to prevent stormwater from draining to the leachate pump station. Immediately prior to solid waste being deposited into a new landfill cell, the valve at the manhole will be opened to allow the free flow of leachate to the pump station.

Leachate collected within the geocomposite drainage layer of the leak detection system of Phase II is drained by gravity to a leak detection manhole located on the north perimeter berm of each cell. The discharge valve at the leak detection manhole will normally be closed to allow the quantity of leakage to be measured. An ultrasonic water level sensor calibrated to the storage volume within the manhole will be used to measure leakage rate. The leachate within the leak detection manholes is subsequently drained by gravity to the leachate pump station after leakage rates are determined. The leak detection system has been designed such that a leak developing within the most remote part of a cell will flow to the leak detection manhole within twelve hours. A Leakage Action Rate (LAR) of 100 gallons/acre/day has been established for the Phase II cells which corresponds to the estimated peak daily discharge to the leak detection system as determined by the HELP model analyses. At this rate, the storage volume within the leak detection manhole will be exhausted within 8.75 hours. For leakage rates greater than 100 gallons/acre/day, measures should be initiated to find and repair or minimize leaks within the primary liner system.

The following procedures will be initiated if the LAR of 100 gallons/acre/day is exceeded:

1. Increase monitoring of the leakage quantity from the cell(s) affected. This consists of increasing the frequency of monitoring liquid levels within the leak detection manhole(s) to determine the time required to fill the five-foot storage volume in the manholes. It is anticipated that readings will be made at least daily after the LAR is exceeded and the calculated leakage rates will be recorded.

2. Immediately notify FDEP once it is ascertained that the LAR is being exceeded and provide a plan on how the County intends to address the exceedence.

3. Attempt to locate and fix sources of leaks to the extent practical. Measures to locate leaks could include inspecting the leak detection manhole to determine whether groundwater is leaking into it, observing the surface of the cell to determine if there are indications as to where leaks may be located such as large protrusions of waste that may have penetrated the liner system, and video taping the leak detection pipe to determine where large inflows are occurring. If the location of a leak can be identified and

excavation of waste is practical, then the liner will be exposed and repaired.

4. Adjust operational practices as needed to reduce the likelihood of future damage to the liner such as increasing the thickness of the initial layer of select waste on the cell bottom.

If leaks can not be specifically located or if it is not practical to find them, adjust operations to try to reduce the leakage to below the LAR. This could include measures to reduce the generation of leachate such as grading the landfill to promote runoff, installing drains and berms to direct runoff away from the landfill, the installation of additional intermediate or temporary cover, installing temporary geomembrane rain covers, or accelerating the placement of final cover in areas that have reached final elevation.

Currently there are no plans to use rain cell covers to collect rainwater within the unused portions of the cells in Phase II.

Phase I/Phase II Overlay Liner System

An overlay liner system will be constructed over the west sideslope of Phase I prior to the placement of waste against this slope as a result of the construction of Phase II. The purpose of the overlay liner system is to reduce the quantity of leachate entering the Phase I leachate collection system from the Phase II expansion by directing it to the Phase II leachate collection system. This will be accomplished by hydraulically separating the newer waste above it from the older waste beneath the overlay liner system.

The overlay liner system will consist of (from the top down) 2 feet of protective cover material, a geonet composite drainage layer, a textured 60-mil HDPE liner, and a minimum of 12 inches of intermediate cover placed over the waste. The protective cover may be installed in stages as required by operations in order to avoid having the material washout during storms. Alternately, the protective cover may be placed all at once if a rain cover is installed over it to prevent washouts. The rain cover would be removed prior to the placement of waste against the overlay liner system.

The rain cover on the overlay liner system, if installed, will include rain gutters to divert stormwater off the rain cover to temporary downdrains that will direct the stormwater to the perimeter drainage channel located north of Phase I. The locations of the rain gutters and temporary downdrains are shown on Sheets C-3 and C-3A of the Engineering Drawings. Details of these features are included on Sheet C-13B of the Engineering Drawings. Calculations demonstrating that the rain gutters and downdrains are capable of transmitting the flow generated from the 25-year design storm are included in Attachment H.2 of the Phase II Permit Application Engineering Report.

Leachate percolating through the newer waste located above the overlay liner system will be captured by the liner and directed to the base of the overlay liner system by means of the geonet composite drainage layer. A stone-filled trench drain with an 8-inch diameter perforated HDPE pipe located at the Phase I/Phase II divider berm will collect the leachate and direct it to the low point within Cell 1 of Phase II where it will flow out of the cell with the rest of the leachate collected within Cell 1. From there, the leachate will flow as previously described for the Phase II collection system.

Leachate Disposal System: General Description

Leachate that is generated from the landfill cells will be pumped to an existing 1,800,000 gallon storage tank. The leachate accumulated in the storage tank will be removed by a leachate pumping station that will pump through a 4-inch PVC force main to a connection to the Sarasota County wastewater collection system south of the landfill on Knights Trail Road. The Sarasota County wastewater collection system in this area flows to the City of Venice Water Reclamation Facility (WRF) for treatment.

The leachate pumping and force main system is the primary disposal method for the CCSWDC leachate. Transfer pumps that discharge to tanker trucks for hauling to the Bee Ridge WRF will serve as a secondary emergency disposal location.

The following information provides a description of the above ground leachate storage tank in accordance with the requirements of 62-701.400(6)(c).

The on-site leachate storage tank has a total capacity of 1.8 million gallons. The exposed plan area of the secondary containment system surrounding the leachate storage tank is 5,419 square feet. This will allow 27,000 gallons of water to accumulate after an 8-inch rainfall event. All liquid accumulating in the secondary containment system will be tested for specific conductance. Specific conductance of the stormwater in the secondary containment shall not be more than 50 percent above the specific conductance of water in the nearest downstream stormwater pond (Stormwater Pond No. 6) or shall not exceed 1,275 umhos/cm, whichever is greater. If the specific conductance is greater than these criteria or if a visible sheen is present, then the stormwater will be pumped directly into the leachate storage tank and managed as leachate.

A log of discharges from the secondary containment system will be maintained. The date, specific conductance measurements, and visual sheen observations shall be recorded.

An electronic water level sensor will automatically determine when the storage tank reaches 90 percent capacity (1.62 million gallons) and a high water alarm will be activated. An electric actuated shutoff valve in the fill line will be activated to prevent overfilling the tank when the capacity reaches 1.8 million gallons in the tank. The electric actuated shutoff valve will be tested by inducing a false signal from the level sensor and confirming proper operation on a weekly schedule. The exposed tank exterior will be inspected weekly by visual observation. The inspection will include looking for leaks, corrosion, or other maintenance deficiencies. This will be accomplished by inspection from platforms at the top of the 20-foot high secondary containment wall, positioned 120 degrees apart around the circumference of the tank. The tank interior will be inspected annually when the tank is empty or at least once every three years. If any failures are detected, the tank construction company shall be contacted immediately and appropriate repairs conducted based on the nature of the problem. Leachate will be managed in accordance with the Contingency Plan (Section L.8.e) when the tank is out of service.

Reports of the above inspections will be maintained by the County (the most recent inspection report is included as Attachment L-7).

The leachate pumping station will have automatic controls with the following set points:

	Elevation
High water alarm	40
Lag pump on	28
Lead pump on	27
Pumps off	26
Tank bottom	22

The set points can be modified by adjusting the pump control system. The duplex pumps will automatically alternate operation each time the pump is stopped by the level control system. The pumping station is equipped with a data logger to record flow, pH, and conductivity on a continuous basis.

L.8.c If Leachate Becomes Regulated as Hazardous Waste

Sarasota County will evaluate options for pretreating the leachate and alternate disposal if it becomes regulated as a hazardous waste.

L.8.d Off-Site Treatment of Leachate

The primary disposal location for CCSWDC leachate and alternate disposal is the City of Venice WWTP. Facility commitment letters are provided in Attachment L-6. A secondary disposal location is the Bee Ridge Water Reclamation facility. CCSWDC may use other secondary facilities for the offsite treatment or disposal of leachate; however, the County will notify FDEP of the change prior to use.

The CCSWDC will dispose of leachate at the primary treatment location provided the leachate meets the disposal quality requirements. Should leachate quality change such that it is no longer acceptable at the primary treatment location, the CCSWDC will dispose of leachate at the secondary facility.

L.8.e Contingency Plan for Leachate Management

Should one of the following events occur, the leachate contingency management plan shall be implemented.

- Any mechanical failure of the leachate management system that would prevent operation of the landfill leachate collection system pumps or the leachate transfer pumps for more then three (3) consecutive days.
- Liquid accumulation in the holding tank leak detection system in amounts greater than expected from rainfall.
- Rise of leachate levels inside the holding tank greater than 52.6 (high water alarm elevation represented by 31 foot mark on the external tank gauge).

Implementation of the contingency plan includes the following actions.

(1) The landfill manager shall notify the FDEP (within twenty-four (24) hours) and leachate disposal facilities of the emergency event.

(2) If the problem is excess leachate in the detection system of the holding tank, remedial measures shall be taken immediately to eliminate the leak. The detection system of the concrete holding tank consists of a layer of gravel located between the bottom of the holding tank and the top of the secondary containment slab that enables the detection of leaks at the bottom of the holding tank. Additional tractor trailer tanker units and operators shall be called to the site to expedite transport of leachate to the receiving wastewater treatment plant or additional quantities shall be pumped through the forcemain to the City of Venice lift station. The holding tank shall be emptied completely, if required, to facilitate repairs. Leachate will be pumped to mobile tanks during periods the repairs.

(3) If the problem is excessive levels of leachate in the holding tank (elevation exceeds the high water alarm level), the maximum amount of leachate shall be diverted from the tank by increasing the number of frequency or tanker trucks hauling leachate to the primary or secondary WWTPs, pumping additional quantities of leachate through the forcemain to the City of Venice lift station, or storing leachate in mobile tanks.

(4) Once the problem causing the implementation of the contingency plan has been resolved to an acceptable degree, the landfill manager shall notify FDEP (within three (3) day) that the facility is ready to return to normal operating conditions.

(5) Inspections and repairs to the leachate tank will be scheduled during winter months to the extent possible in order to minimize the quantity of leachate that must be removed. While the tank is out of service, leachate will be pumped directly to either tanker trucks or temporary storage tanks. If the tank will be out of service for an extended period, the temporary tanks will be plumbed to the leachate transfer station to allow direct pumping of the leachate to the WWTP.

L.8.f Recording Quantities of Leachate Generated

A control panel for each sump pump in Cell Nos. 1 through 5 of Phase I is mounted on the valve box at the top of each cell's lined external containment berm. Each control panel will be equipped with a pump hour meter.

A control panel for the Phase II duplex leachate pump station will be mounted adjacent to the pump station. The control panel will be equipped with a flow meter, water level indicator, and a pump hour meter.

The following information will be recorded once per operating day from each pump location.

Cell No. or Phase	______________________
Flow Meter Reading	______________________
Hour Meter Reading	______________________
Sump or Wet Well Liquid Level	______________________

The above information is recorded on the form provided as Attachment L-8.

A control panel for the Phase II metering manholes will be mounted adjacent to the manhole. The panel will be equipped with a water level indicator, instantaneous flow meter, and a flow totalizer.

The following information will be recorded once per operating day from each metering manhole location.

Cell No.	______________________
Instantaneous Flow	______________________
Totalized Flow	______________________
Liquid Level	______________________

The above information is recorded on the form provided as Attachment L-8.

L.8.g Precipitation and Leachate Generation Rates

Rainfall for each 24-hour period measured at an official gauge located on-site will be recorded and entered onto a spreadsheet (format included in Attachment L-11) to compare precipitation to leachate generation.

L.8.h Leachate Collection System Inspection and Cleaning

CCSWDC will conduct a video inspection of the leachate collection system at least once every five years in accordance with Rule 62-701.500 F.A.C. requirements, and cleaned as necessary. The most recent inspection of the leachate collection system at CCSWDC was completed on February 3, 2006. Leachate pumps, metering manholes, and leak detection manholes at CCSWDC will be inspected for operation failures at least daily. Control panels will be inspected and operational data recorded as described in L.8.f.

L.9 GAS MONITORING PROGRAM

A gas monitoring program will be implemented to prevent explosions and fires and to minimize off-site odors and damage to vegetation. The landfill gas monitoring program for CCSWDC will include monitoring of the landfill perimeter and enclosed on-site structures at the monitoring locations shown on Figure 1 provided in the Water Quality Monitoring Plan Addendum (Appendix C of this permit application). Monitoring will be conducted on a quarterly basis. The outside monitoring locations (gas monitoring probes) will consist of a monitor probe as shown on Figure L-3 in Attachment L-3.

The initial gas monitoring locations for Phase II when Cells 1 and 2 are constructed shall include four (4) gas monitoring probes as described above and numbered GP-2, GP-3, GP-4, and GP-8 and six (6) gas monitoring locations GM-1, GM-2, GM-3, GM-4, GM-5, and GM-7 in structures as shown on Figure 1 provided in the Water Quality Monitoring Plan Addendum. Monitoring probe GP-8 will be abandoned and replaced by GP-9 when Cells 3 and 4 of Phase II are constructed. Low areas, base boards, floor drains, and floor mounted cabinets shall be monitored inside the structures. Other structures on the site are not monitored because their great distance from the landfill (over 3,400 feet) and the shallow groundwater table (5 to 7 feet below surface) at the site would cause any migrating gas, if it existed, to purge to the atmosphere before it would travel to these structures through the ground. Also, there are no connections via conduit pipes, etc. between these structures and the landfill area.

The monitoring will be conducted for the Lower Explosive Limit (LEL) of methane. A Gasman II CEA Instruments or an equivalent unit will be used. No purging of the probe will be allowed. Once the meter is connected to the sampling port, the valve will be opened and the meter pump will be engaged and meter reading observed. The highest value observed is recorded as well as the steady state value observed.

If the LEL is greater than 25 percent inside any monitor location probe, a temporary monitor probe shall be established 50 feet from the monitor location in the opposite direction from the landfill. The temporary monitor probe shall be of the design shown in Figure L-12 of Attachment L-3. The temporary monitor probe will be monitored on a monthly basis for at least one quarter and until the temporary monitor station records zero percent LEL and the monitor location probe records less than 25 percent LEL. If the LEL is greater than 25 percent inside the structures, or equal to, or greater than 100 percent at any monitor probe, the landfill operator will submit to the FDEP within seven (7) days a remediation plan detailing the nature and extent of the problem and the proposed remedy. The remedy will be completed/implemented within sixty (60) days of the detection unless otherwise approved by the FDEP.

L.10 STORMWATER MANAGEMENT SYSTEM

The landfill stormwater management system for CCSWDC is discussed in Section L.2.h.(3) – Stormwater System.

L.11 EQUIPMENT AND OPERATION FEATURE REQUIREMENTS

L.11.a Adequate In-Service Equipment

Equipment proposed for the CCSWDC will include the equipment listed in Table L-1. The exact equipment complement may vary from time to time and additional equipment will be acquired if needed. One roll-off container will be placed at the Class I landfill area.

TABLE L-1. EQUIPMENT USED AT THE CCSWDC

NUMBER	EQUIPMENT
1	Bulldozer
2	Compactors
1	Dump Truck
1	Front-end Loader
1	Grader
1	Hydraulic Excavator
1	Water Truck
1	Fuel Truck
2	Pick-up Trucks
2	UD Gators
1	Roll-off Container
1	Compressor
1	Pressure Washer
1	Welder

Emergency Electrical Generation Equipment is of adequate size to assure complete operation of the Leachate Disposal and Collection Systems.

L.11.b Reserve Equipment

Cooperative lending agreements with the Contract Operator's company and standing agreements with local equipment suppliers will provide a means for procuring additional back-up equipment within 24 hours of a need being identified.

L.11.c Communication Facilities

A telephone will be available at the scalehouse and the maintenance/administration building. Radios and other communication devices will be in select landfill equipment to provide safe conditions for landfill personnel.

L.11.d Dust Control Methods

Dust from unpaved haul roads and construction areas within the Class I landfill area will be controlled through the use of a water spray truck. An alternate dust control measure that may be used in active cells of the Class I landfill area is leachate reuse (see Attachment L-12 for FDEP approval letter). The reuse of leachate involves spraying small quantities of leachate from a spray bar mounted on the rear of a tank truck onto active fill areas of the landfill. The landfill operation crew will monitor the rate of leachate application, soil moisture conditions, and the specific landfill areas used to prevent the generation of leachate runoff. Leachate will only be applied under the following conditions.

- Leachate may only be sprayed on active, bermed fill areas, including the working face, and areas with the required six (6) inches of initial cover.
- Leachate may not be sprayed on areas with intermediate or final cover.
- The maximum grade leachate will be sprayed on is a 10H:1V slope. Areas within 150 feet of a 4H:1V or steeper side slope will not be sprayed on. At all times areas receiving leachate must be controlled to prevent run-off from entering the stormwater system
- Leachate will not be sprayed during a rainfall event, and when the application area is in a saturated condition.
- The application rate of leachate should be such that leachate does not accumulate on the landfill surface, and infiltrates quickly into the covered refuse.
- Leachate will not be sprayed at the end of the day on the initial cover of the working face or other areas. Spraying should be done early in the morning after any dew evaporates and continue until early afternoon or until all available areas have been used.

The Site Manager will record daily the gallons of leachate sprayed per this method.

If needed, dust masks will be available to personnel working in excessively dusty areas.

L.11.e Fire Protection and Fire Fighting Facilities

Small fires on the working face will be controlled using dump trucks, a landfill compactor, and a bulldozer to move earth cover material over hot areas. Additionally, the water truck will be available to apply water to any fires. In the event that an uncontrollable fire does occur at the CCSWDC site, the Nokomis Fire Department will be contacted immediately. The Nokomis Fire Department is equipped with pumper trucks capable of obtaining water from surface sources. In the event of a fire, the landfill operator will notify the FDEP within twenty-four (24) hours. Within seven (7) days, a full written report on the fire will be submitted to FDEP describing the origins of the fire, the actions that were taken to deal with it, the results of the actions taken and an analysis of the success or failure of the actions.

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

No chemicals will be accepted at the landfill. All waste coming through the scale house will be observed to eliminate unwanted chemicals capable of starting a fire. In the event a chemical accident does occur, the following steps will be taken:

- Call local Fire Department (911).
- Contain fire in small area until Fire Department arrives. To eliminate inhalation of potentially toxic fumes, fight fire from upwind side.
- Stay with fire until out and covered with sand.

L.11.f Litter Control Devices

See Section L.7.j. in this Operations Plan.

L.11.g Signs Indicating Name of Operating Authority, Traffic Flow, Hours of Operations, and Charges for Disposal

There is a permanent sign at the south property line along the access road to the facility identifying the Sarasota County Central County Solid Waste Disposal Facility and indicating hours of operation and charges for different types of loads. The sign indicates materials that are not accepted for disposal in the landfill. Signs indicating approach and exit routes and one-way roads are strategically placed so traffic at the landfill will move smoothly and efficiently to and from the working face area.

L.12 ALL WEATHER ACCESS ROADS

A paved entrance from Knights Trail Road terminates at the landfill perimeter roadway. In addition, paved perimeter roads around the landfill areas are shown on Sheet G-03, Overall Site Plan and Phasing Plan of the permit drawings. All weather access roads will be constructed within the Class I area to route traffic to the active working face. The all weather access roads will be constructed of earth, ground shingles, crushed rock, shell or any other stabilizing material, as appropriate.

L.13 ADDITIONAL RECORD KEEPING AND REPORTING

See Section L.3 of this Operations Plan.

Records that are more than five years old may be archived at an off-site storage location. The archived records will be stored in a secure place where they will be protected from damage. Provisions will be made to retrieve records from storage as required.

ATTACHMENT L-1

TRAINING PLAN

ATTACHMENT L-1

TRAINING PLAN

As stated in 62-701.500, F.A.C., all Class I landfills shall have at least one trained operator at the landfill during all times when the landfill receives waste. The operator training includes a 24-hour initial course and 16 hours of continuing education every 3 years. Spotter training includes an 8-hour initial course and 4 hours of continuing education every 3 years.

In accordance with Rule 62-701.320(15), the owner or operator of a landfill, or other solid waste management facility required by this chapter to have trained operators or spotters, shall not employ a person to perform, nor may any person perform, the duties of an operator or spotter at such a facility unless that person is a trained operator or trained spotter, or an interim operator or interim spotter.

Operator and spotter training courses are available at the University of Florida Center for Training, Research and Education for Environmental Occupations (UF/TREEO) and through other sources. A listing of the current year training courses available through TREEO is provided at the end of this attachment. A listing of the County's currently trained operators is provided below.

Sarasota County Trained Operators

Gary Bennett
Frank Coggins
Mark Rhoades
Dan McAllister
Ed Russ
Charles Cangialosi
Terry Foxworthy
James Szala
Ed Wilson

In addition, the following contract personnel are trained as operators or spotters.

Willard Bennett (Operator)
Tim Ferris (Operator)
Roger Harden (Operator)
Ryan Davidson (Operator)
Drew Trainer (Operator)
Luis Herrara Barrero (Spotter)
Joseph Nichols (Spotter)

UF TREEO CENTER

excellence in environmental education & training

Solid Waste

Introduction | Courses | Onsite Training

The 1988 Solid Waste Management Act mandated training for all solid waste landfill operators. In 1989, Rule 62-703, Training Operators of Solid Waste Management Facilities, Florida Administrative Code (F.A.C.), was adopted by the Florida Deparment of Environmental Protection (FDEP) in response to requirements in the 1988 Act. The new rule 62-701 assures the continued development of the Solid Waste Management Facility Operator training program for all solid waste operators in Florida.

Join our email list

Solid Waste Training Info and Database

- Additional Training Information

For additional information about these courses, please contact Dawn Jenkins.

Print Brochures:

2006 MOLO exam

2006 MOLO

2006 Solid Waste Calendar

2006 Solid Waste Course Descriptions

2006 Solid Waste Initial Operator Training Courses

2006 Spotter Training

2006 SWANA-FL Fall Training Symposium

Courses Approved for SWANA CEUs

Is your Florida Solid Waste Operator

IsYourFloridaSolidWaste

Landfill Design Courses

Onsite Solid Waste Training

Courses (38)

- 19-Hour Initial Training Course for Transfer Station Operators and MRF Operators
- 24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)
- Chemical Compatibility and Storage
- Construction and Demolition Debris Landfills: A Short Course for Operators - 24 Hours
- Excavation and Trenching: Competent Person Training
- FDEP SOP Sampling Training For Groundwater, Surface Water and Wastewater
- FEMA Debris Management Course
- Florida Stormwater, Erosion and Sedimentation Control Inspector Training Program
- Groundwater Issues for Landfill Operators - 8 Hours
- Hazardous Materials Awareness for Solid Waste Online
- Hazardous Materials Chemistry for the Non-Chemist
- Hazardous Waste Regulations for Generators
- HazWoper 40-Hour Health & Safety Online
- HazWoper 8-Hour Refresher Online
- Health and Safety for Solid Waste Workers
- Health and Safety Training for Hazardous Materials Activities: 40-hour OSHA Course
- Health and Safety Training for Hazardous Materials Activities: 8-hour OSHA Refresher
- Introduction to Electrical Maintenance
- Landfill Design and Construction
- Landfill Gas and Leachate Systems
- Landfill Gas Production Modeling
- Laws and Rules for Florida Engineers
- Leachate Production Modeling Using HELP

(Hydrologic Evaluation of Landfill Performance)

Management of Leachate, Gas, Stormwater and Odor at Class I, II, and III Landfills

Permit Required Confined Space Training

Safety Awareness Training for Transfer Stations

Spotter Refresher 4-hour Training for Solid Waste Facilities

Spotter Training for Solid Waste Facilities

Spotter Training for Solid Waste Facilities - Spanish

Stormwater Design and Permitting: An Introduction in Using Computers to Solve Stormwater Problems

SWANA-Manager of Landfill Operations (MOLO)

SWANA-Manager of Landfill Operations (MOLO) - Exam Only

SWANA-Managing MSW Recycling Systems - Exam Only

Train-the-Trainer For Environmental Occupations

Train-the-Trainer Refresher

Two-hour Spotter Refresher Training Online

U.S. DOT Hazardous Materials/Waste Transportation

Waste Screening and Identification for Landfill Operators and Spotters

3900 SW 63rd Blvd.
Gainesville, FL 32608
tel: (352) 392-9570
fax: (352) 392-6910
train@treeo.ufl.edu

UF | Division of Continuing Education
UNIVERSITY of FLORIDA

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ATTACHMENT L-2

CONTINGENCY PLAN

ATTACHMENT L-2

CONTINGENCY PLAN

TABLE OF CONTENTS

SAFETY

The program shall consist of the following parts:

Training

General training of all employees will be required to develop the skills of emergency first aid and CPR. General training includes:

- Red Cross Multimedia certification is required initially upon employment and subsequently re-certification on a three-year schedule is required.
- Red Cross Cardiopulmonary Resuscitation Basic Life Support Course certification initially upon employment and subsequently on an annual basis thereafter is required.
- All employees shall be trained in the job-specific aspects of their position. This training will be provided by, and is the responsibility of, the employee's immediate supervisor.
- Special training shall be required for each employee on a job-specific basis. Each operator of a piece of equipment shall be trained in the operation of that piece of equipment by the immediate supervisor. This training shall be given in accordance with the manufacturer's recommendations and operating manuals. This training will be provided by, and is the responsibility of, the immediate supervisor in charge of the employee.

Equipment

This section outlines the basic safety equipment to be provided to the employees of this Division.

- Uniforms shall be furnished for, and shall be worn by, all employees except office personnel. Special exemption from this requirement may be granted by the Director of Solid Waste Operations Division on a case-by-case basis.
- Special safety equipment such as rain gear including rubber boots, boots having steel toes and stainless steel puncture resistant soles, work gloves, goggles, dust masks, protective eye glasses, rubber gloves, face guards, hearing protection, and rubber aprons shall be utilized as part of the day-to-day operational procedures of this Division. It shall be the responsibility of each individual employee and the immediate supervisor to assure that proper safety equipment is in use. Standard operating procedures will be developed and included as a part of this program. Development of these procedures will be the responsibility of all supervisory personnel.
- All employees will be required to wear safety shoes or boots when working in an environment dictating the need for such equipment. Generally, safety shoes will be required except when working in the scalehouse or office. Safety shoes will be issued to all employees whose duties require the wearing of safety shoes.

Special Procedures

Special procedures shall consist of operational plans, which shall be prepared by the supervisor in charge of each separate operation within the Solid Waste Operations Division. Operational plans shall be prepared for the following separate functions within the Solid Waste Operations Division – office, landfill, transfer station, hazardous wastes and infectious wastes.

Safety Meetings

Safety meetings shall be held as deemed necessary by the Solid Waste Operations Division Safety Officer but no less than one meeting shall be held every other month.

Safety meetings shall be the responsibility of the Solid Waste Operations Division Safety Officer.

Safety meeting topics shall include a discussion of all incidents, which have occurred within the Division since the last safety meeting was held, along with topics of current importance and interest.

Safety Officer

The manager of the Solid Waste Operations Division shall appoint the Solid Waste Operations Division Safety Officer. The Solid Waste Operations Division Safety Officer is Terry Foxworthy. The Solid Waste Operations Division Manager is Frank Coggins.

The position of Solid Waste Operations Division Safety Officer shall be held in conjunction with the regular duties of the position for which the person was hired. However, the Solid Waste Operations Division Safety Officer shall be given time during the regular working hours to perform the duties of the Solid Waste Operations Division Safety Officer.

EMERGENCY AND FIRE SAFETY

This section provides the standard operating procedures for all personnel in the event of an emergency or fire of any nature that may take place within the boundaries of landfill or transfer station.

Notification: CALL 911

As in any emergency, the first thing to do is to immediately notify the proper emergency response team. In the case of FIRE, immediately notify the Fire Department through the emergency phone number 911. Remember, if you are calling from a phone, which is connected to the County's switchboard, you must dial 4911 to reach the emergency operator.

If the office or one of the scalehouses is open, you can contact them by radio for your emergency, and they will be able to place the necessary phone call.

Be sure to SPEAK SLOWLY, DISTINCTLY, DELIBERATELY, and remain as calm as possible. Briefly tell the person to whom you are reporting the emergency the following:

- The nature of the emergency;
- Any injuries or persons involved; and
- Where the emergency is located.

If there are injuries, you should render whatever assistance you can without endangering yourself. Use the First Aid and/or CPR training you have learned to assist where necessary. If possible, evacuate any person or equipment that may be endangered.

In the event of small fires, the use of a fire extinguisher may be sufficient to contain the fire until the arrival of the Emergency Responders. Fire extinguishers are found in every Solid Waste Operations Division vehicle and on every machine. In the event of larger fires, a 4000-gallon water tanker and the pressure washer trailer is available for fighting fires.

Upon arrival of the Emergency Responders, you should take whatever steps necessary to assist.

In the event of fire in the landfill, it may be necessary to smother the fire using available dirt from the dirt stockpiles located at the landfill. In this case, the Manager of the landfill shall make immediate provisions to provide that earth cover. Also, the procedures described in Section L.11.e of the Operations Plan shall be followed.

Used Tire Storage Area Special Rules

In the event there is a fire or other emergency in the used tire storage area, the following special rules shall apply:

- After following the emergency procedure outline above, the Manager shall insure that the dike around the waste tire pile is intact and that the valve of the drainpipe through the berm is closed. This shall be accomplished by patrolling the exterior of the dike and by adding earth to the dike wherever necessary to assure that no oily material generated by the combustion of the tires escapes the immediate area.

- The State of Florida, Department of Environmental Protection (FDEP), shall be immediately notified by calling the Tampa office at (813)632-7600 if fire, or another emergency, poses an unanticipated threat to the public health or environment. Within two weeks of any emergency involving potential off-site impact, a report shall be submitted to the FDEP including information on the emergency, the results of the action taken, and an analysis of the success or failure of the actions.
- In addition, any special conditions, as set forth by the Sarasota County Fire Department shall be met.

List of Emergency Response Equipment

In the event of a fire emergency, the following equipment is available at the landfill and may be used as the situation dictates in the evolution of responding to a fire emergency, such as repair of dikes, smothering with earth and materials, and use of water in extinguishing fires:

- D-6N bulldozer (3)
- 623-B Excavator
- 950 Front End Loader
- Pressure washer trailer
- 4,000 gallon water tanker
- 322 Excavator
- 936 Front End Loader

It should be noted that from time to time the equipment available for fire emergency use may be changed, and it should be the responsibility of the persons in charge at the facility to be aware of those changes and respond accordingly with the appropriate equipment in the event of a fire emergency.

Dry hydrant connections are available at the site for the purpose of supplying water in the event of a fire or other emergency.

Also available at the site is an 8-inch Mac pump with hose and discharge pipe to be used for filling the 4000-gallon tanker. Upon arrival of the fire department, this pump and water supply will be used under the direction of the officer in charge from the fire department.

Fire extinguishers are available in every vehicle and piece of equipment on the site. Although fire extinguishers are very ineffective against a large fire, it may be possible through their use to control the fire until larger equipment is brought to fight the fire.

List of Emergency Response Persons

NAME	HOME PHONE NUMBER
Frank Coggins	(941) 496-4667
Gary Bennett	(941) 497-3191
Dan McAllister	(941) 923-5907

Procedure to be Followed for Cleanup

Any residual from a fire at the tire storage area shall be removed for proper disposal by County personnel. The County will provide all cleanup services and equipment required. All debris and contaminated soil will be placed in the landfill and all liquids will be pumped into a truck for proper disposal.

CONTINGENCY PLAN

In the event an emergency should occur that would interrupt operations at the landfill, the emergency provisions of Section L.2.b.1 of the Operations Plan shall be followed and the following procedures shall be implemented:

The waste collection entities operating within the County shall be notified of the operational interruption and approximate time when operations will be restored.

If it is anticipated that the interruption of operations will be no longer than 48 hours, an alternate disposal site shall be determined. The following alternate disposal sites are available and listed in order of preference. Should one facility also not be available the next facility on the list shall be contacted.

- Manatee County Lena Road Landfill
- Charlotte County Zemel Road Landfill
- Waste Management Landfill in Okeechobee County

Sarasota County will develop agreements with the three facilities listed above to provide disposal capacity on an emergency basis.

ATTACHMENT L-3

FIGURES

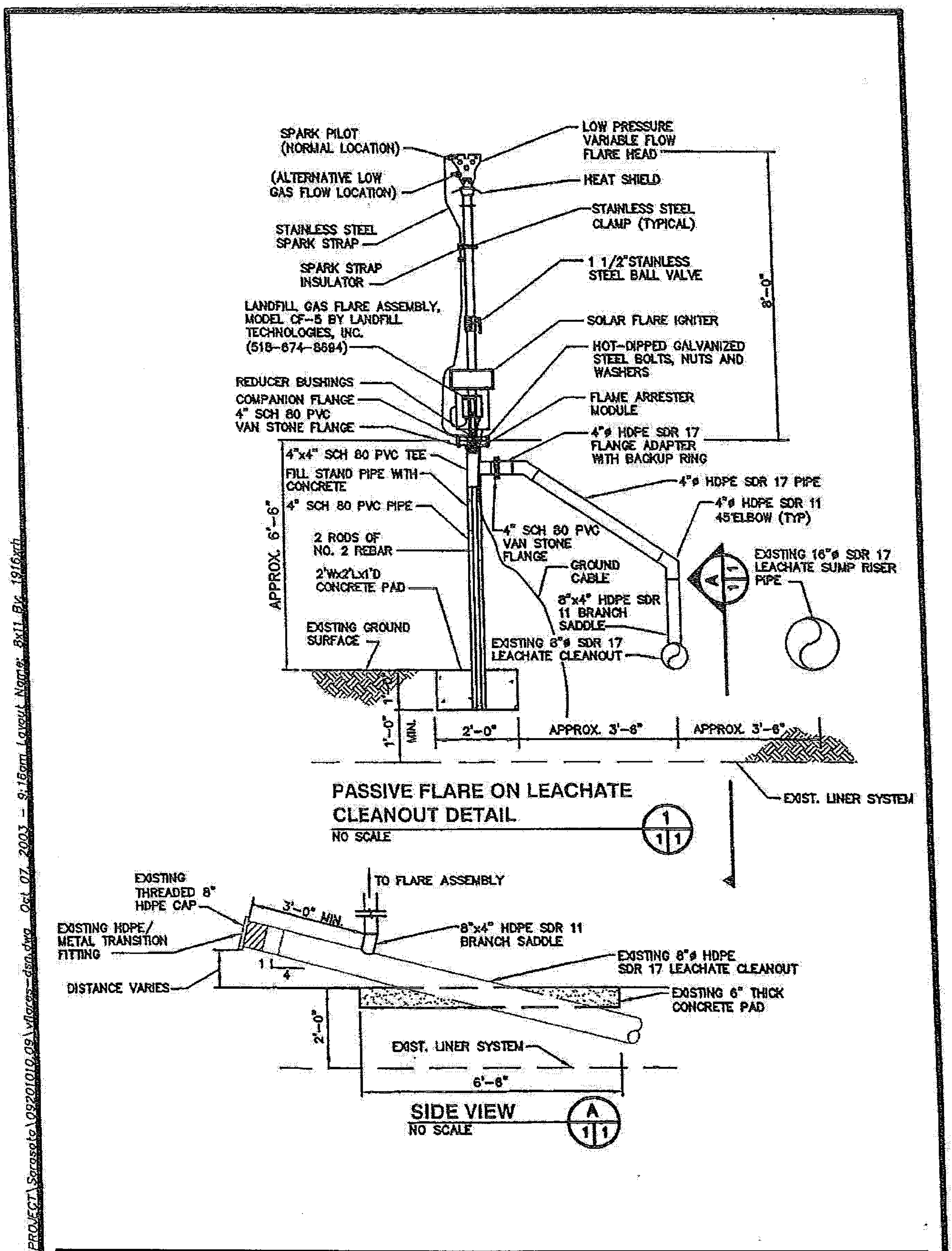

Figure L-1 Passive Vent Installation at LCRS Cleanouts, CCSWDC

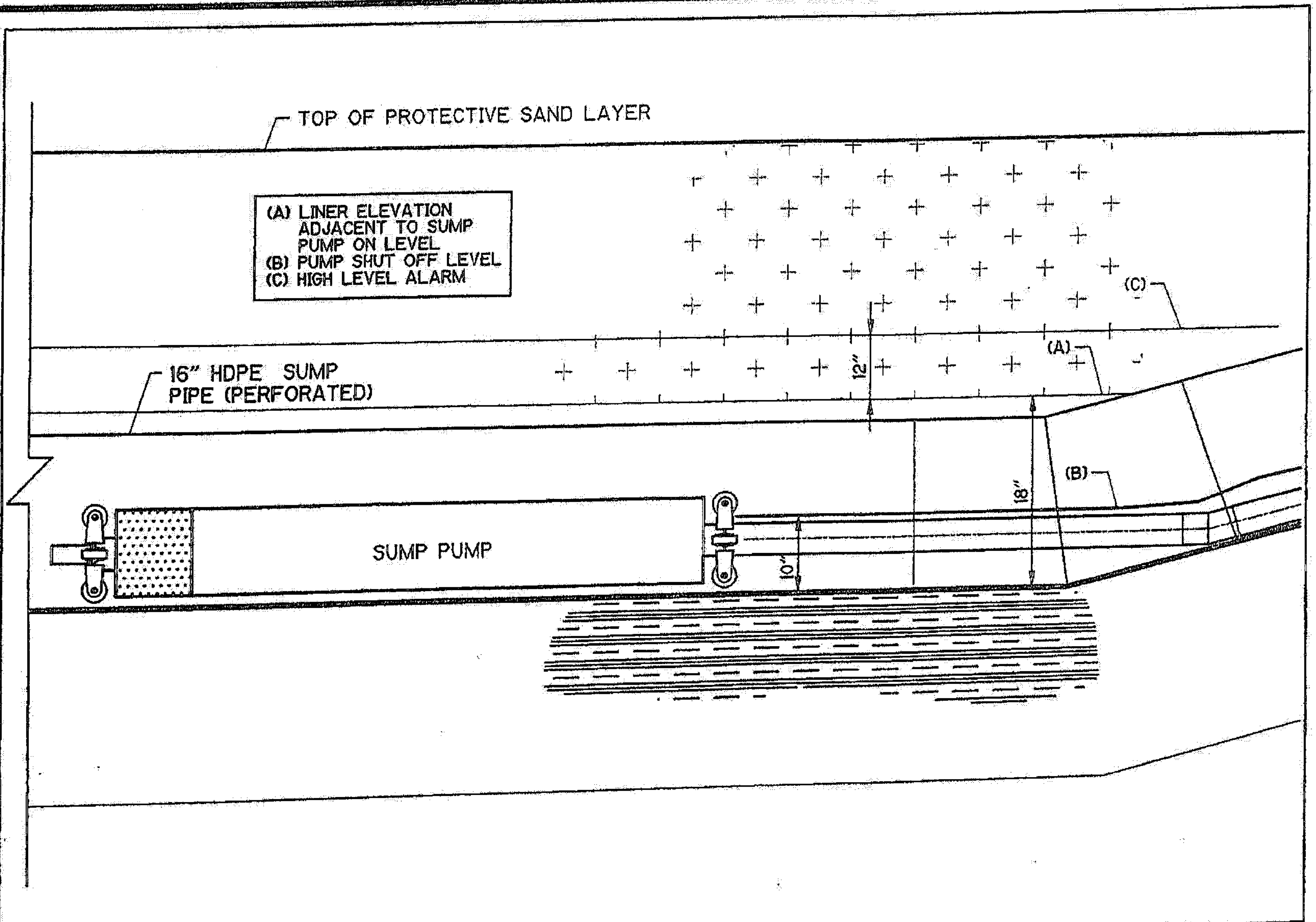

Figure L-2 Operating Levels, Central County Solid Waste Complex, Sarasota County, Florida

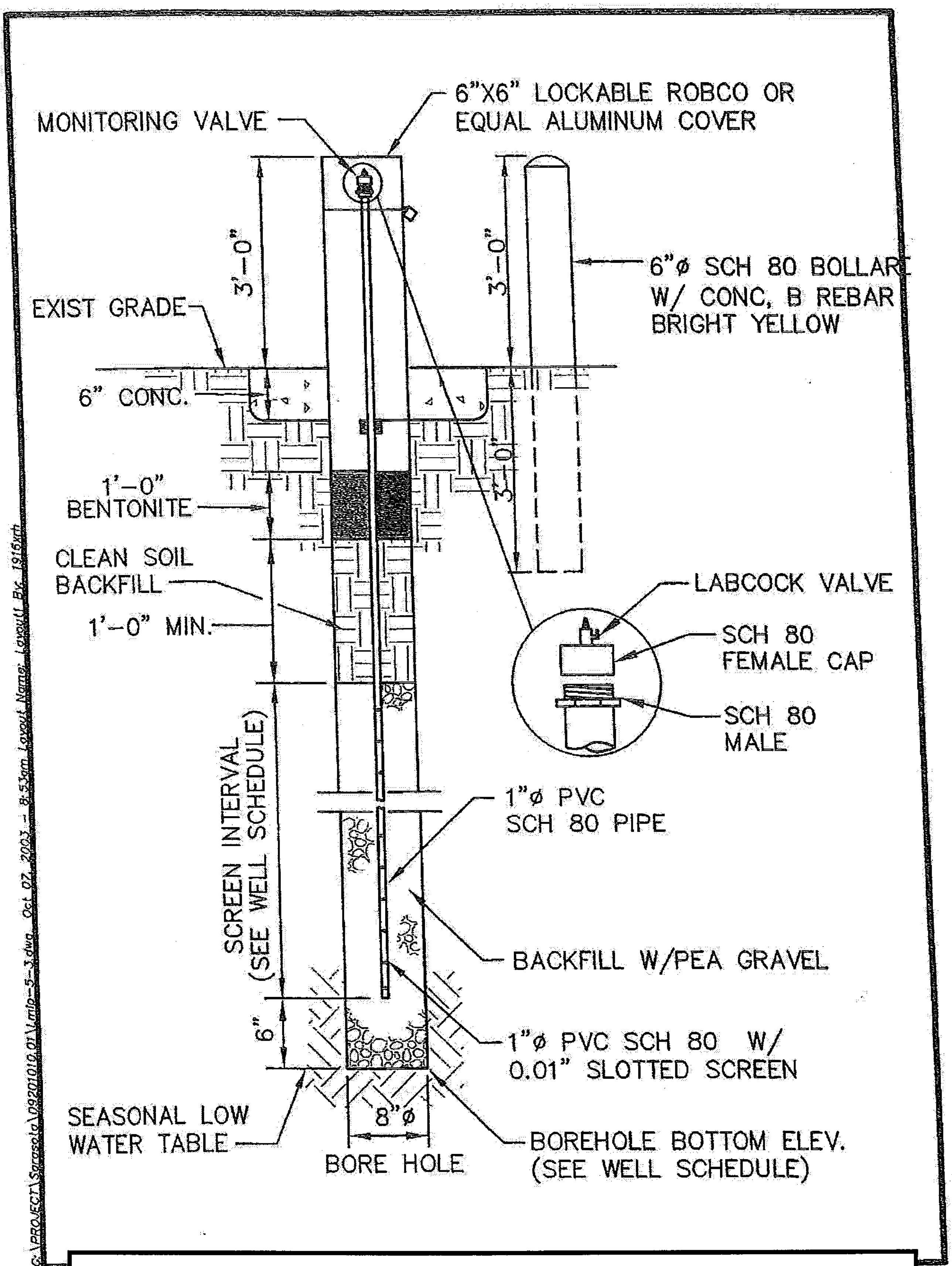

Figure L-3 LFG Monitor Probe, CCSWDC, Sarasota County, Florida

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ATTACHMENT L-4

CONTAMINATED SOIL ACCEPTANCE CRITERIA

ATTACHMENT L-4

CONTAMINATED SOIL ACCEPTANCE CRITERIA

According to the Hazardous Waste Division of Sarasota County, there are no standard contaminated soil acceptance criteria for the CCSWDC. Acceptance of contaminated soil at CCSWDC is only conducted on a case-by-case basis whereby soils must be tested for the toixcity characteristic leaching procedure (TCLP) and the paint filter test. The Hazardous Waste Division evaluates results from these tests to determine whether the soil will be accepted at the landfill. In any case, contaminated soil accepted at CCSWDC would be placed directly into the lined active landfill cell and not stockpiled at the site unless authorized in writing by the Department.

ATTACHMENT L-5

WASTE LOAD INSPECTION AND REPORTING FORM

SARASOTA COUNTY SOLID WASTE DEPARTMENT
SOLID WASTE LOAD INSPECTION FORM

Florida Administrative Code 62-701 requires landfills to periodically inspect loads presented for disposal. If unauthorized wastes are found, the responsible party shall be required to cause removal of said waste and the Florida Department of Environmental Protection shall be notified. Inspection records shall be maintained for a period of three years.

Inspection Location ______________________________

Date ____________ Time ____________ Truck No. ____________

Hauler ______________________ Vehicle License Plate No. ____________

Source of Waste ______________________________

Driver (print name) ______________________________

Driver (signature) ______________________________

Inspector/Title ______________________________

Waste Observed ______________________________

Unauthorized Waste ______________________________

FDEP Contacted ______________ Name of Contact ______________

What action was taken to properly dispose of the unauthorized waste?

(Use attachments if necessary)

ATTACHMENT L-6

LEACHATE DISPOSAL COMMITMENT

COPY

SARASOTA COUNTY
"Dedicated to Quality Service"

December 3, 2001

Kim Ford, P.E.
Florida Department of Environmental Protection
3804 Coconut Drive
Tampa, Florida 33619

Subject: Central County Solid Waste Operations
Leachate Disposal
FDEP - Permit No. S058-299180

Dear Mr. Ford:

I have been requested to provide confirmation regarding the acceptance and disposal of leachate from the closed Bee Ridge Landfill Site, and the Central County Solid Waste Disposal Complex.

The leachate is normally accepted at our Bee Ridge Water Reclamation Facility, with a general maximum leachate input of 500,000 gallons per day.

An alternative disposal site is through our Central County Utilities Facility, with a general maximum leachate input of 250,000 gallons per day.

Please contact my office, should you require additional information.

Sincerely,

WWagner

Warren Wagner
General Manager

c: Gary Bennett, Solid Waste Operations Manager, Solid Waste Operations
Paul Wingler, P.E. Solid Waste Operations
Robert J. Butera, P.E. III, FDEP – Tampa

I:\USER\shared\projects\Central County Solid Waste Disposal Complex\leachate\Correspondence\Kim Ford - leachate Disposal (Author Warren Wagner) - 11-21-01.doc

Florida Department of Environmental Protection

Twin Towers Office Bldg., 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

NOTIFICATION/APPLICATION FOR CONSTRUCTING A DOMESTIC WASTEWATER COLLECTION/TRANSMISSION SYSTEM

PART I - GENERAL

Subpart A: Permit Application Type

Permit Application Type (mark one only)	EDUs Served	Application Fee*	"X"
Are you applying for an individual permit for a domestic wastewater collection/transmission system? Note: an EDU is equal to 3.5 persons. Criteria for an individual permit are contained in Rule 62-604.600(7), F.A.C.	≥ 10	$500	☒
	< 10	$300	☐
Is this a Notice of Intent to use the general permit for wastewater collection/transmission systems? Criteria for qualifying for a general permit are contained in Rule 62-604.600(6), F.A.C. Projects not meeting the criteria in Rule 62-604.600(6), F.A.C., must apply for an individual permit.	N/A	$250	☐

*Note: Each non-contiguous project (i.e., projects that are not interconnected or are not located on adjacent streets or in the same neighborhood) requires a separate application and fee.

Subpart B: Instructions

(1) This form shall be completed for all domestic wastewater collection/transmission system construction projects as follows:
- If this is a Notice of Intent to use the general permit, this notification shall be submitted to the Department **at least 30 days prior to initiating construction.**
- If this is an application for an individual permit, the permit must be obtained prior to initiating construction.

(2) One copy of the completed form shall be submitted to the appropriate DEP district office or delegated local program along with the appropriate fee, and one copy of the following supporting documents. Checks should be made payable to the Florida Department of Environmental Protection, or the name of the appropriate delegated local program.

- If this is a Notice of Intent to use the general permit, attach a site plan or sketch showing the size and approximate location of new or altered gravity sewers, pump stations and force mains; showing the approximate location of manholes and isolation valves; and showing how the proposed project ties into the existing or proposed wastewater facilities. The site plan or sketch shall be signed and sealed by a professional engineer registered in Florida.
- If this is an application for an individual permit, one set of plans and specifications shall be submitted with this application, or alternatively, an engineering report shall be submitted. Plans and specifications and engineering reports shall be prepared in accordance with the applicable provisions of Chapters 10 and 20 of *Recommended Standards for Wastewater Facilities*. The plans and specifications or engineering report shall be signed and sealed by a Professional Engineer registered in Florida.

(3) All information shall be typed or printed in ink. Where attached sheets (or other technical documentation) are utilized in lieu of the blank spaces provided, indicate appropriate cross-references on the form. For Items (1) through (4) of Part II of this application form, if an item is not applicable to your project, indicate "NA" in the appropriate space provided.

Northwest District
160 Governmental Center
Pensacola, Florida 32502-5794
850-595-8300

Northeast District
7825 Baymeadows Way
Suite 200B
Jacksonville, Florida 32256-7590
904-807-3300

Central District
3319 Maguire Blvd
Suite 232
Orlando, Florida 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8318
813-744-6100

South District
2295 Victoria Ave
Suite 364
Fort Myers, Florida 33902-2549
239-332-6975

Southeast District
400 North Congress Ave
Suite 200
West Palm Beach, Florida 33401
561-681-6600

PART II - PROJECT DOCUMENTATION

(1) Collection/Transmission System Permittee

Name Frank Coggins Title Manager - Solid Waste Operations
Company Name Sarasota County - Solid Waste Department
Address 4000 Knights Trail Road
City Nokomis State Florida Zip 34275
Telephone 941-861-1578 Fax 941-486-2620 Email fcoggins@scgov.net

(2) General Project Information

Project Name Central County Landfill - Leachate Force Main and Pump Station
Location: County Sarasota City Nokomis Section 20/29/33 Township 38 Range 19
Project Description and Purpose (including pipe length, range of pipe diameter, total number of manholes, and total number of pump stations) Proposed to construct a pump station and a 5.2 mile 4" diameter force main to pump leachate from the Central County Landf Landfill to Lift Station 376-0527 on Knights Trail Road Just North of Laurel Road.

Estimated date for: Start of construction January 2006 Completion of construction January 2007
Connections to existing system or treatment plant Connect to Lift Station 376-0527

(3) Project Capacity

A = Type of Unit	B = Number of Units	C = Population Unit	D = Total Population (Columns B x C)	E = Per Capita Flow	F = Total Average Daily Flow (Columns D x E)	G = Peak hour flow
Single-Family Home	N/A	N/A	N/A	N/A	N/A	N/A
Mobile Home	N/A	N/A	N/A	N/A	N/A	N/A
Apartment	N/A	N/A	N/A	N/A	N/A	N/A
Commercial, Institutional, or Industrial Facility*	117EDU	1	117EDU	175 GPD/EDU	20,550GPD	40GPM
Total			117EDU		20,550GPD	40GPM

* Description of commercial, institutional, and industrial facilities and explanation of method used to estimate per capita flow for these facilities:

The landfill creates 7.5 MG of leachate per year. 7.5 MG divided by 365 days per year equals 20,550GPD.
Using 175GPD/EDU, this equates to 117EDU'S. The maximum pumping rate for the proposed pumping station is 40GPM.
The pump station has a 1.0MG storage tank to attenuate flows.

(4) Pump Station Data (attached additional sheets as necessary)

Location	Type	Estimated Flow to the Station (GPD) Maximum	Average	Minimum	Operating Conditions [GPM @ FT (TDH)]
Landfill			20,550		40@46

(5) Collection/Transmission System Design Information

A. This information must be completed for all projects by the applicant's professional engineer, and if applicable, those professional engineers in other disciplines who assisted with the design of the project.

If this project has been designed to comply with the standards and criteria listed below, the engineer shall initial in ink before the standards or criteria. If any of the standards or criteria do not apply to this project or if this project has not been designed to comply with the standards or criteria, mark "X" before the appropriate standard or criteria and provide an explanation, including any applicable rule references, in (5)B. below.

allow for another alternative that will result in an equivalent level of reliability and public health protection, the project can be constructed using the general permit.

General Requirements

X 1. The project is designed based on an average daily flow of 100 gallons per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification is used to better estimate the flow. The design includes an appropriate peaking factor, which covers I/I contributions and non-wastewater connections to those service lines. [RSWF 11.243]

J.M.E. 2. Procedures are specified for operation of the collection/transmission system during construction. [RSWF 20.15]

J.M.E. 3. The project is designed to be located on public right-of-ways, land owned by the permittee, or easements and to be located no closer than 100 feet from a public drinking water supply well and no closer than 75 feet from a private drinking water supply well; or documentation isprovided in Part II.(5)B., showing that another alternative will result in an equivalent level of reliability and public health protection. [62-604.400(1)(b) and (c), F.A.C.]

J.M.E. 4. The project is designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water pipes passing through or coming into contact with any part of a sewer manhole. [RSFW 38.1 and 48.5]

J.M.E. 5. The project is designed to preclude the deliberate introduction of storm water, surface water, groundwater, roof runoff, subsurface drainage, swimming pool drainage, air conditioning system condensate water, noncontact cooling water except as provided by Rule 62-610.668(1), F.A.C., and sources of uncontaminated wastewater, except to augment the supply of reclaimed water in accordance with Rule 62-610.472(3)(c), F.A.C. [62-604.400(1)(d), F.A.C.]

J.M.E. 6. The project is designed so that all new or relocated, buried sewers and force mains, are located in accordance with the separation requirements from water mains and reclaimed water lines of Rules 62-604.400(2)(g)(h) and (i) and (3), F.A.C. Note, if the criteria of Rules 62-604.400(2)(g) 4. or (2)(i) 3., F.A.C., are used, describe in Part II.C. alternative construction features that will be provided to afford a similar level of reliability and public health protection. [62-604.400(2)(g), (h), and (i) and (3), F.A.C.]

Gravity Sewers

X 7. The project is designed with no public gravity sewer conveying raw wastewater less than 8 inches in diamete. [RSWF 33.1]

X 8. The design considers buoyancy of sewers, and appropriate construction techniques are specified to prevent flotation of the pipe where high groundwater conditions are anticipated. [RSWF 33.3}

X 9. All sewers are designed with slopes to give mean velocities, when flowing full, of not less than 2.0 feet per second based on Manning's formula using an "n" value of 0.013; or if it is not practicable to maintain these minimum slopes and the depth of flow will be 0.3 of the diameter or greater for design average flow, the owner of the system has been notified that additional sewer maintenance will be required. The pipe diameter and slope are selected to obtain the greatest practical velocities to minimize solids deposition problems. Oversized sewers are not specified to justify flatter slopes. [RSWF 33.41, 33.42, and 33.43]

X 10. Sewers are designed with uniform slope between manholes. [RWSF 33.44]

X 11. Where velocities greater than 15 fps are designed, provisions to protect against displacement by erosion and impact are specified. [RSWF 33.45]

X 12. Sewers on 20% slopes or greater are designed to be anchored securely with concrete, or equal, anchors spaced as follows: not over 36 feet center to center on grades 20% and up to 35%; not over 24 feet center to center on grades 35% and up to 50%; and not over 16 feet center to center on grades 50% and over. [RSWF 33.46]

X 13. Sewers 24 inches or less are designed with straight alignment between manholes. Where curvilinear sewers are proposed for sewers greater than 24 inches, the design specifies compression joints; ASTM or specific pipe manufacturer's maximum allowable pipe joint deflection limits are not exceeded; and curvilinear sewers are limited to simple curves which start and end at manholes. [RSWF 33.5]

X 14. Suitable couplings complying with ASTM specifications are required for joining dissimilar materials. [RSWF 33.7]

X 15. Sewers are designed to prevent damage from superimposed loads. [RSWF 33.7]

X 16. Appropriate specifications for the pipe and methods of bedding and backfilling are provided so as not to damage the pipe or its joints, impede cleaning operations and future tapping, nor create excessive side fill pressures and ovalation of the pipe, nor seriously impair flow capacity. [RSWF 33.81]

X 17. Appropriate deflection tests are specified for all flexible pipe. Testing is required after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system. Testing requirements specify: 1) no pipe shall exceed a deflection of 5%; 2) using a rigid ball or mandrel for the deflection test with a diameter not less than 95% of the base inside diameter or average inside diameter of the pipe, depending on which is specified in the ASTM specification, including the appendix, to which the pipe is manufactured; and 3) performing the test without mechanical pulling devices. [RSWF 33.85]

X 18. Leakage tests are specified requiring that: 1) the leakage exfiltration or infiltration does not exceed 200 gallons per inch of pipe diameter per mile per day for any section of the system; 2) exfiltration or infiltration tests be performed with a minimum positive head of 2 feet; and 3) air tests, as a minimum, conform to the test procedure described in ASTM G 828 for clay pipe, ASTM C 924 for concrete pipe, ASTM F-1417 for plastic pipe, and for other materials appropriate test procedures. [RSWF 33.93, 33.94, and 33.95]

X 19. If an inverted siphon is proposed, documentation of its need is provided in Part II.C. Inverted siphons are designed with: 1) at least two barrels; 2) a minimum pipe size of 6 inches; 3) necessary appurtenances for maintenance, convenient flushing, and cleaning equipment; and 4) inlet and discharge structures having adequate clearances for cleaning equipment, inspection, and flushing. Design provides sufficient head and appropriate pipe sizes to secure velocities of at least 3.0 fps for design average flows. The inlet and outlet are designed so that the design average flow may be diverted to one barrel, and that either barrel may be cut out of service for cleaning. [RSWF 35]

Manholes

X 20. The project is designed with manholes at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet for sewers 15 inches or less and 500 feet for sewers 18 inches to 30 inches, except in the case where adequate modern cleaning equipment is available at distances not greater than 600 feet. [RSWF 34.1]

X 21. Design requires drop pipes to be provided for sewers entering manholes at elevations of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert is designed with a fillet to prevent solids deposition. Inside drop connections (whennecessary) are designed to be secured to the interior wall of the manhole and provide access for cleaning. Design requires the entire outside drop connection be encased in concrete. [RSWF 34.2]

X 22. Manholes are designed with a minimum diameter of 48 inches and a minimum access diameter of 22 inches. [RSWF 34.3]

X 23. Design requires that a bench be provided on each side of any manhole channel when the pipe diameter(s) are less than the manhole diameter and that no lateral sewer, service connection, or drop manhole pipe discharges onto the surface of the bench. [RSWF 34.5]

X 24. Design requires: 1) manhole lift holes and grade adjustment rings be sealed with non-shrinking mortar or other appropriate material; 2) inlet and outlet pipes be joined to the manhole with a gasketed flexible watertight connection or another watertight connection arrangement that allows differential settlement of the pipe and manhole wall; and 3) watertight manhole covers be used wherever the manhole tops may be flooded by street runoff or high water. [RSWF 34.6]

X 25. Manhole inspection and testing for watertightness or damage prior to placing into service are specified. Air testing, if specified for concrete sewer manholes, conforms to the test procedures described in ASTM C-1244. [RSWF 34.7]

X 26. Electrical equipment specified for use in manholes is consistent with Item 46 of this checklist. [RSWF 34.9]

Stream Crossings

X 27. Sewers and force mains entering or crossing streams are designed to be constructed of ductile iron pipe with mechanical joints or so they will remain watertight and free from changes in alignment or grade. Appropriate materials which will not readily erode, cause siltation, damage pipe during placement, or corrode the pipe are specified to backfill the trench. [RSWF 36.21 and 48.5]

X 28. Stream crossings are designed to incorporate valves or other flow regulating devices (which may include pump stations) on the shoreline or at such distances form the shoreline to prevent discharge in the event the line is damaged. [62 604.400(2)(k)5., F.A.C.]

X 29. Sewers and force mains entering or crossing streams are designed at a sufficient depth below the natural bottom of the stream bed to protect the line. At a minimum, the project is designed with subaqueous lines to be buried at least three feet below the design or actual bottom, whichever is deeper, of a canal and other dredged waterway or the natural bottom of streams, rivers, estuaries, bays, and other natural water bodies; or if it is not practicable to design the project with less than three-foot minimum cover, alternative construction features (e.g. a concrete cap, sleeve, or some other properly engineered device to insure adequate protection of the line) are described in Part II.C. [62-604.400(2)(k)1., F.A.C., and RSWF 36.11]

X 30. Specifications require permanent warning signs be placed on the banks of canals, streams, and rivers clearly identifying the nature and location (including depths below design or natural bottom) of subaqueous crossings and suitably fixed signs be placed at the shore, for subaqueous crossings of lakes, bays, and other large bodies of water, and in any area where anchoring is normally expected. [62-604.400(2)(k)2., F.A.C.]

X 31. Provisions for testing the integrity of subaqueous lines are specified. [62-604.400(2)(k)4., F.A.C.]

X 32. Supports are designed for all joints in pipes utilized for aerial crossings and to prevent overturning and settlement. Expansion jointing is specified between above ground and below ground sewers and force mains. The design considers the impact of floodwaters and debris. [RSWF 37 and 48.5]

X 33. Aerial crossings are designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property owners. [62-604.400(2)(k)3., F.A.C.]

Pump Stations

34. In areas with high water tables, pump stations are designed to withstand flotation forces when empty. When siting the pump station, the design considers the potential for damage or interruption of operation because of flooding. Pump station structures and electrical and mechanical equipment are designed to be protected from physical damage by the 100-year flood. Pump stations are designed to remain fully operational and accessible during the 25-year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. [62-604.400(2)(e), F.A.C.]

35. Pump stations are designed to be readily accessible by maintenance vehicles during all weather conditions. [RSWF 41.2]

36. Wet well and pump station piping is designed to avoid operational problems from the accumulation of grit. [RSWF 41.3]

X 37. Dry wells, including their superstructure, are designed to be completely separated from the wet well. Common walls are designed to be gas tight. [RSWF 42.21]

38. The design includes provisions to facilitate removing pumps, motors, and other mechanical and electrical equipment. [RSWF 42.22]

X 39. The design includes provisions for: 1) suitable and safe means of access for persons wearing selfcontained breathing apparatus are provided to dry wells, and to wet wells; 2) stairway access to wet wells more than 4 feet deep containing either bar screens or mechanical equipment requiring inspection or maintenance; 3) for builtin-place pump stations, a stairway to the dry well with rest landings at vertical intervals not to exceed 12 feet; 4) for factory-built pump stations over 15 feet deep, a rigidly fixed landing at vertical intervals not to exceed 10 feet unless a manlift or elevator is provided; and 5) where a landing is used, a suitable and rigidly fixed barrier to prevent an individual from falling past the intermediate landing to a lower level. If a manlift or elevator is provided, emergency access is included in the design. [RSWF 42.23]

40. Specified construction materials are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. [RSWF 42.25]

41. Except for low-pressure grinder or STEP systems, multiple pumps are specified, and each pump has an individual intake. Where only two units are specified, they are of the same size. Specified units have capacity such that, with any unit out of service, the remaining units will have capacity to handle the design peak hourlyflow. [RSWF 42.31 and 42.36]

X 42. Bar racks are specified for pumps handling wastewater from 30 inch or larger diameter sewers. Where a bar rack is specified, a mechanical hoist is also provided. The design includes provisions for appropriate protection fom clogging for small pump stations. [RSWF 42.322]

X 43. Pumps handling raw wastewater are designed to pass spheres of at least 3 inches in diameter. Pump suction and discharge openings are designed to be at least 4 inches in diameter. [RSWF 42.33] (Note, this provision is not applicable to grinder pumps.)

44. The design requires pumps be placed such that under normal operating conditions they will operate under a positive suction head, unless pumps are suction-lift pumps. [RSWF 42.34]

45. The design requires: 1) pump stations be protected from lightning and transient voltage surges; and 2) pump stations be equipped with lighting arrestors, surge capacitors, or other similar protection devices and phase protection. Note, pump stations serving a single building are not required to provide surge protection devices if not necessary to protect the pump station. [62-604.400(2)(b), F.A.C.]

46. The design requires 1) electrical systems and components (e.g., motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, comply with the National Electrical Code requirements for Class I Group D, Division 1 locations; 2) electrical equipment located in wet wells be suitable for use under corrosive conditions; 3) each flexible cable be provided with a watertight seal and separate strain relief; 4) a fused disconnect switch located above ground be provided for the main power feed for all pump stations; 5) electrical equipment exposed to weather to meet the requirements of weatherproof equipment NEMA 3R or 4; 6) a 110 volt power receptacle to facilitate maintenance be provided inside the control panel for pump stations that have control panels outdoors; and 7) ground fault interruption protection be provided for all outdoor outlets. [RSWF 42.35]

X 47. The design requires a sump pump equipped with dual check valves be provided in dry wells to remove leakage or drainage with discharge above the maximum high water level of the wet well. [RSWF 42.37]

X 48. Pump station design capacities are based on the peak hourly flow and are adequate to maintain a minimum velocity of 2 feet per second in the force main. [RSWF 42.38]

49. The design includes provisions to automatically alternate the pumps in use. [RSWF 42.4]

50. The design requires: 1) suitable shutoff valves be placed on the suction line of dry pit pumps; 2) suitable shutoff and check valves be placed on the discharge line of each pump (excepton screw pumps); 3) a check valve be located between the shutoff valve and the pump; 4) check valves be suitable for the material being handled; 5) check valves be placed on the horizontal portion of discharge piping (except for ball checks, which may beplaced in the vertical run); 6) all valves be capable of withstanding normal pressure and water hammer; and 7) all shutoff and check valves be operable from the floor level and accessible for maintenance. [RSWF 42.5]

51. ~~The effective volume of wet wells isbased on design average flows and a filling time not to exceed 30 minutes unless the~~ facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations were utilized in selecting the minimum cycle time. [RSWF 42.62]

X 52. The design requires wet well floors have a minimum slope of 1 to 1 to the hopper bottom and the horizontal area of hopper bottoms be no greater than necessary for proper installation and function of the inlet. [RSWF 42.63]

X 53. For covered wet wells, the design provides for air displacement to the atmosphere, such as an inverted "j" tube or other means. [RSWF 42.64]

X 54. The design provides for adequate ventilation all pump stations; mechanical ventilation where the dry well is below the ground surface; permanently installed ventilation if screens or mechanical equipment requiring maintenance or inspection are located in the wet well. Pump stations are designed with no interconnection between the wet well and dry well ventilation systems. [RSWF 42.71]

X 55. The design requires all intermittently operated ventilation equipment to be interconnected with the respective pit lighting system and the manual lighting/ventilation switch to override the automatic controls. [RSWF 42.73]

X 56. The design requires the fan wheels of ventilation systems be fabricated from non-sparking material and automatic heating and dehumidification equipment be provided in all dry wells. [RSWF 42.74]

X 57. If wet well ventilation is continuous, design provides for at least 12 complete 100% fresh air changes per hour; if wet well ventilation is intermittent, design provides for at least 30 complete 100% fresh air changes per hour; and design requires air to be forced into wet wells by mechanical means rather than solely exhausted from the wet well. [RSWF 42.75]

X 58. If dry well ventilation is continuous, design provides at least 6 complete 100% fresh air changes per hour; and dry well ventilation is intermittent, design provides for at least 30 complete 100% fresh air changes per hour, unless a system of two speed ventilation with an initial ventilation rate of 30 changes per hour for 10 minutes and automatic switch over to 6 changes per hour is used to conserve heat. [RSWF 42.76]

59. Pump stations are designed and located on the site to minimize adverse effects fom odors, noise, and lighting. [62-604.400(2)(c), F.A.C.]

60. The design requires pump stations be enclosed with a fence or otherwise designed with appropriate features to discourage the entry of animals and unauthorized persons. Posting of an unobstructed sign made of durable weather resistant material at a location visible to the public with a telephone number for a point of contact in case of emergency is specified. [62-604.400(2)(d), F.A.C.]

61. The design requires suitable devices for measuring wastewater flow at all pump stations. Indicating, totalizing, and recording flow measurement are specified for pump stations with a 1200 gpm or greater design peak flow. [RSWF 42.8]

62. The project is designed with no physical connections between any potable water supplies and pump stations. If a potable water supply is brought to a station, reduced-pressure principle backflow-prevention assemblies are specified. [RSWF 42.9 and 62-555.30(4), F.A.C.]

Additional Items to be Completed for Suction-Lift Pump Stations

X 63. The design requires all suction-lift pumps to be either self-priming or vacuum-priming and the combined total of dynamic suction-lift at the "pump off" elevation and required net positive suction head at design operating conditions not to exceed 22 feet. For self-priming pumps, the design requires: 1) pumps be capable of rapid priming and repriming at the "lead pump on" elevation with self-priming and repriming accomplished automatically under design operating conditions; 2) suction piping not to exceed the size of the pump suction or 25 feet in total length; and 3) priming lift at the "lead pump on" elevation to include a safety factor of at least 4 feet from the maximum allowable priming lift for the specific equipment at design operating conditions. For vacuum-priming pump stations, the design requires dual vacuum pumps capable of automatically and completely removing air from the suction-lift pumps and the vacuum pumps be adequately protected from damage due to wastewater. [RSWF 43.1]

X 64. The design requires: 1) suction-lift pump equipment compartments to be above grade or offset and to be effectively isolated from the wet well to prevent a hazardous and corrosive sewer atmosphere from entering the equipment compartment; 2) wet well access not to be through the equipment compartment and to be at least 24 inches in diameter; 3) gasketed replacement plates be provided to cover the opening to the wet well for pump units to be remove for service; and 4) no valving be located in the wet well. [RSWF 43.2]

Additional Items to be Completed for Submersible Pump Stations

65. Submersible pumps and motors are designed specifically for raw wastewater use, including totally submerged operation during a portion of each pump cycle and to meet the requirements of the National Electrical Code for such units. Provisions for detecting shaft seal failure or potential seal failure are included in the design. [RSWF 44.1]
66. The design requires submersible pumps be readily removable and replaceable without dewatering the wet wellor disconnecting any piping in the wet well. [RSWF 44.2]
67. In submersible pump stations, electrical supply, control, and alarm circuits are designed to provide strain relief; to allow disconnection from outside the wet well; and to protect terminals and connectors from corrosion by location outside the wet well or through use of watertight seals. [RSWF 44.31]
68. In submersible pump stations, the design requires the motor control center to be located outside the wet well, readily accessible, and protected by a conduit seal or other appropriate measures meeting the requirements of the National Electrical Code, to prevent the atmosphere of the wet well from gaining access to the control center. If a seal is specified, the motor can be removed and electrically disconnected without disturbing the seal. The design requires control equipment exposed to weather to meet the requirements of weatherproof equipment NEMA 3R or 4. [RSWF 44.32]
69. In submersible pump stations, the design requires: 1) pump motor power cordsbe flexible and serviceable under conditions of extra hard usage and to meet the requirements of the National Electrical Code standards for flexible cords in wastewater pump stations; 2) ground fault interruption protection be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable; and 3) power cord terminal fittings be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, provided with strain relief appurtenances, anddesigned to facilitate field connecting. [RSWF 44.33]
70. In submersible pump stations, the design requires all shut-off and check valves be located in a separate valve pit. Provisions to remove or drain accumulated water from the valve pit are included inthe design. [RSWF 44.4]

Emergency Operations for Pump Stations

71. Pump stations are designed with an alarm system which activates in cases of power failure, sump pump failure, pump failure, unauthorized entry, or any cause of pump station malfunction. Pump station alarms are designed to be telemetered to a facility that is manned 24 hours a day. If such a facility is not available and a 24-hour holding capacity is not provided, the alarm is designed to be telemetered to utility offices during normal working hours and to the home of the responsible person(s) in charge of the lift station during off-duty hours. Note, if an audio-visual alarm system with a self-contained power supply is provided in lieu of a telemetered system, documentation is provided in Part II.C. showing an equivalent level of reliability and public health protection. [RSWF 45]
72. The design requires emergency pumping capability be provided for all pump stations. For pump stations that receive flow from one or more pump stations through a force main or pump stations discharging through pipes 12 inches or larger, the design requires uninterrupted pumping capability be provided, including an in-place emergency generator. Where portable pumping and/or generating equipment or manual transfer is used, the design includes sufficient storage capacity with an alarm system to allow time for detection of pump station failure and transportation and connection of emergency equipment. [62-604.400(2)(a)1. and 2., F.A.C., and RSWF 46.423 and 46.433]
73. The design requires: 1) emergency standby systems to have sufficient capacity to start up and maintain the total rated running capacity of the station, including lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation; 2) special sequencing controls be provided to start pump motors unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating; 3) a riser from the force main with rapid connection capabilities and appropriate valving be provided for all pump stations to hook up portable pumps; and 4) all pump station reliability design features be compatible with the available temporary service power generating and pumping equipment of the authority responsible for operation and maintenance of the collection/transmission system. [62-604.400(2)(a)3., F.A.C., and RSWF 46.431]
74. The design provides for emergency equipment to be protected from operation conditions that would result in damage to the equipment and from damage at the restoration of regular electrical power. [RSWF 46.411, 46.417, and 46.432]

X 75. For permanently-installed internal combustion engines, underground fuel storage and piping facilities are designed in accordance with applicable state and federal regulations; and the design requires engines to be located above grade with adequate ventilation of fuel vapors and exhaust gases. [RSWF 46.414 and46.415]

X 76. For permanently-installed or portable engine-driven pumps are used, the design includes provisions for manual start-up. [RSWF 46.422]

X 77. Where independent substations are used for emergency power, each separate substation and its associated transmission line is designed to be capable of starting and operating the pump station at its rated capacity. [RSWF 46.44]

Force Mains

X 78. Force mains are designed to maintain, at design pumping rates, a cleansing velocity of at least 2 feet per second. The minimum force main diameter specified for raw wastewater is not less than 4 inches. [RSWF 48.1]

GME 79. The design requires: 1) branches of intersecting force mains be provided with appropriate valves such that one branch may shut down for maintenance and repair without interrupting the flow of other branches; and 2) stubouts on force mains, plac in anticipation of future connections, be equipped with a valve to allow such connection without interruption of service. [6: 604.400(2)(f), F.A.C.]

GME 80. The design requires air relief valves be placed at high points in the force main to prevent air locking. [RSWF 48.2]

GME 81. Specified force main pipe and joints are equal to water main strength materials suitable for design conditions. The force main, reaction blocking, and station piping are designed to withstand water hammer pressures and stresses associated with cycling of wastewater pump stations. [RSWF 48.4]

GME 82. When the Hazen and Williams formula is used to calculate friction losses through force mains, the value for "C" is 100 for unlined iron or steel pipe for design. For other smooth pipe materials, such as PVC, polyethylene, lined ductile iron, the value for C does not exceed 120 for design. [RSWF 48.61]

GME 83. Where force mains are constructed of material, which might cause the force main to be confused with potable water mains, specifications require the force main to be clearly identified. [RSWF 48.7]

GME 84. Leakage tests for force mains are specified including testing methods and leakage limits. [RSWF 48.8]

*RSWF = *Recommended Standards for Wastewater Facilities* (1997) as adopted by rule 62-604.300(5)(c), F.A.C.

B. Explanation for Requirements or Standards Marked "X" in II(5)A. Above (Attach additional sheets if necessary):

The proposed system consists of an above ground pump ststion pumping at 40GPM through a 4" force main. There are no manholes.
The proposed pipe does not cross any streams.
The proposed system is pumping filtered water with no solids, therefore 2FPS cleaning velocity is not needed.

PART III - CERTIFICATIONS

(1) Collection/Transmission System Permittee

I, the undersigned owner or authorized representative* of PBS&J am fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge a belief. I agree to retain the design engineer or another professional engineer registered in Florida, to conduct on-site observation of construction, prepare a certification of completion of construction, and to review record drawings for adequacy. Further, I agree to provide an appropriate operat and maintenance manual for the facilities pursuant to Rule 62-604.500(4), F.A.C., and to retain a professional engineer registered in Florida examine (or to prepare if desired) the manual. I am fully aware that Department approval must be obtained before this project is placed into serv for any purpose other than testing for leaks and testing equipment operation.

Signed ______________________ Date ______________________
Name Frank Coggins Title Project Manager
Attach a letter of authorization.

(2) Owner of Collection/Transmission System

I, the undersigned owner or authorized representative* of Sarasota County Utilities certify that we will be the Owner of this project after it is placed into service. I agree that we will operate and maintain this project in a manner that will comply with applicable Department rules. Also I agree that we will promptly notify the Department if we sell or legally transfer ownership of this project.

Signed ______ Date ______
Name MIKE MEHAN, PE Title General Manager- Sarasota County Utilities
Company Name Sarasota County
Address 1301 CATTLEMEN ROAD
City Sarasota State Florida Zip 34232
Telephone 941-650-2050 Fax ______ Email MMEHAN@SCGOV.NET
Attach a letter of authorization.

(3) Wastewater Facility Serving Collection/Transmission System**

If this is a Notice of Intent to use a general permit, check here:

☑ The undersigned owner or authorized representative* of the CITY OF VENICE WWTP wastewater facility hereby certifies that the above referenced facility has the capacity to receive the wastewater generated by the proposed collection system; is in compliance with the capacity analysis report requirements of Rule 62-600.405, F.A.C.; is not under a Department order associated with effluent violations or the ability to treat wastewater adequately; and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

If this is an application for an individual permit, check one:

☐ The undersigned owner or authorized representative* of the ______ wastewater facility hereby certifies that the above referenced facility has and will have adequate reserve capacity to accept the flow from this project and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

☐ The undersigned owner or authorized representative* of the ______ wastewater facility hereby certifies that the above referenced facility currently does not have, but will have prior to placing the proposed project into operation, adequate reserve capacity to accept the flow from this project and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

Name of Treatment Plant Serving Project City of Venice Wastewater Treatment Plant
County Sarasota City Venice
DEP permit number FL 0041441 Expiration Date 4/24/05 Extended
Maximum monthly average daily flow over the last 12 month period 3.590 MGD Month(s) used feb-05
Maximum three-month average daily flow over the last 12 month period 3.259 MGD Month(s) used Dec.04, Jan 05
Current permitted capacity 6MGD MGD ☐ AADF ☐ MADF ☒ TMADF
Current outstanding flow commitments (including this project) against treatment plant capacity: Unknown

Signed ______ Date 7/5/05
Name R Christopher Sharek PE Title Utilities Manager
Address 200 N. Warfield Avenue
City Venice State Florida Zip 34292
Telephone 941480-3333 ext 224 Fax 941486-2084 Email csharek@ci.venicefl.us
Attach a letter of authorization.
*** If there is an intermediate collection system, a letter shall be attached certifying that the intermediate downstream collection system has adequate reserve capacity to accept the flow from this project.*

(4) Professional Engineer Registered in Florida

I, the undersigned professional engineer registered in Florida, certify that I am in responsible charge of the preparation and production of engineering documents for this project; that plans and specifications for this project have been completed; that I have expertise in the design of wastewater collection/transmission systems; and that, to the best of my knowledge and belief, the engineering design for this project complies with the requirements of Chapter 62-604, F.A.C.

(Affix Seal)

Signed
Date 6/1/05

Name John M. Eash, P.E. Florida Registration No. 46235
Company Name PBS&J
Address 2803 Fruitville Road, Suite 130
City Sarasota State Florida Zip 34237
Telephone 954-4036 Fax 951-1477 Email jmeash@pbsj.com
Portion of Project for Which Responsible Pipe Layout

(Affix Seal)

Signed
Date 6/1/05

Name Dave A. Weber, P.E. Florida Registration No. 29323
Company Name PBS&J
Address 2803 Fruitville Road, Suite 130
City Sarasota State Florida Zip 34237
Telephone 954-4036 Fax 951-1477 Email DAWeber@pbsj.com
Portion of Project for Which Responsible Pump Station

(Affix Seal)

Signed
Date

Name Florida Registration No.
Company Name
Address
City State Zip
Telephone Fax Email
Portion of Project for Which Responsible

ATTACHMENT L-7

LEACHATE TANK INSPECTION REPORT

p.a. wingler, p.e.
Professional Engineer

FILE COPY

March 15, 2005

Susan Pelz, P.E.
Department of Environmental Protection
Solid Waste Section - S W District
3804 Coconut Palm Drive
Tampa, Florida 33619

Re: Central County Solid Waste Disposal Complex
Sarasota, Florida
Concrete Tank Evaluation

Dear Ms. Pelz:

The subject leachate was inspected March 7, 2005. An inspection was conducted on the walls and portions of the floors to assess the condition of the tank.

History

The Crom Corporation built the 1.8 MG tank in 1997 (Crom's Job Number 9736). The reservoir is a complete tank within a tank. The outer tank or secondary containment vessel is 130"-0" diameter with a 21' high 6" wall. The inner tank, which sits on a stone subgrade within the outer tank, is 100'-0" diameter with a 30' high 8" wall. The inner and outer tank floors are cast concrete 5" and 4" thick, respectively. The walls of both tanks are shotcrete which contains a steel shell diaphragm.

Inspection

The exterior wall surface of the outer tank has a few minor shrinkage cracks. These cracks are cosmetic in nature and do not affect the tank's integrity. The interior wall was sounded and no hollows or delaminations were detected. The floor does not exhibit characteristics associated with settlement of the subgrade.

The inner and outer surface of the inner tank wall do not exhibit any cracks and the protective coatings are intact.

March 15, 2005

Recommendations

An in depth evaluation of the tank protective coatings should be conducted at the next inspection in order to determine their integrity. Coatings have a finite life and at some point they should be replaced to offset the aggressive leachate.

If you have any questions, please feel free to give me a call at (941) 861-1578.

Sincerely,

PA Wingler

Paul A. Wingler, P.E.
Project Manager

cc. Frank Coggins, *Manager, Solid Waste* C✓
Don Shaulis, *Operations Supervisor*
Chip Harden, Onyx Waste

ATTACHMENT L-8

LEACHATE PUMP DATA FORM

and

METERING MANHOLE DATA FORM

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE I LEACHATE COLLECTION

DAILY PUMP METER LOG

DATE	TIME	CELL NO. 1			CELL NO. 2			CELL NO. 3			CELL NO. 4			CELL NO. 5		
		Level	Flowmeter	Hours	Level	Flowmeter	Hours	Level	Flowmeter	Hours	Level	Flowmeter	Hours	Level	Flowmeter	Hours
1																
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CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE II LEACHATE COLLECTION

DAILY PUMP METER LOG

DATE	TIME	PUMP STATION PUMP NO. 1			PUMP STATION PUMP NO. 2			RECIRCULATION PUMP NO. 1		
		LEVEL	FLOWMETER	HOURS	LEVEL	FLOWMETER	HOURS	LEVEL	FLOWMETER	HOURS
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CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE II LEACHATE COLLECTION

METERING MANHOLE LOG

DATE	TIME	CELL NO. 1			CELL NO. 2			CELL NO. 3			CELL NO. 4		
		Level	Instantaneous Flow	Totalized Flow	Level	Instantaneous Flow	Totalized Flow	Level	Instantaneous Flow	Totalized Flow	Level	Instantaneous Flow	Totalized Flow
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ATTACHMENT L-9

LABORATORY CERTIFICATION

FLORIDA DEPARTMENT OF HEALTH

State of Florida
Department of Health, Bureau of Laboratories

This is to certify that

E83079
ELAB, INC.
8 EAST TOWER CIRCLE
ORMOND BEACH, FL 32174

has complied with Florida Administrative Code 64E-1,
for the examination of Environmental samples in the following categories

DRINKING WATER - GROUP I UNREGULATED CONTAMINANTS, DRINKING WATER - SYNTHETIC ORGANIC CONTAMINANTS, DRINKING WATER - GROUP II UNREGULATED CONTAMINANTS, DRINKING WATER - OTHER REGULATED CONTAMINANTS, DRINKING WATER - GROUP III UNREGULATED CONTAMINANTS, DRINKING WATER - MICROBIOLOGY, DRINKING WATER - PRIMARY INORGANIC CONTAMINANTS, DRINKING WATER - SECONDARY INORGANIC CONTAMINANTS, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - MICROBIOLOGY, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - MICROBIOLOGY, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS, BIOLOGICAL TISSUE - METALS, BIOLOGICAL TISSUE - PESTICIDES-HERBICIDES-PCB'S

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

EFFECTIVE August 21, 2006 THROUGH June 30, 2007

Dian Sharma, Ph.D.
Acting Chief, Bureau of Laboratories
Florida Department of Health
DH Form 1697, 7/04
NON-TRANSFERABLE E83079-07-8/21/2006
Supersedes all previously issued certificates

ATTACHMENT L-10

INITIAL COVER SPECIFICATIONS

ATTACHMENT L-10

INITIAL COVER SPECIFICATIONS

Materials approved for use as initial cover shall include soils as well as the following:

- Waste tires that have been cut into sufficiently small parts, which means that 70 percent of the waste tire materials cut into pieces of 4 square inches or less and 100 percent of the waste tire material is 32 square inches or less, and applied in a six (6) inch compacted layer, may be used as initial cover within the bermed working area.
- Composted yard trash, unscreened, and then mixed in the ratio of 50 percent unscreened compost to 50 percent soil, and applied in a six (6) inch compacted layer may be used as initial cover within the bermed working area. Ninety percent of the unscreened compost shall pass through a 3/4 inch screen prior to mixing with soil.
- Shredded asphalt roofing shingles, screened through a 1 inch mesh, and then mixed in the ratio of 50 percent shredded shingles to 50 percent soil, and applied in a six (6) inch compacted layer may be used as initial cover within the bermed working area.
- Ground-up construction and demolition debris, unscreened, and applied in a six (6) inch compacted layer, may be used as initial cover within the bermed working area. Ninety percent of the unscreened ground-up debris shall pass a 2 inch screen and 50 percent shall pass a ¼ inch screen.
- Composted yard trash, screened through ½ inch mesh, and then mixed in the ratio of 75 percent screened compost to 25 percent soil, and applied in a six (6) inch compacted layer may be used as initial cover, or applied in a one (1) foot compacted layer in addition to the six (6) inch initial cover may be used as intermediate cover.
- A mixture of yard trash mulch and soil such that the mixture will achieve the following: 100 percent passes 2 inch screen, 85 percent passes a ¾ inch screen, and 70 percent passes a ¼ inch screen. The mixture shall be applied in a 6-inch compacted layer.

ATTACHMENT L-11

LEACHATE REPORT FORM

AND

LCRS INSPECTION REPORT

SARASOTA COUNTY SOLID WASTE DEPARTMENT
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX – DAILY PRECIPITATION DATA AND LEACHATE BALANCE

DATE	LANDFILL AREA	LANDFILL RAINFALL[1]	RAINFALL IN STORAGE TANK[2]	LEACHATE CELL 1 PUMPED[3]	LEACHATE CELL 2 PUMPED	LEACHATE CELL 3 PUMPED	LEACHATE CELL 4 PUMPED	TOTAL LEACHATE[4]	LEACHATE REMOVED[5]	LEACHATE REUSE	LEACHATE BALANCE[6]	TANK LEVEL	CUMULATIVE STORAGE[7]
	(acres)	(inches)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)		(gallons)	(feet)	(gallons)
1													
2													
3													
4													
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6													
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25													
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30													
31													
TOTAL AVERAGE													

Notes

1 Precipitation recorded at the CCSWDC weather station.

2 Rainfall falling into the leachate storage tank (13,275 square feet area) wich is classified as leachate.

3 Based on flowmeter data, the amound of leachate pumped from the Class I landfill area to the storage tank - Also see table titled Leachate Balance For Each Cell.

4 Sum of rainfall into the storage tank and the leachate pumped from the Class I landfill.

5 Quantity of leachate hauled away based on the flowmeter at the leachate storage tank plus what is used for reuse

6 Total leachate added to the storage tank minus the quantity hauled during a day (daily increase or decrease)

7 Quantity of leachate stored in the tank.

FLORIDA JETCLEAN INC.

HIGH PRESSURE WATER JETTING
VIDEO PIPELINE INSPECTION
NO DIG POINT REPAIRS
WWW.FLORIDAJETCLEAN.COM

19019 FERN MEADOW LOOP
LUTZ, FL 33558
TEL: 800-226-8013 FAX: 813-926-4616

Onyx
Sarasota – Nokomis Landfill

Leachate Collection System Maintenance

Work Performed February 2006

Survey Conducted By:
Florida Jetclean, Inc.
800-226-8013

FEB 1 ~~3~~4 2006

Logged

FLORIDA JETCLEAN INC.

HIGH PRESSURE WATER JETTING
VIDEO PIPELINE INSPECTION
NO DIG POINT REPAIRS
WWW.FLORIDAJETCLEAN.COM

19019 FERN MEADOW LOOP
LUTZ, FL 3355[illegible]
TEL: 800-226-8013 FAX: 813-926-461[illegible]

DATE : 2/7/2006
TO : Chip Harden - Onyx
FROM : Ralph Calistri (floridajetclean@yahoo.com)
SUBJECT : Sarasota – Nokomis Landfill

Florida Jetclean, Inc. has completed the jetcleaning and video inspection work at the above landfill on 2/3/2006. Included with this letter are 3 hard-copy video inspection reports. The video tapes will be mailed directly to you under separate cover.

As the jetting log (below) indicates, all pipes were cleaned end-to-end. The post jetcleaning video inspection shows that all pipes inspected are clean. The leachate collection system appears to flow and drain properly, and looks to be in a sound condition to deliver leachate.

JETCLEANING LOG REPORT

Customer: Onyx - Sarasota - Nokomis Landfill
Purpose: Maintenance related jetcleaning of Leachate Collection System lines.
Date: 2/3/06

Location	Distance Achieved	Result
Cell 1	1,200'	Pipe cleaned end-to-end
Cell 2	1,200'	Pipe cleaned end-to-end
Cell 3	1,200'	Pipe cleaned end-to-end
Cell 4	1,200'	Pipe cleaned end-to-end

Please call us with questions or concerns.

Regards,

Ralph Calistri

Ralph Calistri
Florida Jetclean, Inc.

'CCTV Surveys List for ONYX

Number of surveys in this list is 8 as of Friday, February 03, 2006 Unit of measure: ft

Setup	Date	Street	Start MH	Finish MH	Dir	Scheduled Length	Surveyed Length
1	2/2/2006	CELL 1 NOKOMIS JETTING=1200'	C01SE	CO1NE	D	1,200.0	1088.4
2	2/2/2006	CELL 1 NOKOMIS LANDFILL	CO1NE	C01SE	U	1,200.0	228.8
3	2/2/2006	CELL 2 NOKOMIS JETTING=1200'	C02SE	CO2NE	D	1,200.0	870.7
4	2/2/2006	CELL 2 NOKOMIS LANDFILL	CO2NE	CO2SE	U	1,200.0	411.4
5	2/3/2006	CELL 3 NOKOMIS JETTING=1200'	CO3SE	CO3NE	D	1,200.0	907.4
6	2/3/2006	CELL 3 NOKOMIS LANDFILL	CO3NE	CO3SE	U	1,200.0	350.5
7	2/3/2006	CELL 4 NOKOMIS LANDFILL	CO4NE	CO4SE	U	1,200.0	700.0
8	2/3/2006	CELL 4 NOKOMIS JETTING=12OO'	CO4SE	CO4NE	D	1,200.0	550.7

Total Scheduled Length	9,600.0	
Total Length Surveyed		5,107.9

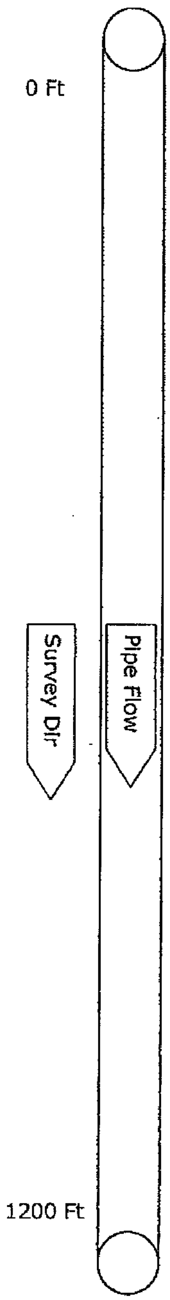
Pipe Graphic Report of PLR C01SE X for ONYX

Work Order		**Contract**		**Video**	1	**Setup**	1
Facility		**Operator**	BMN	**Van Ref**	2	**Surveyed On**	02/02/2006

Street Name	CELL 1 NOKOMIS LANDFILL	**City**	SARASOTA
Location type	LANDFILL		
Surface			
Survey purpose	SAMPLE SURVEY TO DETERMINE ASSET CONDITION	**Weather**	Dry

Pipe Use	LEACHATE	**Schedule length**	1200.0 Ft	**From**	C01SE	**Depth**		Ft
Shape	Circular	**Size**	8 **by** ins	**To**	CO1NE	**Depth**		Ft
Material	HDPE	**Joint spacing**	Ft	**Direction**	Downstream			
Lining		**Year laid**		**Pre-clean**	Y	**Last cleaned**	2/2/2006	

General note	CO1SE=CLEANOUT 1 SOUTH END
Location note	CO1NE-CLEANOUT 1 NORTH END



0.0 Ft Start of Survey
Manhole/Node [C01SE]
Water level 0

41.2 Ft General observation [PERFORATION'S START]

1,088.4 Ft Survey abandoned [LOSS OF TRACTION]

Pipe Graphic Report of PLR C01SE X for ONYX

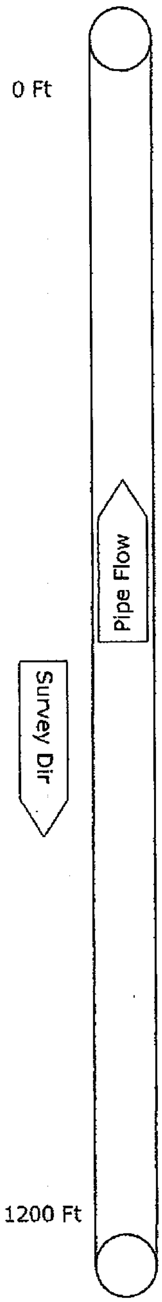
Work Order		**Contract**		**Video**	1	**Setup**	2
Facility		**Operator**	BMN	**Van Ref**	2	**Surveyed On**	02/02/2006

Street Name	CELL 1 NOKOMIS LANDFILL	**City**	SARASOTA
Location type	LANDFILL		
Surface			
Survey purpose	SAMPLE SURVEY TO DETERMINE ASSET CONDITION	**Weather**	Dry

Pipe Use	LEACHATE	**Schedule length**	1200.0 Ft	**From**	CO1NE	**Depth**	Ft
Shape	Circular	**Size**	8 **by** ins	**To**	C01SE	**Depth**	Ft
Material	HDPE	**Joint spacing**	Ft	**Direction**	Upstream		
Lining		**Year laid**		**Pre-clean**	Y	**Last cleaned**	2/2/2006

General note CO1SE=CLEANOUT 1 SOUTH END

Location note CO1NE-CLEANOUT 1 NORTH END



0.0 Ft	Start of Survey Manhole/Node [CO1NE] Water level 0
44.6 Ft	General observation [PERFORATIONS START]
53.2 Ft	Camera under water
66.6 Ft	General observation [OUT OF WATER]
73.2 Ft	Lateral or connection exists OK 03 o'clock [HEADER TO SUMP]
79.3 Ft	Camera under water
117.2 Ft	General observation [OUT OF WATER]
129.4 Ft	Camera under water
154.4 Ft	General observation [OUT OF WATER]
228.8 Ft	Survey abandoned [OVERLAP]

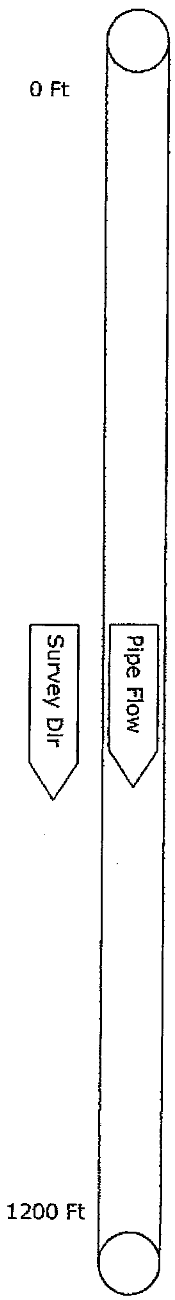
Pipe Graphic Report of PLR C02SE X for ONYX

Work Order		***Contract***		***Video***	1	***Setup***	3
Facility		***Operator***	BMN	***Van Ref***	2	***Surveyed On***	02/02/2006

Street Name CELL 2 NOKOMIS LANDFILL ***City*** SARASOTA
Location type LANDFILL
Surface
Survey purpose SAMPLE SURVEY TO DETERMINE ASSET CONDITION ***Weather*** Dry

Pipe Use	LEACHATE	***Schedule length***	1200.0 Ft	***From***	C02SE	***Depth***	Ft
Shape	Circular	***Size***	8 ***by*** ins	***To***	CO2NE	***Depth***	Ft
Material	HDPE	***Joint spacing***	Ft	***Direction***	Downstream		
Lining		***Year laid***		***Pre-clean***	Y	***Last cleaned***	2/2/2006

General note CO2SE=CLEANOUT 2 SOUTH END
Location note CO2NE-CLEANOUT 2 NORTH END



0.0 Ft	Start of Survey Manhole/Node [C02SE] Water level 0
40.4 Ft	General observation [PEFORATIONS START]
452.7 Ft	General observation [PARTIAL SUBMERGED]
768.5 Ft	Camera under water
794.7 Ft	General observation [OUT OF WATER]
829.4 Ft	Camera under water
839.8 Ft	General observation [OUT OF WATER]
849.0 Ft	Camera under water
870.7 Ft	Survey abandoned [LOSS OF TRACTION]

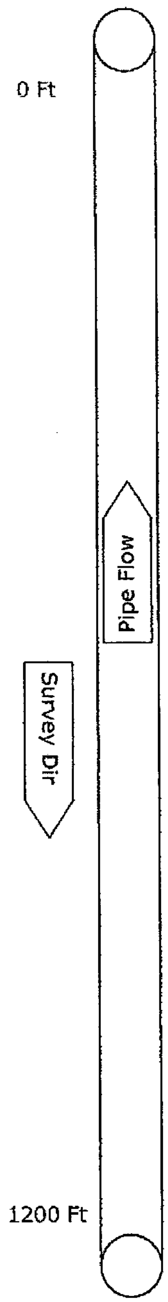
Pipe Graphic Report of PLR CO2SE X for ONYX

Work Order		***Contract***		***Video***	1	***Setup***	4
Facility		***Operator***	BMN	***Van Ref***	2	***Surveyed On***	02/02/2006

Street Name CELL 2 NOKOMIS LANDFILL ***City*** SARASOTA
Location type LANDFILL
Surface
Survey purpose SAMPLE SURVEY TO DETERMINE ASSET CONDITION ***Weather*** Dry

Pipe Use	LEACHATE	***Schedule length***	1200.0 Ft	***From***	CO2NE	***Depth***	Ft
Shape	Circular	***Size*** 8 ***by***	ins	***To***	CO2SE	***Depth***	Ft
Material	HDPE	***Joint spacing***	Ft	***Direction***	Upstream		
Lining		***Year laid***		***Pre-clean***	Y	***Last cleaned***	2/2/2006

General note CO2SE=CLEANOUT 2 SOUTH END
Location note CO2NE-CLEANOUT 2 NORTH END



0.0 Ft	Start of Survey Manhole/Node [CO2NE] Water level 0
41.6 Ft	General observation [PERFORATIONS START]
49.8 Ft	Camera under water
368.8 Ft	Camera under water
402.7 Ft	Camera under water
411.4 Ft	Survey abandoned

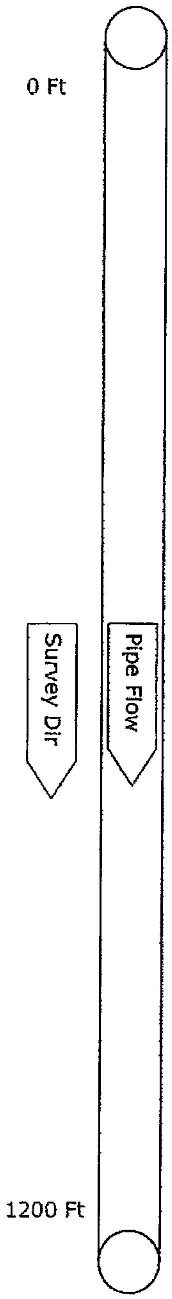
Pipe Graphic Report of PLR CO3SE X for ONYX

Work Order		*Contract*		*Video*	2	*Setup*	5
Facility		*Operator*	BMN	*Van Ref*	2	*Surveyed On*	02/03/2006

Street Name CELL 3 NOKOMIS LANDFILL *City* SARASOTA
Location type LANDFILL
Surface
Survey purpose SAMPLE SURVEY TO DETERMINE ASSET CONDITION *Weather* Dry

Pipe Use	LEACHATE	*Schedule length*	1200.0 Ft	*From*	CO3SE	*Depth*	Ft
Shape	Circular	*Size*	8 *by* ins	*To*	CO3NE	*Depth*	Ft
Material	HDPE	*Joint spacing*	Ft	*Direction*	Downstream		
Lining		*Year laid*		*Pre-clean*	Y	*Last cleaned*	2/2/2006

General note CO3SE=CLEANOUT 3 SOUTH END
Location note CO3NE-CLEANOUT 3 NORTH END



0.0 Ft	Start of Survey Manhole/Node [CO3SE] Water level 0
487.7 Ft	Camera under water
504.4 Ft	General observation [OUT OF WATER]
907.4 Ft	Survey abandoned [LOSS OF TRACTION]

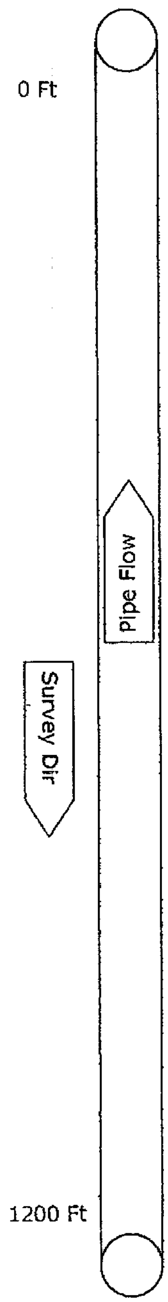
Pipe Graphic Report of PLR CO3SE X for ONYX

Work Order		**Contract**		**Video**	2	**Setup**	6
Facility		**Operator**	BMN	**Van Ref**	2	**Surveyed On**	02/03/2006

Street Name CELL 3 NOKOMIS LANDFILL **City** SARASOTA
Location type LANDFILL
Surface
Survey purpose SAMPLE SURVEY TO DETERMINE ASSET CONDITION **Weather** Dry

Pipe Use	LEACHATE	**Schedule length**	1200.0 Ft	**From**	CO3NE	**Depth**	Ft
Shape	Circular	**Size**	8 **by** ins	**To**	CO3SE	**Depth**	Ft
Material	HDPE	**Joint spacing**	Ft	**Direction**	Upstream		
Lining		**Year laid**		**Pre-clean**	Y	**Last cleaned**	2/2/2006

General note CO3SE=CLEANOUT 3 SOUTH END
Location note CO3NE-CLEANOUT 3 NORTH END



0.0 Ft	Start of Survey Manhole/Node [CO3NE] Water level 0
41.1 Ft	General observation [PERFORATIONS START]
49.9 Ft	Camera under water
100.2 Ft	General observation [OUT OF WATER]
137.5 Ft	Camera under water
173.2 Ft	General observation [OUT OF WATER]
187.2 Ft	Camera under water
205.5 Ft	General observation [OUT OF WATER]
220.2 Ft	Camera under water
319.2 Ft	General observation [OUT OF WATER]
330.2 Ft	Camera under water
350.5 Ft	General observation [OUT OF WATER] Survey abandoned [OVERLAP]

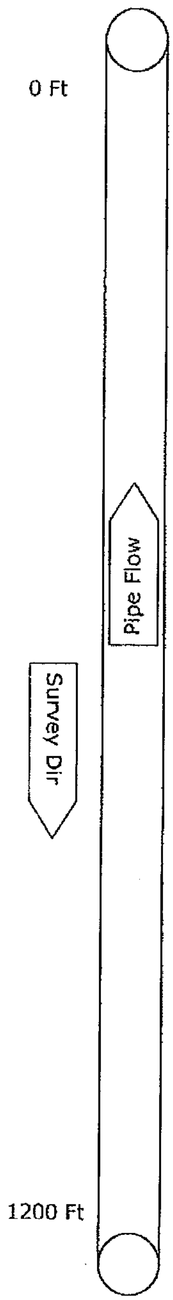
Pipe Graphic Report of PLR CO4SE X **for** ONYX

Work Order		*Contract*		*Video*	2	*Setup*	7
Facility		*Operator*	BMN	*Van Ref*	2	*Surveyed On*	02/03/2006

Street Name	CELL 4 NOKOMIS LANDFILL	*City*	SARASOTA
Location type	LANDFILL		
Surface			
Survey purpose	SAMPLE SURVEY TO DETERMINE ASSET CONDITION	*Weather*	Dry

Pipe Use	LEACHATE	*Schedule length*	1200.0 Ft	*From*	CO4NE	*Depth*		Ft
Shape	Circular	*Size*	8 *by* ins	*To*	CO4SE	*Depth*		Ft
Material	HDPE	*Joint spacing*	Ft	*Direction*	Upstream			
Lining		*Year laid*		*Pre-clean*	Y	*Last cleaned*	2/2/2006	

General note	CO4SE=CLEANOUT 4 SOUTH END
Location note	CO4NE-CLEANOUT 4 NORTH END



0.0 Ft — Start of Survey
Manhole/Node [CO4NE]
Water level 0

43.6 Ft — General observation [PERFORATIONS START]

89.6 Ft — Camera under water

104.5 Ft — General observation [OUT OF WATER]

308.9 Ft — Camera under water

365.8 Ft — General observation [OUT OF WATER]

700.0 Ft — Survey abandoned [LOSS OF TRACTION]

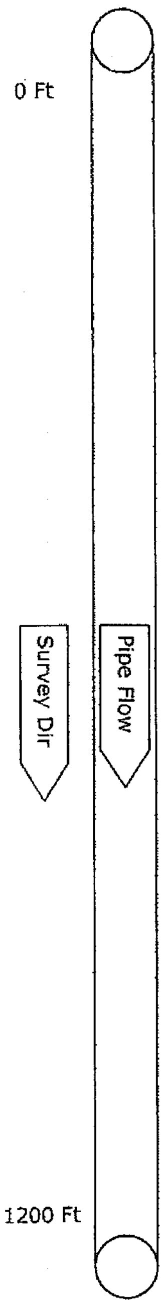
Pipe Graphic Report of PLR CO4SE X for ONYX

Work Order		***Contract***		***Video***	2	***Setup***	8
Facility		***Operator***	BMN	***Van Ref***	2	***Surveyed On***	02/03/2006

Street Name CELL 4 NOKOMIS LANDFILL ***City*** SARASOTA
Location type LANDFILL
Surface
Survey purpose SAMPLE SURVEY TO DETERMINE ASSET CONDITION ***Weather*** Dry

Pipe Use	LEACHATE	***Schedule length***	1200.0 Ft	***From***	CO4SE	***Depth***	Ft
Shape	Circular	***Size***	8 ***by*** ins	***To***	CO4NE	***Depth***	Ft
Material	HDPE	***Joint spacing***	Ft	***Direction***	Downstream		
Lining		***Year laid***		***Pre-clean***	Y	***Last cleaned***	2/2/2006

General note CO4SE=CLEANOUT 4 SOUTH END
Location note CO4NE-CLEANOUT 4 NORTH END



	Start of Survey
0.0 Ft	Manhole/Node [CO4SE]
	Water level 0
36.8 Ft	General observation [PERFORATIONS START]
550.7 Ft	Survey abandoned [OVERLAP]

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ATTACHMENT L-12

FDEP APPROVAL LETTER FOR LEACHATE REUSE

FILE COPY SOLID WASTE OPERATIONS

JAN 20 2000

RECEIVED

Department of
Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

January 18, 2000

Mr. Gary Bennett
Sarasota County
Solid Waste Operations
4000 Knights Trail Road
Nokomis, FL 34275

Re: Leachate Reuse at SCSWDC
Permit #SO58-299180, Sarasota County

Dear Mr. Bennett:

The Department has no objection to the reuse of leachate for dust control (not re-circulation) on active areas as described in your January 12, 2000 letter and operations plan for leachate reuse via truck mounted spraying (attached), subject to the conditions in these referenced letters and attachments. The reuse of leachate for dust control at SCSWDC is considered experimental and over-application should be avoided.

If any inspections disclose problems with this leachate reuse, such as failure to maintain normal operation and prevent ponding and leachate discharge outside the active disposal area, approval may be discontinued. If you have any questions you may call me at (813) 744-6100, extension 382.

Sincerely,

Kim B. Ford, P.E.
Solid Waste Section
Division of Waste Management

KBF/ab
Attachments

cc: Paul Wingler, P.E., Sarasota County
Robert Butera, P.E., FDEP Tampa
Steve Morgan, FDEP Tampa

SOLID WASTE OPERATIONS
JAN 2 0 2000
RECEIVED

D.E.P.
JAN 14 2000
Southwest District Tampa

SARASOTA COUNTY
"Dedicated to Quality Service"

January 12, 2000

Kim B. Ford, P. E.
Florida Department of Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33619-8318

Re: Central County Solid Waste Disposal Complex
Leachate Reuse

Dear Mr. Ford:

Our Contract Landfill Operator, Waste Management has requested leachate reuse as a dust control agent. They have submitted the attached "Operations Plan for Leachate Reuse via Truck Mounted Spraying" which outlines their proposed activity.

We would require the following additional conditions if the proposed activity is acceptable to the Department.

a) Leachate reuse is subject to the acceptance of the Sarasota County Solid Waste Operations Manager or his designee and will be suspended or terminated at his discretion.
b) The leachate reuse management system will operate to prevent the exposure of leachate to the stormwater control network.
c) The truck used for leachate hauling must be thoroughly cleaned before being used for any other watering purpose.
d) The truck tank must be free of leaks. If a leak is discovered the truck must be decommissioned for the purpose of repair.
e) Use of the leachate for dust control must not result in ponding within the authorized operation area of the landfill cell(s).

Sincerely,

Gerald L. Bennett
Solid Waste Operations Manager

GLB:lh
Attachment
c: Anita Largent, General Manager, Solid Waste
Stephen Barton, WM/Englewood Disposal Company
Robert J. Butera, P.E., Florida Department of Environmental Protection, Tampa
Ed Norris, Sarasota Landfill Management

\\CCSWDP\VOL1\USER\shared\projects\Central County Solid Waste Disposal Complex\Landfill Operator\Correspondence\FDEP K. Ford - Leachate Reuse.doc

SOLID WASTE OPERATIONS

JAN 2 0 2000

RECEIVED

asota County Central Solid Waste Disposal Complex
Procedures for Leachate Reuse
Operator: Sarasota Landfill Management

December 6, 1999

SOLID WASTE OPERATIONS

JAN - 4 2000

RECEIVED

Operations Plan for Leachate Reuse via Truck Mounted Spraying

Leachate reuse will be employed for dust control and as a supplemental method to manage leachate. The reuse of leachate involves spraying small quantities of leachate from a spray bar mounted on the rear of a tank-truck onto active fill areas of the landfill. This approach has been used successfully at numerous Class I landfills in Florida. The advantages of this method are the reduction of leachate by evaporation, the promotion of the decomposition of organic matter in the landfilled refuse and dust control.

The landfill operation crew will monitor the rate of leachate application, soil moisture conditions and the specific landfill areas used so that leachate application does not generate run-off. This form of leachate reuse should be acceptable as a supplementary means of leachate management. Leachate may be applied under the following conditions:

- Leachate may only be sprayed on active, bermed fill areas, including the working face, and areas with the required six (6) inches of initial cover.
- Leachate may not be sprayed on areas with intermediate or final cover.
- At all times areas receiving leachate must be controlled to prevent run-off from entering the stormwater system.
- Leachate may not be sprayed when the application area is in a saturated condition.
- The application rate of leachate should be such that leachate does not accumulate on the landfill surface, nor infiltrate quickly into the covered refuse.
- Leachate should not be sprayed at the end of the day on the initial cover of the working face or other areas. Spraying should be done early in the morning after any dew evaporates and continue until early afternoon or until all available areas have been utilized.

The Site Manager will record daily the gallons of leachate sprayed per this method and provide this information to the County on a weekly basis. Leachate reuse will be conducted in strict compliance with these procedures.

ATTACHMENT L-13

LANDFILL RECYCLING PLAN

ATTACHMENT L-13

LANDFILL RECYCLING PLAN

Sarasota County Solid Waste Operations (SWO) segregates the following materials at the Central County Solid Waste Disposal Complex (CCSWDC) for the purpose of recycling these materials:

- Yard Wastes
- White Goods (i.e., household appliances)
- Waste Tires
- Construction and Demolition Wastes
- Batteries
- Waste Oil
- Lawn Mowers
- Electronic Devices

The procedures for managing each of these materials are presented below:

YARD WASTES

Yard wastes are brought to the CCSWDC as segregated loads, either from residential collection vehicles or commercial landscaping contractors. Yard waste loads are directed to the yard waste composting area located south of the Phase I Class I Landfill Area. New yard waste loads are deposited in a designated area of this site.

Bagged yard waste shall not be mulched at the site unless the bags are removed prior to mulching.

The incoming yard waste is stored in a pile until such time that enough material is accumulated to begin processing. Yard waste processing includes size reduction via a tub grinder and screening of the size reduced materials.

Once processing is completed, the resulting yard waste mulch is either placed into windrows for composting or is used by the landfill operations as erosion control and road stabilizing material. The composted material is used on site as a replacement for soil.

Any unprocessed yard trash will be removed from the facility within six months, or within the period required to accumulate 3,000 tons or 12,000 cubic yards, which ever comes first. Processed yard trash will be removed or marketed within 18 months. Yard waste shall be managed in accordance with the facility's yard waste processing facility registration and Rule 62-709.320, F.A.C.

WHITE GOODS

White goods are separated from the waste stream at the point of collection or at the working face of the landfill. White goods are stored in the northeast corner of the yard waste composting area. White goods containing fluids are stored in an upright position until the fluids are removed or the item is picked up for removal from the site. Refrigerants are removed from the items on-site by a contractor licensed to perform this function. White goods that have had fluids and/or refrigerant removed from them will be clearly marked.

The white goods are periodically collected by a steel recycler who transports the materials to a facility that recycles the materials into new steel products.

A maximum of 1,250 (total) white goods and lawn mowers may be stored at the site at any time. The white goods shall be removed from the site at least monthly (every 30 days).

WASTE TIRES

Waste tires are delivered to the CCSWDC in segregated loads. In addition, waste tires are pulled from the working face of the landfill. The waste tires are stored at the Waste Tire Processing Facility located east of the Yard Waste Composting Area. The Waste Tire Processing Facility is permitted by FDEP for storage and processing of waste tires.

Currently the contracted landfill operator is removing waste tires from the site for processing off-site. The tires are shredded and then processed for use in new products. Waste tires may also be processed on site to produce tire chips for use as an alternate daily cover material or as a drainage media for the proposed Phase II leachate recirculation trenches.

Waste tire shall be managed in accordance with Permit NO. 126775-001-WT.

CONSTRUCTION AND DEMOLITION WASTE

Construction and Demolition (C&D) wastes are delivered to the CCSWDC in segregated loads. A specialized contractor operates a permitted C&D waste processing facility located at the CCSWDC, south of the Waste Tire Processing Facility. The contractor screens and sorts C&D waste and resells lumber, cardboard, concrete, and roofing shingles to various users or distributors of these materials.

The maximum quantities of C&D wastes that may be stored at the site, and the schedule for removal from the site, shall be as required under Waste Processing Facility Permit No. 134912-003-SO.

BATTERIES

Waste lead-acid batteries are removed from the working face of the landfill and temporarily stored at the CCSWDC maintenance building on spill containment pallets. The storage area is under a roof and protected from rainfall.

Periodically the waste batteries are collected by a battery recycling company and the various components, mainly lead, are recovered for use in new products.

A maximum of 30 lead acid batteries may be stored on-site at any time. Lead acid batteries shall be removed from the site at least monthly (every 30 days).

WASTE OIL

Waste oil is collected by the solid waste franchise hauler and delivered to the CCSWDC for temporary storage until collected by a waste oil recycler. The waste oil is stored in a secure container near the main entrance to the CCSWDC until collected by the recycler.

Two 250 gallon containers are provided for the storage of waste oil at the entrance to the landfill. Waste oil shall be removed from the site at least monthly (every 30 days).

LAWN MOWERS

Lawn mowers are accepted at the CCSWDC provided that all fluids have been drained. Lawn mowers are managed as white goods. After inspection for fluids, mowers are stored in the white goods area until collected by the white goods recycling contractor.

ELECTRONIC DEVICES

Undamaged television sets, computer and monitors are collected for recycling and stored on a concrete pad until collected and removed from the site by a recycling contractor.

A maximum of 1,000 electronic devices may be stored at the site at any time. Electronics, either damaged or undamaged, shall be removed from the site at least monthly (every 30 days).

ATTACHMENT L-14

PHASE I OPERATION DRAWINGS

Sarasota County

Phase I Class I

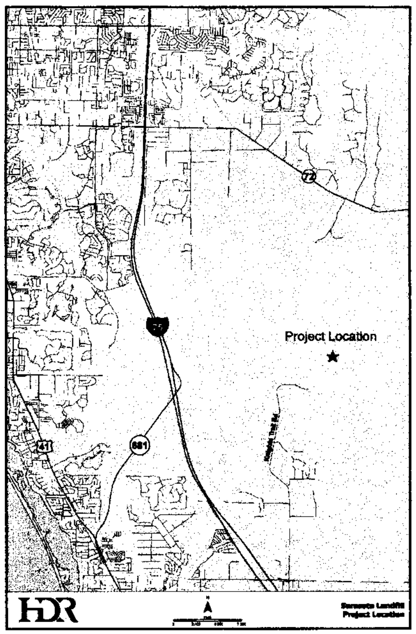
OPERATIONS DRAWINGS

Central County Solid Waste Disposal Complex

Sarasota County, Florida

Project No.
000000000022404-018

Issued for FDEP Minor Permit Modification
JANUARY 2008



PROJECT LOCATION MAP

HDR

HDR Engineering, Inc.

2202 N. WEST SHORE BLVD. SUITE 250
TAMPA, FL 33607-5755
(813) 282-2300
FLORIDA CERTIFICATE OF AUTHORIZATION
NO. 00004213

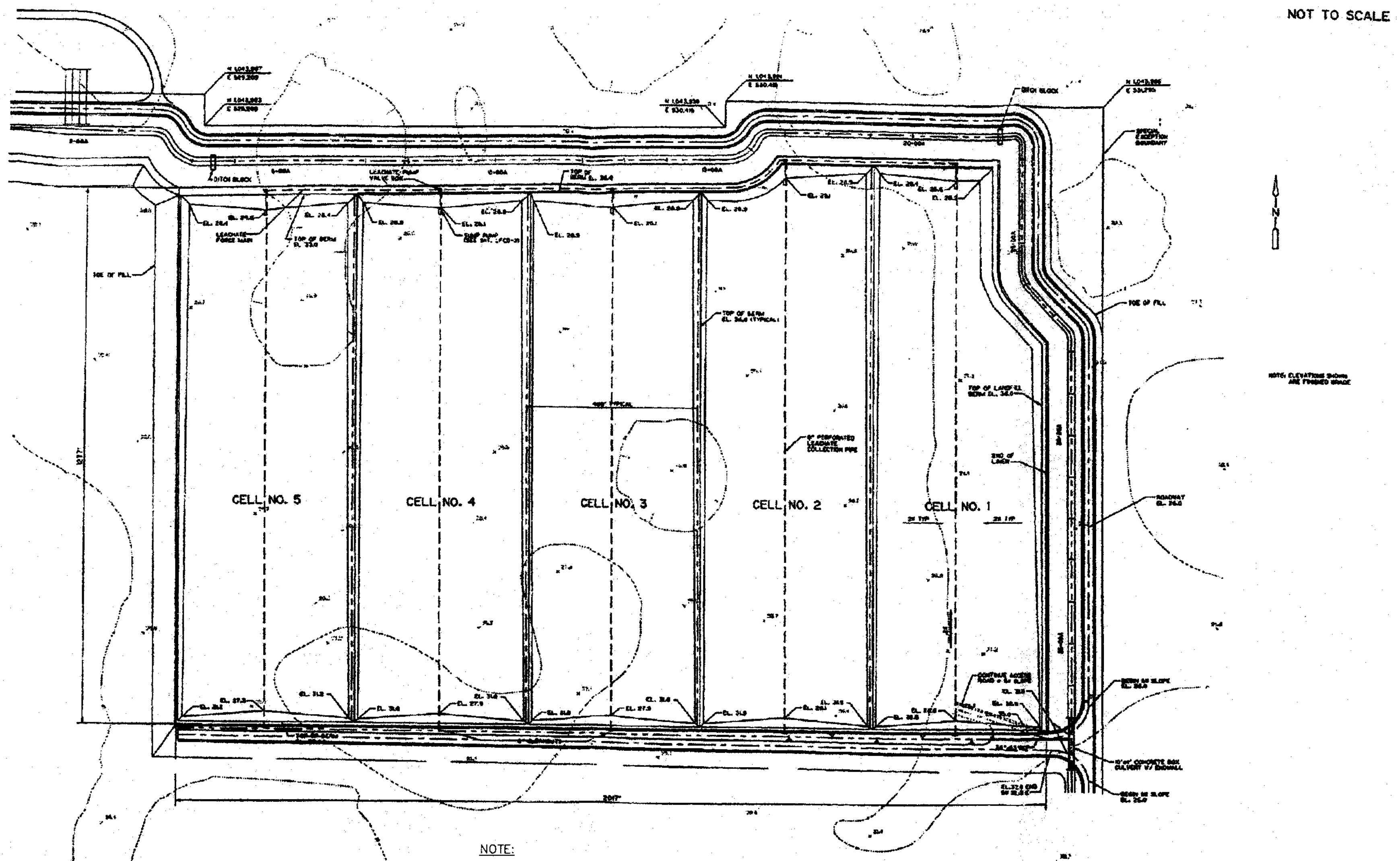
INDEX OF DRAWINGS

NOTE: FDEP APPROVED ORIGINAL OPERATIONS DRAWINGS SIGNED AND SEALED BY SCS ENGINEERS, INCLUDING SHEET NUMBERS 1, 2, 3, 4, 5, 6, 7, 8, 9, 13A, 13B, 14, 15, 16, AND 17 WERE SUBMITTED IN MARCH 2004. ONLY THE REVISED OPERATIONS DRAWINGS PREPARED BY HDR ENGINEERING, INC. INCLUDED IN THIS DRAWING SET HAVE BEEN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.

Thomas M. Yanoschak
01/07/08

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

NOT TO SCALE



NOTE:

THIS MODIFIED DRAWING IS BASED ON
AUGUST 1993 CONSTRUCTION, OPERTAION,
AND CLOSURE PLANS, SHEET NO. LFC-1
FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 39397

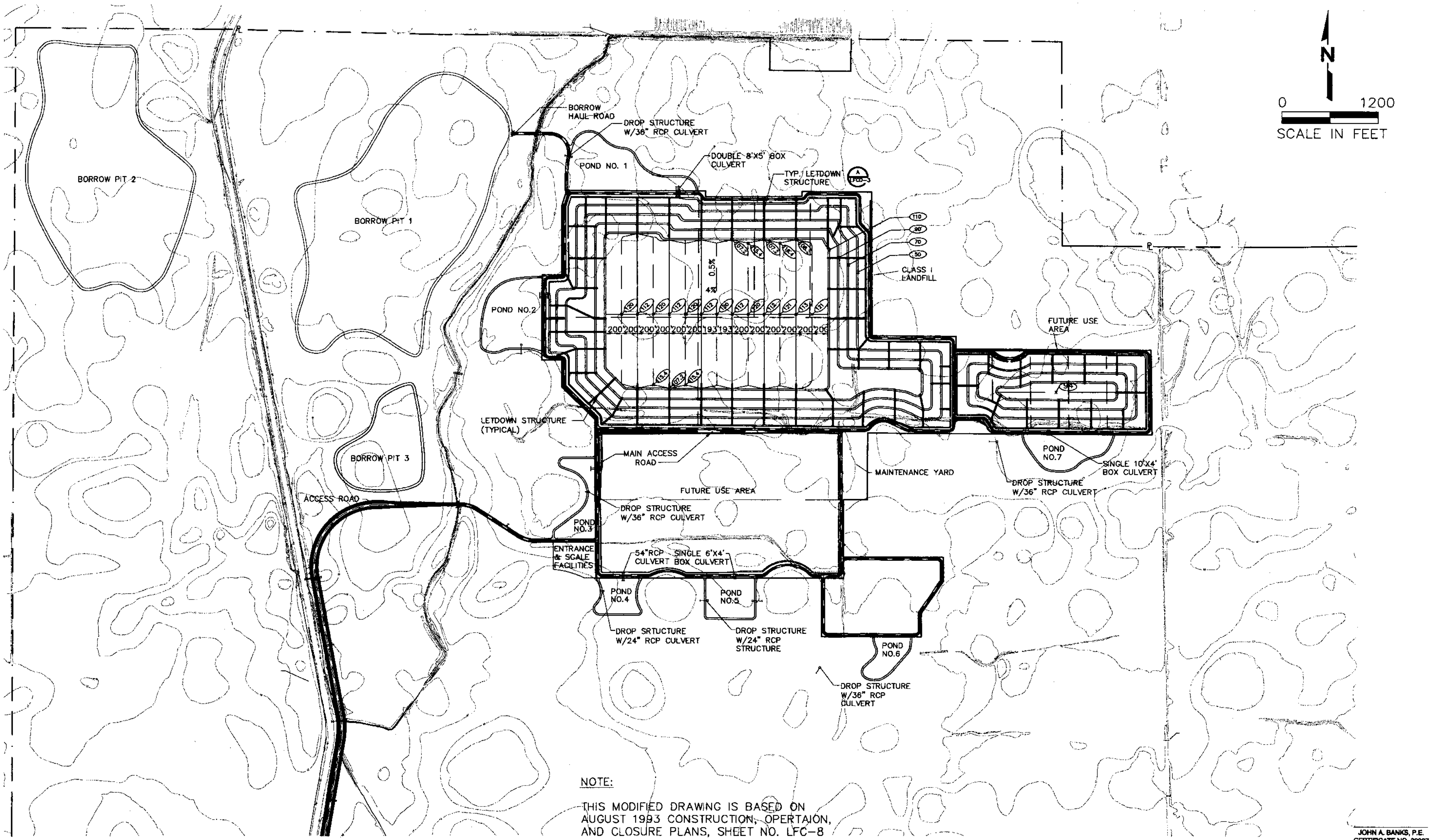
SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS

Revisions								
No.	Description	Date	By	No.	Description	Date	By	

Approved By:	RBG
Checked By:	JAB
Drawn By:	GRD III

Project Location:
CENTRAL COUNTY SOLID
WASTE DISPOSAL COMPLEX
SARASOTA COUNTY,
FLORIDA

Drawing No. 09201010.01\CDMORIG.dwg		
Scale:	As Shown	Sheet Number: 1
Date:	JULY 2002	



NOTE:

THIS MODIFIED DRAWING IS BASED ON AUGUST 1993 CONSTRUCTION, OPERTAION, AND CLOSURE PLANS, SHEET NO. LFC-8 FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 39397

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
3012 U.S. HWY. 301 NORTH, SUITE 700, TAMPA, FL 33619 PH (813) 621-0080 FAX NO. (813) 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

Revisions

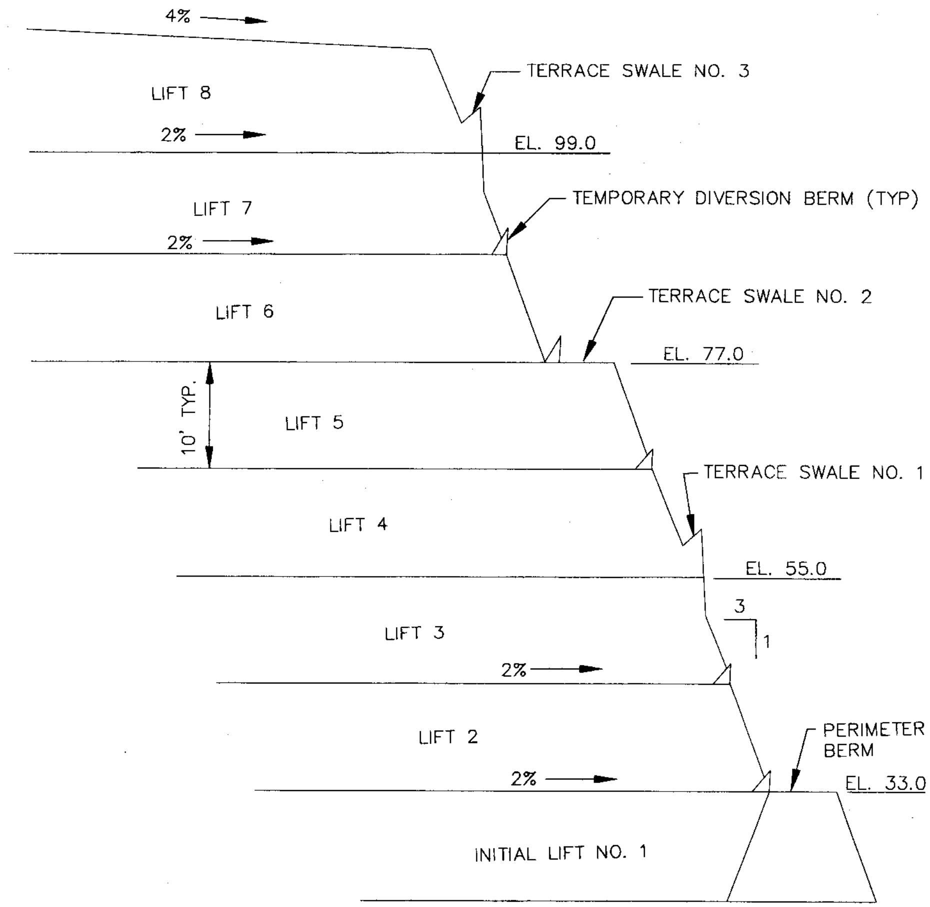
No.	Description	Date	By	No.	Description	Date	By

Approved By: RBG
Checked By: JAB
Drawn By: GRD III

Project Location:
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

FINAL CLOSURE PLAN

Drawing No. 09201010.01\CDMORIG.dwg
Scale: As Shown
Date: JULY 2002
Sheet Number: 2



NOTE:

THIS MODIFIED DRAWING IS BASED ON AUGUST 1993 CONSTRUCTION, OPERTAION, AND CLOSURE PLANS, SHEET NO. LFC-10 FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 39397

REVISED ON 10/06/03

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS

BASED ON CDM ORIGINAL DRAWINGS DATE: 2/97

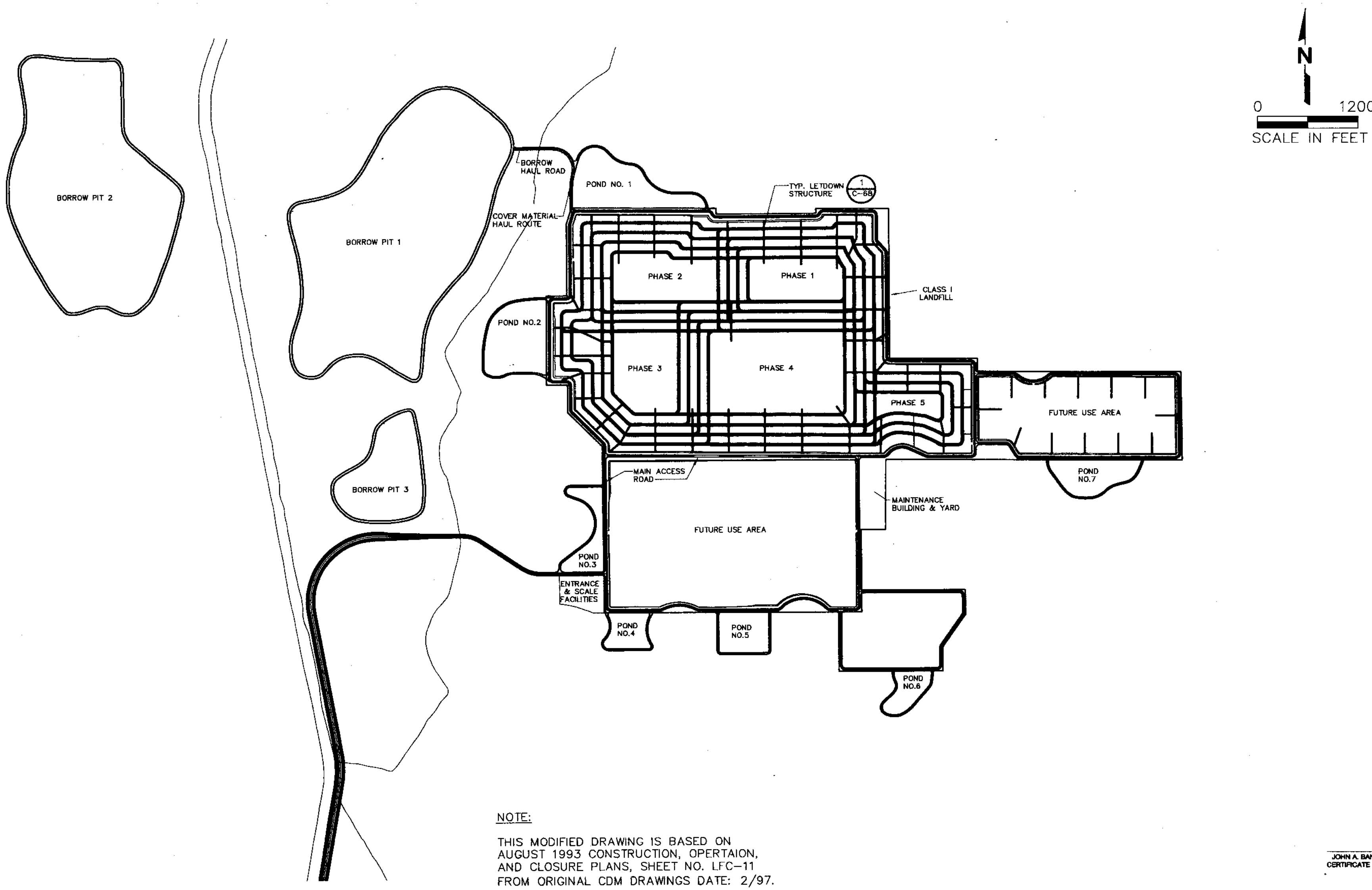
No.	Description	Date	By	No.	Description	Date	By

Revisions

Approved By: RBG
Checked By: JAB
Drawn By: GRD III

Project Location:
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

Drawing No.	011004CDMORIG
Scale: As Shown	Sheet Number: 3
Date: JULY 2002	



NOTE:

THIS MODIFIED DRAWING IS BASED ON AUGUST 1993 CONSTRUCTION, OPERTAION, AND CLOSURE PLANS, SHEET NO. LFC-11 FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 39397

SCS ENGINEERS
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FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

Revisions

No.	Description	Date	By	No.	Description	Date	By

Approved By: RBG
Checked By: JAB
Drawn By: GRD III

Project Location:
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

FACILITIES PHASING PLAN

Drawing No. 09201010.01\CDMORIG.dwg
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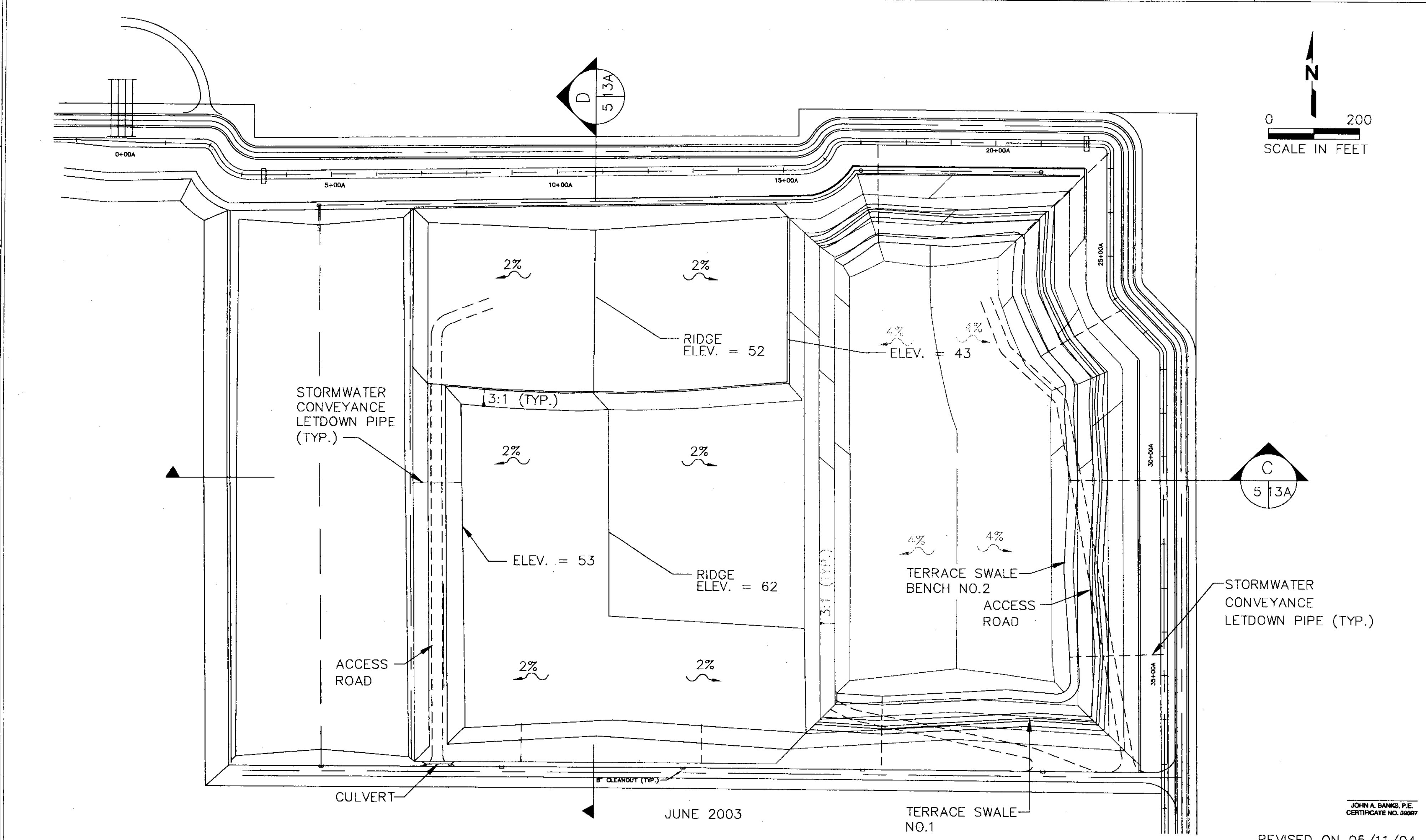
Date: JULY 2002
Sheet Number: 4



REVISED ON 05/11/04

SCS ENGINEERS
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CONSULTING ENGINEERS
3012 U.S. HWY. 301 NORTH, SUITE 700, TAMPA, FL 33619 PH (813) 621-0080 FAX NO. (813) 623-6757
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ONYX

Revisions

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Project Location:
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SARASOTA COUNTY, FLORIDA

Drawing No. 09201041.00\PHASES.dwg
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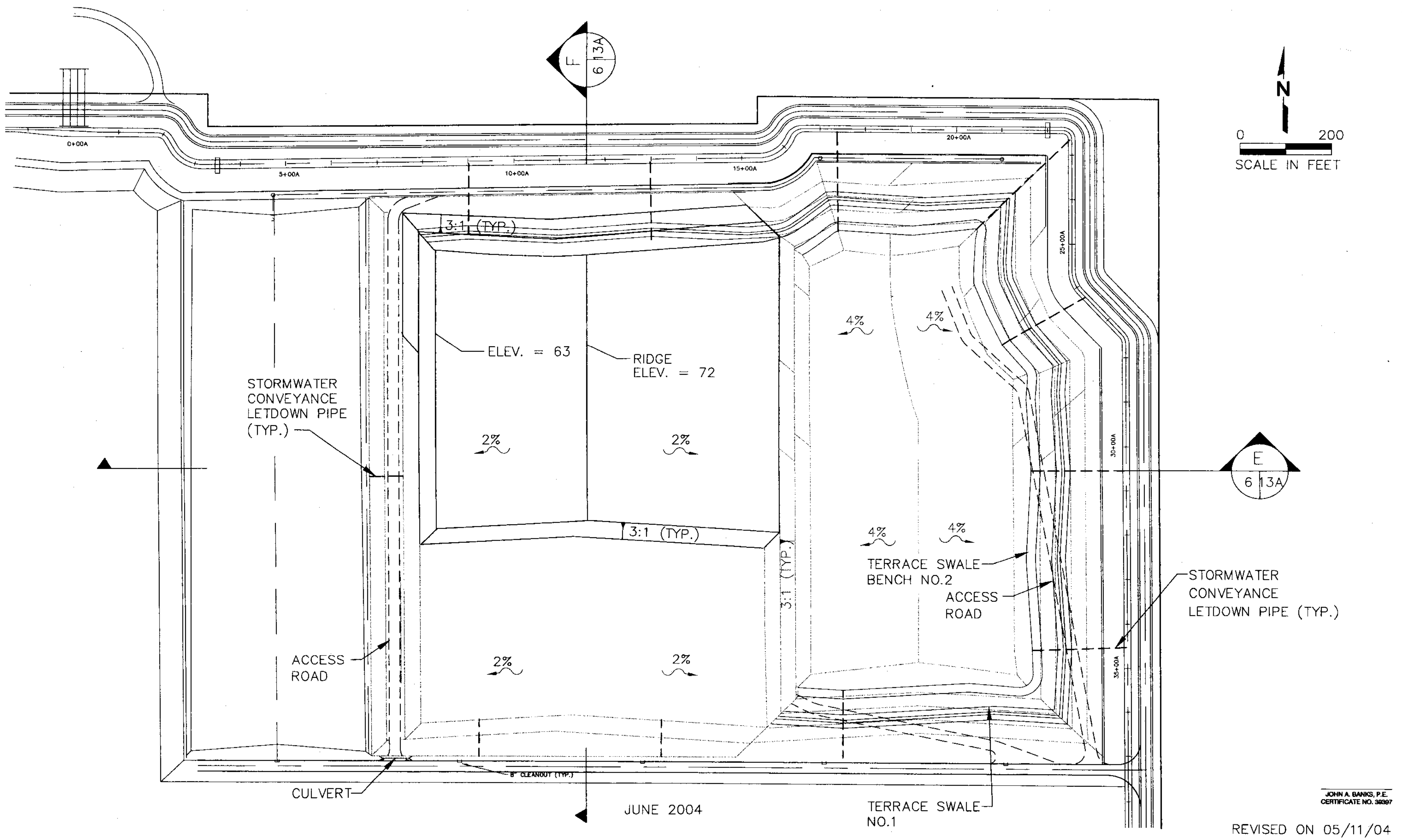
Date: JULY 2002
Sheet Number: 5



JOHN A. BANKS, P.E.
CERTIFICATE NO. 38397

REVISED ON 05/11/04

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Project Location:
CENTRAL COUNTY SOLID
WASTE DISPOSAL COMPLEX
SARASOTA COUNTY,
FLORIDA

Drawing No.	09201041.00\PHASES.dwg	
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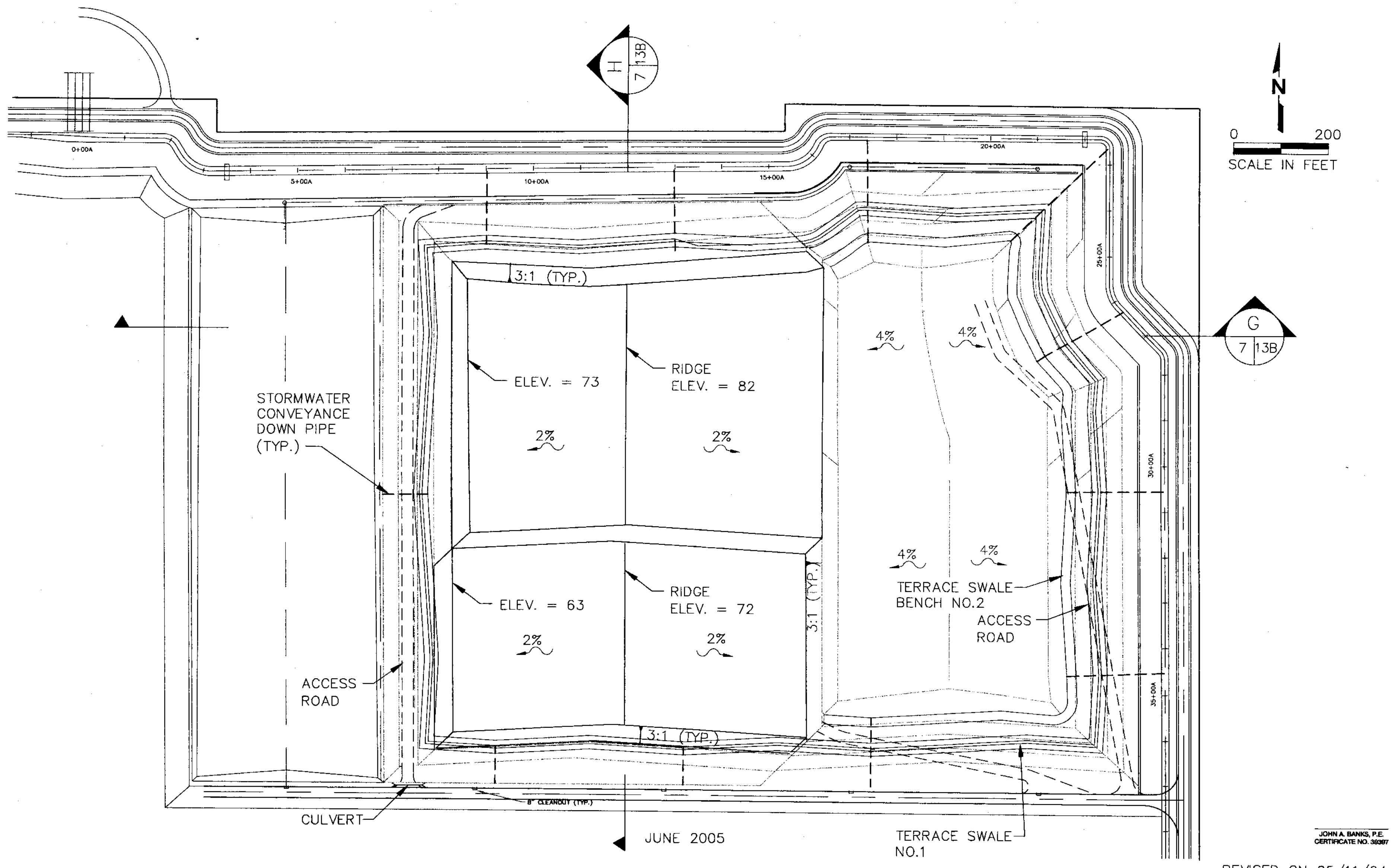
Date:	JULY 2002	



JOHN A. BANKS, P.E.
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REVISED ON 05/11/04

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Revisions

No.	Description	Date	By	No.	Description	Date	By

Approved By: RBC
Checked By: JAB
Drawn By: GRD III

Project Location:
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

Drawing No. 09201041.00\PHASES.dwg
Scale: As Shown
Date: JULY 2002
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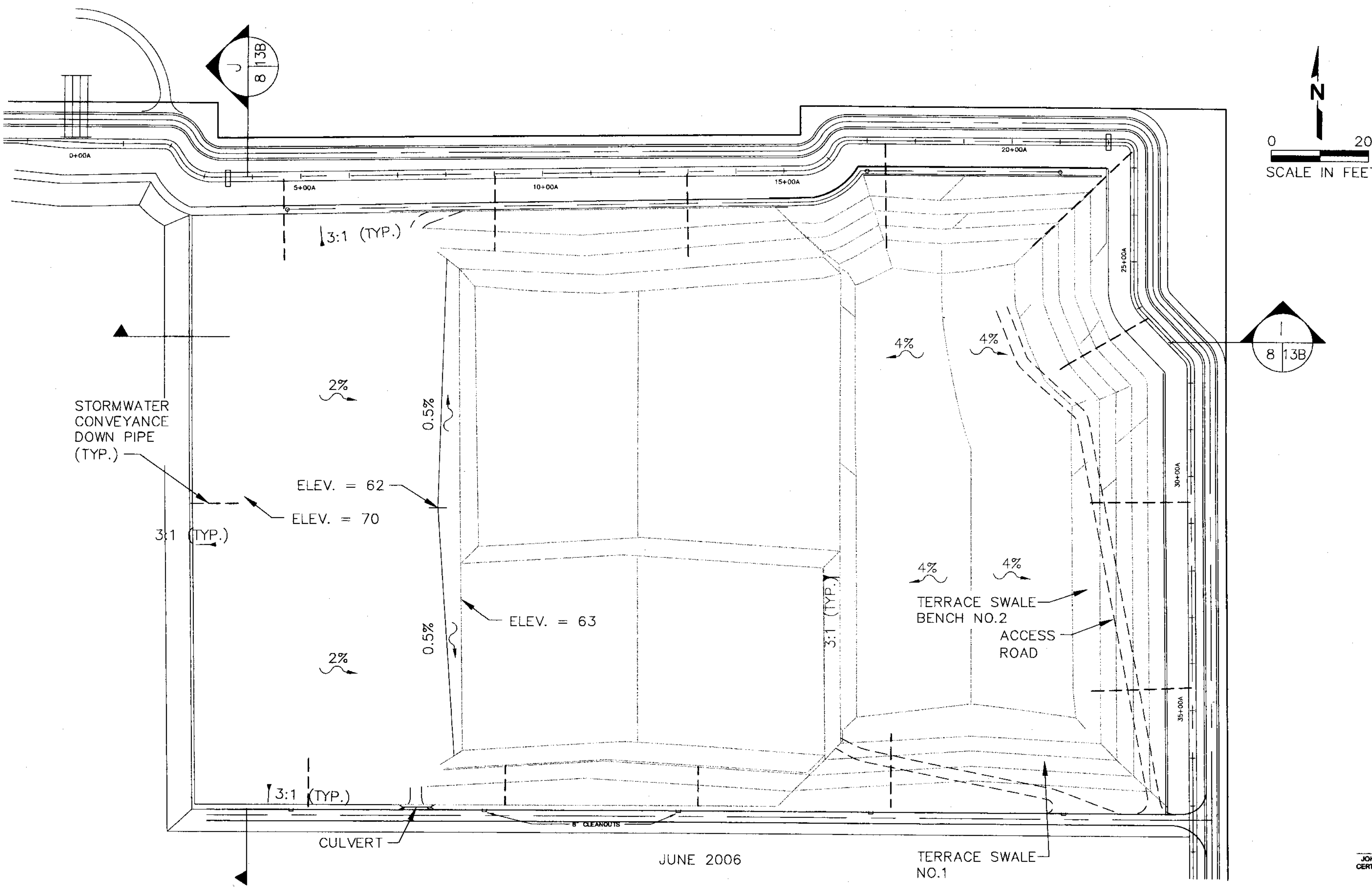

JUNE 2006

JOHN A. BANKS, P.E.
CERTIFICATE NO. 39397

REVISED ON 05/11/04

SCS ENGINEERS
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Revisions

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Drawn By:	GRD III

Project Location:
CENTRAL COUNTY SOLID
WASTE DISPOSAL COMPLEX
SARASOTA COUNTY,
FLORIDA

Drawing No.	09201041.00\PHASES.dwg	
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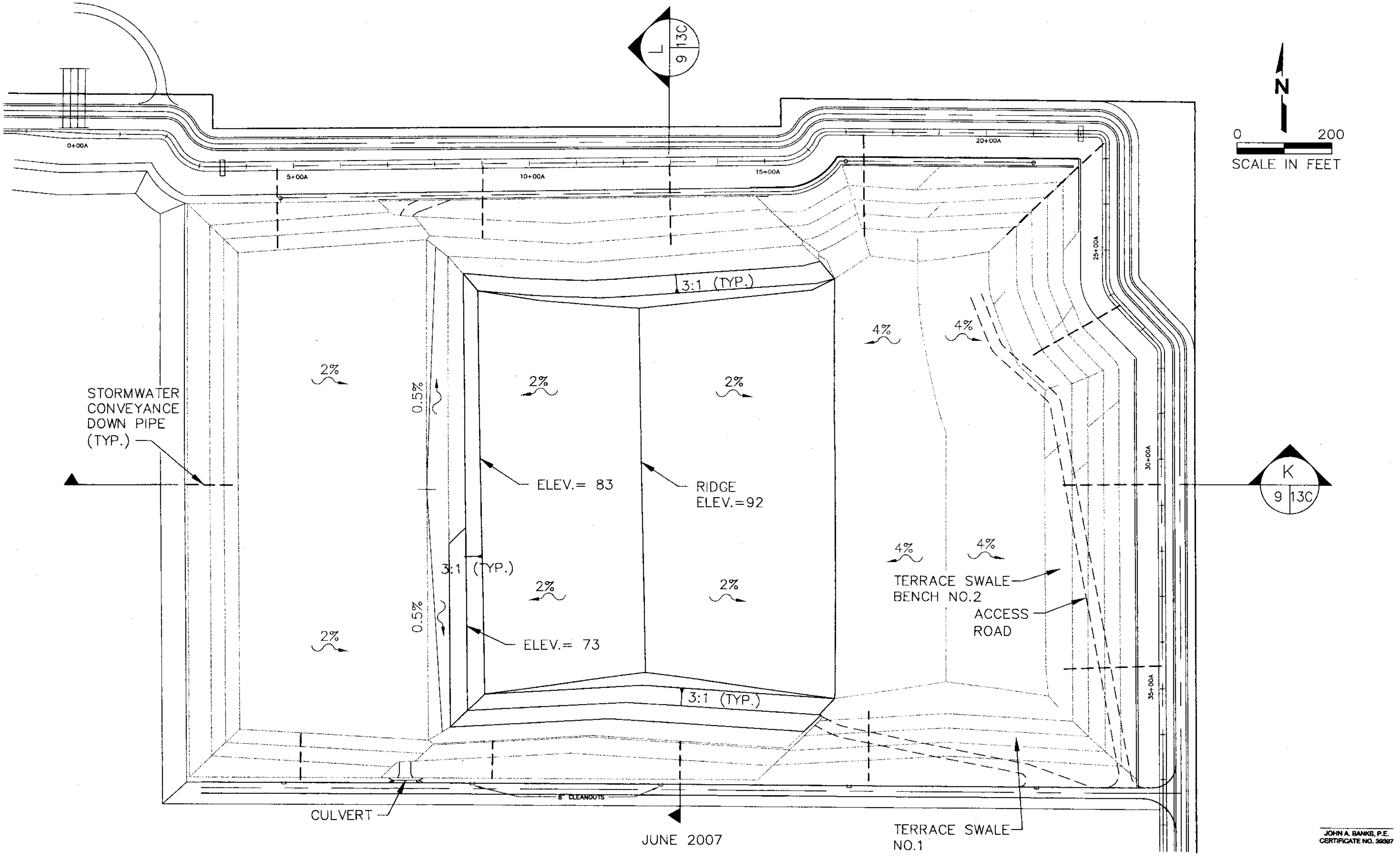
Date:	JULY 2002	8



JOHN A. BANKS, P.E.
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REVISED ON 05/11/04

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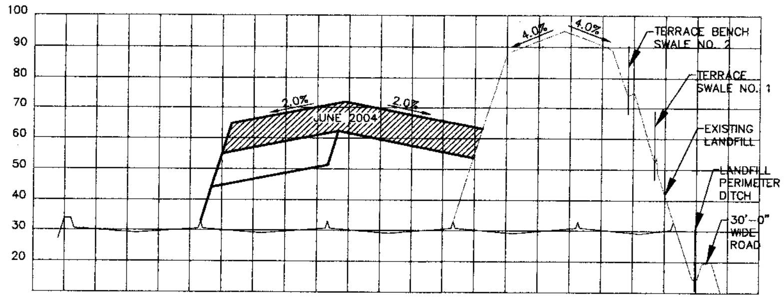
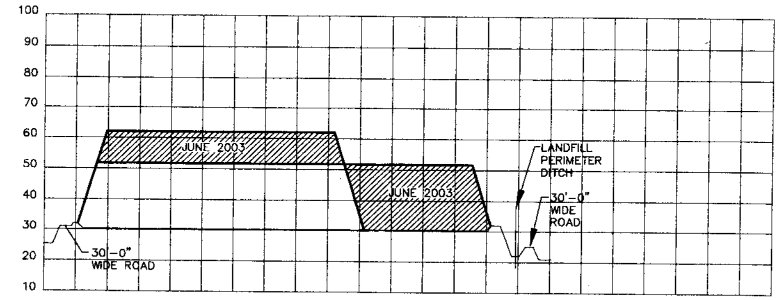
SARASOTA COUNTY, FLORIDA

Drawing No. 09201041.00\PHASES.dwg
Scale: As Shown
Date: JULY 2002
Sheet Number: 9



NOTE:
PROVIDE TEMPORARY STORMWATER SWALE AT CELL INTERFACE WITH A NEGATIVE GRADE AT 0.5% TOWARDS THE PERIMETER OF THE LANDFILL.

SECTION E 6 13A
NOT TO SCALE



NOTE:
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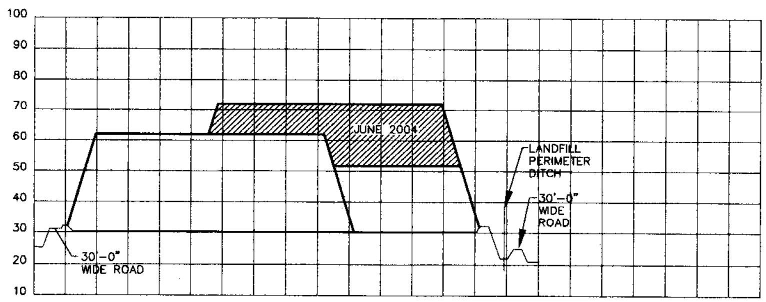
SECTION D 5 13A
NOT TO SCALE



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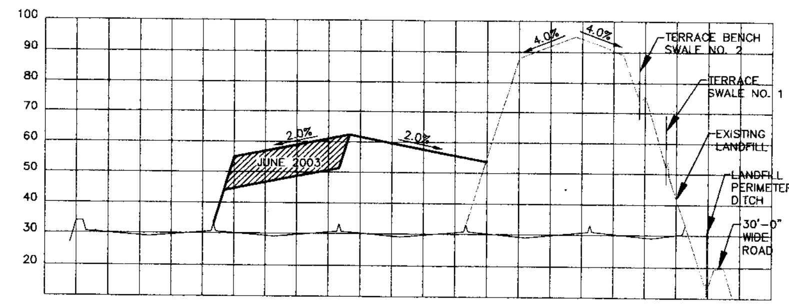
SECTION F 6 13A
NOT TO SCALE



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SECTION C 5 13A
NOT TO SCALE

JOHN A. BANKS, P.E.
CERTIFICATE NO. 38397

REVISED ON 05/11/04

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Checked By: JAB
Drawn By: CRD III

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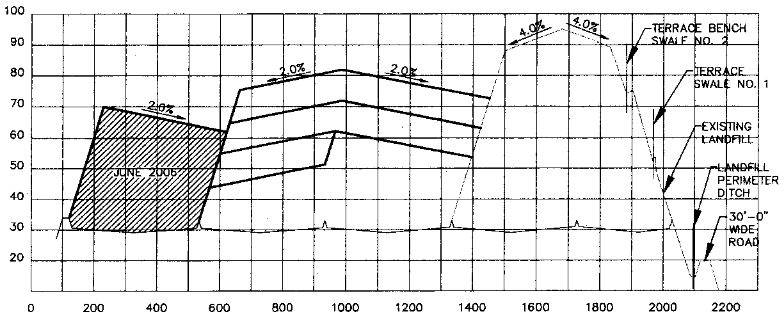
SARASOTA COUNTY, FLORIDA

Drawing No. 09201041.00\PHASES.dwg
Scale: As Shown
Date: JULY 2002
Sheet Number: 13A



NOTE:
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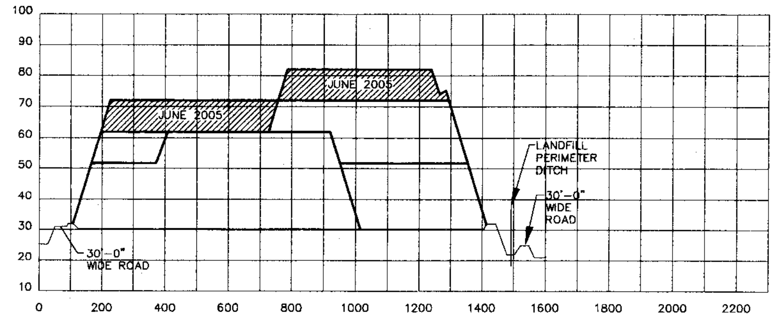
SECTION I 8 13B
NOT TO SCALE



NOTE:
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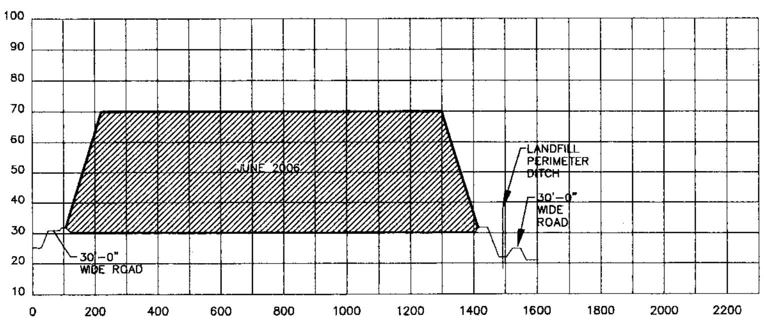
SECTION H 7 13B
NOT TO SCALE



NOTE:
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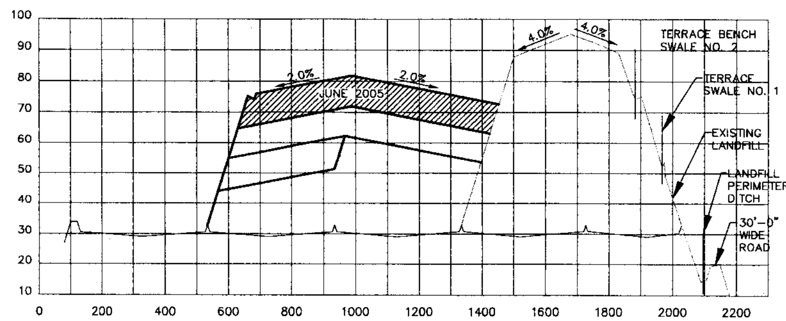
SECTION J 8 13B
NOT TO SCALE



NOTE:
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SECTION G 7 13B
NOT TO SCALE

JOHN A. BANKS, P.E.
CERTIFICATE NO. 36397

REVISED ON 05/11/04

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ONYX

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Checked By: JAB
Drawn By: GRD III

Project Location:
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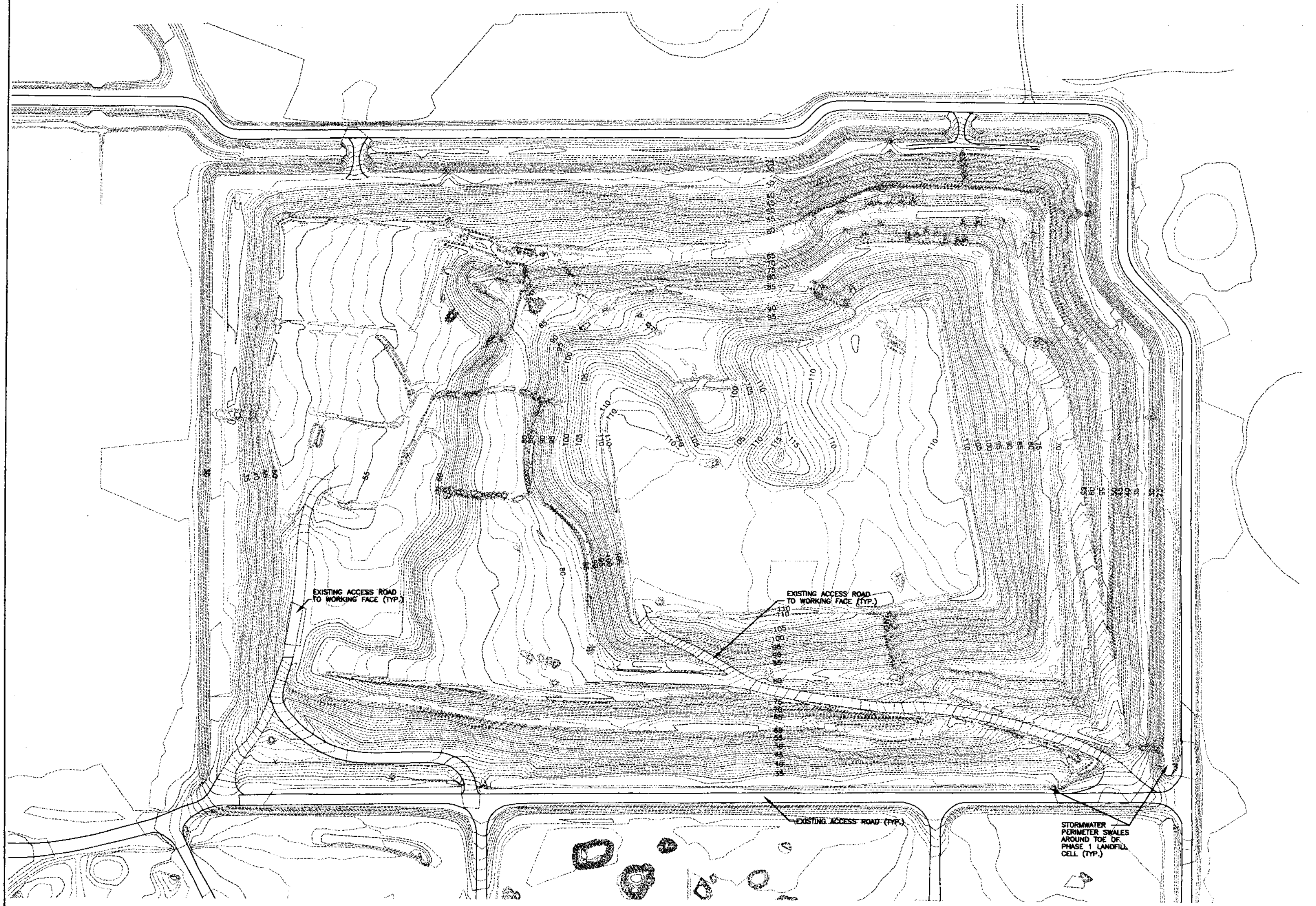
SARASOTA COUNTY, FLORIDA

Drawing No. 09201041.00\PHASES.dwg
Scale: As Shown
Date: JULY 2002
Sheet Number: 13B



GRAPHIC SCALE

0 50 100 200

SCALE IN FEET
1" = 100'

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.

2. OPERATIONAL AND FINAL GRADES SHALL NOT BE GREATER THAN 3:1.

3. MAINTAIN OPERATION BERMS AT ALL ACTIVE WORKING FACES TO CONTAIN ALL STORMWATER COMMINGLED WITH WASTE.

4. MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.

5. THE PURPOSE OF THESE DRAWINGS IS TO SUPPLEMENT THE CURRENT FDEP APPROVED FILL SEQUENCE PLANS.

6. EXISTING CONDITIONS BASED ON THE JUNE 20, 2007 AERIAL TOPOGRAPHICAL SURVEY, PERFORMED AND PREPARED BY LANDAIR, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

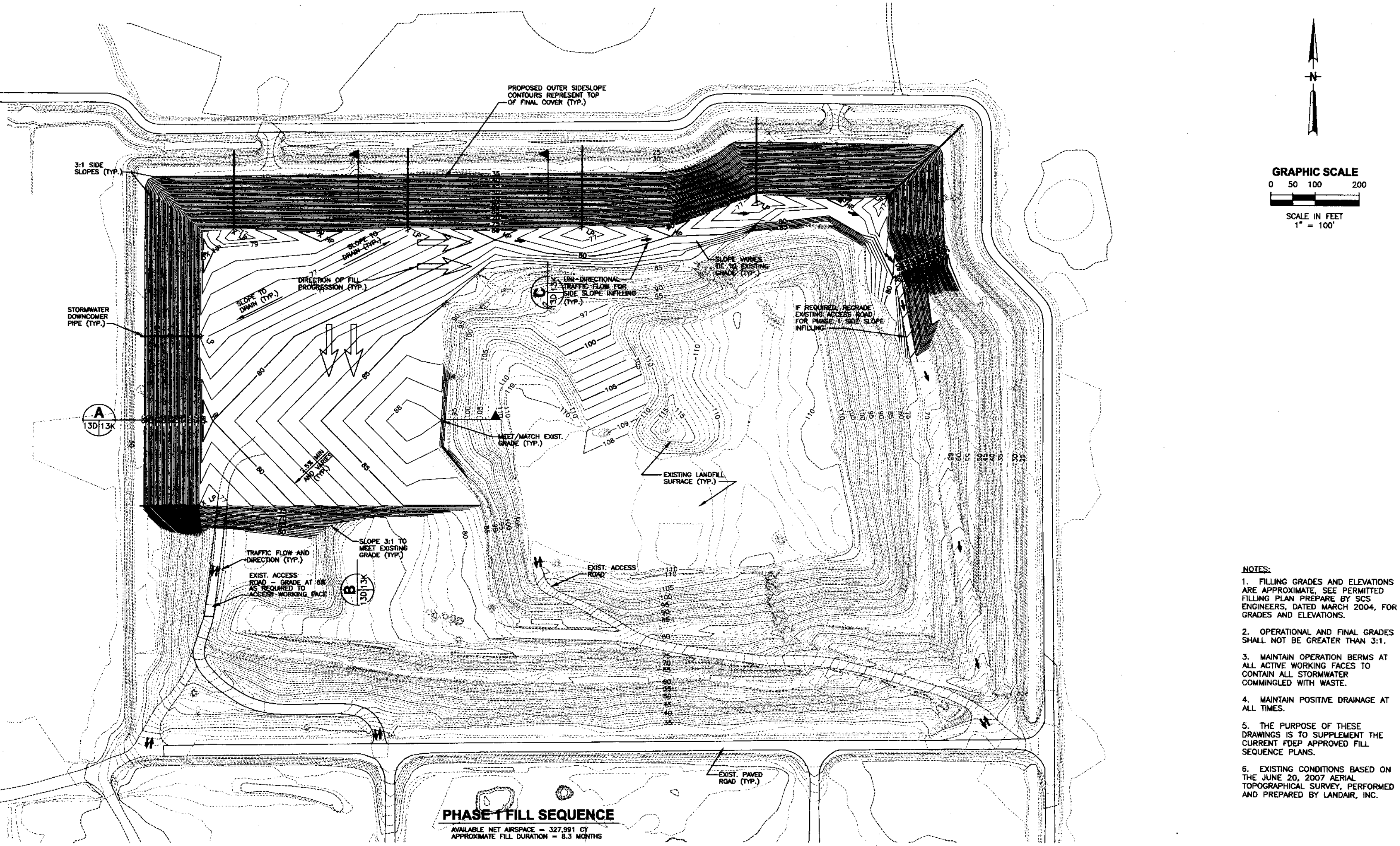
01/07/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

EXISTING CONDITIONS
JUNE 2007 TOPOGRAPHIC SURVEY

0 1" 2"

FILENAME: HDR FDEP SEQUENCING
SCALE: 1" = 100'
SHEET: 13C



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HDR

ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

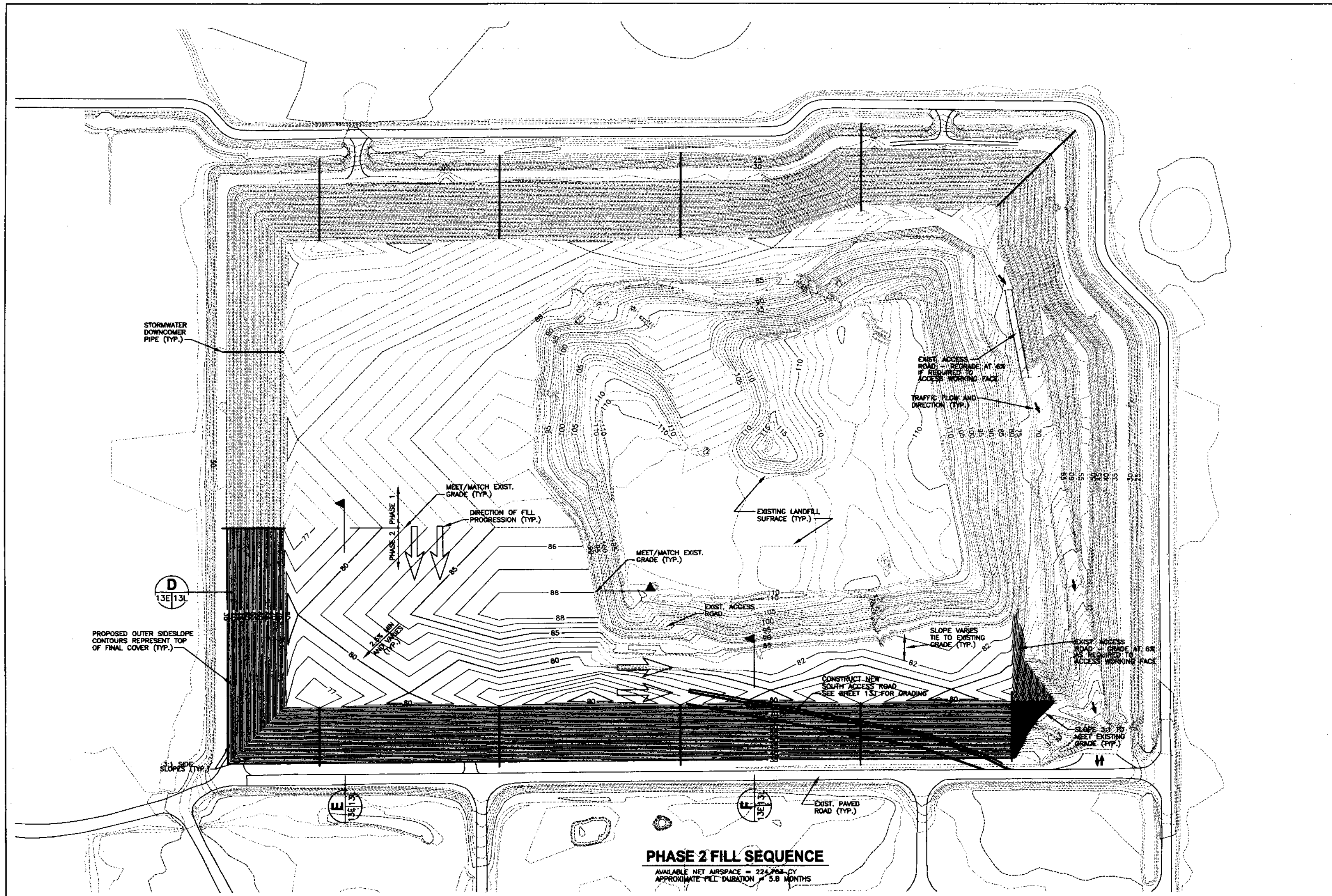
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

01/07/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

PHASE 1 SEQUENCE

FILENAME: HDR FDEP SEQUENCING
SCALE: 1" = 100'
SHEET: 13D



PHASE 2 FILL SEQUENCE

AVAILABLE NET AIRSPACE = 224,763 CY
APPROXIMATE FILL DURATION = 5.8 MONTHS

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.
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HDR

ISSUE	DATE	DESCRIPTION
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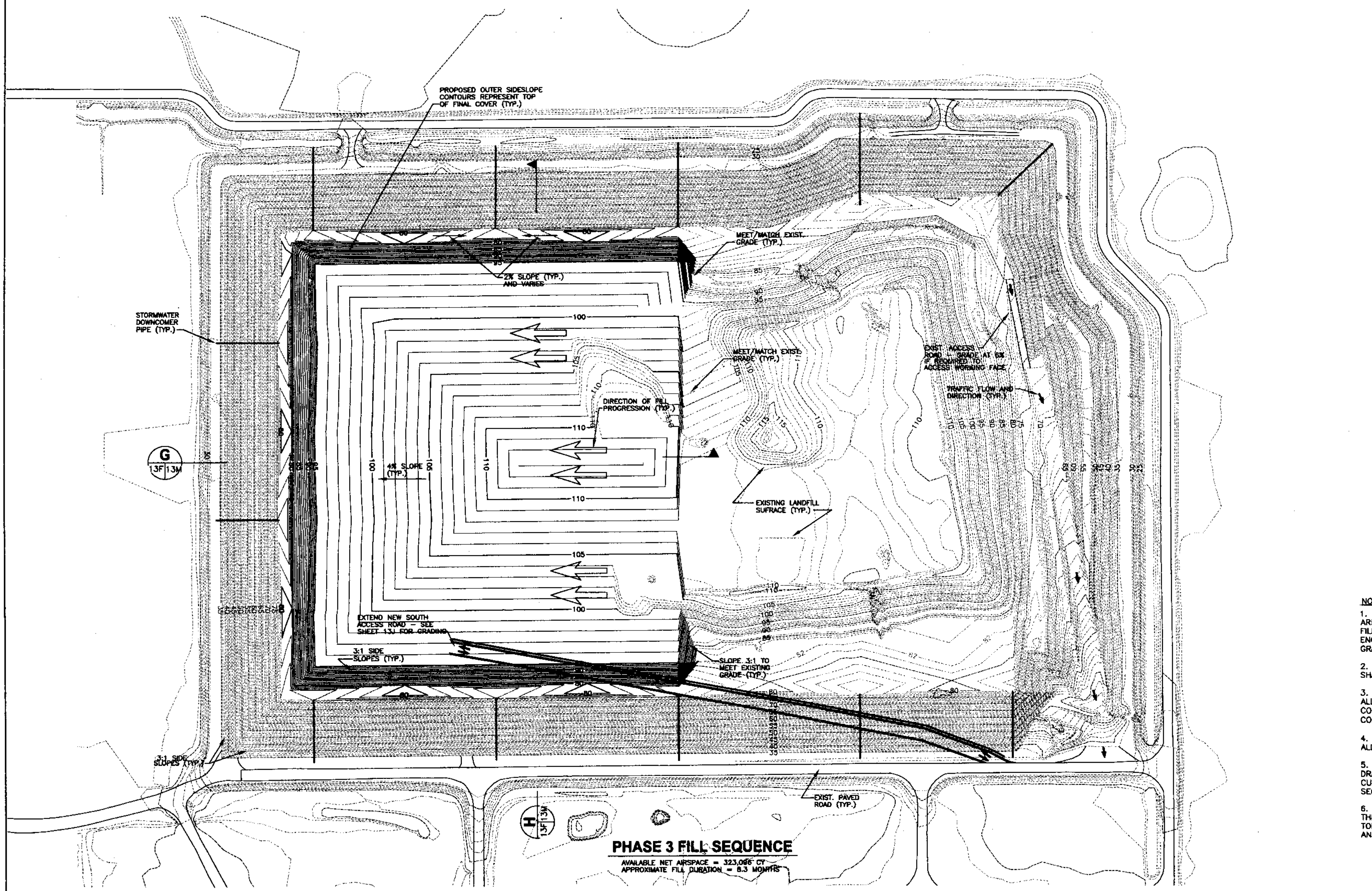
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

01/07/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

PHASE 2 SEQUENCE

FILENAME: HDR FDEP SEQUENCING
SCALE: 1" = 100'
SHEET: 13E



PHASE 3 FILL SEQUENCE

AVAILABLE NET AIRSPACE = 323,096 CY
APPROXIMATE FILL DURATION = 8.3 MONTHS

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.

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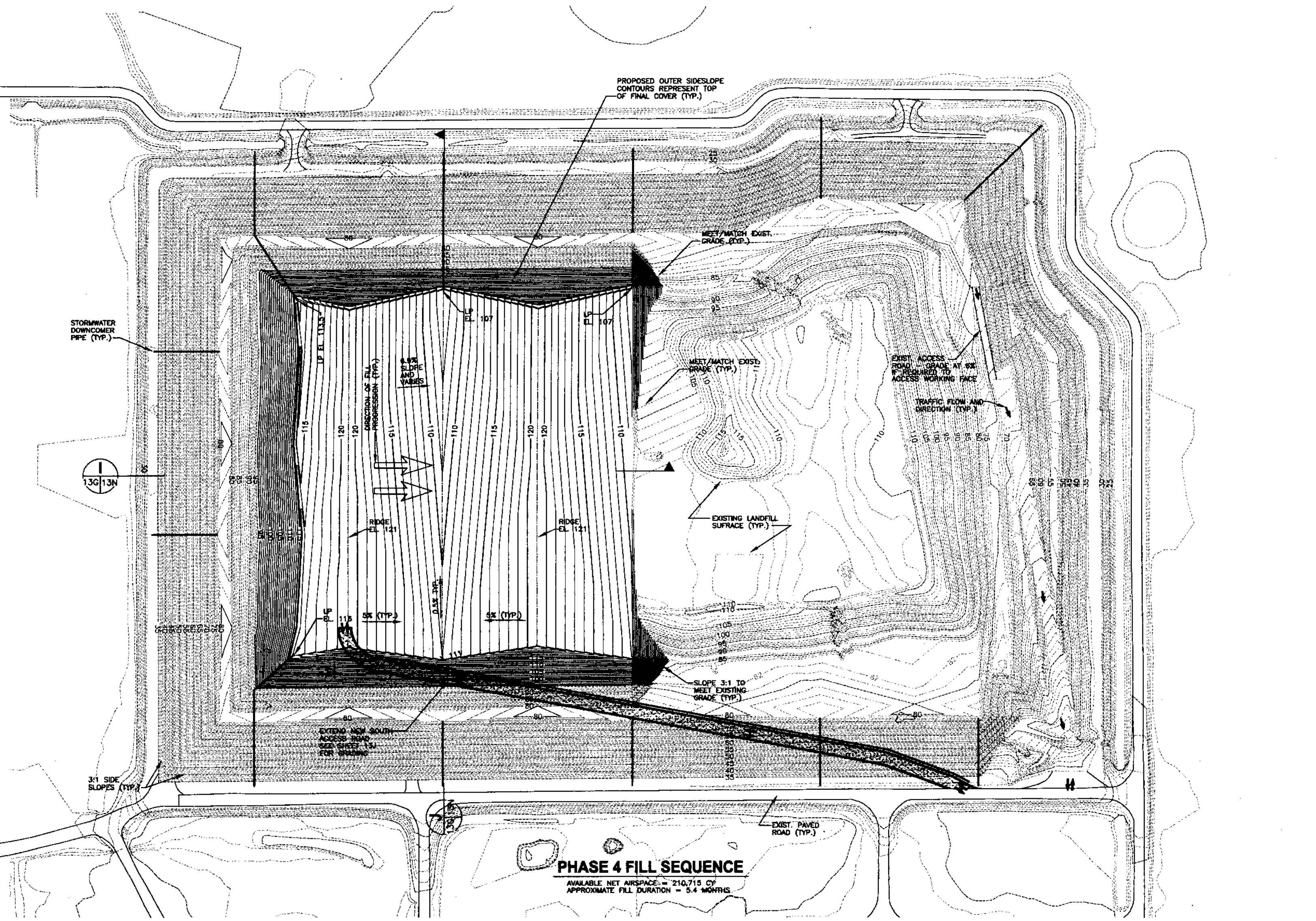
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

01/07/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

PHASE 3 SEQUENCE

FILENAME	HDR FDEP SEQUENCING	SHEET
SCALE	1" = 100'	13F



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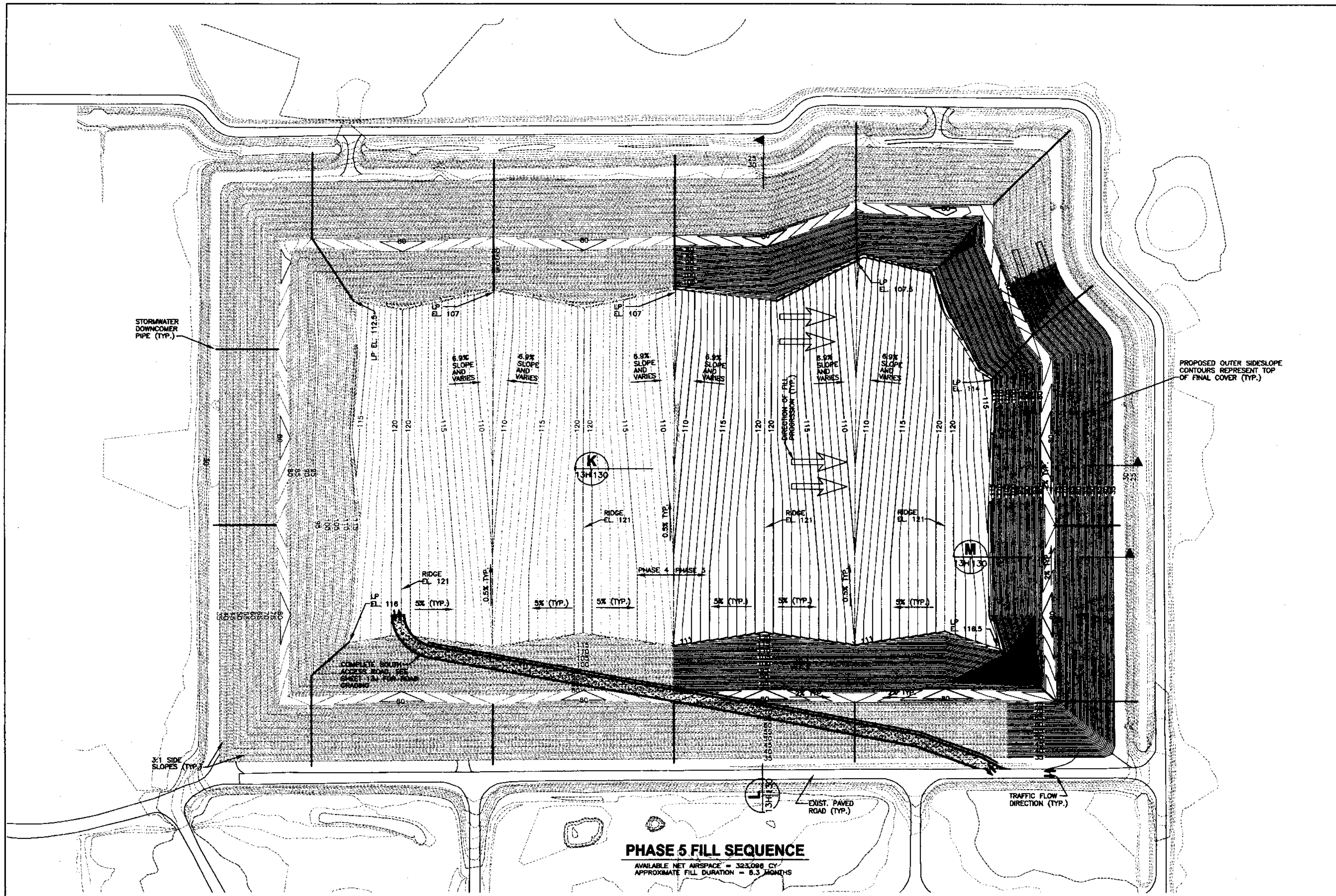
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

01/07/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

PHASE 4 SEQUENCE

FILENAME	HDR FDEP SEQUENCING
SCALE	1" = 100'
SHEET	13G



PHASE 5 FILL SEQUENCE

AVAILABLE NET AIRSPACE = 323,096 CY
APPROXIMATE FILL DURATION = 8.3 MONTHS

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.

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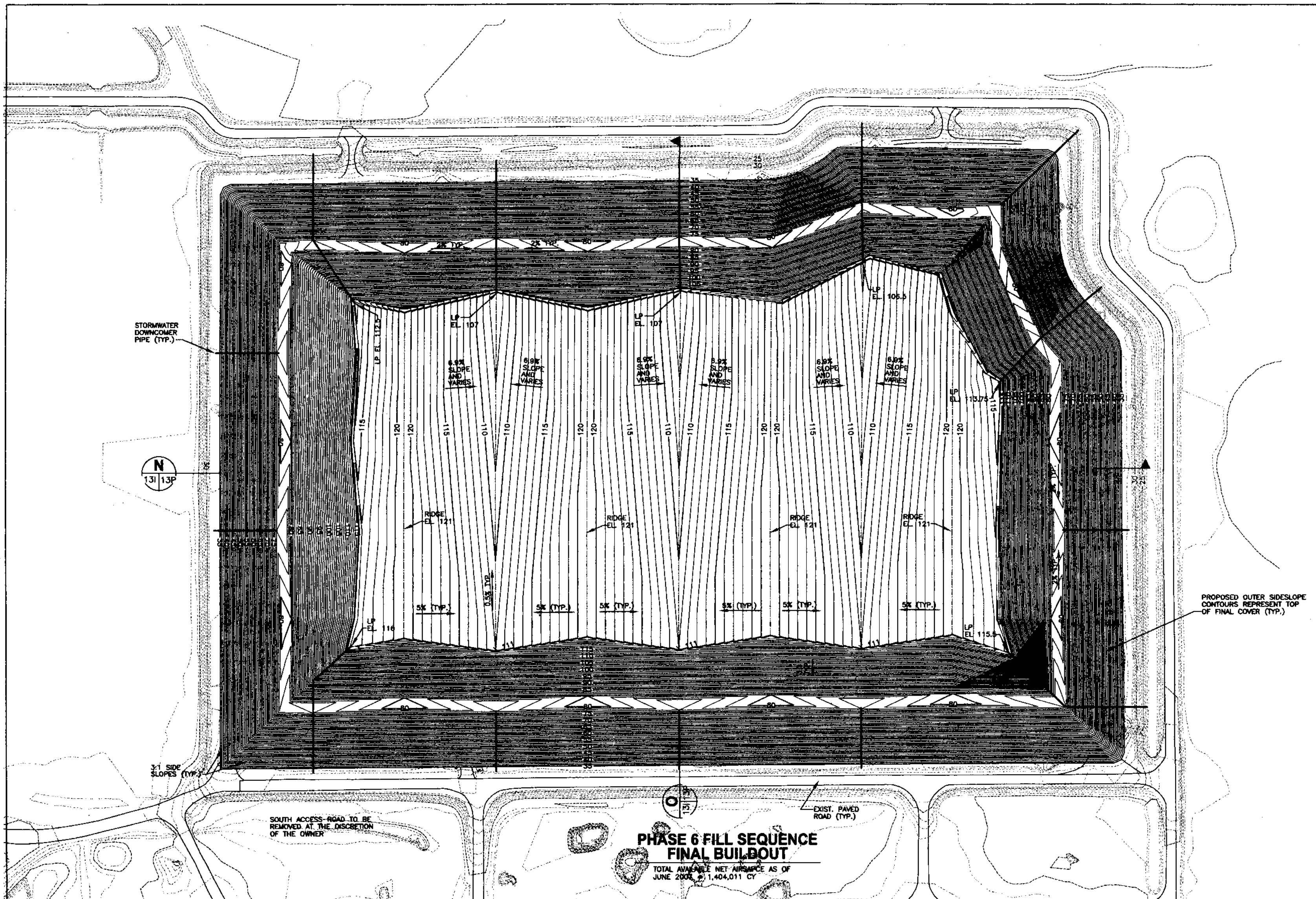
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

PHASE 5 SEQUENCE

FILENAME: HDR FDEP SEQUENCING
SCALE: 1" = 100'
SHEET: 13H



GRAPHIC SCALE

0 50 100 200

SCALE IN FEET
1" = 100'

NOTES:

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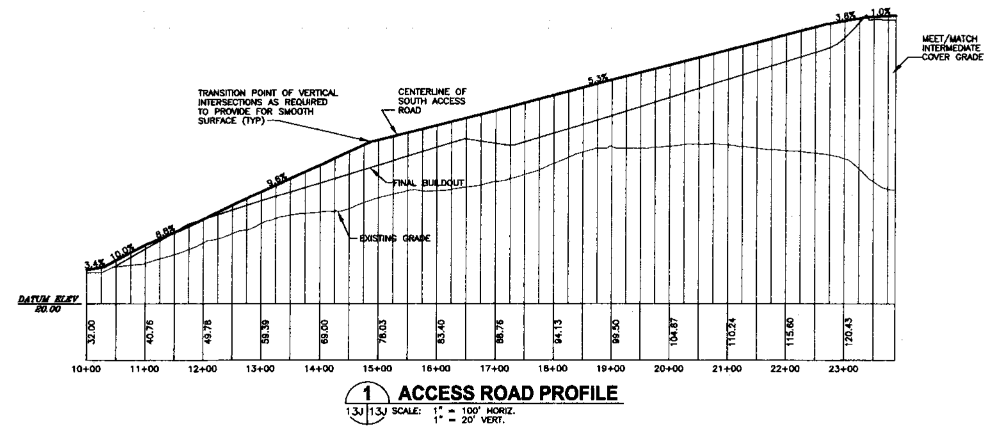
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

CENTRAL COUNTY SOLID
WASTE DISPOSAL COMPLEX
SARASOTA COUNTY,
FLORIDA

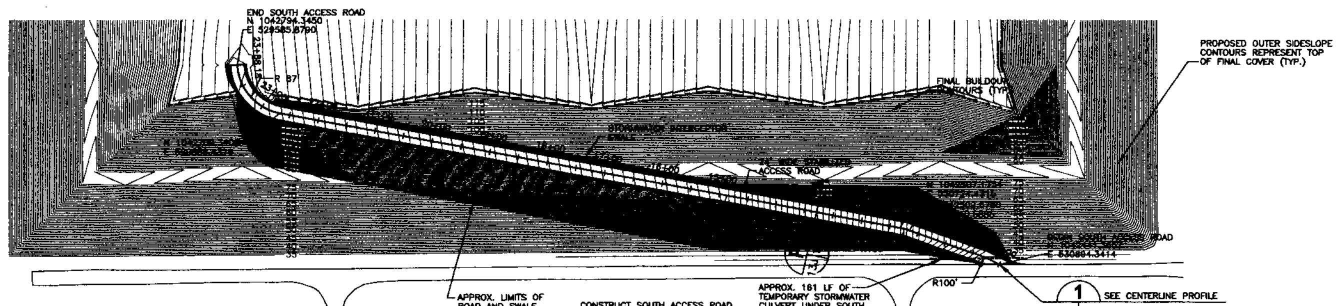
PHASE 6
FINAL BUILDOUT

FILENAME	HDR FDEP SEQUENCING	SHEET
SCALE	1" = 100'	13I



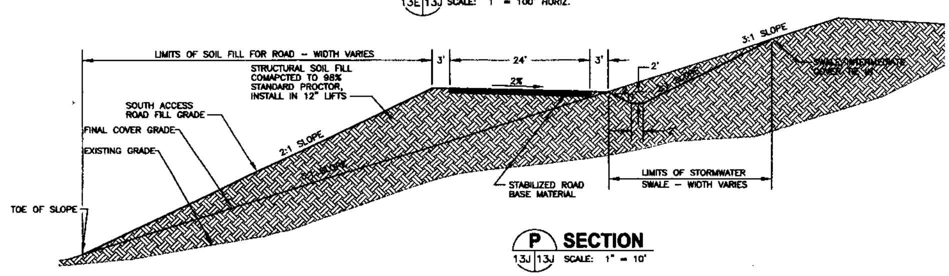
1 ACCESS ROAD PROFILE

13J | 13J SCALE: 1" = 100' HORIZ. 1" = 20' VERT.



2 ACCESS ROAD PLAN

13E | 13J SCALE: 1" = 100' HORIZ.



P SECTION

13J | 13J SCALE: 1" = 10'

GRAPHIC SCALE

0 50 100 200

SCALE IN FEET
1" = 100'

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.

2. OPERATIONAL AND FINAL GRADES SHALL NOT BE GREATER THAN 3:1.

3. MAINTAIN OPERATION BERMS AT ALL ACTIVE WORKING FACES TO CONTAIN ALL STORMWATER COMMINGLED WITH WASTE.

4. MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.

5. THE PURPOSE OF THESE DRAWINGS IS TO SUPPLEMENT THE CURRENT FDEP APPROVED FILL SEQUENCE PLANS.

6. EXISTING CONDITIONS BASED ON THE JUNE 20, 2007 AERIAL TOPOGRAPHICAL SURVEY, PERFORMED AND PREPARED BY LANDAIR, INC.

HDR

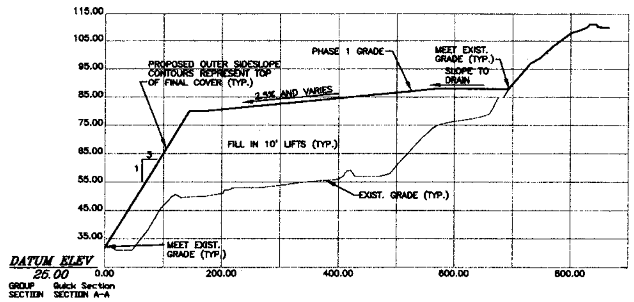
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER	
			PROJECT MANAGER	R. SIEMERING
			DESIGNED BY	R. SIEMERING
			DRAWN BY	R. SIEMERING
			APPROVED BY	T. YANOSCHAK
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL	22404-018	

01/05/08

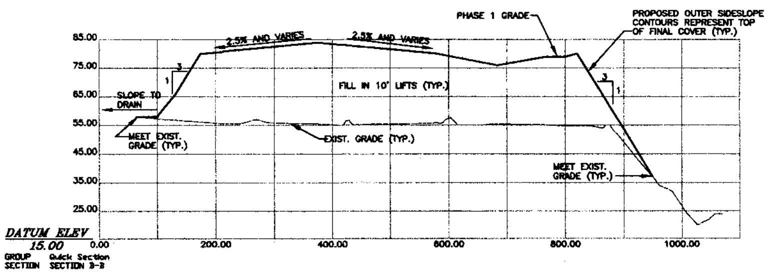
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SOUTH ACCESS ROAD PLAN AND PROFILE

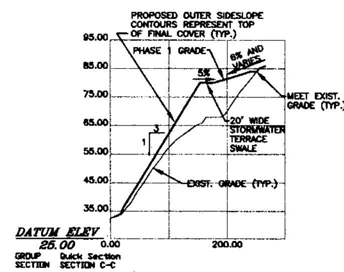
FILENAME: HDR FDEP SEQUENCING
SCALE: AS SHOWN
SHEET: 13J



A SECTION A-A 13D 13K SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



B SECTION B-B 13D 13K SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



C SECTION C-C 13D 13K SCALE: 1" = 100' HORIZ. 1" = 10' VERT.

GRAPHIC SCALE

0 50 100 200

SCALE IN FEET
1" = 100'

NOTES:

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HDR

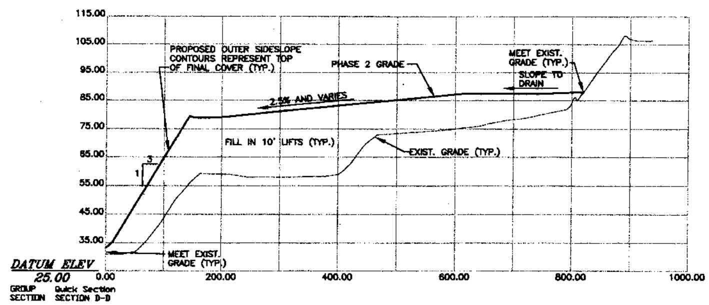
ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

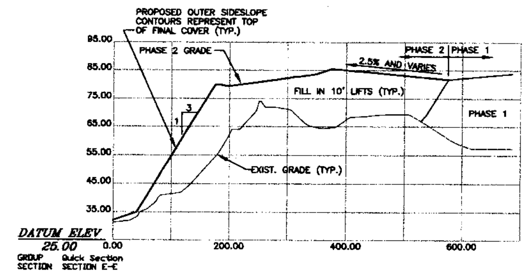
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SECTIONS
PHASE 1

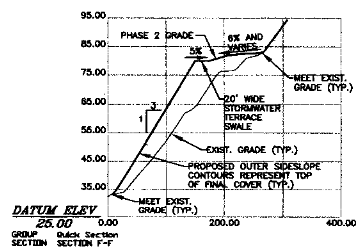
FILENAME HDR FDEP SEQUENCING
SCALE AS SHOWN
SHEET 13K



D SECTION D-D
13E 13L SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



E SECTION E-E
13E 13L SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



F SECTION F-F
13E 13L SCALE: 1" = 100' HORIZ. 1" = 10' VERT.

GRAPHIC SCALE

0 50 100 200

SCALE IN FEET
1" = 100'

NOTES:

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HDR

ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

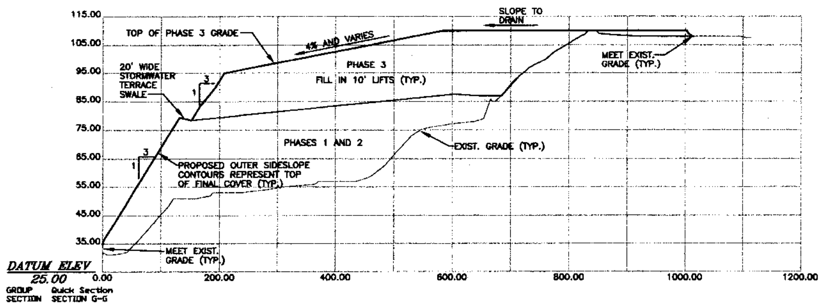
01/02/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

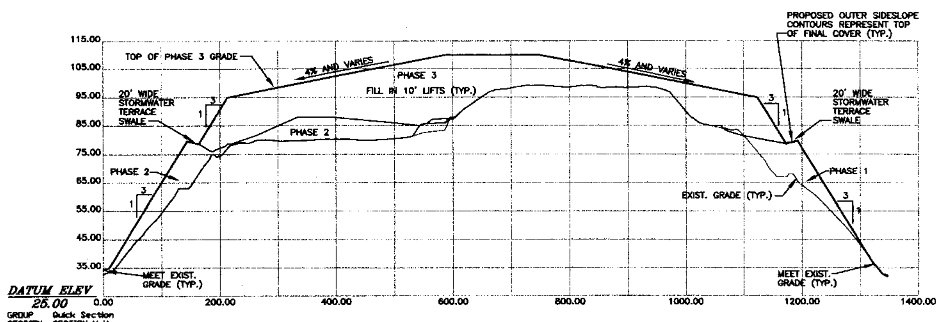
SECTIONS
PHASE 2

0 1" 2"

FILENAME	HDR FDEP SEQUENCING	SHEET
SCALE	AS SHOWN	13L



G SECTION G-G 13F 13M SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



H SECTION H-H 13F 13M SCALE: 1" = 100' HORIZ. 1" = 10' VERT.

GRAPHIC SCALE

0 50 100 200

SCALE IN FEET 1" = 100'

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.

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HDR

ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

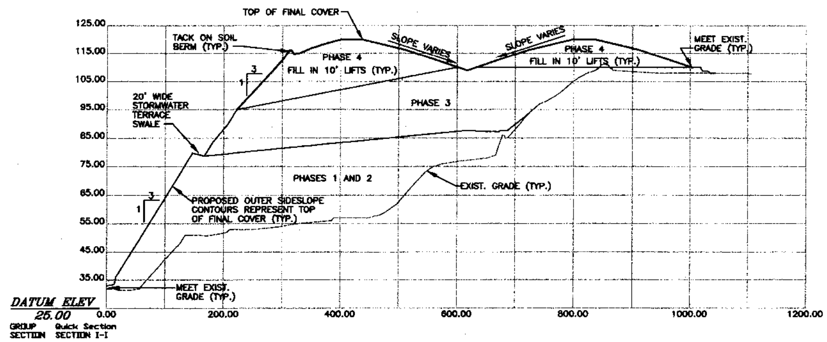
01/08/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX SARASOTA COUNTY, FLORIDA

SECTIONS PHASE 3

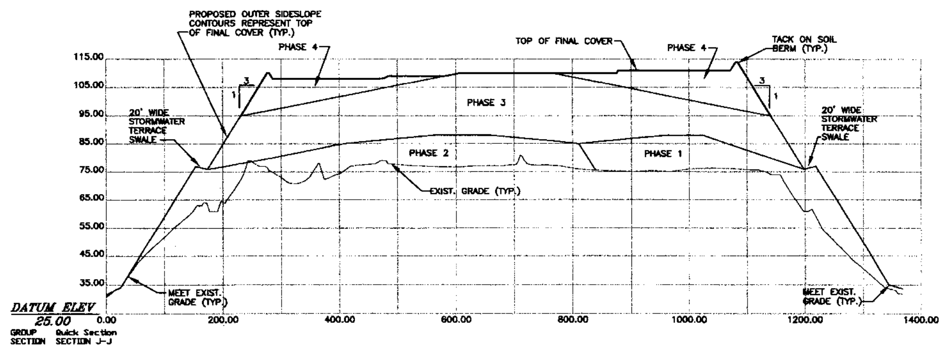
0 1" 2"

FILENAME	HDR FDEP SEQUENCING	SHEET
SCALE	AS SHOWN	13M



SECTION I-I

I 13G 13N SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



SECTION J-J

J 13G 13N SCALE: 1" = 100' HORIZ. 1" = 10' VERT.

GRAPHIC SCALE

0 50 100 200

SCALE IN FEET
1" = 100'

NOTES:

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HDR

ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

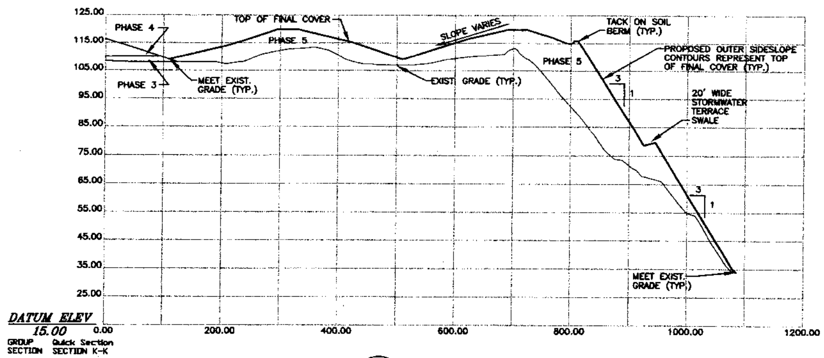
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

01/28/08

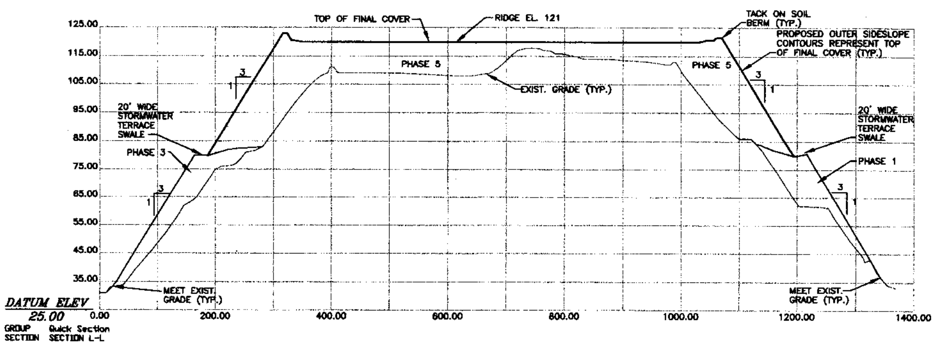
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SECTIONS
PHASE 4

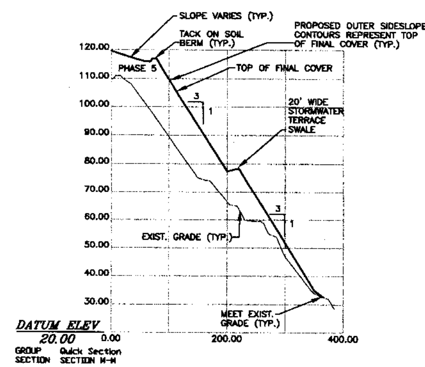
FILENAME	HDR FDEP SEQUENCING
SCALE	AS SHOWN
SHEET	13N



K 13H 130 **SECTION K-K**
SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



L 13H 130 **SECTION L-L**
SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



M 13H 130 **SECTION M-M**
SCALE: 1" = 100' HORIZ. 1" = 10' VERT.

GRAPHIC SCALE
0 50 100 200
SCALE IN FEET
1" = 100'

NOTES:

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HDR

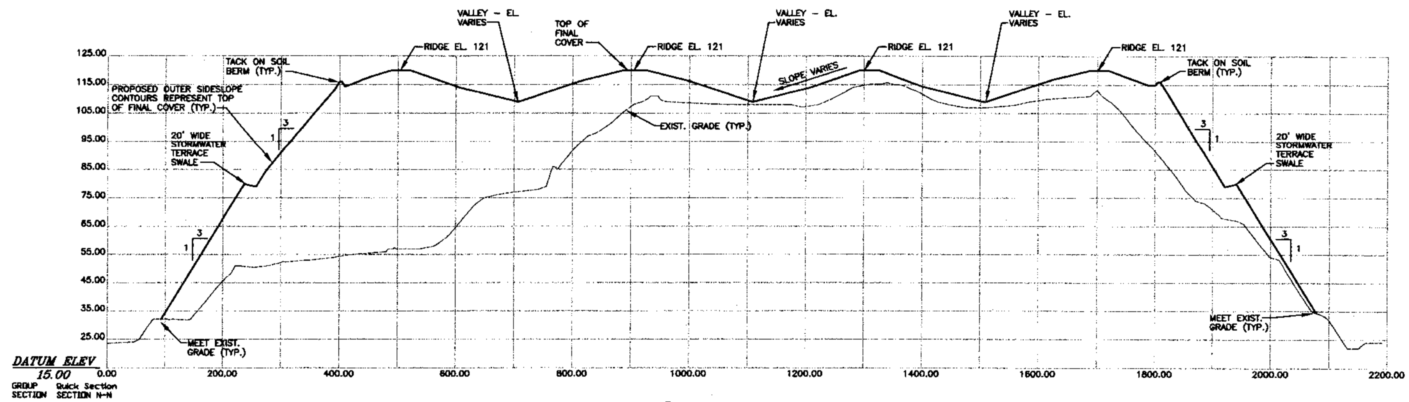
ISSUE	DATE	DESCRIPTION
1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

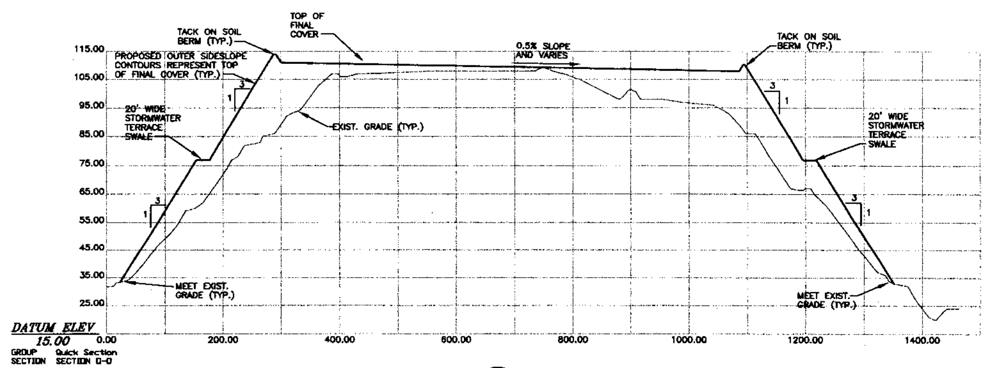
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SECTIONS
PHASE 5

FILENAME	HDR FDEP SEQUENCING	SHEET
SCALE	AS SHOWN	130



N 13I 13P SECTION N-N
SCALE: 1" = 100' HORIZ. 1" = 10' VERT.



O 13I 13P SECTION O-O
SCALE: 1" = 100' HORIZ. 1" = 10' VERT.

NOTE: SEE SECTION Q-Q ON SHEET 13Q FOR TYPICAL LIFT THICKNESSES

GRAPHIC SCALE
0 50 100 200
SCALE IN FEET
1" = 100'

NOTES:

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HDR

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1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

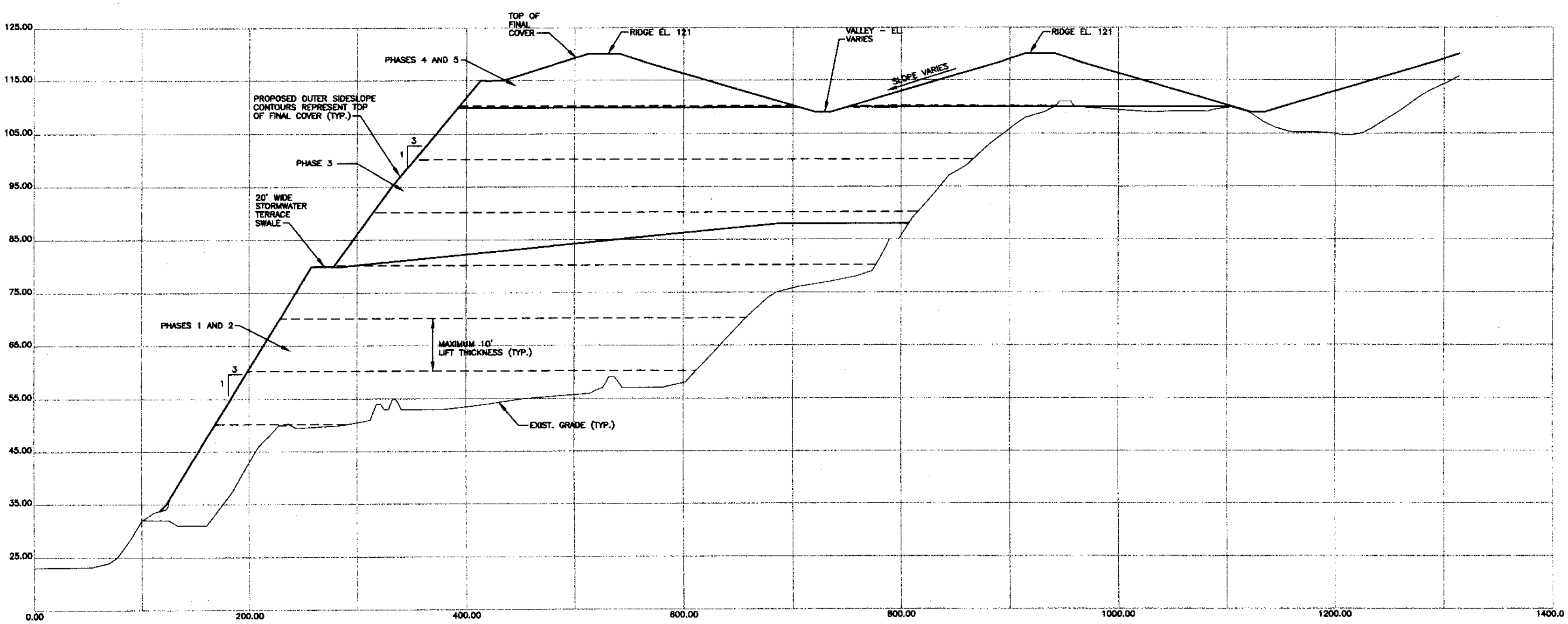
PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
22404-018	
PROJECT NUMBER	

01/10/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SECTIONS
PHASE 6
FINAL BUILDOUT

FILENAME: HDR FDEP SEQUENCING
SCALE: AS SHOWN
SHEET 13P



Q 13P 13Q **SECTION Q-Q**
SCALE: 1" = 50' HORIZ.
1" = 10' VERT.

NOTES:

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY SCS ENGINEERS, DATED MARCH 2004, FOR GRADES AND ELEVATIONS.

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HDR

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1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

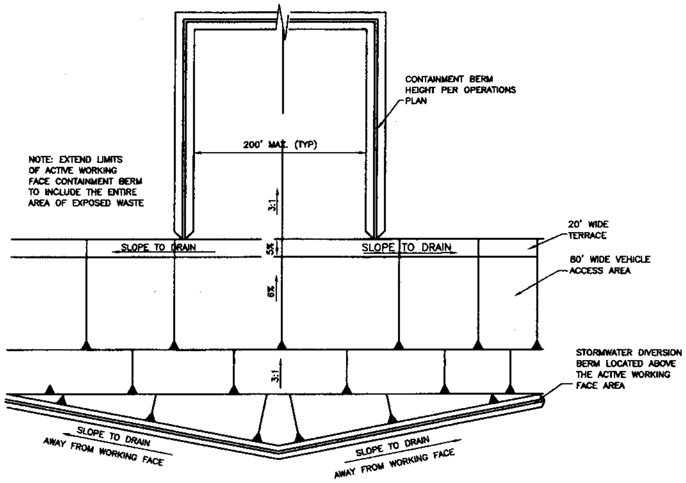
01/17/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SECTIONS
TYPICAL LIFTS

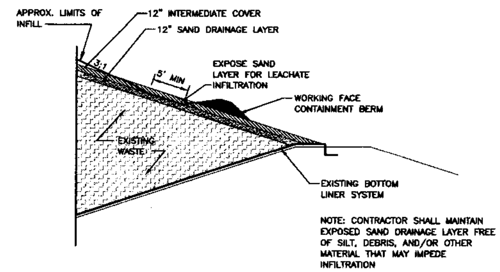
0 1" 2"

FILENAME	HDR FDEP SEQUENCING	SHEET
SCALE	AS SHOWN	13Q



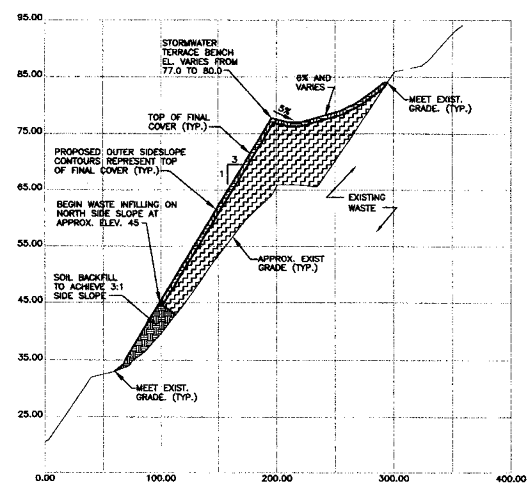
TYPICAL ACTIVE WORKING FACE DETAIL (PHASE 1 AND PHASE 2 SEQUENCE)

NOT TO SCALE



TYPICAL ACTIVE WORKING FACE DETAIL (PHASE 1 AND PHASE 2 SEQUENCE)

SCALE 1" = 10'



TYPICAL NORTH INFILL WASTE PLACEMENT (PHASE 1 SEQUENCE)

SCALE 1" = 50' HORIZ.
1" = 5' VERT.

NOTES:

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1	01/2008	FDEP MINOR PERMIT MODIFICATION SUBMITTAL

PROJECT MANAGER	R. SIEMERING
DESIGNED BY	R. SIEMERING
DRAWN BY	R. SIEMERING
APPROVED BY	T. YANOSCHAK
PROJECT NUMBER	22404-018

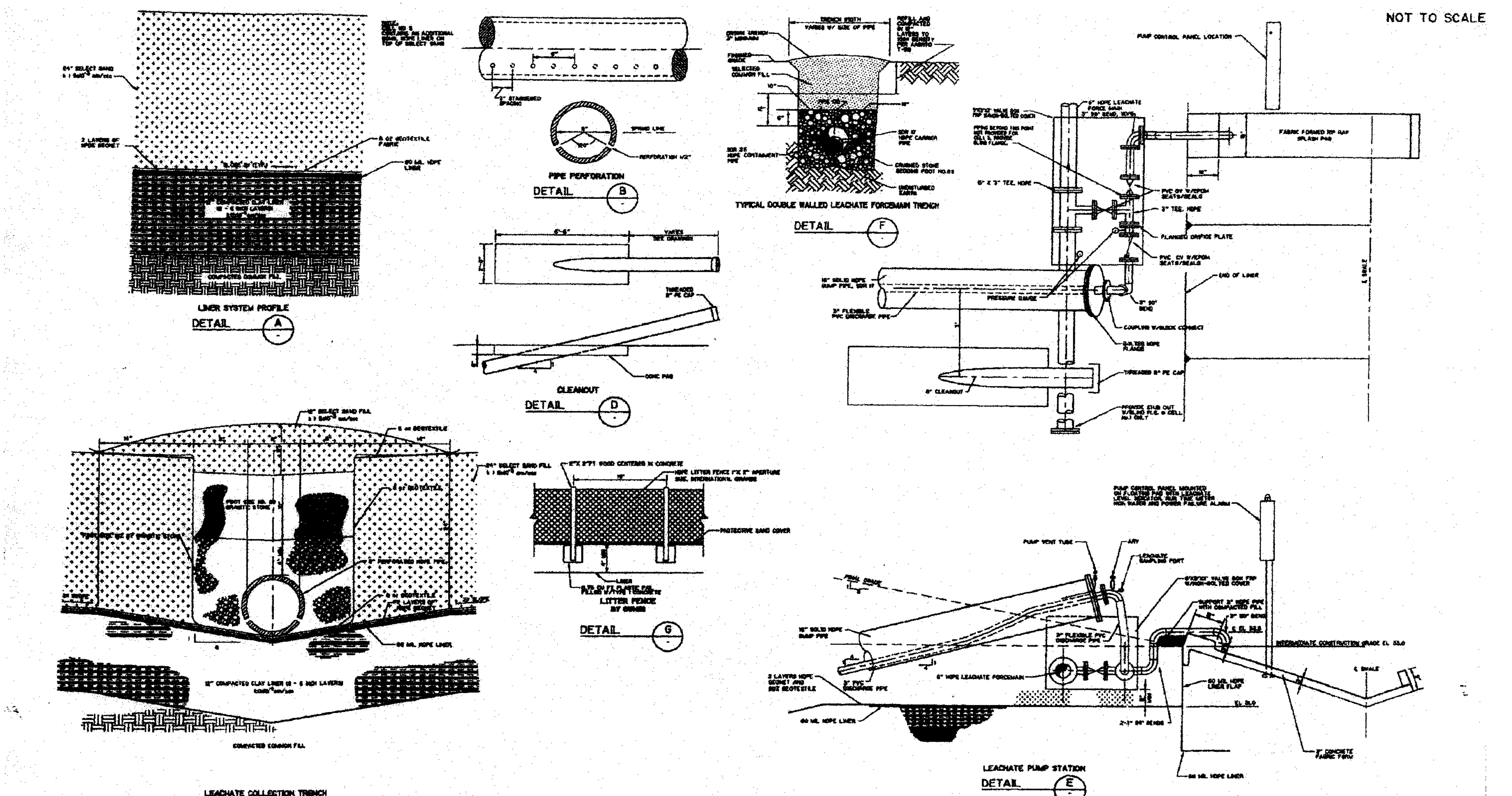
01/14/08

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

DETAILS 1

0 1" 2"

FILENAME	HDR FDEP SEQUENCING	SHEET 13R
SCALE	AS SHOWN	



NOTE:

THIS MODIFIED DRAWING IS BASED ON AUGUST 1993 CONSTRUCTION, OPERTAION, AND CLOSURE PLANS, SHEET NO. LFCD-1 LANDFILL SITE WORK CONFIRMED PLANS, FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
3012 U.S. HWY. 301 NORTH, SUITE 700, TAMPA, FL 33619 PH (813) 621-0080 FAX NO. (813) 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

Revisions							
No.	Description	Date	By	No.	Description	Date	By

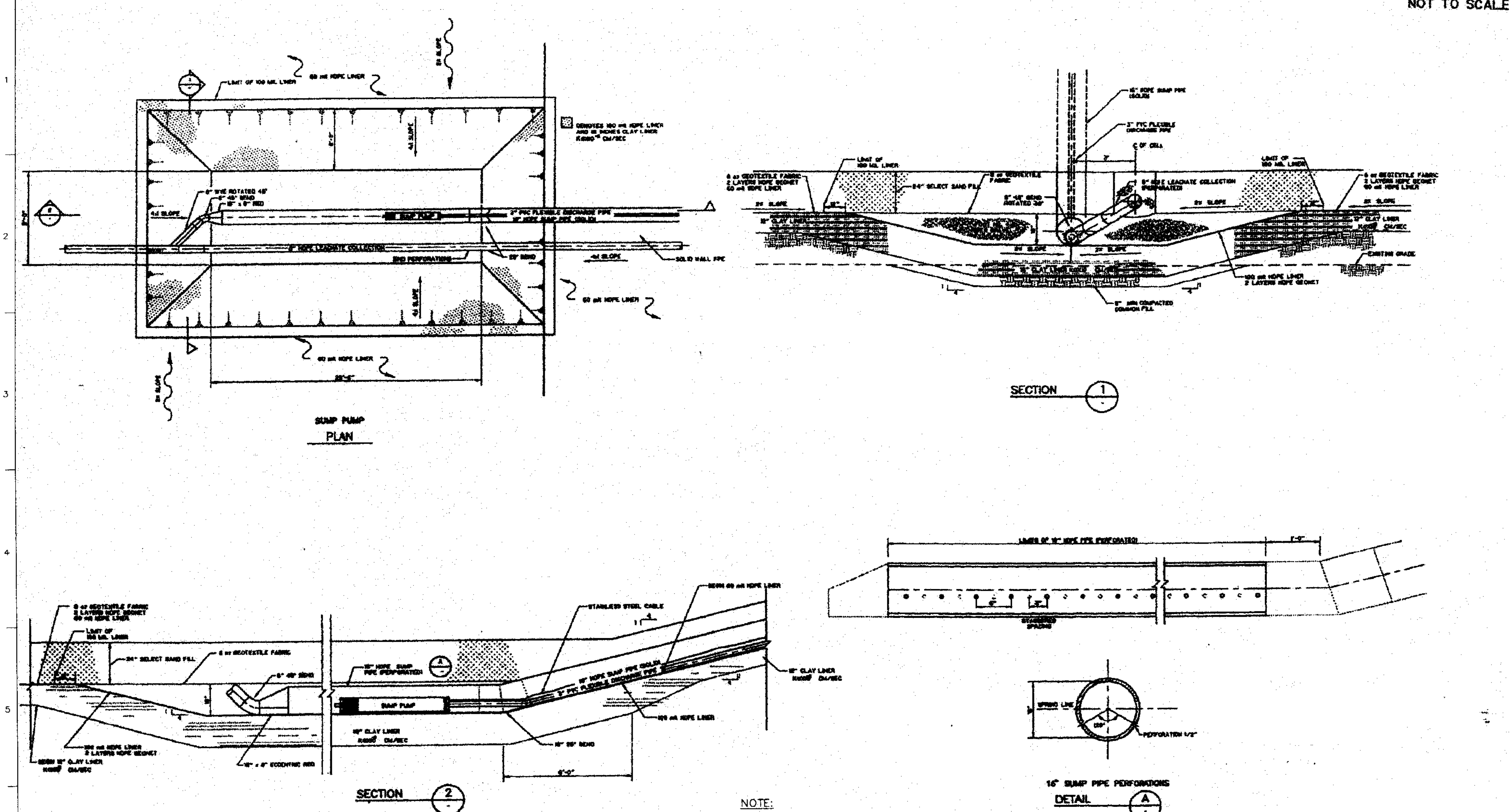
Approved By:	RBG
Checked By:	JAB
Drawn By:	GRD III

Project Location: CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX SARASOTA COUNTY, FLORIDA

LINER PROFILE AND COLLECTION PIPE DETAILS

Drawing No.	09201010.01\CDMDETAILS.dwg
Scale:	As Shown
Date:	JULY 2002
Sheet Number:	14

NOT TO SCALE



NOTE:

THIS MODIFIED DRAWING IS BASED ON AUGUST 1993 CONSTRUCTION, OPERTAION, AND CLOSURE PLANS, SHEET NO. LFCD-2 FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 30307

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS

Approved By:	RBG
Checked By:	JAB
Drawn By:	GRD III

Project Location:
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

SUMP DETAILS AND SECTIONS

Drawing No. 09201010.01\CDMDETAILS.d	
Scale: As Shown	Sheet Number: 15
Date: JULY 2002	

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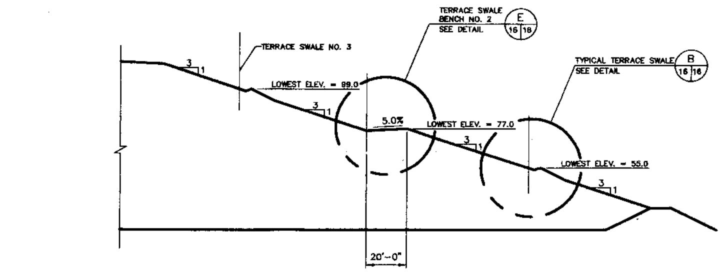
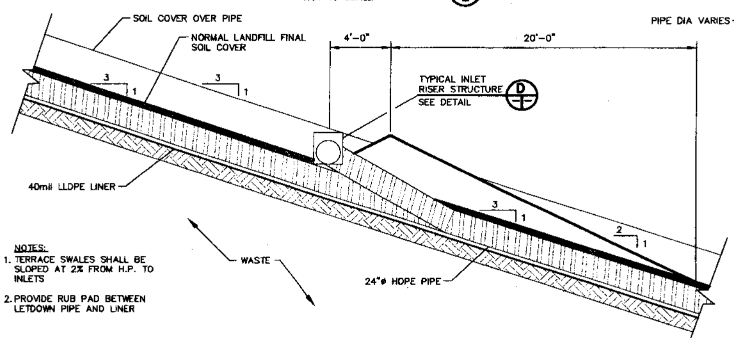
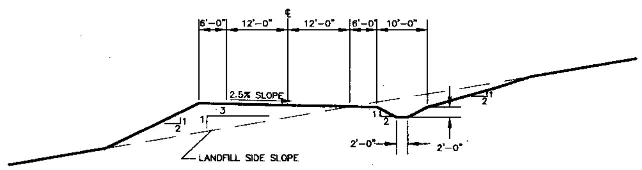


TYPICAL SIDESLOPE DETAIL
NOT TO SCALE
(A)

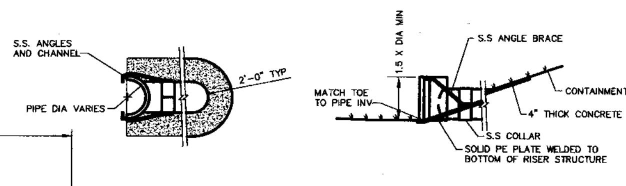


NOTES:
1. TERRACE SWALES SHALL BE SLOPED AT 2% FROM H.P. TO INLETS
2. PROVIDE RUB PAD BETWEEN LETDOWN PIPE AND LINER

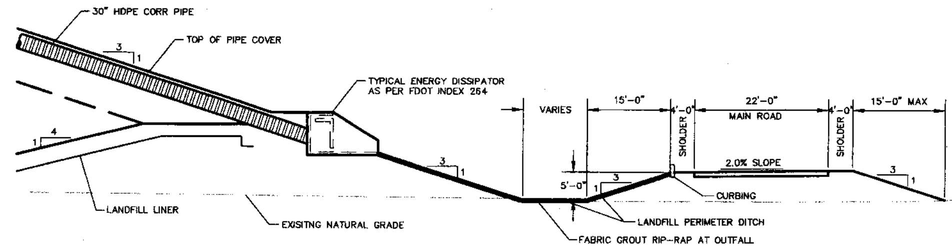
TYPICAL TERRACE SWALE DETAIL
1"=4'
(B)



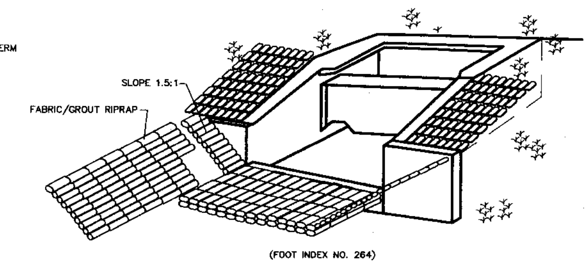
TYPICAL ACCESS RAMP DETAIL
NOT TO SCALE
(C)



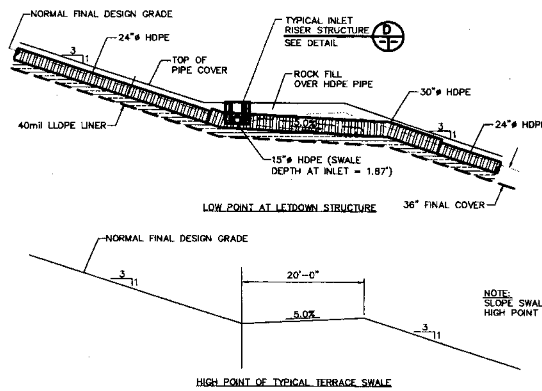
TYPICAL INLET RISER STRUCTURE DETAIL
NOT TO SCALE
(D)



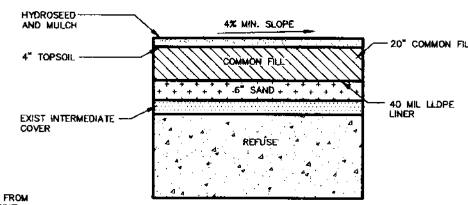
TYPICAL DISCHARGE STRUCTURE DETAIL
NOT TO SCALE
(F)



TYPICAL ENERGY DISSIPATOR DETAIL
NOT TO SCALE
(G)



TYPICAL TERRACE BENCH DETAIL
NOT TO SCALE
(E)



FINAL CAP PROFILE DETAIL
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NOTE:
DRAINAGE STRUCTURES ARE FOR FINAL CLOSURE AND PERMANENT INSTALLATION. TEMPORARY DRAINAGE PIPES SHALL BE INSTALLED AT MINIMUM AT THE LOCATIONS SHOWN ON EACH FILL STAGE AND SHALL BE A MINIMUM SIZE OF 18 INCHES.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 36097

REVISED ON 03/15/04

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS

BASED ON CDM ORIGINAL DRAWINGS DATE: 2/97

Revisions

No.	Description	Date	By	No.	Description	Date	By

Approved By:	RBG
Checked By:	JAB
Drawn By:	GRD

Project Location: CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX SARASOTA COUNTY, FLORIDA

LANDFILL CLOSURE AND DRAINAGE DETAILS

Drawing No. 09201010.01\CDMDETAILS.dwg
Scale: As Shown
Date: JULY 2002
Sheet Number: 16

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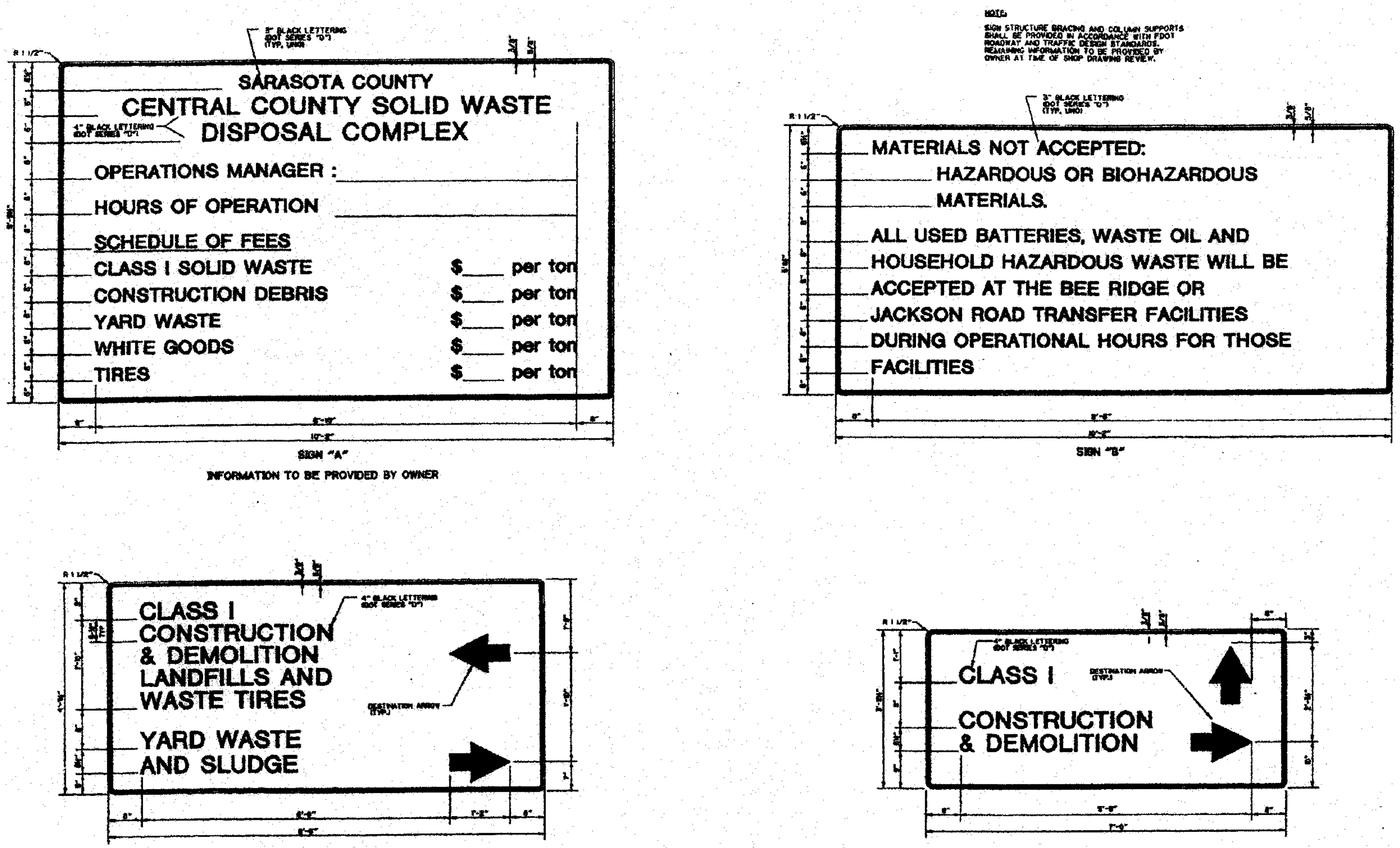

NOTE:

THIS MODIFIED DRAWING IS BASED ON NOVEMBER 1995 LANDFILL SITE WORK CONFORMED PLANS, SHEET NO. LFC-66 FROM ORIGINAL CDM DRAWINGS DATE: 2/97.

JOHN A. BANKS, P.E.
CERTIFICATE NO. 36397

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Revisions							
No.	Description	Date	By	No.	Description	Date	By

Approved By:	RBG
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CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
SARASOTA COUNTY, FLORIDA

ROADWAY SIGNAGE DETAILS

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Date:	JULY 2002	

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Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex LFGCCS Operations and Maintenance Plan

~~December 2008~~
March 2009

Prepared by
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HDR Project No. 39017-87559-195

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OPERATIONS AND MAINTENANCE PLAN
LANDFILL GAS COLLECTION AND CONTROL SYSTEM
SARASOTA COUNTY CCSWDC

1 INTRODUCTION

This Operations and Maintenance Plan (O&M Plan) has been prepared to summarize steps necessary to operate and maintain the Gas Collection and Control System (gas system) at the Central County Solid Waste Disposal Complex (CCSWDC) in Sarasota County, Florida. This O&M Plan is an integral part of the development and successful operation of the gas system. Therefore, a copy of this plan must be maintained with the CCSWDC records. This document is to be an attachment to the existing Operations Plan for the site.

2 FACILITY DESCRIPTION

2.1 Location and Description

The CCSWDC is a multi-function solid waste management facility which includes Class I waste disposal, construction and demolition (C&D) waste processing facility, yard waste mulching, household hazardous waste storage and processing, and storage of tires, white goods and other bulky waste materials for processing off-site by private firms. The CCSWDC was opened in 1998 and has been owned by Sarasota County and operated under the direction of the Sarasota County Solid Waste Operations Unit. The majority of waste received at the CCSWDC is mixed garbage and trash, which requires disposal in a permitted Class I waste disposal facility.

2.2 Gas Extraction and Control System Description

The gas system is designed to collect landfill gas generated within the existing Landfill at the CCSWDC as the waste decomposes. The landfill gas is collected at a proposed on-site landfill gas control facility where it will be flared.

In the absence of active control measures, positive gas pressure builds up within the landfill through the anaerobic decomposition of the waste materials, which produces primarily methane (typically 40-50%) and carbon dioxide (typically 50-60%). If not relieved, pressure within the landfill can force these gases to move laterally below the ground and eventually into the atmosphere, potentially causing hazardous conditions to develop in underground and/or above ground structures on and off the CCSWDC site. The gas system helps relieve the positive pressure by applying a vacuum throughout the landfill. The gas is then conveyed to a control unit, located near the southeast corner of the Landfill.

The vertical gas extraction wells are drilled into the landfill to a depth equivalent to two-thirds of the waste depth and leaving a minimum 15 foot buffer between the base liner and the bottom of the well. The wells are designed to be perforated below grade to extract gas from each level of the landfill, and include a slip-coupling to help negate the effects of settlement on the extraction wells. Additional detailed information on the gas wells and the rest of the gas system design is available in the Engineering Report submitted with the FDEP application document.

The active gas system incorporates strategically placed valves and cross lateral pipelines to provide a degree of flexibility and control in the application of vacuum at the extraction wells. Therefore, the vacuum can be selectively applied based upon actual gas generation at specific gas extraction points. The placement of the valves in the network of collection pipelines allows for sections of the gas system to be segregated for maintenance while the remainder of the system is operated.

While the gas system is operating, the change in temperature of the landfill gas results in the precipitation of moisture, which produces condensate within the gas system pipelines. The condensate from the gas system flows by gravity through the gas collection pipelines into condensate sumps and knock-out pots where the moisture is allowed to drop out from the gas. From the sumps and knock-out pots, the condensate flows by gravity or is pumped to the existing leachate management system for removal from the site.

3 Operation Procedures

3.1 General

In general, a constant vacuum is applied from the gas control unit to collect the landfill gas from the landfill. The vacuum can be adjusted at each extraction location to either collect more or less gas, based on the quality of the gas collected. At each gas collection location (i.e. wells), methane, carbon dioxide, and oxygen concentrations are measured on a regular basis. As the concentrations of these parameters change due to landfill and environmental conditions at the site (i.e. age of waste, moisture content, cover material, etc.), the vacuum is adjusted to ensure concentrations stay within permitted ranges. The initial vacuum values indicated in this report are rules of thumb, and should only be used as a starting point. The only way to accurately determine the vacuum needed for any given well is to take readings at each well and adjust the vacuum accordingly. These procedures are further described in this O&M Report.

Vacuum adjustments throughout the gas system can be made by adjusting the valves at each wellhead and at various locations on the pipeline. By adjusting the valves to increase or decrease the applied vacuum, the gas system can be balanced and the maximum amount of gas can be collected without pulling air into the waste, which would diminish anaerobic decomposition and increase the potential for landfill fires. To assist with system balancing and verify efficient operation of the gas extraction system, the following will be measured and recorded:

- Gas flow rates at each wellhead and to the gas control unit;
- Methane, carbon dioxide, oxygen, and balance gas concentrations at each wellhead and at the gas control unit;
- Vacuum at each wellhead; and
- Gas temperature at each wellhead

Initially, to balance the gas system, daily measurements will be necessary. As the system begins to stabilize and the built up gas stored in the landfill is removed, measurements may be taken less frequently. To maintain a balanced system once the system is stabilized, weekly well measurements of the vacuum, the gas temperature, and the methane, carbon dioxide, oxygen, and balance gas concentrations should be performed. Periodic gas flow rates at the wells must be recorded so that the correlation between the vacuum applied and the gas flow rate can be established for each well.

The amount of vacuum applied at each well will vary through time and is influenced by many factors, including the type of landfill cover. The typical values indicated below are used in the landfill gas industry and are suggested as a starting point in conjunction with validation or adjustment of this vacuum based on readings at each well for oxygen and methane concentrations. Typically, the vacuum applied at exterior gas extraction wells should be approximately 1 to 3 inches of water column to provide adequate gas control and avoid excessive air infiltration along the landfill slope. The vacuum that can typically be applied to interior gas extraction wells is 3 to 7 inches of water column without producing excessive air infiltration. Some experimentation will be required to find the proper vacuum to apply to these wellheads.

As a starting point, the valves should be nearly closed at the wellheads and opened slightly until the gas readings are within the required ranges. In this way, excessive air infiltration into the gas system can be avoided. The required ranges for each constituent of the landfill gas are discussed in the following sections.

3.1.1 Gas Readings

Gas readings for oxygen, carbon dioxide, and methane are commonly measured at wells using instruments such as the Landtec GEM500 and GEM2000. These instruments only measure percentages of methane, oxygen ad carbon dioxide. The remaining percentage of gas is the "balance gas". Typically the balance gas in nearly all nitrogen, and the terms balance gas and nitrogen, are sometimes used interchangeably when talking about landfill gas.

The concentration of these various gases at each wellhead is the primary indicator of how much vacuum should be applied at each gas collection location. Landfill gas typically contains approximately 40%-50% methane and 50%-60% carbon dioxide, with trace amounts of other non-methane organic compounds (NMOCs).

- If the concentration of methane is high at a particular wellhead (>50%), then the volume of gas at that location may be greater than what is currently being collected, and the vacuum applied should be increased.
- If the concentration of methane is less than 45%, the concentration of oxygen is above 1%, or the balance gas concentration is above 12%, excessive air may be entering the landfill. The vacuum should be decreased and the location should be monitored again later that same day. If the conditions have not changed, or have gotten worse, the vacuum will be shut off at that gas collection point until an evaluation of the cause of the variance can be performed, and the issue corrected, as necessary.

3.1.2 Vacuum Readings

The vacuum readings are used to develop an understanding of the relationship between the flow rate and the vacuum applied. By measuring and recording the gas flows and vacuums at each well during various weather conditions, some trends related to the gas collection on the landfill can be observed. Drastic changes in these trends, such as reduced flow or a sudden spike in oxygen or balance gas, could be an indicator that there is a problem with the gas collection system (i.e. leak or blockage in a header pipe, water in the out well, etc.) or an issue with the landfill itself (i.e. air filtration, landfill fire, diminishing gas production, etc.). Closer evaluation of the operation of the gas system is warranted if drastic changes occur in the operational trends of the system.

3.1.3 Temperature Readings

The temperature of the landfill gas at each wellhead can be an indicator of the amount of air infiltrating into the landfill. The temperature at a wellhead should remain relatively constant. If the temperature at a well increase sharply or exceeds 130° degrees Fahrenheit, excessive air may have infiltrated into the landfill, especially if the concentration of methane has decreased and/or balance gas has increased. An elevated temperature reading at a well requires immediate attention, since over time this situation increases the possibility of a landfill fire. The well should be shut down and an evaluation of the condition around the well should be performed as soon as practical after the elevated temperature reading is recorded. Corrective actions should be performed based on the results of the evaluation.

3.1.4 Isolation Valves

Valves are located at several locations throughout the header system to provide the ability to isolate portions of the gas system for maintenance or repair. Through the use of these valves, portions of the gas system can be shut down while other portions remain in operation. When portions of the system are isolated, the balance of vacuum to the wells can be affected, and must be monitored closely to ensure that excessive vacuum is not applied to the individual wells.

Additionally, individual wells can be shut down by closing the valve on the wellhead. This can be useful when conducting preventative maintenance or making repairs to individual wells.

3.1.5 Condensate Collection

Condensate is a by-product of the extraction of gases from the landfill. At the pressure and temperature inside the body of the landfill, gases are typically saturated with moisture. Once released or extracted, these gases are subject to different environmental conditions (i.e. lower temperature and pressure) that result in condensation within the gas collection system.

If not properly managed, condensate can accumulate to the extent where it disrupts the flow of landfill gas from the landfill by blocking pipes. To avoid this problem, all gas collection header pipelines are designed to allow the condensate to flow to the condensate collection structures prior to entering the gas control unit. Condensate forming in the wells is pumped in to condensate return lines installed with the header and lateral pipes. The condensate return lines then pump or gravity drain condensate to the leachate collection system or to condensate drop-out structures which then gravity drain or pump condensate to the leachate collection system.

Pipelines off of the landfill are designed to have a minimum one percent (1%) slope and pipelines on the landfill are designed with a minimum five percent (5%) slope, to allow for settlement. Pipes will be installed at a slope greater than these minimum requirements wherever possible to allow easier transmission of the condensate. Additionally, the pipes have been sized to allow the condensate to flow without affecting the gas flow capacity of the pipelines.

At the peak gas flow and maximum temperature change, it is estimated that less than a maximum of about ~~7,700~~ 7,962 gallons per day (gpd) of condensate could be generated in the gas system (see the Engineering Report of the FDEP permit application document). The actual amount of condensate generated by the gas system will be dependent on system operations and seasonal temperatures, but should be less than ~~7,700~~ 7,962 gpd. The condensate collected at the gas control unit is designed to drain into condensate collection structures which then drain or pump the condensate to the existing leachate collection system.

3.2 System Start-Up

The gas system start-up must be conducted carefully to maximize gas flow and prevent excessive vacuum at the gas extraction points. The system must be gradually balanced by adjusting the valves at the wellheads. Initially, the wellhead valves should be adjusted according to their distance from the gas control unit. Greater vacuum will be available at the wells nearer to the facility, and the valves on these wells should be opened less than the valves further away on the opposite side of the hill. In all cases, the wells should only be opened slightly at first, and should be monitored and adjusted daily until the readings stabilize on the landfill.

The monitoring of the wells will include measurements of methane, carbon dioxide, oxygen, balance gas, pressure, temperature, and flow rate. These readings will be utilized to make vacuum adjustments at the wellheads to balance the system.

3.3 System Performance Testing

Once the gas system is operational and has been balanced to a steady state of gas collection, performance testing is necessary to ensure the proper operation of the system and to troubleshoot potential problems. Performance testing is an essential component in the efficient and safe operation of the gas system. Performance testing must be conducted routinely, and the results recorded in a permanent logbook and digitally in a spreadsheet or similar program. Weekly measurements of the following parameters should be made at the wellheads:

- Temperature
- Vacuum
- Methane concentration
- Carbon dioxide concentration

- Oxygen concentration
- Balance gas concentration

Weekly measurements of the following parameters should be made at the inlet of the gas control unit:

- Gas flow rate
- Temperature at the knockout pot
- Methane concentration
- Carbon dioxide concentration
- Oxygen concentration
- Balance gas concentration

The following sections describe performance testing in more detail.

3.3.1 Gas Component Measurements

The measurements of the following gas components at the wellheads are the principal parameters used to balance the gas system:

- Methane concentration
- Carbon dioxide concentration
- Oxygen concentration
- Balance gas concentration

Measurements of these components at the wellheads should be conducted at least weekly and as often as daily during initial system start-up and balancing. The concentrations of these gases should also be determined at the following locations at the gas control unit:

- The knockout pot inlet
- The blower inlet
- The control equipment

The methane production at each gas extraction point (i.e. wellhead) will change over time, requiring periodic adjustments in the vacuum applied to maintain optimal system efficiency.

Landfill gas typically contains approximately 40%-50% methane and 50%-60% carbon dioxide. If the concentration of methane is high at a particular point, then the volume of gas at that location may be greater than the gas being collected and the vacuum applied should be increased by slightly increasing the valve opening. If the concentration of methane is 45% or less, excessive air may be entering the landfill and the vacuum should be decreased at that wellhead by slightly closing the valve, while monitoring the gas flow rate. The gas quality will not change immediately after opening or closing the valve and must be measured the next day to assure accurate methane concentrations.

The oxygen concentrations should be less than 1% at the wellheads, while the balance gas should remain below 12%. Oxygen greater than 1% and/or balance gas levels above 12% may indicate air leaks in the wellfield components or excessive vacuum on extraction wells. If the data indicates that atmospheric air is entering the system, the cause must be evaluated by performing diagnostic readings and observations at the wellheads and access ports to determine the likely source. A diagnostic approach includes measuring and comparing gas component concentrations at the wellhead, lateral, and the main header line.

Visual, auditory, touch, and olfactory senses may be helpful in isolating wellfield air leaks. Leaks can sometimes be heard (hissing) or smelled ("the rotten egg" smell associated with hydrogen sulfide). However, smelling or hearing gas leaks does not replace regular gas monitoring as a way to determine if there are leaks in the gas system. Air leaks in a gas collection system are typically first noticed when a sudden spike in oxygen or balance gas is observed in the gas monitoring results.

3.3.2 Temperature Measurements

Weekly measurements of temperature must be used in conjunction with the gas component measurements to determine the positioning of the wellhead valves. The temperature of the landfill gas at each collection point can be used as an indication of air infiltration into the landfill. The temperature at a wellhead should remain relatively constant and in no case reach 130° degrees Fahrenheit. If the temperature at a wellhead increases sharply, excessive air may have infiltrated into the landfill, especially if the concentration of methane has decreased. This situation indicates an increased possibility of a landfill fire and requires immediate attention.

If elevated temperatures are observed at any well, it should be shut down and monitored for carbon monoxide, a common by-product of combustion activities such as landfill fires. Nearby wells should also be monitored for carbon monoxide to ascertain if subsurface activities are occurring in the area. A carbon monoxide concentration of 100 parts per million (ppm) is generally a good indication that a subsurface oxidation event (i.e. landfill fire) is occurring. Wells with elevated carbon monoxide readings should be shut down and monitored regularly until the readings are reduced.

In the event that carbon monoxide readings do not decrease, or increase and spread to other wells, the proper authorities, as listed in Section 6.0, will be notified of a potential landfill fire. Other signs of landfill fires are visible smoke, open flames, burning odors, wells that have melted, or subsidence of the landfill in localized areas. Excavation around the problem area should NOT be performed, since this would introduce additional fuel (oxygen) to the fire.

3.3.3 Vacuum Measurements

Vacuum (negative pressure) measurements indicate the amount of vacuum being applied at each gas collection point. Weekly measurements (in inches of water column) should be taken during system balancing at the wellheads, the inlet to the knockout pots, and the blower inlet and outlet. The results of the vacuum measurements could indicate possible problem conditions at these locations. Reduced wellhead vacuum may be indicative of a blocked lateral pipe or of a blocked or broken header pipe if the decreased vacuum occurs at two or more well locations. Isolated low vacuum conditions may be alleviated by repeatedly closing and opening the valve, thus surging the well. In many cases, a minor blockage can be alleviated by surging, followed by re-adjusting the flow to the established optimal performance level.

3.3.4 Flow Rate Measurements

The flow rates measured in the gas system are used to determine individual well performance, and overall system performance. During initial system balancing, the flow rate must be measured weekly and more often when valve positions are changed. Typical well performance will be evident over time at each location. If the flow rate drops at a particular collection point, a blockage in the well or lateral line may exist.

Due to a build up of gases within the landfill, the flow rates of the system will be greater when the system is first operated or turned on after a system shut down. Once this positive pressure is eliminated and the system is balanced, the gas collection will equalize and remain relatively constant. Once the system is stabilized, flow rate measurements can be performed on a monthly basis, instead of weekly.

3.3.5 Water Level/Well Depth Measurements

In some cases, perched water within a landfill can cause an extraction well to clog with water. This is not expected to occur at this site since the cover soil materials used in the past have been fairly permeable and each well is installed with a pneumatic pump. However, if blockage of an extraction well is suspected for any reason, a water level measurement should be taken to make sure that the well is not filled with water.

In cases where the performance of an extraction well deteriorates over time, water level measurements can be used to determine if water within a well is covering the perforate section of the well screen and inhibiting the free flow of gas to the well. An electronic water level indicator will be used for this purpose. Well depth measurements will be used to check for well blockages due to sediments from the waste. Even partial blockages of a well can affect its ability to effectively extract gases. Water level and depth measurements should be performed promptly at wells where a blockage due to liquid or sediments is suspected.

The following procedure will be followed to measure the water level and total depth at the gas extraction wells.

1. Close the valve on the wellhead of the well being measured.
2. Remove the well cap or wellhead as necessary.
3. Turn on the water level indicator and lower the probe down the well until the instrument signals.
4. Determine the top of the water by slowly raising and lower the probe and observing the point at which the instrument signals relative to the well measuring point. Read the graduated scale on the instrument cable to the nearest 0.1 feet and record the reading in the logbook.
5. Determine the total well depth by slowly lowering the water level probe (turned to off) to the well bottom. Record the depth at which the probe can no longer be lowered.
6. Determine the length of perforated well pipe collecting gas by performing the following calculations: Subtract the depth to water from the total depth of the well to obtain the height of water within the well. Subtract the height of water within the well from the as-built total length of the perforate pipe to obtain the length of perforated pipe collecting gas.

Remedial actions for blockages in extraction wells due to excessive liquids or sediments will be determined on a case by case basis and can range from no action to installation of a permanent pump in the well. The decision on whether remedial action is necessary will be based on various factors, such as the location and past productivity of the well, and proximity of the well to gas migration pathways from the landfill.

3.4 Blower Maintenance

The blower system provides the vacuum that draws the landfill gas from the extraction wells, through the header piping, and through the condensate collection equipment. The blower system also pushes the gas into the engine. Therefore, it is essential to the overall system performance that the blower system is functioning properly. Some of the more common maintenance items are listed below.

1. Bearing and motor lubrication.
2. Valve operation.
3. Pipe and valve leak detection
4. Tightness of connectors that could vibrate loose.
5. Electrical connections.

3.5 Condensate System Maintenance

The condensate drop-out structures act as moisture separators and allow any condensate that collects in the gas collection pipeline to fall out from the gas and be collected separately. As the gas enters the drop-out structure or knockout pot, it slows down and allows moisture to drop out and/or collect on baffles or mesh screens. The condensate then flows by gravity or is pumped to the existing leachate management system.

The condensate drop-out structures preceding the knockout pot prior the blower at the gas processing unit allows a majority of the condensate to drop out of the gas collection system before it reaches the gas control unit. The condensate then flows through a vacuum trap/sump to avoid applying a vacuum to the existing leachate collection system. As condensate builds up in the trap/sump, it will reach the outlet elevation and drain to the leachate collection system. The drop-out structures are also designed for the temporary storage of condensate. This storage allows the gas system to continue to operate if the condensate flow to the leachate management system is interrupted for a short period of time.

Knockout pots typically incorporate a sight glass that allows observation of the level of condensate within the structure. Condensate should not build up within the knockout pot during normal operations. If condensate accumulates in the knockout pot, then the outlet of the knockout pot must be cleaned. If the vacuum required to pull the gas through the knockout pot increases over time, then the baffles within the knockout pot should be cleaned. An increase in the vacuum required to draw the landfill gas through the knockout pot is a good indicator that maintenance is required.

3.6 Gas Extraction Wellhead Maintenance

During the routine performance monitoring, the following will be conducted at each wellhead in addition to the monitoring previously described:

1. Check valve operation.
2. Observe piping, valves, and fittings for leakage.
3. Check the well and pipelines for accumulated liquid and repair, as necessary.
4. Check borehole seal and the condition of the landfill surface around the well.

The wellheads shall be operated and maintained in accordance with the manufacturer's specifications and operational instructions. If any problems are found at the wellheads, wells, or nearby pipeline, repairs shall be initiated at that time, if possible. If the repairs require the use of additional materials, equipment, or labor, the Solid Waste Operations Manager shall be notified and the materials, equipment, and/or labor shall be made available to perform the repairs. In any case, all repair activities shall be recorded in a logbook and on the well data spreadsheet prepared by the wellfield operator.

4 CONDENSATE MANAGEMENT PLAN

Condensate will be conveyed through the gas collection system and collected at condensate drop-out structures located through out the gas collection system and also at the knockout pot prior to the blower at the gas control unit. The condensate will be drained from the condensate collection trap/sump and gas control unit into the existing leachate collection system for disposal. Condensate will be collected for sampling from the condensate drop out structure located just prior to the knock out pot at the Landfill Gas Control Unit.

According to calculations performed for this site, about ~~7,700~~ 7,962 gallons per day of condensate is expected to be collected from the gas system during peak gas generation (year 2054). This equates to only about ~~5.4~~ 5.5 gallons per minute from the entire gas collection system. This minimal amount of condensate from the gas system will not significantly impact the operations of the leachate collection and storage system, even at peak discharge.

5 STAFFING PLAN

The gas system will require only routine maintenance once it is operating and balanced. Personnel assigned to the gas system will be principally concerned with routine system performance monitoring and maintenance. One technician should be devoted for approximately 8 hours per week to these duties. Additional manpower may be necessary for the initial balancing of the system. The startup, operation, and maintenance work associated with the gas system will be managed and directed by Sarasota County Solid Waste Operations Unit. Operational data and results of monitoring will be complied on a monthly basis, and more often for non-routine issues, as necessary. Any modifications, major repairs, or operational problems prior to performing any activities on the landfill shall be reported to the Solid Waste Operations Manager.

6 CONTINGENCY PLAN

6.1 Fire Control

Please refer to the Attachment L2 of the Operations Plan for the Landfill, as this attachment pertains solely for the Operations and Maintenance of the Landfill Gas Collection and Control System.

As with any emergency, the first thing to do is to immediately notify the proper emergency response team. In case of FIRE, immediately notify the Fire Department through the emergency phone number 991. Remember, if you are calling from a phone, which is connected to the County's switchboard, you must dial 4911 to reach the emergency operator.

If the office or one of the scale houses is open, you can contact them by radio for your emergency, and they well be able to place the necessary phone call.

Be sure to SPEAK SLOWLY, DISTINCTLY, DELIBERATELY, and remain as calm as possible. Briefly tell the person to whom you are reporting the emergency the following:

- The nature of the emergency;
- Any injuries or persons involved; and
- Where the emergency is located.

If there are injuries, you should render whatever assistance you can without endangering yourself. Use the First Aid and/or CPR training you have learned to assist where necessary. If possible, evacuate any person or equipment that may be endangered.

The gas collection and control system will be shut down in the event of a fire at the gas control unit or on the landfill.

In the event of small fires, the use of a fire extinguisher may be sufficient to contain the fire until the arrival of the Emergency Responders. Fire extinguishers are found in every Solid Waste Operations Division vehicle and on every machine. In the event of larger fires, a 4000-gallon water tanker and the pressure washer trailer is available for fighting fires. Landfill fires can be very dangerous due to the presence of methane, a combustible gas. Fire fighting by onsite personnel should only be attempted against relatively small and controllable fires.

Upon arrival of the Emergency Responders, you should take whatever steps necessary to assist.

In the event of fire in the landfill, it may be necessary to smother the fire using available dirt from the dirt stockpiles located at the landfill. In this case, the Manager of the landfill shall make immediate provisions to provide that earth cover. Also, the procedures described in Section L.11.e of the Operations Plan shall be followed.

Procedures for handling fires must be posted at an appropriate location on-site and must include names and telephone numbers of authorities to be called during an emergency. The FDEP's Southwest District, Solid Waste Section, and local police and fire departments must be notified whenever and fire, smoldering, or smoking materials are discovered at the site. Any activities shall be suspended in the vicinity of smoldering, smoking, or burning areas. Any disruption of the finished grade or covered surface as a result of fire-fighting activities must be repaired or replaced immediately upon termination of the fire-fighting activities.

6.2 Wellfield Repairs

Over time, damage to the wellfield components of the gas collection system will occur due to aging equipment, accidental damage during landfill operations, or due to weather conditions. Damage to the wellheads or collection pipelines will usually result in fluctuations of the gas readings at the wellheads and/or at the gas control unit. Based on the gas monitoring results from the wellfield, the problem areas will be identified and repaired as quickly as possible after the problem is observed. Under normal conditions, broken seals or disconnected wellheads will not cause enough disruption to the gas concentrations to require the engines and collection system to shut down. The valve on the wellhead can be shut off to minimize air infiltration into the gas system. Then, repairs can be made at the well while the collection system continues to operate.

However, if the damage to the collection system is substantial enough to make the gas from the landfill unusable in the flare (due to high oxygen or low methane concentrations), the gas control unit will be shut down until repairs can be made. When the gas control unit is shut down, gas will not be allowed to vent to the atmosphere through the gas collection system where the final cover system has been installed. ~~Landfill gas will be allowed to accumulate within the landfill until the vacuum can be reapplied to collect the gas.~~ In the event that the gas control unit is shut down for an extended period of time, the kanaflex hose at each well head will be disconnected. The control value for each well head will also be fully turned to the open position. In areas where the final cover system has not been installed, landfill gas will vent to the atmosphere. Prior to bring the gas control unit online the kanaflex hose should be reconnected at each well head. Once gas control unit is brought back online, the gas system will need to be balanced as provided Section 3.2

The main valve at the gas processing unit, located prior to the blowers, will automatically close if the gas control unit is shut down for any reason (maintenance, power outage, severe weather, engine malfunction, etc.). This is the only valve that will be closed during shutdowns. Shutting the main valve effectively contains the gas in the collection system, since the system is closed off from the atmosphere. Gas can and will build up in the gas collection system on the landfill side of the closed valves, as well as in the landfill. Excess gas will vent to the atmosphere through the landfill and well field as it does today without the gas system in place, until the system is brought back online.

The gas system has been designed with a loop system to allow the collection of gas from a majority of the landfill, even when one section is isolated and closed for repairs. This is accomplished by shutting off valves on the main headers and laterals to isolate sections of pipeline from the vacuum applied to the system. If sections of pipe are to be isolated in this way for an extended period of time, such as a day or more, gas readings should be taken at each well and the wellheads adjusted accordingly, since the vacuum will be distributed differently through the collection system.

6.3 Condensate Collection

A condensate drop-out structure located prior to the gas control unit has been designed into the system to collect as much condensate as possible before the gas enters the gas control unit. The condensate drop-out is designed to hold as much as 200 gallons of condensate as a contingency, in case blockages or other problems occur in the condensate drainage system.

6.4 Natural Disasters

The County's Hurricane Preparedness manual will serve as the emergency procedures for hurricanes and other natural disasters. Additionally, in the event that the site is evacuated, the gas collection and processing systems will be shut down and the area will be secured. Any items that could become windborne and cause damage to structures, equipment, or emergency personnel will be secured.

7 CONSTRUCTION PLAN

7.1 Documentation

During construction, careful documentation must be maintained by the contractor and verified by an experienced construction inspector. The information to be gathered as the system is constructed includes the following:

- Extraction well locations and construction details, including borehole logs and well construction diagrams for all gas extraction wells (existing and proposed);
- Pipe sizes and types;
- As-built pipe and appurtenance locations, elevations, and slope verifications;
- Pressure testing of installed solid pipes at 10 psi for one hour (no drop in pressure allowed);
- Documentation of installation, operation, and maintenance procedures for all items supplied by the contractor; and
- As-built drawings for all materials installed.

At the completion of the construction phase of the project, a professional engineer's certification must be submitted to the FDEP in accordance with F.A.C. 62-701.310(9)(a).

7.2 Construction Contingency Plan

7.2.1 Health and Safety

Performing construction work on and around a landfill requires adherence to certain precautionary measures to ensure the safety of all workers. The contractor must develop and maintain a Health and Safety Plan that meets or exceeds minimum regulatory requirements and procedures. The contractor must have supervisory personnel on-site to monitor construction activities and to assess the environmental condition of the workspace. The personnel will be responsible for establishing the hazard level of the workspace and establishing hazard level classifications for different areas of the site for the contractor.

Since the project involves excavation of landfill cover materials and previously deposited solid wastes, the progress of the work should be observed to provide an indication of potential problems. The excavations should be limited to a depth necessary to install the structures and provide the desired slope on the piping systems.

Workers must undertake all necessary safety precautions and comply with all provisions of federal, state, and local safety laws, regulations, and codes to prevent accidents and injury to personnel in the vicinity of the work area.

The contractor must inform his personnel that the construction site is a landfill and that inherent dangers exist. Workers must be required to utilize appropriate personnel protective devices and to observe safe working practices. Smoking is strictly prohibited at the work site.

Workers must be advised of the hazards associate with the work to be accomplished. Of particular concern are physical hazards associated with heavy equipment and excavations, and hazards of landfill gasses including methane, carbon dioxide, hydrogen sulfide, volatile organics, and any other known or suspected gas or vapor which may be encountered. Precautions must be taken based upon known or suspected hazards.

The contractor must designate a Site Health and Safety Officer. The Health and Safety Officer should be trained in the use of gas detection instruments, safety equipment, and health and safety procedures associated with the work conducted. The Health and Safety Officer should be present at all times when construction work is being conducted and periodically monitor the atmosphere within the breathing zone of the workers. At a minimum, the Health and Safety Officer should monitor the concentration of oxygen, the percent of the lower explosive limit for methane, and hydrogen sulfide.

Welding will not be permitted in trenches or other enclosed spaces unless properly performed over ground mats and approved by the Health and Safety Officer.

As construction progresses, valves, pipe, and other openings must be closed as soon as possible after installation to prevent gas migration though the pipeline network and to prevent foreign material from entering.

Excavation and boreholes greater than two feet in depth may not be left unattended unless covered. Storm water must be prevented from entering excavation and boreholes. Extreme caution must be exercised if manholes or other types of vaults must be entered. Confined space entry procedures must be strictly adhered to. Fire extinguishers rated at least A, B, and/or C should be readily available at the work area.

Construction equipment should be equipped with vertical exhaust and spark arrestors. Spark arrestors may not be required if motors are powered by diesel fuel. Motors used in excavated areas should be explosion proof. Start up and shut down of equipment should be conducted outside of excavations. Soil stockpiles should be situated in the vicinity of work areas for fire fighting purposes. Refuse excavated during construction will be containerized or disposed of at the active landfill face and covered by the end of the day with at least six inches of soil.

The Contractor shall comply with Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act, as set forth in Title 29, C.F.R. Copies of these regulations may be obtained from Labor Building, 14th and Constitution Avenue N.W., Washington, DC 20013.

The Contractor shall also comply with the provisions of the Federal Occupational Safety and Health Act, as amended.

7.2.2 Spoils Disposal and Handling

Spoils from excavation areas below the final cover and in areas where final cover has not been installed must be treated and handled as solid waste. This means all special handling procedures associated with normal landfill operations must be adhered to and all necessary protective clothing (hard hats, coveralls, gloves, etc.) should be worn by working personnel.

The spoils must be inspected as they are removed from the excavation to assess workspace conditions and to assure proper management of the spoils. Spoils that are deemed inappropriate for disposal at the active face of the landfill must be segregated and containerized. The FDEP and local fire department must be notified upon the discovery of suspected hazardous materials prior to arranging for proper off-site disposal.

Spoils from the construction activities on the landfill which are comprised of municipal solid wastes must be taken from the working area to the active face of the landfill, on an as needed basis, but at least daily. During well drilling activities, spoils will be brought to the active face frequently and mixed with new waste materials. This is done to help minimize the affects of odors associated with the older waste.

7.2.3 Emergency Situations

All personnel working on the landfill must be informed of the location of the closest medical facility and the telephone numbers for the local police and fire departments, and the local ambulance service. A list of emergency telephone numbers is provided below.

Ambulance Service	911
Police Department	911
Fire Department	911
Solid Waste Operations Manager Frank Coggins	(941) 861-1571 home (941) 799-4667
Dept. of Environmental Protection Southwest District	(813) 632-7600

7.3 System Decommissioning

The gas system can be relatively easily decommissioned if the system sustains irreparable damage or the gas system is no longer needed to manage gases from the landfill. To safely and properly decommission the gas system, the following tasks will be performed.

1. Shut down the gas control unit and appurtenant equipment.
2. Open the in-line control valve at each gas well to allow gases still in the gas system to passively vent to the atmosphere and relieve residual pressure in the system.
3. Locate the inlet pipe to the blower. Once located, this pipe will be cut and sealed. Measurements will be taken to be sure the location can be re-established in the future.
4. Disassemble and remove the gas processing equipment.
5. Disassemble yard piping at the gas control unit. Remove the gas processing equipment from the support base as needed for salvage or disposal.
6. Remove the disassembled equipment from site for salvage or disposal.
7. If gas collection is no longer necessary, reconstruct gas wellhead assemblies to allow passive venting.

8 ENVIRONMENTAL MONITORING

8.1 Landfill Gas Sampling and Testing

Additional source testing may be performed after the gas system is operational, to characterize the quality of the gas generated by the landfill. This testing is different than the routine monitoring of the wellheads and the inlet of the gas control unit discussed in Section 3.3, which includes taking readings for temperature, methane, oxygen, carbon dioxide and balance gas. The objective of this testing is to monitor the constituents and combustibility of the landfill gas at the inlet to the gas control unit. Testing could include measuring the concentration of volatile organic compounds, nitrogen, hydrogen sulfide, other sulfides, siloxanes, and other parameters, as necessary.

8.2 Condensate Sampling and Testing

Condensate samples will be taken at ~~the~~ a condensate drop out structure located ~~just~~ prior to the knock out pot at the Landfill Gas Control Unit. At a minimum, one condensate sample should be collected semi-annually and analyzed by a Florida certified laboratory for the same parameters that the facility leachate is tested for, including pH, metals, and volatile organic compounds.

ATTACHMENT L-16

TEMPORARY GAS VENT INFORMATION

September 16, 2009

Mr. Steve Morgan
Florida Department of Environmental Protection
Southwest District
13051 N. Telecom Parkway
Temple Terrace, FL 33637

Re: Central County Solid Waste Disposal Complex (CCSWDC)
Phase II Expansion
Permit No.: 130542-006-SC/01
Bottom Liner Temporary Gas Vent Installation

Dear Steve:

As requested during our phone conversation earlier today, this letter discusses the proposed installation of temporary gas vents within a portion of the Phase II landfill expansion area. Areas near the Cell 2/Cell 3 interface of Phase II have exhibited gas bubbles accumulating beneath the recently installed bottom liner system. The gas pressure has led to visible lifting of portions of the protective cover over the liner system. Several of the locations have been already been vented and repaired, however, the gas generally accumulates again after the repairs are made. Analysis of the gas indicates it is naturally occurring methane and not landfill gas.

The attached sketch illustrates the proposed temporary vent design and installation instructions. The vents consist of short lengths of perforated 4-inch diameter polyethylene pipe inserted beneath the liner system and connected to a riser pipe with a tee. The riser pipe will extend 2 feet above the protective cover soil and will be perforated above the protective cover soil to allow the gas to escape. An 18-inch diameter section of open-ended polyethylene pipe will be centered over the vent to protect it. Currently we estimate a maximum of approximately 6 vents will be installed although we hope this number can be reduced based on field observations after the initial vents are installed.

The vents will be removed prior to the placement of waste in the area. CQA will be provided during vent removal to verify that all pipes are removed, all geosynthetic layers are properly patched, and that a minimum of 2-feet of protective cover soil is placed over the patched area.

We understand that you will require a minor modification for the temporary gas vent installation. Since the geosynthetics installer is going to be demobilizing from the site very soon, we would appreciate your expedited review of this proposal so the County can install the vents without incurring a remobilization charge.

Please do not hesitate to contact us if you have any questions during your review.

Sincerely,

HDR Engineering, Inc.

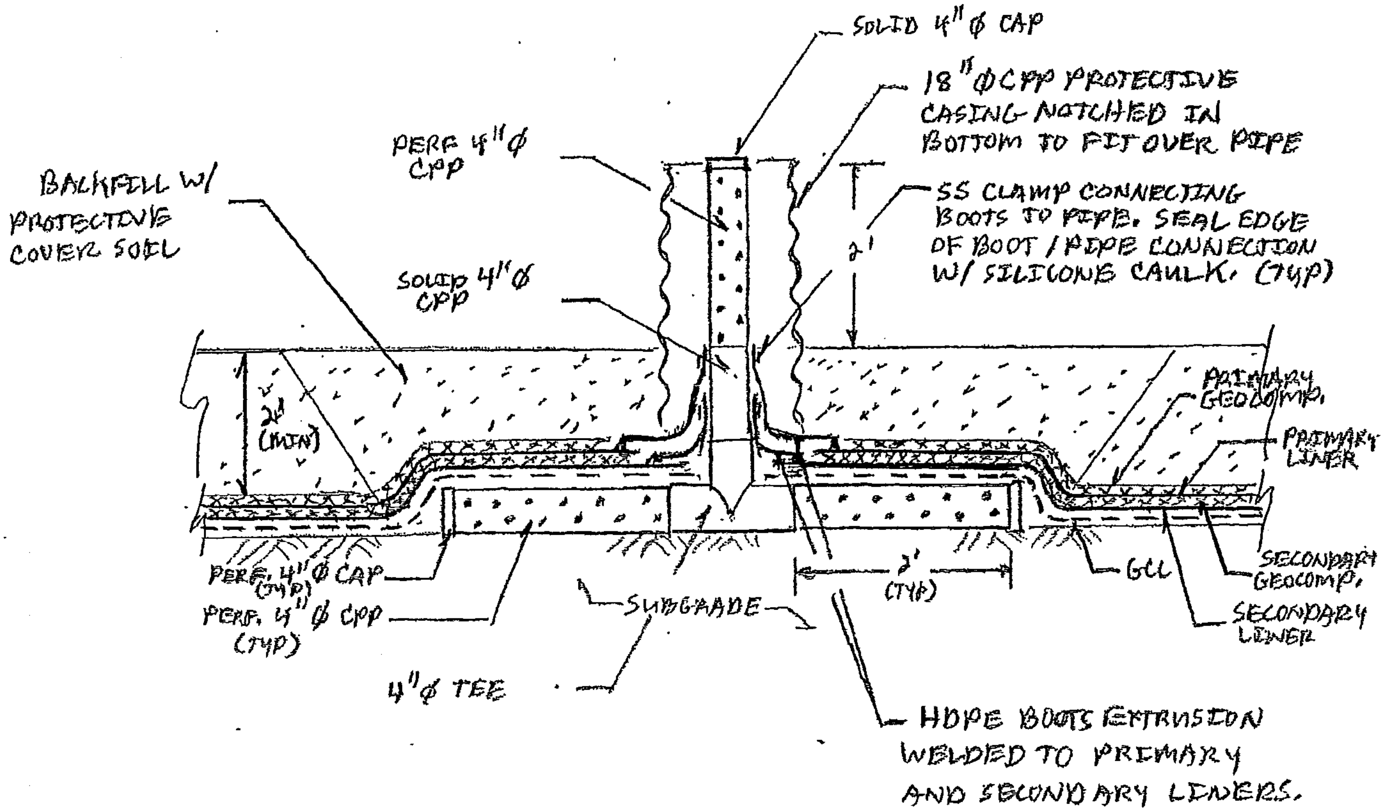
Thomas M. Yanoschak, P.E., BCEE
Senior Project Manager

Enclosures as noted.

cc: Gary Bennett, Sarasota County
Frank Coggins, Sarasota County
Spencer Anderson, Sarasota County
Jack Gibson, Sarasota County
Rich Siemering, HDR
Joe Readling, HDR

HDR | ONE COMPANY *Many Solutions*™

Project:	CCSWDC	Computed:	TMY	Date:	9/10/09
Subject:	Phase II	Checked:		Date:	
Task:	Gas Vent	Page:	1	of:	2
Job #:		No:			



TEMPORARY GAS VENT DETAIL

NTS.

NOTE: ALL PIPE AND BOOTS TO BE REMOVED, GEOSYNTHETICS REPAIRED, AND MIN. 2' PROTECTIVE COVER SOIL REPLACED PRIOR TO THE PLACEMENT OF WASTE WITHIN OR NEAR THE VENT AREA.

Project:		Computed:	Date:
Subject:		Checked:	Date:
Task:		Page: 2	of: 2
Job #:		No:	

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TEMPORARY GAS VENT CONSTRUCTION SEQUENCE

1. EXCAVATE PROTECTIVE COVER SOIL TO EXPOSE MIN. 2'x5' OF PRIMARY GEOCOMPOSITE OVER GAS BUBBLE.

2. CUT APPROX. 12" Ø HOLE THROUGH EACH LAYER OF GEOSYNTHETICS AT CENTER OF EXPOSED AREA.

3. INSERT 2-2' LENGTHS OF PERFORATED 4" Ø CPP W/ CAPS ON FAR ENDS BETWEEN GCL AND SUBGRADE PER DETAIL.

4. INSERT 4" Ø CPP TEE THROUGH HOLE IN GEOSYNTHETICS AND CONNECT PERFORATED PIPE TO TEE PER DETAIL, ORIENT SIDE-OUT OF TEE VERTICAL.

5. CONNECT APPROX. 1.5' LENGTH OF SOLID 4" Ø CPP TO SIDE-OUT OF TEE.

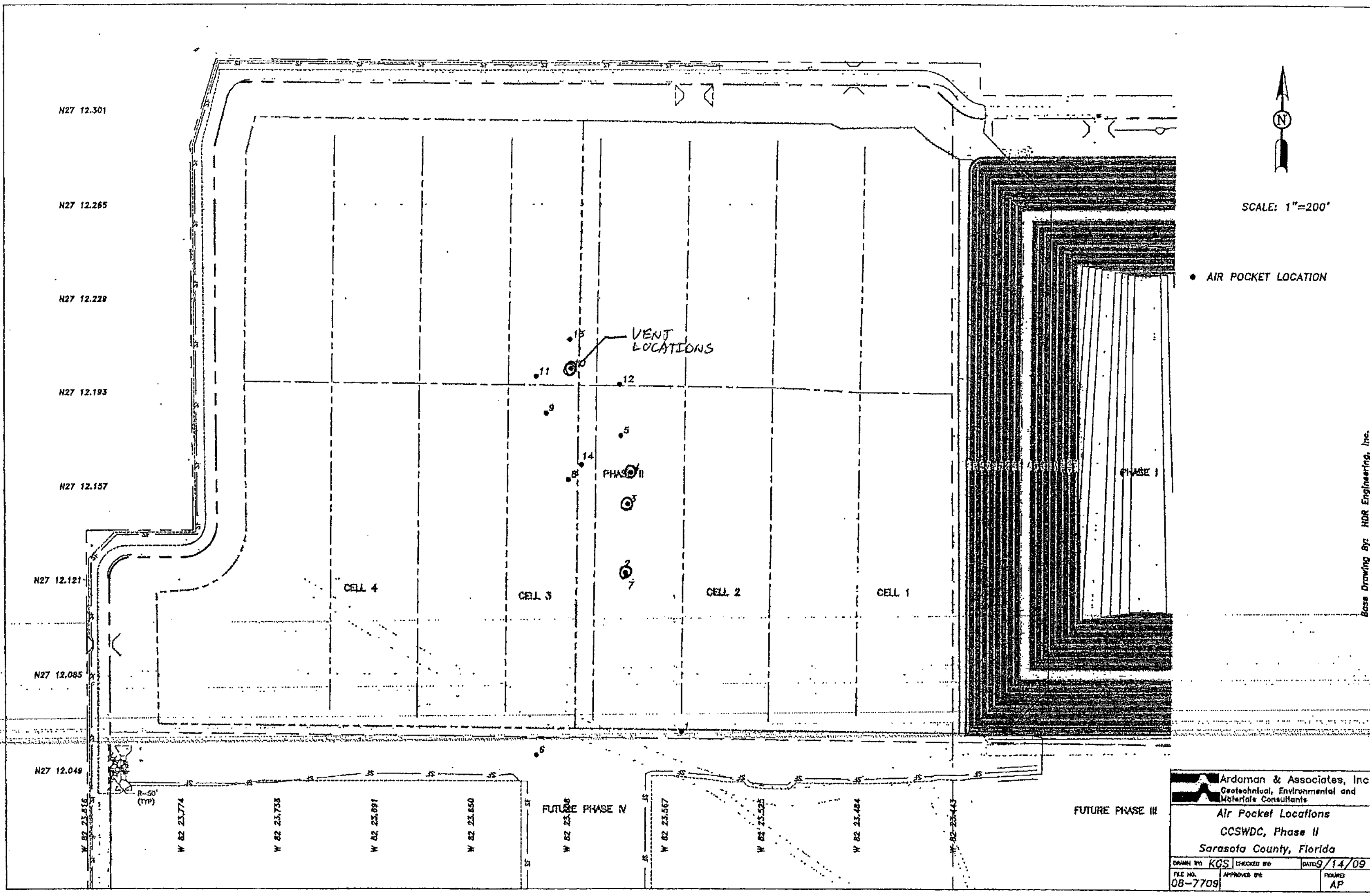
6. FABRICATE BOOT EXTRUSION WELDED TO SECONDARY HDPE LINER AND CONNECTED TO VERTICAL PIPE W/ SS CLAMP AND SEALED W/ SILICONE CAULK.

7. FABRICATE BOOT EXTRUSION WELDED TO PRIMARY HDPE LINER AND CONNECTED TO VERTICAL PIPE SAME AS ABOVE.

8. CONNECT PERF. 4" Ø CPP TO VERTICAL SOLID PIPE TO EXTEND APPROX. 2' ABOVE PROTECTIVE COVER SOIL. ATTACH SOLID CAP TO END OF PIPE.

9. CENTER 18" Ø CPP PROTECTIVE CASING OVER VERTICAL PIPE. NOTCH OUT BOTTOM OF CASING TO FIT OVER BOOTS/PIPE.

10. BACKFILL OVER PIPE AND AROUND PROTECTIVE CASING W/ MIN. 2' OF PROTECTIVE COVER SOIL.


SCALE: 1"=200'
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• AIR POCKET LOCATION
Base Drawing By: HDR Engineering, Inc.
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N27 12.265
N27 12.229
N27 12.193
N27 12.157
N27 12.121
N27 12.085
N27 12.049
W 82 23.816
W 82 23.774
W 82 23.733
W 82 23.691
W 82 23.650
W 82 23.608
W 82 23.567
W 82 23.525
W 82 23.484
W 82 23.443
CELL 4
CELL 3
CELL 2
CELL 1
PHASE II
PHASE I
FUTURE PHASE IV
FUTURE PHASE III
VENT LOCATIONS
R=50' (TYP)
Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants
Air Pocket Locations
CCSWDC, Phase II
Sarasota County, Florida
DRAWN BY: KGS
CHECKED BY:
DATE: 9/14/09
FILE NO. 08-7709
APPROVED BY:
FIGURE: AP

ATTACHMENT L-17

RAIN COVER SPECIFICATION

SECTION 02780

GEOSYNTHETIC RAIN COVER

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials, tools, and equipment, and perform all work and services necessary for or incidental to the furnishing and installation, complete, of an impermeable, geosynthetic rain cover as shown on Drawings and specified in accordance with provisions of the Contract Documents.

B. Related Sections include but are not necessarily limited to:
   1. Section 02220 - Earthwork.
   2. Section 02221 - Trenching, Backfilling, and Compacting for Utilities.

1.2 QUALITY ASSURANCE

A. Refer to the following standard references or specifications as applicable to this section of technical specifications:
   1. American Society for Testing and Materials (ASTM).
      a. ASTM D751 - Standard Test Method for Coated Fabrics.
      b. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles
      c. ASTM D5199 - Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
      d. ASTM D7003 - Standard Test Method for Strip Tensile Properties of Reinforced Geomembranes.
      e. ASTM D7004 - Standard Test Method for Grab Tensile Properties of Reinforced Geomembranes.
      f. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

1.3 SUBMITTALS

A. The Contractor must provide installation instructions.

B. The Contractor must certify that the rain cover resin is first use; top grade quality only.

PART 2 - PRODUCTS

2.1 MATERIALS

A. 20-mil Scrim Reinforced Polyethylene Rain Cover
   1. The 20-mil scrim reinforced polyethylene rain cover shall consist of two sheets of high-strength polyethylene film laminated together with a third layer of molten polyethylene. A heavy scrim reinforcement shall be placed between these plies to enhance tear resistance and increase service life.
   2. Contractor must supply (in the Bid price) a high strength adhesive tape or equal for waterproofing and sealing the field seams and for performing repair work to the rain cover. Contractor shall minimize field seams.
   3. The scrim reinforced rain cover must meet the following specifications or approved equal, as determined by the Engineer.

PROPERTY	TEST METHOD	SCRIM-REINFORCED TEST VALUE
a. Thickness, nominal	ASTM D5199	20 mil
b. Weight		11.2 oz/yd^2
c. 1" Tensile Strength	ASTM D7003	75 lbf
d. Elongation at Break	ASTM D7003	750%
e. Grab Tensile Strength	ASTM D7004	102.9 lbf
f. Trapezoidal Tear Strength	ASTM D4533	102 lbf
g. Hydrostatic Resistance	ASTM D751	136 psi
h. Perm Rating	ASTM E96 Method A	0.053 U.S.Perms
i. Water Vapor Transmission	ASTM E96 Method A	0.052 U.S. Perms

B. General Requirements
1. The rain cover must perform as specified for at least 3 years and a warranty must be supplied for at least 3 years.
2. The material must be able to be moved by site personnel as needed. The material must be resilient to damage when moved and/or relocated by site personnel. If necessary, the material may be cut for removal/relocation; however, in this case, must be able to be easily reseamed by site personnel.
3. Factory seams must utilize methods that will eliminate excess overlap.
4. The rain cover must be impermeable, capable of repelling water with no absorption.
5. The material must be anchored, when installed, through a system so as to preclude wind damage, traffic damage, and weather.

PART 3 - EXECUTION

3.1 METHODS

A. The Contractor shall deploy the GRC in a manner consistent with the manufacturer's specifications.

B. Anchoring methods shall be as per the manufacturer's specifications or as approved otherwise by the Engineer.

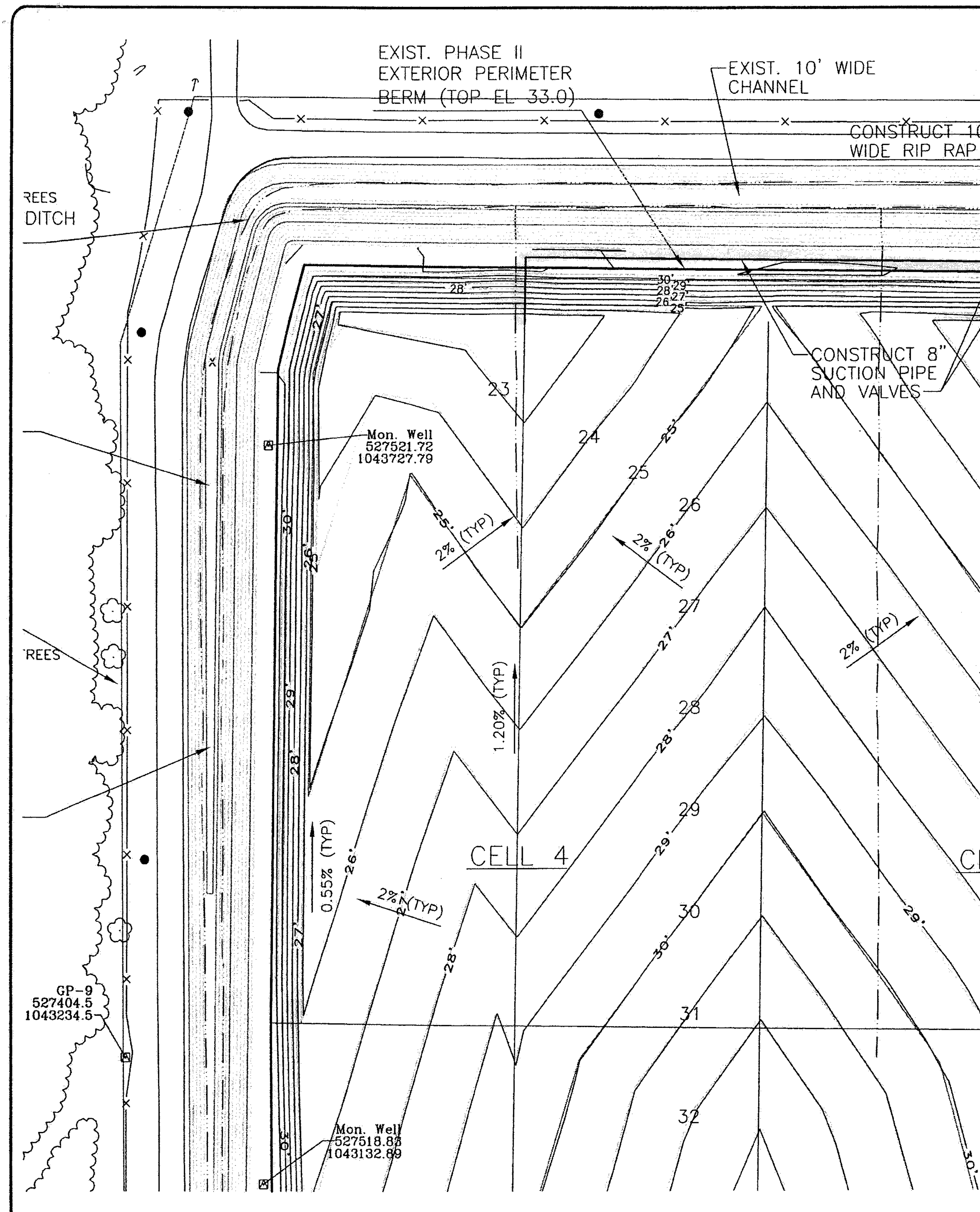
C. Any damage to the GRC during installation will be the Contractor's responsibility to repair/replace at no cost to the Owner.

D. Field seams shall be of the strongest available method for the approved material except as required for patches or similar limited area applications.

END OF SECTION

ATTACHMENT L-18

CELLS 3 and 4 RAIN COVER DEWATERING SYSTEM



REVISIONS

NOTES:

DRAWN BY:	GC
DESIGNED BY:	JG
CHECKED BY:	JG
DESIGN ENGINEER:	JG

SCALE: N.T.S.
DATE: DECEMBER 2009
ACCT.# 95222

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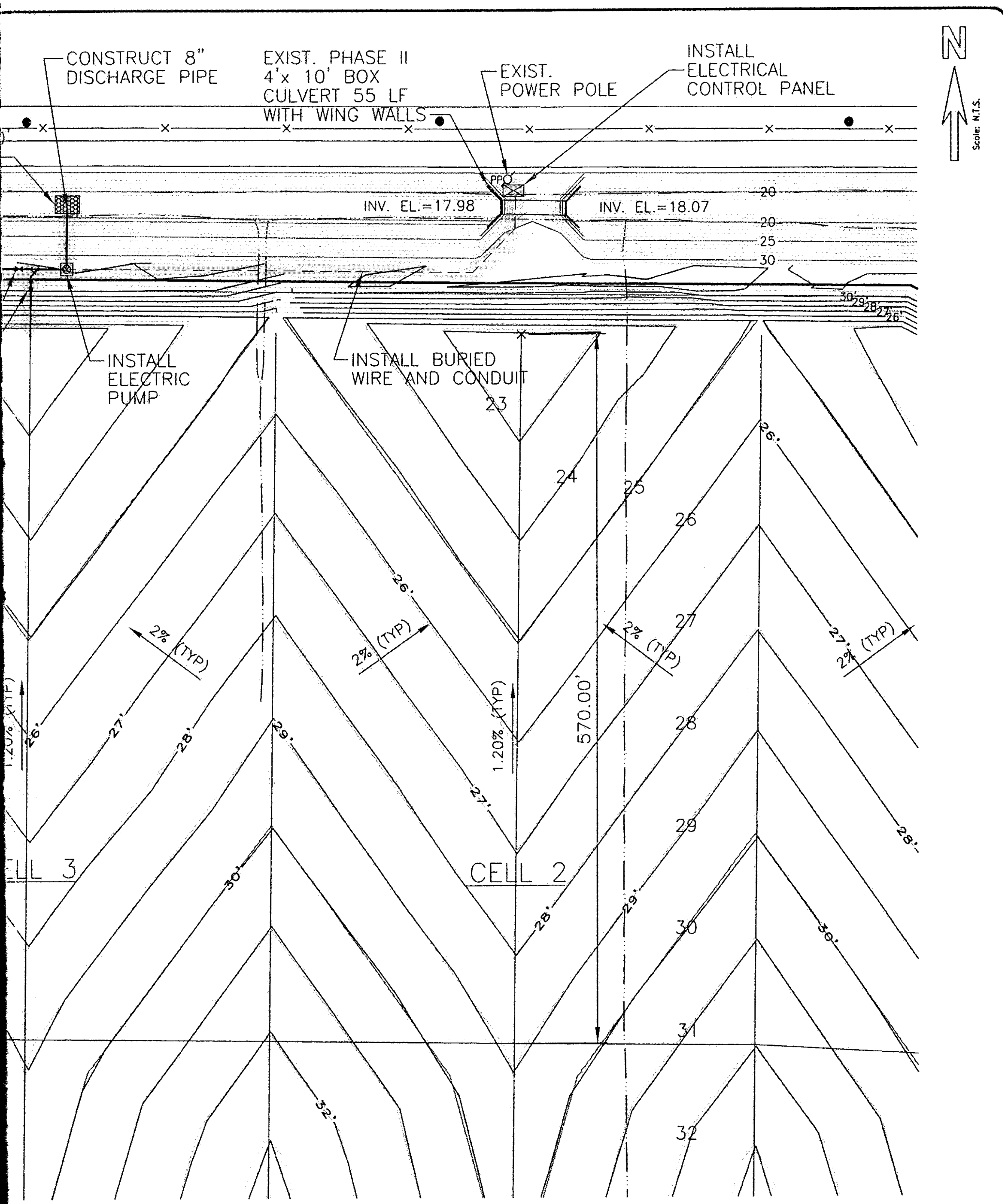
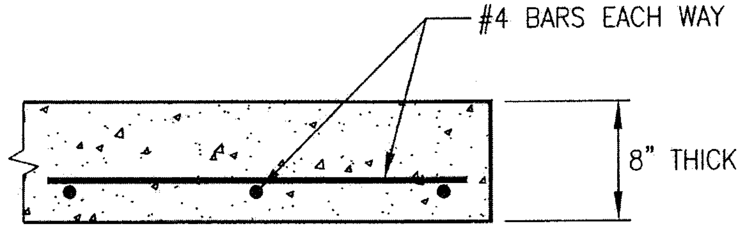


CCSWDC-01B.DWG 12/23/09

TY GOVERNMENT ERVICES, UTILITIES CENTER BLVD. ORIDA 34240	CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX PHASE II	CELLS 3 & 4 RAIN COVER DEWATERING SYSTEM		PROJECT NO. 95222 C-01B SHEET

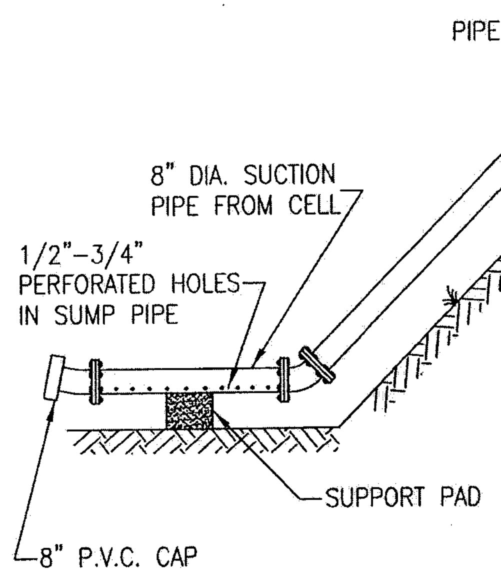
NOTES:

1. #4 REBARS @ 12" O.C. EACH WAY
2. 3,000 PSI CONCRETE @28 DAYS
3. WIDTH AND LENGTH DIMENSIONS TO BE DETERMINED IN FIELD TO ACCOMODATE PUMP TRAILER ACTUAL SIZE.



CONCRETE PUMP PAD

N.T.S.



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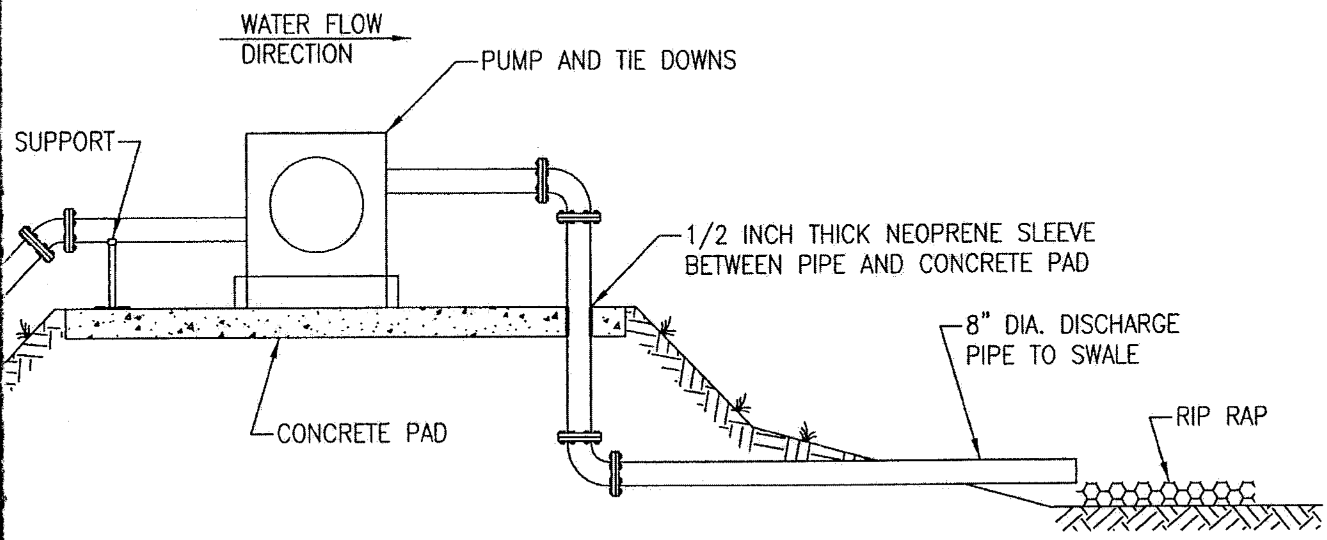
REVISIONS	NOTES:	DRAWN BY: GC	SCALE: N.T.S.	SARASOTA COUNT
		DESIGNED BY: JG	DATE: MAY 2009	ENVIRONMENTAL SE
		CHECKED BY: JG	ACCT.# 95222	1001 SARASOTA
		DESIGN ENGINEER: JG		SARASOTA, FLO



SUCTION PUMP DETAIL

N.T.S.

CCSWDC-01C.DWG 12/28/09DJ

GOVERNMENT RVICES, UTILITIES CENTER BLVD. RIDA 34240	CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX PHASE II	CELLS 3 & 4 RAIN COVER DEWATERING SYSTEM		PROJECT NO. 95222 C-01C SHEET

Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex
Class I Landfill Expansion
Construction Quality Assurance Plan

February 2007
Revised June 2007

Prepared by
HDR Engineering, Inc.
2202 N. West Shore Blvd, Suite 250
Tampa, Florida 33607-5755
(813) 282-2300

HDR Project No. 001916-43485-018

01/11/08

TABLE OF CONTENTS

LIST OF FIGURES & TABLES

SECTION 1.0
INTRODUCTION

1.1 PURPOSE

This Construction Quality Assurance (CQA) Plan is a document that contains requirements for testing materials and monitoring construction of the Sarasota Central County Solid Waste Disposal Complex Class I landfill expansion, including the responsibilities of CQA personnel, documentation control, and reporting procedures.

The plan was prepared to provide the Owner, Design Engineer, CQA Engineer, and the Contractor the means to govern the construction quality and to satisfy the environmental protection as required under current solid waste management regulations, utilizing state-of-the-art construction practices and testing to adequately document proposed construction activities. The proposed construction, testing, and documentation procedures are intended to not only satisfy the minimum regulatory requirements, but to provide the necessary safeguards and provisions to a level commensurate with the potential environmental liability to be accepted by the Owner upon completion. The roles of each party have been sufficiently defined and the level of responsibility explained such that the proposed liner system will be constructed in accordance with the design, the construction documented, and respective components approved and certified for acceptance.

More specifically, this CQA Plan addresses the soils and geosynthetics components of the liner system. Specific work elements include the following:

- Soil subgrade
- Composite liner which consists, from bottom to top, of
    - a geosynthetic clay liner,
    - secondary 60-mil geomembrane,
    - leak detection geocomposite drainage layer,
    - primary 60-mil geomembrane, and
    - leachate collection geocomposite drainage layer.
- Protective cover with perforated lateral collection piping.
- Lift Stations.
- Manholes, pipes, and fittings.
- Pumps.

The CQA organization has the primary responsibility of implementing and managing the CQA program described in this plan. When construction is complete, the CQA organization will prepare a construction certification report that will include information generated through the CQA program and will document the extent to which construction was performed in accordance with the contract documents.

The CQA Plan is intended to be a supporting document to improve the overall implementation of the work. The CQA Plan may be more or less specific than the Project Plans and Specifications, and conflicts may exist between the documents. The Contractor is instructed to bring discrepancies to the attention of the Design Engineer or CQA Engineer for resolution. The Design Engineer has the sole authority to determine resolution of discrepancies existing within the Contract Documents. Unless otherwise determined by the Design Engineer, the more stringent requirement shall be the controlling resolution.

1.2 REFERENCE DOCUMENTS

In addition to the methods, procedures and requirements outlined in this CQA Plan, refer to the following documents:

- Florida Department of Environmental Protection (FDEP) Chapter 62-701.400
- Project Plans and Specifications
- Manufacturer's Quality Assurance Manuals (where applicable)
- Contractor's Construction Quality Control Plan
- EPA/600/R-93/182
- ASTM International - Current Edition

1.3 DEFINITIONS

This section provides definitions for terms used in this CQA Plan.

Contract Documents – All contractor submittals, construction plans, as-built plans, construction specifications, QA plan, safety plan and project schedule.

CQA Organization – The company and persons including CQA Engineer, CQA Inspector, and CQA Laboratories whose primary responsibility is to implement the CQA Plan.

CQA Plan – The document contained herein, entitled Central County Solid Waste Disposal Complex Class I Landfill Expansion Construction Quality Assurance Plan prepared for Sarasota County Solid Waste Operations by HDR Engineering, Inc.

Project Plans and Specifications - All project related plans and specifications including design modifications and as-built plans.

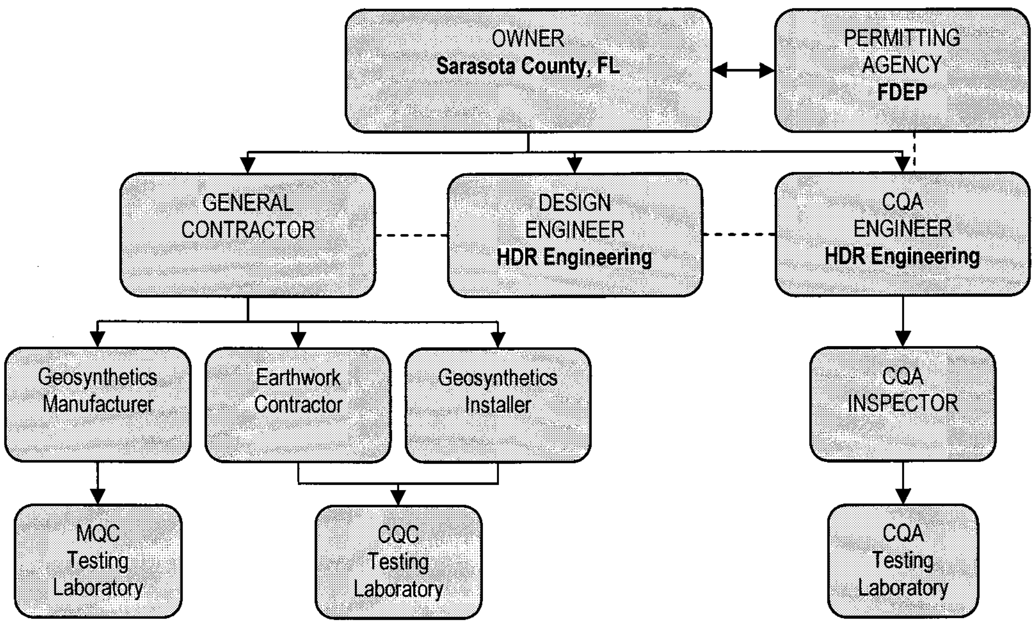
Quality Control - Actions taken by the geomembrane manufacturer and installer to ensure that the geosynthetic materials and workmanship meet the requirements of the Project Plans and Specifications.

Work - All tools, equipment, supervision, labor and material or supplies necessary to complete the project as specified herein and as shown on the Project Plans and Specifications.

SECTION 2.0
RESPONSIBILITY AND AUTHORITY

The principal organizations involved in permitting, designing and construction of the solid waste disposal facility include the permitting agency, facility owner/operator, Design Engineer, CQA organization, and Contractor. The principal organizations, their areas of responsibility and lines of authority as delineated for the CQA Plan are shown in the organization chart below and described fully in this section. This establishes the necessary lines of communication that will facilitate an effective decision making process during implementation of the CQA Plan.

Figure 1
CQA/CQC Organization Chart



2.1 PERMITTING AGENCY

The Florida Department of Environmental Protection (FDEP), as permitting agency, is authorized by law to issue a permit for the construction of landfill expansion. It is the responsibility of the FDEP to review the facility owner/operator's permit application, including the site-specific CQA Plan, for compliance with FDEP's regulations and to make a decision to issue or deny a permit based on this review. The FDEP has the responsibility and authority to review and accept or reject any design revisions or requests for variance that are submitted by the facility owner/operator after the permit is issued. The FDEP also has the responsibility and authority to review all CQA documentation during or after construction to confirm that the approved CQA Plan was followed and that the construction was completed as specified in the design.

2.2 FACILITY OWNER/OPERATOR

Sarasota County, Florida ("Owner") is the facility owner/operator and is responsible for the design, construction, operation and closure of the solid waste disposal facility. This responsibility includes complying with the requirements of the FDEP in order to obtain a permit and assuring the FDEP, by the submission of CQA documentation, that the facility was constructed as specified in the design. The Owner has the authority to select and dismiss organizations charged with design, CQA, and construction activities. The Owner also has the authority to accept or reject design plans and specifications, CQA Plans, reports and recommendations of the CQA Engineer, and the materials and workmanship of the contractor.

2.3 DESIGN ENGINEER

HDR Engineering, Inc. is the Design Engineer and is primarily responsible for designing a Subtitle D landfill expansion for the solid waste disposal facility that fulfills the requirements of the Owner and the FDEP. Design activities shall not end until construction of the expansion is completed. The Design Engineer may be requested to change some component designs if unexpected site conditions are encountered or changes in construction methodology occur that could adversely affect landfill construction. Implementation of the CQA Plan provides assurance that these unexpected changes or conditions will be detected, documented, and addressed during construction.

The Owner has the authority to delegate additional responsibility and authority to the Design Engineer by expressed consent (i.e., a contractual agreement). Additional responsibilities and authority include formulating and implementing a site-specific CQA Plan, periodic review of CQA documentation, modifying construction site activity, and identifying corrective measures in cases where deviation from the specified design or failure to meet design criteria, plans, and specifications is detected by the CQA Engineer.

2.4 CONSTRUCTION QUALITY ASSURANCE ORGANIZATION

2.4.1 Construction Quality Assurance Engineer (CQA Engineer)

HDR Engineering, Inc. is the CQA Engineer. The CQA Engineer is a party, independent of the manufacturer and the contractor, with responsibility for implementing this CQA plan. The CQA Engineer is responsible to the Owner but will function independently of the Owner and Contractor. At a minimum, the CQA Engineer is a Florida Registered Professional Engineer who possesses adequate formal academic training in engineering and managerial experience to successfully oversee and implement construction quality assurance activities for solid waste disposal facilities. The CQA Engineer is responsible for the following:

- Reviewing design criteria, permit conditions, the Contractor's CQC plan, and Project Plans and Specifications for clarity and completeness so that the CQA plan can be implemented.
- Educating CQA Inspectors on CQA requirements and procedures.
- Scheduling and coordinating CQA activities including sampling for conformance testing.

- Confirming that regular calibration of testing equipment is properly conducted and recorded.
- Reviewing and interpreting test data and reports.
- Rejecting defective work and verifying that corrective measures have been implemented.
- Certifying construction completion.
- Providing signed, sealed final report and record drawings to the FDEP stating that the liner system has been installed in substantial conformance with the Project Plans and Specifications for the liner system.

2.4.2 Construction Quality Assurance Inspector (CQA Inspector)

In order to assist the CQA Engineer in providing full-time on-site oversight and monitoring services, a CQA Inspector will be named. The CQA Inspector is a person(s) or firm(s) independent of the Contractor and Geomembrane Installer and authorized by the CQA Engineer and Owner to manage and oversee the execution of the work. The CQA Inspector shall possess formal academic training in soils engineering, engineering geology or other closely associated discipline. All completed work is subject to approval of the CQA Engineer.

The following minimum qualifications must be met by the CQA Inspector:

- The CQA Inspector must have been in business for at least ten (10) continuous years of operation immediately prior to the date of this project.
- The CQA Inspector must have inspected and tested a minimum of five (5) liner projects consisting of at least 10,000,000 square feet of HDPE liner.
- The CQA Inspector shall provide one full-time Qualified Engineering Technician and other trained technicians to perform the required tests and inspections of the liner system.
- The Qualified Engineering Technician is qualified representative of the CQA Inspector who is NICET Certified in Geotechnical Engineering Technology at Level 1 or higher, who is an engineering technician with a minimum of four years of directly related experience or a graduate engineer/geologist with one year of directly related experience.
- The CQA Inspector shall provide certified technicians to perform full time observation and documentation of activities related to the CQA of the liner system construction.
- The CQA Inspector must have registered full-time Professional Engineers on staff to sign, seal, and certify that the project was constructed in accordance with the contract documents.

The CQA Inspector's responsibilities include:

- Performing independent on-site inspection of the work in progress to assess compliance with the facility design, Project Plans and Specifications.
- Verifying that the equipment used in testing meets the test requirements and that the tests are conducted according to the standardized procedures defined by the CQA Plan.
- Reviewing design criteria, and Project Plans and Specifications for CQA requirements and procedures.
- Scheduling and coordinating inspection activities.

- Directing and supporting the inspection personnel in performing observations and tests by:
    - submitting test samples for analysis by the CQA laboratory,
    - confirming that regular calibration of testing equipment is properly conducted and recorded,
    - confirming that the testing equipment, personnel, and procedures do not change over time or making sure that any changes do not adversely impact the inspection process,
    - recording and maintaining comprehensive documentation of the liner system construction, and
    - verifying that the raw data are properly recorded, validated, reduced, summarized, and interpreted in accordance with the CQA Plan and the Project Plans and Specifications.
- Providing to the CQA Engineer reports on the inspection results including:
    - review and interpretation of all data sheets and reports,
    - identification of work that the CQA Inspector believes should be accepted, rejected, or uncovered for observation, or that may require special testing, inspection, or approval,
    - rejection of defective work and verification that corrective measures are implemented, and
    - verification that the Contractor's construction quality control plan is in accordance with the site-specific CQA Plan.

2.4.3 Construction Quality Assurance Laboratory (CQA Laboratory)

The CQA Laboratory will be independent of the geosynthetic manufacturer and installer. The CQA Laboratory will be qualified and responsible for material conformance testing for soil, geomembrane, GCL, geotextile, geocomposite, and for destructive seam tests on the installed geomembrane. The CQA Engineer and CQA Inspector will be responsible for coordinating with the laboratory, sampling the geosynthetics or arranging for sampling at the manufacturing facility, and reviewing conformance testing.

- The CQA Laboratory shall possess testing equipment which is capable of testing the interface friction between the liner system components in accordance with ASTM standards.
- The CQA Laboratory shall possess testing equipment which is capable of testing HDPE liner seams for peel and shear according to ASTM standards.
- The CQA Laboratory shall be familiar with ASTM, NSF and other applicable test standards. It shall have performed a minimum of 100 sets of peel and shear tests on seams of material the same type as specified.

2.5 CONSTRUCTION CONTRACTORS

2.5.1 Construction Contractor

It is the responsibility of the Contractor to construct the landfill system in strict accordance with design criteria, Project Plans and Specifications, using the required construction procedures and techniques. The chosen Contractor will be registered in accordance with applicable local, state, and federal requirements and will have prior landfill-related experience.

The Construction Contractor's responsibilities include but are not limited to:

- Constructing the solid waste disposal facility in strict accordance with the contract documents including Project Plans and Specifications using the necessary construction procedures and techniques.
- Formulating and implementing a Construction Quality Control (CQC) Plan in accord with requirements of the technical specification.
- Contracting with subcontractors, such as manufacturers and specialty installers, and coordinating their activities.
- Supplying required materials and supporting QC documentation either directly or through subcontractors.
- Discussing procedures for locating and protecting construction materials and for implementing methods for preventing damage of the materials from inclement weather or other adverse effects.
- Coordinating activities with the CQA Engineer and CQA Inspector and providing the CQA organization with all necessary documentation as detailed in this plan.
- Updating original construction drawings and specifications to reflect any deviation from the original plans and furnishing as-built record drawings and all required quality control documentation.
- Planning and monitoring construction site health and safety procedures.
- Approving shop drawings prior to submission to the CQA Engineer.
- Determining and verifying:
    - field measurement,
    - field construction criteria,
    - catalog numbers and similar data, and
    - conformance to Project Plans and Specifications.
- Coordinating each submittal with other submittals and with the requirements of work and of the Project Plans and Specifications
- Notifying the CQA Engineer in writing, at time of submission, of any variance in the submittals from the requirements of the Project Plans and Specifications. Any such deviations permitted by the Design Engineer will require modifications to the Project Plans and Specifications.

2.5.2 Site Supervisor

The Construction Contractor will be represented in the field by a Site Supervisor. The Site Supervisor is responsible for the following:

- Scheduling and coordinating work including subcontractors.
- Informing the CQA Inspector and CQA Engineer of any discrepancies between the Project Plans and Specifications and field conditions.
- Coordinating with the CQA Inspector and CQA Engineer.
- Attending project meetings.
- Maintaining a daily log of construction and quality control activities.
- Implementing and verifying CQC procedures.

- Submitting proposed alternative materials or construction methods for approval before acquisition and use.
- Construction.

2.5.3 Geomembrane Installation Contractor (Geomembrane Installer)

The Geomembrane Installer may be a general contractor, a subcontractor to the general construction contractor, or a specialty contractor hired directly by the Owner. The Geomembrane Installer has not been chosen at this time. The selected contractor will have experience in installing at least 10 million square feet of geosynthetics.

The Geomembrane Installer or their CQC Consultant will be responsible for the following:

- Coordinating with the general contractor and CQA Inspector.
- Handling, storing, placing, and installing manufactured materials.
- Implementing and verifying a manufacturer and installer QC plan.

SECTION 3.0
SUBGRADE AND PROTECTIVE COVER

This section contains procedures and tests, which must be implemented in order to ensure the soil components of the base liner system meet the design standards. This is a critical component of the Construction Quality Assurance Plan. All required tests and sampling procedures within this section shall be performed in accordance with generally accepted engineering procedures.

3.1 SUBGRADE

3.1.1 Preconstruction

Soil material to be used as subgrade shall consist of select borrow material meeting all requirements specified in the contract documents. The borrow material for liner subgrade must be of approved regular on-site borrow or borrow excavation unless otherwise specified or noted on drawings. If fill comes from off-site location, Contractor must submit the source test data to the CQA Inspector for approval a minimum of 48 hours prior to intended use.

Table 3- 1
Subgrade Test Procedure Standards

STANDARD	TEST DESCRIPTION
ASTM C136	Sieve Analysis of Fine and Coarse Aggregates
ASTM D1557	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft^3)
ASTM D 1556	Test Method for Water Content of Soil and Rock In-Place by the Sand-Cone Method
ASTM D422	Method for Particle-Size Analysis of Soils
ASTM D2922	Test Methods for Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
ASTM D2487	Test Method for Classification of Soils for Engineering Purposes (United Soil Classification System)
ASTM D2488	Practice for Description and Identification of Soils (Visual-Manual Procedure)
ASTM D3017	Test Method for Water Content of Soil and Rock In-Place by Nuclear Methods (Shallow Depth)
ASTM D2216	Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
ASTM D2434	Method of Test for Permeability of Granular Soils (Constant Head)
ASTM D5321	Test Method Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method
ASTM D6243	Test Method for Determining the Coefficient of Soil and GCL or Geosynthetic and GCL Friction by the Direct Shear Method
ASTM D3080	Method for Direct Shear Testing of Soil Under Consolidated Drained Conditions
ASTM D4318	Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D2937	Test Method for Density of In-Place Soils by Drive-Cylinder Method

Soil for the subgrade should be free of deleterious material (sticks, roots, waste, etc.) and rock fragments, boulders or cobbles greater than three inches in size. Fines content of installed soil shall be a maximum of 20% (passing #200 sieve) and monitored as specified in the Project Plans and Specifications.

The CQA Inspector on-site shall test materials and monitor compliance with requirements of the Project Plans and Specifications. All observations and tests shall be conducted at locations selected by the CQA Inspector who has been assigned responsibility for verification and documentation of the element in question.

3.1.2 Construction

The following is an outline of the minimum construction requirements for the subgrade. For more detailed information see the specification Sections 02220, Earthwork and 02776, Geosynthetic Clay Liner (GCL).

- Approval from CQA Inspector with regard to suitability of soils and acceptable subgrade.
- Atmospheric conditions observed and recorded by the CQA Inspector and appropriate actions taken when unsuitable weather conditions exist.
- Subgrade soils proof-rolled in accordance with technical specification Section 02776 Part 3.1 F..
- Dust control continuous throughout the subgrade preparation operations.
- Final grading completed in accordance with specification Section 02220, Earthwork.
- Engineered fills compacted to specified requirements.
- Provide as built survey of subgrade sealed by a professional land surveyor illustrating construction of all design features.
- Approval from CQA Inspector with regard to final surface smoothness and uniformity. Any objects protruding from the final surface or coarse fragments within the surface material that may damage the geomembrane will be removed.

Table 3- 2
Subgrade Conformance and Construction Testing

TEST DESCRIPTION	STANDARD	TEST FREQUENCY
Subgrade		
Density, Nuclear Method	ASTM D2922	1 per 10,000 ft^2
Moisture Content, Nuclear Method	ASTM D3017	1 per 10,000 ft^2
Engineered Fill		
Density, Nuclear Method	ASTM D2922	1 per 1,500 yd^3
Moisture Content, Nuclear Method	ASTM D3017	1 per 1,100 yd^3
Sand Cone or Drive Cylinder Method	ASTM D1556/D2937	1 per 20 nuclear tests
Oven Moisture Content Verification	ASTM D2216	1 per 20 nuclear tests
Moisture/Density Relations	ASTM D1557	1 per 20,000 yd^3

3.2 PROTECTIVE COVER

3.2.1 Preconstruction

Soil materials to be used as the 24-inch thick protective cover shall consist of select borrow material meeting all requirements specified in Specification Section 02240, Protective Cover and Leachate Collection Stone. The borrow material for protective cover must be of approved regular on-site borrow or borrow excavation unless otherwise specified or noted on the drawings. If cover soil comes from off-site location, the Contractor must submit the source test data to the CQA Inspector for approval a minimum of 48 hours prior to intended use.

The protective cover layer shall be placed and compacted in accordance with the specification Section 02240. The Contractor will provide gradation and permeability testing of the granular material at the frequency specified in the specificationSection 02240. The CQA Inspector will observe that placement of the granular material is done in a manner to protect the geocomposite, and review the gradation and permeability test data provided by the Contractor. The CQA Inspector may conduct confirmation gradation and density testing in accordance with specification Section 02240.

Table 3- 3
Protective Cover Test Procedure Standards

STANDARD	TEST DESCRIPTION
ASTM C33	Standard Specification for Concrete Aggregate
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D2434	Standard Test Method for Permeability of Granular Soils (Constant Head)
ASTM D4373	Standard Test Method for Rapid Determination of Carbonate Content of Soils
ASTM D5321	Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method

3.2.2 Construction

Protective cover does not require compaction control; however, it should be stable for construction and maintenance traffic. Care will be exercised in placement so as not to shift, wrinkle or damage the underlying geosynthetic layers, and the placement methods will be documented.

The protective cover shall be placed under the direct supervision of the CQA Inspector. The Contractor shall utilize care to avoid damage to the geocomposite. No vehicular traffic will be permitted on the unprotected liner system. The loose thickness of the initial lift of protective cover shall not be less than 12 inches and spread with low ground pressure equipment (maximum pressure 8 psi). Fill shall be placed by equipment pushing from the bottom to top of slope. Material shall not be placed over standing water or ice.

The following is the general protective cover construction sequence:

- Obtain sample of materials for visual reference if different.
- Review material submittals and pre-construction testing.
- Establish stockpile location, if required.
- Perform sampling, gradation, and permeability testing of material before installation at the frequencies established below to verify material quality.
- Verify the underlying geocomposite construction is complete before material installation.
- Verify grade control is established to control thickness of material placed.
- For placement of material over geosynthetics, monitor 12-inch minimum thickness of material below spreading equipment and the spreading equipment has a ground pressure rating equal to or less than 8psi. During placement of material, identify geocomposite damaged during material installation and establish that the damage is repaired.
- Monitor haul road thickness over geocomposite and verify that equipment hauling and placing material over geocomposite meets equipment specifications.
- Monitor placement of material over piping and verify that pipe is not damaged by occasionally uncovering piping.
- Monitor equipment speed over material.

All observation and test locations shall be conducted at locations selected by the CQA Inspector. Weather conditions shall be observed and recorded by the CQA Inspector and appropriate actions will be taken when unsuitable weather conditions exist.

The required thickness of protective cover will be verified by survey methods on an established grid system with not less than one verification point per 5,000 square feet of surface.

Table 3- 4
Protective Cover Conformance and Construction Testing

TEST DESCRIPTION	STANDARD	TEST FREQUENCY
Protective Cover		
Gradation	ASTM D422	1 per 1,500 yd^3
Permeability	ASTM D2434	1 per 3,000 yd^3
Leachate Collection Stone		
Gradation	ASTM C33	1 per 1,500 yd^3
Permeability	ASTM D2434	1 per 3,000 yd^3

SECTION 4.0
GEOSYNTHETIC CLAY LAYER

The following section outlines the CQA required for the installation of the Geosynthetic Clay Layer (GCL).

4.1 PRECONSTRUCTION

4.1.1 Manufacturer's Quality Control

Before scheduled manufacturing of the product, the Geosynthetics Manufacturer will provide the CQA Inspector the following items for review and testing:

- Manufacturer's description (cut sheet) of the proposed GCL documenting that it will meet or exceed specified requirements.
- Available historical data documenting that the proposed GCL will meet specified interface peak strength.
- Written instructions for storage, handling, installation, seaming and repair of the proposed GCL.

Before shipment of the GCL, the CQA organization shall review all pre-construction submittals.

Before installation, the CQA Inspector shall take conformance samples for testing in accordance with this CQA plan and the specification Section 02776, Geosynthetic Clay Liner (GCL).

Table 4- 1
Manufacturer's Quality Control Testing for GCL

MATERIAL	TYPE OF TEST	STANDARD TEST METHOD	FREQUENCY OF TESTING
Geosynthetic Clay Layer	Bentonite Mass	ASTM D5993	1 per 40,000 ft^2 placed
	Index Flux and calculated hydraulic conductivity, at 10 psi confining pressure and 2 psi head	ASTM D5887	1 per 100,000 ft^2 placed
	Minimum Grab Tensile Strength	ASTM D4632	1 per 40,000 ft^2
	Typical Shear Strength	ASTM D6243	1 per project
	Minimum Free Swell	ASTM D5890	1 per 100,000 lbs
	Maximum Fluid Loss	ASTM D5891	1 per 100,000 lbs
	Minimum peel strength, MD	ASTM D6496	1 per 40,000 ft^2 placed
	Tensile strength, MD	ASTM D6768	1 per 40,000 ft^2 placed

4.1.2 CQA Conformance Testing

The GCL manufacturer will provide the Contractor and CQA Inspector with a written certification signed by a responsible party, that the GCL actually delivered has properties which meet or exceed the guaranteed properties.

The CQA Inspector will examine all manufacturer's certifications to ensure that the property values listed on the certification meet or exceed the project specifications. Any deviations will be reported to the CQA Engineer. Interface friction testing will be conducted in accordance with this CQA Plan and specification Section 02776, Geosynthetic Clay Liner (GCL).

This material is part of a system. The system shall meet the requirements before the component material can be deemed acceptable. Testing will include the interfaces between the following adjacent materials.

Table 4- 2
CQA Conformance Testing for GCL

MATERIAL	SPECIFICATION SECTION
Protective Cover	02240
Drainage Composite	02777
60 Mil Textured HDPE	02775
Drainage Composite	02777
60 Mil Textured HDPE	02775
Geosynthetic Clay Liner (GCL)	02776

The testing shall be performed as follows.

- Conduct one set of three direct-shear interface friction tests on each of the interfaces listed above. Normal stresses calculated to represent project conditions and presented in specification Section 02776 shall be used during hydration and shearing. Samples shall be allowed to hydrate for a minimum of 3 days prior to shear testing. The hydration fluid shall be leachate. Orient all geosynthetic materials such that the shear force is parallel to the down slope orientation of these components in the field.
- Verify that the materials meet the minimum friction angle required for each interface in the system as defined in the Project Plans and Specifications.
- Test interface friction between the GCL and adjacent materials in accordance with ASTM D6243, Procedure B. The rate of horizontal deformation shall be determined from the T50% time calculated during the consolidation phase of each test.
- Compact the subgrade soils within the moisture-density requirements of their respective specifications.

4.2 CONSTRUCTION

4.2.1 Delivery, Storage and Handling

During delivery of GCL the CQA Inspector will observe for the following:

- Equipment used to unload the materials does not damage the GCL.
- Rolls are wrapped in impermeable and opaque protective covers.
- Care is used to unload the rolls.
- Documentation required by the Pspecification Section 02776 has been received.
- Each roll is marked or tagged with manufacturer's name; project identification; lot number; roll number; roll dimensions and that this information is documented on a geosynthetic receipt form.
- Materials are stored in a location that will protect the rolls from exposure to precipitation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions.

Damaged rolls may be rejected. If rejected, it must be verified that rejected material is removed from the site or stored at a location separate from accepted rolls. GCL rolls that do not have proper manufacturer's documentation must be stored at a separate location until all documentation has been received and approved.

4.2.2 GCL Subsurface Preparation

Before GCL installation, the CQA Inspector will observe for the following:

- Lines and grades have been verified by the Contractor and a subgrade acceptance form has been submitted.
- Soil subgrade surface has been prepared in accordance with specification Section 02776.

4.2.3 GCL Placement and Seaming

During GCL deployment and seaming operations, the CQA Inspector will observe for the following:

- All defects and defect corrective actions (panel rejected, patch installed, etc.) are recorded, and corrective actions are performed in accordance with specification Section 02776.
- Equipment used to install geocomposite does not damage it during handling, deployment, or due to leakage of hydrocarbons or other means.
- Crews working on the GCL do not smoke, wear shoes that could damage the GCL, or engage in activities that could damage the GCL.
- The GCL is securely anchored to prevent movement by the wind.
- Adjacent panels are overlapped and seamed in accordance with tspecification Section 02776 and the proper amount of bentonite is applied to the seam overlap.
- The GCL is not exposed to precipitation.
- Final GCL surface is free of objects that could damage the overlying geomembrane.

The CQA Inspector will inform both the CQA Engineer and Contractor if they observe any conditions that do not conform to the requirements of the CQA Plan.

4.2.4 GCL Repairs

Where repairs are necessary the CQA Inspector will observe and document patching activities used to repair large holes, tears, and small defective areas. GCL that has been hydrated (above 100% per ASTM D4643) shall be removed and replaced.

SECTION 5.0
GEOMEMBRANE LINER

This section covers the work necessary to construct and test the double geomembrane lining system, which will consist of two 60 mil High Density Polyethylene (HDPE) liner materials in accordance with specification Section 02775, HDPE Geomembrane Liner Systems. The HDPE liner materials shall be new, first quality products designed and manufactured specifically for the purposes of the Work and shall have satisfactorily demonstrated, by prior use, to be suitable and durable for such purposes. The geomembrane will be textured on both sides and shall be an unmodified HDPE containing no plasticizers, fillers, chemical additives, or extenders. The only other compound ingredients to be added to the geomembrane resin shall be anti-oxidants and heat stabilizers required for manufacturing. The geomembrane shall be supplied as a single ply continuous sheet with no factory seams and in rolls with a minimum width of 22 FT. The roll length shall be maximized to provide the largest manageable sheet for the fewest field seams.

Extrusion resin used for fusion welding with extrudate to make field seams between geomembrane sheets and for repairs shall be HDPE produced from, and the same as, the geomembrane sheet resin. Physical properties shall be same as HDPE geomembrane sheets.

The geomembrane liner shall conform to the testing requirements of GRI Standard GM13 - "*Test Properties, Testing Frequency and Recommended Warrant for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes*" (Geosynthetic Research Institute; Philadelphia, PA) except as modified herein.

5.1 PRECONSTRUCTION

5.1.1 Certification of CQA Plan Conformance

Prior to start of work, the Geosynthethics Manufacturer and the Geomembrane Installer, each, shall submit for approval by the CQA Inspector documented evidence of its ability and capacity to perform this Work. Each shall have successfully manufactured and/or installed a minimum of ten (10) million square feet of similar lining material in solid waste containment structures.

The Contractor shall submit written certification by the Geosynthetics Manufacturer that the lining materials conform to the requirements of the CQA Plan. The Contractor shall submit the name and qualifications of its project superintendent that will be on the project whenever lining materials are being handled and/or installed plus the names and qualifications of senior installation personnel on the project. All manufacturer and Geomembrane Installer qualifications shall be submitted in accordance with technical specification Section 02775 Part 1.2 B.

5.1.2 Geomembrane Installer's and Manufacturer's QC Program

The Geosynthetics Manufacturer and the Geomembrane Installer, each, shall submit a complete description of its quality control (QC) program, as applicable, for manufacturing, handling, installing, testing, repairing and providing a completed lining in accordance with requirements of the CQA Plan and contract documents. The description shall include, but not be limited to, polymer resin supplier, product identification, acceptance testing, fabrication and production testing, installation testing, documentation of changes, alterations and repairs, retests and acceptance.

The following quality control tests will be performed on the geomembrane.

Table 5- 1
MQC Conformance Testing for Geomembranes

STANDARD	TEST DESCRIPTION
ASTM D638, Type IV	Test Method for Tensile Properties of Plastics
ASTM D1004	Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting
ASTM D1505/D792	Standard Test Method for Density of Plastics by the Density-Gradient Technique
ASTM D1238	Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
ASTM D1603	Standard Test Method for Carbon Black Content in Olefin Plastics
ASTM D3895	Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
ASTM D4833	Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D5596	Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
ASTM D5994	Standard Test Method for Measuring Core Thickness of Textured Geomembrane
ASTM E96	Standard Test Methods for Water Vapor Transmission of Materials
GRI GM12	Asperity Height

5.1.3 Geomembrane Installer's Installation Plan

The Installer shall submit installation drawings, the Manufacturer's written Field Installation Procedure Manual, and a schedule for performing/completing the Work. Installation drawings shall show a lining sheet layout with proposed size, number, position, and sequence of placing of all sheets and indicating the location of all field seams. Installation drawings shall also show complete details and/or methods for anchoring the lining at its perimeter, making field seams, and making anchors/seals to pipes and structures.

The Installer shall submit a complete description of welding procedures for making field seams and repairs. The welding procedures shall conform to the latest procedures recommended by the lining Manufacturer and to the CQA Plan.

The Contractor and Geomembrane Installer shall submit for approval by the CQA Inspector certification that the surface(s) on which the lining will be placed is acceptable. Installation of the lining shall not commence until this certification is furnished to the CQA Inspector.

The Geomembrane Installer shall provide on-site technical supervision and assistance at all times during installation of the lining system. The Geomembrane Installer and Contractor, as applicable to each, shall submit for approval by the CQA Inspector written certification that the lining system was installed in accordance with the Manufacturer's recommendation, the CQA Plan, Project Plans, specification Section 02775, and approved submittals.

The CQA Engineer will initiate a pre-installation meeting with the Geomembrane Installer, Contractor, and CQA Inspector prior to installation of the lining system. Topics for review/discussion shall include, as a minimum, Project Plans and Specifications, approved submittals, training and qualification procedures for Contractor personnel, and demonstration of making a field welded seam(s) including peel and shear tests.

Prior to installation of the lining system, the Geomembrane Installer shall instruct the workmen of the hazards of installation, such as handling sheets of lining material in high winds; use of equipment; application of solvents, adhesives and caulks; and walking on lining surfaces. Work gloves, safety glasses, hard hats, and smooth-soled shoes are minimum safety wear requirements when working on the geomembrane. Safety shoes must be worn when handling heavy objects.

The CQA Inspector shall have authority to order an immediate stoppage of work because of improper installation procedures, safety infractions, or for any reason which may result in a defective liner.

5.1.4 Contractor's Geomembrane Preconstruction Material Submittals

The Contractor will provide the CQA organization with the following items for review and testing:

- Geomembrane proposed for the project for slope stability verification testing as outlined in this CQA Plan.
- Manufacturer's description (cut sheet) of the proposed geomembrane documenting it will meet or exceed specified requirements.
- Available historical data documenting that the proposed geomembrane will meet specified interface friction angle.
- Written instructions for storage, handling, installation, seaming, and repair of the proposed geomembrane.

Before shipment of the geomembrane, the CQA organization shall review all approved pre-construction submittals. Pre-construction submittals should be submitted a minimum of four weeks in advance to allow time for review and approval by the CQA organization.

The Contractor shall submit certifications that the HDPE geomembrane material delivered to the site meets the requirements of the Specification and that the HDPE geomembrane was received and accepted in undamaged condition from shipper.

5.1.5 CQA Conformance Testing

The geomembranematerial will be sampled at the site by the CQA Inspector or at the manufacturing plant by a third party under the direction of the CQA organization. The Ssample will be taken across the entire roll width and will be 3 feet long. Samplers will mark the machine direction and the manufacturer's roll identification number on the sample. Samplers will also assign a conformance test number to the sample and mark the sample with that number. The samples will be forwarded to a CQA testing laboratory for the conformance testing. The CQA Inspector will review all conformance test results and report any nonconformance to the Owner and CQA Engineer

The following conformance tests will be performed on the geomembrane.

Table 5- 2
CQA Conformance Testing for Geomembranes

STANDARD	TEST DESCRIPTION
ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D4437	Standard Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes
ASTM D5321	Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method

Laboratory interface friction tests shall be conducted in general accordance with ASTM D5321, on the following interfaces:

- Textured HDPE liner and geosynthetic clay liner.
- Textured HDPE liner and geocomposite.

The CQA Laboratory will perform three (3) direct shear tests at the project specific effective normal stresses. These tests will be performed using the Contractor's proposed HDPE and a sample of geosynthetics materials obtained from the Geosynthetics Manufacturer following award of the construction contract to the selected Contractor. A minimum interface friction angle based on the landfill design will be required to maintain stability.

The Owner will pay for "Passing" tests. Costs of corrective action, costs of "Failing" tests and all associated costs of testing due to failing tests are the sole responsibility of the Contractor. Materials not meeting the required shear strength will not be approved for use on this project.

Destructive seam tests will be taken at a minimum of 1 per 500 linear feet at locations selected by the CQA Inspector. The samples will be packaged in a manner that will not damage the test sample and will be sent to the CQA Testing Laboratory. Conformance testing will include seam strength and peel adhesion in accordance with ASTM D638 (using one-inch strips and a strain rate of two inches per minute), ASTM D4437, and the project technical specifications.

5.2 CONSTRUCTION

5.2.1 Delivery, Storage and Handling

Materials will be delivered to the site after the required submittals have been furnished and approved. The delivered roll goods will be marked by the manufacturer to show at a minimum the following information:

- Name of manufacturer.
- Product type.
- Product thickness.
- Manufacturing batch code.
- Date of manufacture.
- Physical dimensions.
- Roll number.

Lining materials delivered to the site shall be inspected for damage, unloaded, and stored with a minimum of handling. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. The plastic wrap shall not be removed until deployment. Materials shall not be stored directly on the ground. The storage area shall be such that all materials are protected from mud, soil, dirt and debris. The stacking of lining shall not be higher than two rolls.

Under no circumstances shall the lining be subjected to materials, sandbags, equipment or other items being dragged across its surface. Nor shall workmen and others slide down slopes atop the lining. All scuffed surfaces resulting from abuse of any kind caused by the Contractor in performance of the Work shall be repaired at the CQA Inspector's direction.

HDPE geomembrane or plastic wrapping damaged as a result of storage or handling shall be repaired or replaced, as directed. HDPE shall not be exposed to temperatures in excess of 60°C (140°F) or less if recommended by the Manufacturer.

No hooks, tongs or other sharp instruments shall be used for handling the HDPE geomembrane. Rolls shall not be lifted by use of cables or chains in contact with the HDPE geomembrane. HDPE geomembrane shall not be dragged along the ground.

The Contractor shall be completely responsible for shipping, storage, handling, and installation of all lining materials in compliance with the CQA Plan.

5.2.2 Geomembrane Subsurface Preparation

Before geomembrane installation, the CQA Inspector will document that the GCL installation is complete and CQC and CQA documentation verifies that its installation meets specified requirements.

5.2.3 Geomembrane Placement and Seaming

Prior to installation of the geomembrane, a site inspection will be conducted by the CQA Inspector and the Contractor to verify measurements, structures and surface conditions to support the geomembrane.

The Contractor and Geomembrane Installer will provide written documentation to the CQA Inspector that surfaces to receive the geomembrane have been inspected and are acceptable for installation of the lining.

Before the work begins, the Contractor will inspect all lining materials for damage from transit. Materials that cannot be repaired will be rejected and removed from the work area and site.

During unwrapping of lining materials for use and placement, the Contractor will visually inspect all materials, particularly surfaces of lining sheets, for imperfections and faulty areas. All such defective places will be marked and repaired in accordance with approved methods.

The geomembrane will be installed as shown on the project plans and approved installation drawings. Placement of the geomembrane will be done such that good fit, without bridging, is provided on all covers and grade changes. Excessive slack will be avoided to minimize rippling during the soil cover operation. Geomembrane liner shall be handled and placed in a manner which minimizes wrinkles, scratches and crimps.

Sheets of geomembrane materials will be of such lengths and widths and will be placed in such a manner as to reduce field seaming to a minimum. The lining will be anchored in accordance with details shown on approved plans and drawings. The lining will be anchored and sealed to structures, pipes and other types of penetrations, (if any), in accordance with details shown on approved plans and drawings. All changes in approved installation drawings and procedures must be approved by the Design Engineer.

Extreme care will be taken during installation of the lining to be certain no damage is done to any part of the lining. Dragging of the geomembrane material on the subgrade will be prohibited. Smoking by installation personnel will be prohibited. All handling and installation procedures will be performed by workers wearing shoes with smooth soles. Shoes with soles that have patterns in relief shall be prohibited. No foot traffic will be allowed on the geomembrane except with approved shoes. No vehicular traffic will be allowed on the geomembrane. All motor driven equipment using fuel will have spark arrestors. No gasoline driven generators or cans of gas or solvent will be placed directly on the lining material. Under no circumstances will the lining be used as a work area to prepare patches or to store tools and supplies. If needed, a tarpaulin of approved material will be spread out as a work area.

During installation, the Contractor will be responsible for protecting the lining against adverse effects of high winds such as uplift. Sand bags will be used as required to hold the lining material in position during installation. Sand bags will be sufficiently close-knit to preclude fines from working through the bottom, sides or seams. Paper bags, whether or not lined with plastic, will not be permitted. Burlap bags, if used, must be lined with plastic. Bags that are split, torn, or otherwise losing their contents will be immediately removed from the work area and any spills immediately cleaned up. Metal or wire ties will not be used.

The geomembrane material will not be installed under adverse climatic conditions, unless the Contractor can demonstrate that his installation techniques adequately compensate for such adverse conditions and quality of workmanship is not compromised. Adverse climatic conditions occur when the air temperature measured 6 inches above the geomembrane surface is less than 32°F and decreasing, or more than 90°F; when the relative humidity is more than 80 percent; when it is raining; or when there is frost on the ground; or during conditions of excessive winds.

Geomembrane field seams will be lap seams as shown on approved plans and drawings. The lap seams will be formed by lapping the edges of geomembrane sheets a minimum of 3 inches. The contact surfaces of the sheets will be wiped clean to remove dirt, dust, moisture, and other foreign materials. Geomembrane shall not be welded when ambient temperatures are below 5°C or above 40°C without written consent of manufacturer and CQA Engineer or CQA Inspector. For fillet weld seams, bevel edge of geomembrane and clean oxidation from surfaces to receive extrudate by disk grinding or equivalent not more than one hour before seaming.

Lap seam intersections involving more than three thicknesses of lining material will be avoided, and all seam intersections will be offset at least 2 FT. No horizontal field seams will be allowed on the slope and sheets of lining material on the slopes will extend down slope out onto bottom a minimum of 5 FT from toe of slope.

Geomembrane liners shall be welded using either extrusion or double wedge welding equipment. Extrusion welding equipment shall be provided with thermocouples and temperature readout devices which continuously monitor the temperature of the extrudate. double wedge welding equipment shall be provided with thermocouples and temperature readout devices which continuously monitor the temperature of the wedge. Each piece of welding equipment and each operator shall perform demonstration welds at the start of a shift, whenever equipment is switched on, if a seaming operation has been suspended for more than 1/2 hour or if a breakdown of the seaming equipment occurs, and at other times at the discretion of the CQA Inspector. These demonstration welds shall be tested using field test equipment, and at a minimum exhibit strength equivalent to a film tear bond.

Geomembrane liners shall be welded continuously without fishmouths or breaks in the weld. Where fishmouths are unavoidable, the geomembrane sheet shall be slit to a point such that the sheet lies flat and with no remaining wrinkle. The two edges of the slit shall be welded together provided that the overlap for this weld shall be a minimum of 6 inches. Areas of the slit that do not achieve an overlap of 6 inches, including the terminus of the slit, shall be provided with a patch.

Any necessary repairs to the geomembrane will be made with the lining material itself, using approved fusion welding systems, equipment and techniques. The patch size will be 6 inches larger in all directions than the area to be patched. All corners of the patch will be rounded. Torn or permanently twisted geomembrane shall be replaced at no expense to the County.

All seams and seals of the geomembrane will be tightly bonded on completion of the work. Any lining surface showing injury due to scuffing or penetration by foreign objects or showing distress will be replaced or repaired as directed by the CQA Inspector.

Cleanup within the work area will be an ongoing responsibility of the Contractor. Particular care will be taken to insure that no trash, tools, and other unwanted materials are trapped beneath the lining. Care will be taken to insure that all scraps of lining material are removed from the work area prior to completion of the installation.

5.2.4 Field Quality Control

Inspection and testing will involve the full time observation of the installation of the geomembrane, including the making and testing of lining seams and patches and periodic measurement of the liner material thickness to insure compliance.

Test welds will be made to verify that adequate conditions exist for field seaming to proceed. Each seamer and seaming equipment will produce a test seam at the beginning of each shift to determine the peel and tensile strength of the seam. The CQA Inspector may require a sample field seam be made at any time during seaming production to verify equipment/operator performance and seam integrity. In addition, if a seaming operation has been suspended for more than 1/2 hour or if a breakdown of the seaming equipment occurs, a test seam will be produced prior to resumption of seaming operations.

The trial weld sample must be a minimum of three feet long and one and a half feet wide, with the seam centered lengthwise. The CQA Inspector must observe all trial welding operations, quantitatively test each trial weld for peel and shear, and record the results. A minimum of two peel and two shear tests will be performed per trial seam. The trial weld shall be completed under the same conditions for which the panels will be welded. The trail weld must meet the requirements for peel and shear as stated in the following paragraph and the break must be a film tear bond (FTB) for a wedge weld.

During the field seaming operation, destructive samples will be removed from field seams by the Installer at locations selected by the CQA Inspector. Repairs to the field seams will be made in accordance with repair procedures specified in this CQA Plan. The samples will have a width of 12 inches plus the seam width and length of 48 inches. A minimum of one stratified sample per 500 feet of field seam will be made. All field seams will have a film tear bond in peel and shear and will meet the minimum pound per inch width seam strength specified in the specification Section 02775, HDPE Geomembrane Liner Systems. At the very least, the seam peel strength must be greater than or equal to 90 ppi. The bonded shear strength for fusion and extrusion welds must be greater than or equal to 120 ppi and 115 ppi, respectively. A sufficient amount of the seam must be removed in order to conduct field testing, independent laboratory testing, and archiving of enough material in order to retest the seam when necessary. The archived material will be kept at the CQA laboratory. Field testing shall include at least two peel tests per sample. CQA laboratory testing shall consist of five shear tests and five peel tests per sample. The Installer shall test the seam destructively at a frequency of one test per 500 linear feet of weld and shall test 10 percent of all repaired areas. Destructive seam-testing locations shall be cap-stripped and the cap completely seamed by extrusion welding to the geomembrane. Capped sections shall be non-destructively tested. Additional destructive test samples may be taken if deemed necessary by the CQA Inspector.

All field-tested specimens from a destructive-test location must be passing in both shear and peel for the seam to be considered as passing. The CQA laboratory testing must confirm these field results. The CQA testing laboratory will save all test samples including specimens tested until notified by the CQA Engineer relative to their disposal. All specimens which have failed under test will be shipped immediately by express delivery to the CQA Inspector for determination of corrective measures to be taken, which includes retest or repair of failed section.

For destructive samples which have failed the passing criterion, the Installer will reconstruct all the field seams between any two previous passed seam locations which include the failed seam or will go on both sides of the failed seam location (10 feet minimum), take another sample each side and test both. If both pass, the Installer may patch or cap strip the seam between the passed samples. If either fails, the Installer will remove and replace the entire seam. In all cases, acceptable field seams must be bounded by two passed test locations. The decision of the CQA Engineer will be final.

The Installer shall test all patch welds using one of the following nondestructive tests: vacuum tests, or spark tests. The Installer shall also test patch welds destructively at a frequency of 10 percent or one test per welding personnel per day. This destructive testing may be accomplished using demonstration welds performed adjacent to the liner installation.

In the event capping of a field seam is required, the Installer will use a cover strip of the same thickness as the lining (and from the same roll, if available) and a minimum of 6 inch overlap away from the seam in all direction. It will be positioned over the center of the field seam and welded to the lining using a fillet weld each side.

All geomembrane sheets, seams, anchors, seals, and repairs will be visually inspected by the Installer for defects. Depending on seam welding equipment used, all seams and repairs will be tested continuously by a vacuum testing device, air pressure, or spark tests.

A visual inspection of the lining sheets, seams, anchors and seals will be made by the Installer as the installation progresses and again on completion of the installation. Defective and questionable areas will be clearly marked and repaired. Final approval of repairs will be given by the CQA Inspector.

If the fillet weld, extrusion lap weld or single hot-wedge fusion lap weld is used to weld seams, the Installer will further test all seams and repairs in the geomembrane by vacuum box. All vacuum box testing will be done in the presence of the CQA Inspector. The area to be tested will be cleaned of all dust, debris, dirt and other foreign matter. A soap solution will be applied to the test area with a paint roller and the vacuum of 5 psi air pressure will be induced and held at least fifteen seconds to mark for repair any suspicious areas as evidenced by bubbles in the soap solution.

If the double hot-wedge is used, the Installer will further test all seams in the geomembrane by using the air pressure test which consists of inserting a needle with gauge in the air space between welds. Air will be pumped into space to 25 psi and held for 5 minutes. If pressure does not drop more than 2 psi, then the seam is acceptable.

All costs of retesting of the geomembrane including reruns of field weld tests and all repairs will be at the Installer's expense.

The Installer shall assemble the quality control data required above into a final report of geomembrane installation. The report will contain all test data and a final layout of geomembrane liner which shows the location of all seams, patches and sample locations. In addition, the Installer shall submit resin tests, tests of sheet material, factory seam tests, daily seam test results, and daily results of production seam testing.

The Contractor will retain responsibility for the integrity of the geomembrane system until acceptance by the CQA Engineer. The geomembrane will be accepted by the CQA Engineer when:

- Written certification letters including as built record drawings, have been received by the CQA Engineer.
- Installation is completed.
- Documentation of completed installation, including all reports, is received and approved.
- Verification of adequacy of field seams and repairs, including associated testing, is complete.

Acceptance of the completed work will include receipt of all submittals and all work completed to the satisfaction of the CQA Engineer.

5.2.5 Geosynthetics Manufacturer's Warranty

The Geosynthetics Manufacturer's warranty shall be against manufacturing defects or workmanship and against deterioration due to ozone, ultraviolet or other normal weather aging. The warranty shall be limited to replacement of material only, and shall not cover installation of said material. It shall not cover damage due to vandalism, acts of animals or unusual acts of God. The warranty shall state that the furnished material meets all requirements of specification Sectio 02775 and the Contract Documents, is free from manufacturing defects and is able to withstand normal weathering for a period of five years, prorated. Written warranties addressing the HDPE geomembrane material shall be furnished by the contractor and shall be made to Sarasota County.

5.2.6 Installer's Warranty

The Installer shall furnish a written guarantee that the entire lining work constructed by him to be free of defects in material and workmanship and installed pursuant to the CQA Plan for a period of two (2) years following the date of acceptance of the work by the CQA Engineer. During the 23rd month, a pre-guarantee expiration inspection will be conducted to identify any necessary repair work covered by the guarantee. The Installer shall agree to make any repairs or replacements made necessary by defects in materials or workmanship in the Work which become evident within said guarantee period. The Installer shall make repairs and/or replacements promptly, the Owner may do so, and the Installer shall be liable to the Owner for the cost of such repairs and/or replacements. The Installer's warranty shall state that the materials were properly installed, properly welded, seamed and jointed and will not fail within 2 years of installation under similar conditions. The warranty shall provide for complete repair/replacement for the warranty period. Written warranties addressing the HDPE geomembrane material shall be furnished by the contractor and shall be made to Sarasota County.

SECTION 6.0
GEOTEXTILE

The following section outlines the CQA required for the installation of geotextiles. Non-woven cushion, drainage, and woven separator geotextiles will be used to protect the geomembrane and segregate the leachate collection system and protective cover materials.

6.1 PRE-CONSTRUCTION

6.1.1 Manufacturer's Quality Control

Before scheduled manufacturing of the product, the Geosynthetics Manufacturer will provide the following:

- Manufacturer's description (cut sheet) of the proposed geotextiles documenting it will meet or exceed specified requirements.
- Available historical data documenting that the proposed cushion geotextile will meet specified interface residual strength.
- Written instructions for storage, handling, installation, seaming, and repair of the proposed geotextiles.

Before shipment of the geotextile, the CQA organization shall review all pre-construction submittals.

The CQA Inspector will take conformance samples for testing in accordance with this CQA Plan and the specification Section 02778, Geotextiles.

Table 6- 1
Manufacturer's Quality Control Testing for Geotextiles

MATERIAL	TYPE OF TEST	STANDARD TEST METHOD	FREQUENCY OF TESTING
Non-Woven Cushion Geotextile	Mass Per Unit Area (oz/sy)	ASTM D5261	One per 90,000 ft^2
	UV Degradation, % retained @ 500 hrs	ASTM 4355	1 per formulation
	Grab Tensile Strength (lbs) [(1)]	ASTM D4632	One per 90,000 ft^2
	Grab Elongation (%) [(1)]	ASTM D4632	One per 90,000 ft^2
	Puncture Resistance (1bs)	ASTM D4833	One per 90,000 ft^2
	Trapezoidal Tear	ASTM D4533	One per 90,000 ft^2
Non-Woven Drainage Geotextile	Mass Per Unit Area	ASTM D5261	One per 90,000 ft^2
	Grab Tensile Strength (lbs)	ASTM D4632	One per 90,000 ft^2
	Puncture Strength	ASTM D4833	One per 90,000 ft^2
	AOS, US sieve (mm)	ASTM D4751	One per 540,000 ft^2

MATERIAL	TYPE OF TEST	STANDARD TEST METHOD	FREQUENCY OF TESTING
	Permittivity, (sec^{-1})	ASTM D4491	One per 540,000 ft^2
	Flow Rate, gpm/ft^2	ASTM D4491	One per 540,000 ft^2
	UV Degradation, % retained @ 500 hrs	ASTM 4355	1 per formulation
Woven Separator Geotextile	Water Flow Rate (gpm/sf)	ASTM D4491	One per 90,000 ft^2
	Ultraviolet Degradation, % retained @ 500 HRS	ASTM D4355	1 per formulation
	Permittivity, SEC-1	ASTM D4491	One per 540,000 ft^2
	Trapezoidal Tear, (lbs)	ASTM D4533	One per 90,000 ft^2
	Grab Tensile, (lbs)	ASTM D4632	One per 90,000 ft^2
	Elongation, %	ASTM D4632	One per 90,000 ft^2
	AOS, U.S. Sieve (max ARV)	ASTM D4751	One per 540,000 ft^2
	Puncture, LBS	ASTM D4833	One per 90,000 ft^2

6.1.2 CQA Conformance Testing

The CQA Organization may obtain geotextile conformance test samples of each type of material manufactured for the project. Samples will be obtained across the entire roll width and will be 3 feet long. Samplers will mark the manufacturer's roll identification number, as well as the machine direction, on the sample. Samplers will assign a conformance test number to the sample and mark the sample with that number. Each sample will be sent to the CQA Laboratory for conformance testing. The CQA Inspector will review test results and report any nonconformance to the CQA Engineer.

The following conformance tests will be performed on the geotextile:

Table 6- 2
CQA Conformance Testing for Geotextiles

MATERIAL	TYPE OF TEST	STANDARD TEST METHOD
Geotextile	Puncture Resistance (1bs)	ASTM D4833
	Water Flow Rate (gpm/sf)	ASTM D4491
	AOS	ASTM D4751
	Tear Strength	ASTM D4533
	Mass per Unit Area $(oz/ft)^2$	ASTM D5261

6.2 CONSTRUCTION

6.2.1 Delivery, Storage and Handling

During delivery of geotextiles the CQA Inspector will monitor for the following:

- Equipment used to unload the rolls will not damage the geotextile.
- Rolls are wrapped in impermeable and opaque protective covers.
- Care is used to unload the rolls.
- Documentation required by specification Section 02778, Geotextiles has been received.
- Each roll is marked or tagged with manufacturer's name, project identification, lot number, roll number, roll dimensions, and that this information is documented on a geosynthetic receipt form.
- Materials are stored in a location that is protected from ultraviolet light exposure, precipitation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions.

Damaged rolls may be rejected. If rejected, verify that rejected material is removed from the site or stored at a location separate from accepted rolls. Geotextile rolls that do not have proper manufacturer's documentation must also be stored at a separate location until all documentation has been received and approved.

6.2.2 Geotextile Subsurface Preparation

Before geotextile installation, the CQA Inspector will document that the geomembrane installation is complete and CQC and CQA documentation verifies that its installation meets specified requirements.

6.2.3 Geotextile Placement and Seaming

During geotextile placement and seaming operations, the CQA Inspector will monitor for the following:

- All defects and defect corrective actions are recorded (panel rejected, patch installed, etc.), and corrective actions are performed in accordance with specification Section 02778, Geotextiles.
- Equipment used to install the geotextile does not damage it during deployment.
- Crews working on the geotextile do not smoke, wear shoes that could damage the geotextile, or engage in activities that could damage the geotextile.
- The geotextile is securely anchored to prevent movement by the wind.
- Adjacent panels are overlapped and seamed in accordance with specification Section 02778, Geotextiles.
- The geotextile is not exposed to direct sunlight for more than the 14 days in accordance with technical specification Section 02778, Geotextiles.
- Final geotextile surface is free of harmful foreign objects.

The CQA Inspector will inform both the CQA Engineer and Contractor if they observe any conditions that do not conform to the requirements of the CQA Plan conditions.

6.2.4 Geotextile Repairs

Where repairs are necessary the CQA Inspector will monitor for the following:

- Place a patch of the same type of geotextile which extends a minimum of 24 inches beyond the edge of the damage or defect.
- Fasten patches continuously using a sewn seam or other approved method.

- Align machine direction of the patch with the machine direction of the geotextile being repaired.
- Replace geotextile which cannot be repaired.

SECTION 7.0
GEOCOMPOSITE

The leak detection layer and leachate collection layer will be composed of a double-sided geocomposite.

7.1 PRECONSTRUCTION

All HDPE drainage composite shall be manufactured in accordance with specification Section 02777, Drainage Composite. The drainage composite manufacturer will provide the Contractor and the CQA Inspector with a written certification, signed by a responsible party, that the drainage composites actually delivered have properties which meet or exceed the guaranteed properties. The CQA Inspector will examine all manufacturer's certifications to ensure that the property values listed on the certifications meet or exceed the project specifications. Any deviations will be reported to the CQA Engineer.

7.1.1 Manufacturer's Quality Control

Before scheduled manufacturing of the product, the Geosynthetics Manufacturer will provide the CQA organization with the following items for review and testing:

- Manufacturer's description (cut sheet) of the proposed geocomposites documenting that it will meet or exceed specified requirements.
- Available historical data documenting that the proposed geocomposites will meet specified interface residual strength.
- Written instructions for storage, handling, installation, seaming, and repair of the proposed geocomposites.

Before shipment of the geocomposite, the CQA organization will review pre-construction submittals.

Table 7- 1
Manufacturer's Quality Control Testing for Geonet

MATERIAL	TYPE OF TEST	STANDARD TEST METHOD	FREQUENCY OF TESTING
Geonet	Specific Gravity/Density (g/cm3) (min)	ASTM D 1505	One per 100,000 ft^2 and every resin lot
	Mass per Unit Area (lbs/ft2)	ASTM D 5261	One per 50,000 ft^2 and every resin lot
	Carbon Black Content (% Minimum)	ASTM D 1603	One per 50,000 ft^2 and every resin lot
	Tensile Strength	ASTM D 5035	One per 50,000 ft^2 and every resin lot
	Transmissivity at 500 psf (m2/sec)	ASTM D 4716	One per 50,000 ft^2 and every resin lot

7.1.2 CQA Conformance Testing

The CQA Organization may obtain geocomposite conformance test samples of each type of material manufactured for the project. Samples will be obtained across the entire roll width and will be 3 feet long. Samplers will mark the manufacturer's roll identification number, as well as the machine direction, on the sample. Samplers will assign a conformance test number to the sample and mark the sample with that number. Each sample will be sent to the CQA Laboratory for conformance testing in accordance with the project specifications (Section 02778, Part 2). The CQA Inspector will review all test results and report any non-conformance to the CQA Engineer.

The following conformance tests will be performed on the geocomposite:

Table 7- 2
CQA Conformance Testing for Geocomposite

MATERIAL	TYPE OF TEST	STANDARD TEST METHOD
Geocomposite	Transmissivity (m^2/s)	ASTM D4716
	Ply Adhesion	ASTM F904
	Thickness	ASTM D5199

NOTE: Geotextiles shall be tested in accordance with Table 6.1 and 6.2.

7.2 CONSTRUCTION

The following subsection describes the CQA inspection activities that are necessary during the geocomposite installation. Refer to the specification Section 02777, Drainage Composite, for project specific construction and test requirements.

The CQA Inspector shall observe the geocomposite placement to confirm that specifications Section 02777 is followed, including coverage of all specified areas and adequate material overlap or seaming

7.2.1 Delivery, Storage and Handling

During delivery of geocomposite the CQA Inspector will observe rolls for the following, and any deviation will be reported to the CQA Engineer.:

- Equipment used to unload the rolls does not damage the material.
- Rolls are wrapped in impermeable and opaque protective covers.
- Care is used to unload the rolls.
- Documentation required by specification Section 02777, Drainage Composite has been received.
- The drainage composite manufacturer has identified all rolls of drainage composite in accordance with specification Section 02777, Drainage Composite.

Drainage composite cleanliness is essential to its performance; therefore, the shipping and storage or drainage composite must be in strict accordance with specification Section 02777, Drainage Composite. The CQA Inspector will verify the following and report any deviations to the CQA Engineer.

- Materials are stored in a location that will protect the rolls from ultraviolet light exposure, precipitation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions.
- Drainage composites are free of dirt and dust just before installation. If the drainage composites are judged dirty or dusty, they will be washed by the drainage composite installer prior to installation. Washing operations will be observed by the CQA Inspector and improper washing operations will be reported to the CQA Engineer.
- When several layers of drainage composite are stacked, care is taken to ensure that stacked drainage composites are placed in the same direction. A stacked drainage composite will never be laid in a perpendicular direction to the underlying drainage composite (unless otherwise specified by the CQA Engineer.)

Damaged rolls may be rejected. If rejected, it must be verified that rejected material is removed from the site or stored at a location separate from accepted rolls. Geocomposite rolls that do not have proper manufacturer's documentation must also be stored at a separate location until all documentation has been received and approved.

7.2.2 Geocomposite Subsurface Preparation

Before geocomposite installation, the CQA Inspector will observe for the following:

- Lines and grades for the composite liner subgrade have been verified by the Contractor.
- Geomembrane installation is complete.

7.2.3 Geocomposite Placement and Seaming

During deployment and seaming operations, the CQA Inspector will observe for the following:

- All defects and defect corrective actions (panel rejected, patch installed, etc.) are recorded, and corrective actions are performed in accordance with the specifications.
- Equipment used to install geotextile does not damage it during deployment.
- Crews working on the geocomposite do not smoke, wear shoes that could damage the geocomposite, or engage in activities that could damage the geocomposite.
- The geocomposite is securely anchored to prevent movement by the wind.
- Adjacent panels are overlapped and connected in accordance with pecificationSection 02777, Drainage Composite.
- The geotextile component is not exposed to direct sunlight for more than the number of days recommended by the manufacturer.

The CQA Inspector will inform both the CQA Engineer and Contractor if they observe any conditions that do not conform to the requirements of the CQA Plan.

7.2.4 Geocomposite Repairs

Repair any holes or tears in the drainage composite by placing a patch of drainage composite extending a minimum of 2 FT beyond the edges of the holes or tear. Use approved fasteners, spaced every 6 IN around the patch to fasten the patch to the original roll.7.2.5 Placement of Soil Materials

All soil materials places over the drainage composite will be placed in accordance with specification Section 02777, Drainage Composite, so as to ensure the following:

- The drainage composite and underlying geomembrane are not damaged.
- Minimal slippage of the drainage composite on the underlying geomembrane occurs.
- No excess tensile stresses occur in the drainage composite.

The CQA Inspector will inform both the CQA Engineer and Contractor if they observe any conditions that do not conform to the requirements of the CQA Plan.

SECTION 8.0
HIGH DENSITY POLYETHYLENE PIPE, MANHOLES AND FITTINGS
CONSTRUCTION QUALITY ASSURANCE

8.1 PRECONSTRUCTION

All HDPE manholes, pipe, and fittings shall be produced in accordance with specification Section 15067, Pipe - Polyethylene.

8.1.1 Manufacturer's Quality Control

8.1.1.1 Prior to Shipment

Prior to shipment, the Contractor will provide the CQA Engineer and the CQA Inspector with a quality control certification for each lot/batch of HDPE material provided. The quality control certificate will be signed by a responsible party employed by the Manufacturer, such as the production manager. The quality control certificate will include:

- lot/batch number and identification; and
- sampling procedures and results of quality control tests.

The CQA Inspector will verify that the quality control certificates have been provided at the specified frequency for all lots/batches of pipe and that each certificate identifies the pipe lot/batch related to it; and review the quality control certificates and verify that the certified properties meet the requirements of specification Section 15067.

8.1.1.2 Prior to Installation

Prior to the installation of HDPE manholes or pipes, the Manufacturer will provide to the Contractor and the CQA Inspector the following:

- a properties sheet including, at a minimum, all specified properties, measured using test methods indicated in specification Section 15067;
- a list of quantities and descriptions of materials other than the base resin which comprise the pipe;
- the sampling procedure and results of testing; and
- a certification by the manufacturer that values given in the properties sheet are minimum values and are guaranteed by the Manufacturer.

The CQA Inspector will review these documents and verify that:

- the property values certified by the Manufacturer meet all requirements of specification Section 15067; and
- the measurements of properties by the Manufacturer are properly documented and that the test methods used are acceptable.
- report any discrepancies with the above requirements to the CQA Engineer.

SECTION 9.0
PUMPS AND VALVES

This section describes CQA procedures for leachate pumps and valves. Leachate pumps and valves will be installed in the lift station to pump and direct leachate to the leachate storage tanks. In addition, pumps and valves will be used in the leachate recirculation system.

9.1 PRECONSTRUCTION

9.1.1 Manufacturer's Quality Control

Prior to the installation of the pumps or valves, the Manufacturer will provide to the Contractor and the CQA Inspector the following:

- Manufacturer's description (cut sheet) including, at a minimum, all specified properties, measured using test methods indicated in the project technical specifications.
- A list of quantities and descriptions of materials which comprise the pumps and valves.
- The testing results.
- Certification by the Manufacturer that values given in the properties sheet are minimum values and are guaranteed by the Manufacturer.

The CQA Inspector will review these documents and verify that:

- Property values certified by the Manufacturer meet all of the project technical specifications.
- Measurements of properties by the Manufacturer are properly documented and the test methods used are acceptable.

The CQA Inspector will inform both the CQA Engineer and Contractor if they observe any discrepancies with the above requirements.

9.1.2 CQA Conformance Testing

The CQA Inspector will conduct field testing of the system to verify that the pumps and valves are installed correctly and operating within the design criteria in specification Section 15100, Valves – Basic Requirements, and Section 15101, Gate Valves. The CQA Inspector will inform the CQA Engineer and Contractor if any leaks are detected or the system fails to operate as designed.

9.2 CONSTRUCTION

9.2.1 Nondestructive Testing of Joints

All non-perforated HDPE joints must be nondestructively tested. These pipe joints will be tested using the pressure test as provided in the project technical specifications. Other nondestructive test methods may be used only when:

- The Geomembrane Installer can prove its effectiveness.

- The method is approved by the HDPE pipe manufacturer.
- The method is approved by the CQA Engineer.

The CQA Engineer and the CQA Inspector will verify the effectiveness and validity of the alternative test method.

All leachate piping within the landfill footprint will be videotapes for blockages, belles, beans, and soil deposits. The CQA Inspector and CQA Engineer will review the videotape for deficiencies. Any deficiencies will be reported to the Contractor.

SECTION 10.0
SURVEYING

Surveying of lines and grades is conducted on an ongoing basis during construction of the component liner and leachate collection systems. Close construction quality control (CQC) of the surveying is absolutely essential to ensure that slopes are properly constructed. The surveying conducted at the site shall be performed by the Contractor.

10.1 SURVEY CONTROL

Permanent benchmarks and baseline control points are to be established for the site at locations convenient for daily tie-in. The vertical and horizontal controls for this benchmark will be established within normal land surveying standards.

10.2 SURVEYING PERSONNEL

The Contractor's survey crew will consist of a Senior Surveyor, and as many Surveying CQC Monitors as are required to satisfactorily undertake the requirements for the work. All Surveying CQC personnel will be experienced in the provision of these services, including detailed, accurate documentation.

All surveying will be performed under the direct supervision of a Registered Professional Engineer (PE) or Licensed Land Surveyor (PLS) licensed in the state in which the project is located. The Licensed Land Surveyor may be the Senior Surveyor.

10.3 PRECISION AND ACCURACY

A wide variety of survey equipment is available to meet the requirements of this project. The survey instruments used for this work should be sufficiently precise and accurate to meet the needs of the project. All survey instruments should be capable of reading to a precision of 0.01 foot and with a setting accuracy of 20 seconds. (5.6×10^{-3} degrees).

10.4 LINES AND GRADES

The following surfaces shall be surveyed to verify the lines and grades achieved during construction. The survey should at least include (as deemed appropriate by the CQA Engineer and CQA Inspector):

- One or more construction baselines.
- The edges of all surface breaks (ex. toes, crests, ridges and valleys).
- Surface of the subgrade.
- All structures.
- Surface of the soil liner component.
- Surface of the leachate collection layer (protective cover).
- Invert elevation of and location of leachate collection/header at each lateral intersection and endpoint, and every 50 feet between the intersections and endpoints.

- Force main piping and gravity main piping.
- Inverts of sumps and manholes.
- Top/toe of all berms, roads, and channels.
- Location of edge of liner, anchor trenches tie-in seam to adjacent existing liner system (as applicable).
- Major patches of HDPE liner.

Laser planes are highly recommended for achieving the correct lines and grades during construction of each surface.

10.5 FREQUENCY AND SPACING

All surveying will be carried out immediately upon completion of a given installation to facilitate progress and avoid delaying commencement of the next installation. In addition, spot checks during construction, as determined by the Senior Surveyor, CQA Inspector, or CQA Engineer, may be necessary to assist the Contractor in complying with the required grades.

The following spacings and locations will be provided by the CQC surveyor, as a minimum, for survey points:

- Surfaces with slopes less than 10 percent will be surveyed on a square grid not wider than 100 feet.
- On slopes greater than 10 percent, a square grid not wider than 100 feet will be used, but, in any case, a line of survey points at the crest, midpoint, and toe of the slope will be taken.
- A line of survey points no farther than 100 feet apart will be taken along any slope break (this will include the inside edge and outside edge of any bench on a slope).
- A line of survey points not farther than 50 feet apart will be taken for all piping used for leachate collection/detection lines, in particular, at the lateral intersection and line end points.
- At a minimum, a line of survey points no farther than 50 feet apart will be taken for all cleanout risers.
- At a minimum, every 100 feet along the perimeter of the primary and secondary liner system.
- At a minimum, a line of survey points no farther than 50 feet apart will be taken for all piping used for the leachate collection/detection lines.

10.6 THICKNESS MEASUREMENTS

The CQC surveyor as a representative of the Contractor shall obtain elevations of the subgrade at a maximum 100-foot grid points and at all grade break lines prior to placement of the geosynthetic clay liner. The procedure for obtaining elevations of the subgrade shall be agreed to by the CQA Inspector and CQA Engineer prior to construction. The CQC Surveyor shall review the survey information with the Contractor to ensure that the survey demonstrates compliance with the Project Plans and Specifications. The Contractor is responsible for identifying and reporting to the CQA Inspector any areas of non-compliance evidenced by the survey, and for repairing such areas. The CQA Inspector and

Contractor shall review the elevation measurements of the subgrade prior to placement of the geosynthetic clay liner.

10.7 TOLERANCES

Except for liner components where no minus tolerances are acceptable, the following are maximum tolerances for survey points:

- On surfaces, the maximum tolerances shall be 0.1 foot. This tolerance must be set to the record elevation of the surface below it and not the design elevation.
- On piping for leachate collection/detection lines, the maximum tolerance shall be 0.02 foot. This tolerance must be set to the record elevation of the surface below it and not the design elevation.
- On cleanout risers, the tolerance shall be 0.1 foot. This tolerance must be set to the record elevation of the surface below it and not the design elevation.

10.8 DOCUMENTATION

All field survey notes will be retained by the Senior Surveyor. The results from the field surveys will be documented on a set of survey record (as-built) drawings by the Contractor for submittal to the CQA Inspector. The Contractor shall certify to the CQA Inspector and CQA Engineer that the results of the survey demonstrates compliance with the Contract Documents. Sealed surveys depicting the information gathered in Paragraph 10.5 shall be supplied to the CQA Engineer and CQA Inspector in sufficient quantities. The surveys shall depict the information in a topographic format and illustrate actual data points. For thickness verification a table shall be compiled by the CQC surveyor or contractor containing the following information for each point.

- Proposed subgrade elevation.
- Actual subgrade elevation.
- Subgrade deviation.
- Proposed final elevation.
- Actual final elevation.
- Thickness.
- Elevation deviation.

Any deviations in elevation or thickness outside the tolerances allowed by specification shall be corrected.

SECTION 11.0
REPORTING REQUIREMENTS AND DOCUMENTATION

11.1 PROJECT MEETINGS

Conducting periodic project meetings is the responsibility of the Design Engineer who will make physical arrangements for meetings, record minutes and distribute copies to participants and those affected by decisions make at meetings. At a minimum the following meetings will be held.

- Pre-construction CQA meeting
- Problems or Work deficiency meetings

11.1.1 Preconstruction CQA Meeting

This meeting shall be attended by the Owner, Design Engineer, CQA Engineer, CQA Inspector, and Contractor. The topics should include but are not limited to:

- Providing each organization with all relevant CQA documents and supporting information.
- Familiarizing each organization with the site-specific CQA Plan and its role relative to the design criteria.
- Determining any changes to the CQA Plan that are needed to ensure that the facility will be constructed to meet or exceed the specified design.
- Reviewing the responsibilities of each organization.
- Reviewing lines of authority and communication for each organization.
- Discussing the established procedures or protocol for observations and tests including sampling strategies.
- Discussing the established procedures or protocol for handling construction deficiencies, repairs, and retesting.
- Reviewing methods for documenting and reporting inspection data.
- Reviewing methods for distributing and storing documents and reports.
- Reviewing work area security and safety protocol.
- Discussing procedures for the location and protection of construction materials and for the prevention of damage of the materials from inclement weather or other adverse events.
- Conducting a site walk-around to review construction material and inspection equipment storage locations.

The meeting shall be documented by a designated person, and minutes should be transmitted to all parties.

11.1.2 Weekly Progress Meetings

A progress meeting shall be held weekly at the work area at a time determined at the pre-construction meeting. At a minimum, the meeting should be attended by the CQA Engineer, CQA Inspector, Contractor and the Owner.

The purpose of the meeting is to:

- Review the previous week's activities and accomplishments.
- Review status of progress schedule.
- Review the work location and activities for the week.
- Identify the contractor's personnel and equipment assignments for the week.
- Discuss any potential construction problems.

This meeting shall be documented by the CQA Engineer.

11.1.3 Problem or Work Deficiency Meetings

A special meeting shall be held when and if a problem or deficiency is present or likely to occur. At a minimum, the meeting shall be attended by the Design Engineer, Owner, Contractor, CQA Engineer, and CQA Inspector. The purpose of the meeting is to define and resolve a problem or recurring work deficiency in the following manner:

- Define and discuss the problem or deficiency.
- Review alternative solutions.
- Implement a plan to resolve the problem or deficiency.

The meeting shall be documented by the CQA Engineer and transmitted to the Owner, Contractor, CQA Inspector and Design Engineer, if applicable.

11.2 DOCUMENTATION

Documentation is an essential element of the CQA Plan. The following documentation and record keeping of inspection activities will be required.

11.2.1 Daily Summary Report

A summary report shall be prepared daily by the CQA Inspector. This report will provide the chronologic framework for identifying and recording all other reports. At a minimum, the summary reports shall include the following information:

- Unique identifying sheet number for cross-referencing and document control.
- Date, project name, location, and other identification.
- Data on weather conditions.
- Reports on any meetings held and their results.
- Unit processes, and locations, of construction under way during the timeframe of the daily summary report.
- Equipment and personnel being worked in each unit process, including subcontractors.
- Descriptions of areas or units of work being inspected and documented.
- Description of off-site materials received, including any quality verification (vendor certification) documentation.

- Calibrations, or recalibrations, of test equipment, including actions taken as a result of recalibration.
- Decisions made regarding approval of units of material or of work (blocks), and/or corrective actions to be taken in instances of substandard quality.
- Unique identifying sheet numbers of inspection data sheets and/or problem reporting and corrective measures reports used to substantiate the decisions described in the preceding item.
- Supporting inspection data sheets.
- Signature of the CQA Inspector.

11.2.2 Inspection Data Sheets and Photographs

All observations, and field and/or laboratory tests, shall be recorded on an inspection data sheet. Required data to be addressed for most of the standardized test methods are included in the pertinent ASTM Standards.

At a minimum, the inspection data sheets shall include the following information:

- Unique identifying sheet number for cross-referencing and document control.
- Description or title of the inspection activity.
- Location of the inspection activity or location from which the same increment was obtained.
- Type of inspection activity; procedure used (reference to standard method when appropriate).
- Recorded observation or test data, with all necessary calculations.
- Results of the inspection activity; comparison with specification requirements.
- Personnel involved in the inspection activity.
- Signature of the appropriate inspection personnel and concurrence by the CQA Engineer.

Items above may be formulated into site-specific checklists and data sheets so that details are not overlooked.

Photographic supporting data sheets also may prove useful. Such data sheets could be cross-referenced or appended to inspection data sheets and/or problem identification and corrective measures reports. At a minimum, photographic reporting data sheets should include the following information:

- A unique identifying number on data sheets and photographs for cross-referencing and document control.
- The date, time, and location where the photograph was taken and weather conditions.
- The size, scale, and orientation of the subject matter photographed.
- Location and description of the work.
- The purpose of the photograph.
- Signature of the photographer and concurrence of the CQA Engineer.

These photographs will serve as a pictorial record of work progress, problems, and corrective measures. They should be kept in a permanent protective file in the order in which they were taken.

11.2.3 Problem Identification and Corrective Measures Reports

A problem is defined herein as material or workmanship that does not meet the specified design. Problem identification and corrective measures reports shall be cross-referenced to specific inspection data sheets where the problem was identified. At a minimum, they shall include the following information:

- Unique identifying sheet number for cross-referencing and document control.
- Detailed description of the problem.
- Location of the problem.
- Probable cause.
- How and when the problem was located (reference to inspection data sheets).
- Estimation of how long problem has existed.
- Suggested corrective measure.
- Documentation of correction (reference to inspection data sheets).
- Final results.
- Suggested methods to prevent similar problems.
- Signature of the appropriate CQA inspection personnel and concurrence by the CQA Engineer.

Copies of the report shall be sent to the Design Engineer and the Owner for their comments and acceptance. These reports should not be submitted to the FDEP at that time unless they have been specifically requested. However, a summary of all data sheets and reports will be submitted to the FDEP upon completion of construction.

11.2.4 Acceptance of Completed Components

All daily inspection summary reports, inspection data sheets, and problem identification and corrective measures reports, shall be reviewed by the CQA Engineer.

11.2.5 Final Documentation

At the completion of the project, the Owner will submit a final construction certification report to the FDEP. This report will include all of the daily inspection summary reports, inspection data sheets, problem identification and corrective measures reports, photographic supporting data, acceptance reports, deviations from design and material specifications (with justifying documentation), and record drawings. This document shall be certified correct by the CQA Engineer and included as part of the CQA Plan documentation.

Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex Water Quality Monitoring Plan Addendum

February 2007
Revised June 2007
Revised September 2007
Revised January 2008
Revised March 2008
Revised April 2009

Dept. of Environmental Protection

APR 23 2009

Southwest District

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HDR Project No. 001916-43485-018

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SECTION 1.0
INTRODUCTION

The Phase II expansion of the Central County Solid Waste Disposal Complex (CCSWDC) Class I landfill will require the abandonment of existing groundwater monitoring wells and the installation of new wells. The construction of the Phase II cells will also require the addition of a leachate sampling location. Since the Phase II expansion will be located in an area where stormwater is controlled by an existing permitted stormwater management system, no modifications to the existing surface water monitoring system are proposed.

Also addressed in this addendum is the removal of a landfill gas monitoring probe and replacement with another probe.

This addendum to the CCSWDC Water Quality Monitoring Plan therefore addresses only those modifications noted above. Sampling procedures and frequencies, analytical methods, and sampling parameters will remain as currently described in the Water Quality Monitoring Plan and in the Operation Permit dated July 11, 2006.

SECTION 2.0
GROUNDWATER MONITORING LOCATION REVISIONS

2.1 MONITORING WELL AND PIEZOMETER ABANDONMENT

The locations of the existing groundwater monitoring wells at CCSWDC proposed for abandonment, and the new wells to be installed are shown on Figure 1. The groundwater monitoring wells initially proposed for abandonment include MW-11R and MW-12R that are located immediately west of Phase I and are within the Phase II waste disposal footprint. In addition to these two monitoring wells, all eight (8) of the temporary piezometers installed within the Phase II footprint will be abandoned as shown on Figure 1. These piezometers include:

P-S-1	P-D-1 (SHALLOW)
P-S-2	P-D-1 (DEEP)
P-S-3	P-D-2 (SHALLOW)
P-S-4	P-D-2 (DEEP)

~~Phase II will be constructed in two parts with only Cells 1 and 2 being constructed initially. Figure 1 shows the proposed locations of two interim monitoring wells located immediately west of Cell 2 that are labeled MW 13 and MW 14. These wells will be abandoned when Cells 3 and 4 of Phase II are constructed. As indicated in Figure 1, wells MW-17, MW-18, MW-19, and MW-20 will not be installed until Cells 3 and 4 of Phase II are constructed.~~

All monitoring wells will be plugged and abandoned in accordance with FAC 62-532.440 and Southwest Florida Water Management District (SWFWMD) requirements. Abandonment will not occur until a Permit to Construct is obtained for Phase II. Abandonment will be completed prior to grading within the Phase II area. Documentation of abandonment will include a map showing well/piezometer locations and SWFWMD abandonment records. Sarasota County will submit a written report to FDEP providing verification of the well abandonment within 30 days of abandonment.

2.2 MONITORING WELL INSTALLATION AND DESIGN

Monitoring wells proposed for installation prior to Phase II operation are shown on Figure 1. These new wells include the following:

Table 2- 1
Proposed New Phase II Groundwater Monitoring Wells

WELL NO.	AQUIFER MONITORED	TYPE OF WELL	LOCATION
~~MW-13*~~	~~Surficial~~	~~Interim Detection~~	~~West of Cell 2, Phase II~~
~~MW-14*~~	~~Surficial~~	~~Interim Detection~~	~~West of Cell 2, Phase II~~
MW-15	Surficial	Detection	South of Phase II
MW-16	Surficial	Detection	South of Phase II

WELL NO.	AQUIFER MONITORED	TYPE OF WELL	LOCATION
MW-17~~**~~	Surficial	Detection	South of Phase II
MW-18~~**~~	Surficial	Detection	West of Phase II
MW-19~~**~~	Surficial	Detection	West of Phase II
MW-20~~**~~	Surficial	Detection	West of Phase II

~~* MW-13 and MW-14 will be abandoned when Cells 3 and 4 of Phase II are constructed.~~

~~** MW-17, MW-18, MW-19, and MW-20 will not be installed until Cells 3 and 4 of Phase II are constructed.~~

As shown on Figure 1, MW-15, MW-16, and MW-17 will be spaced approximately 500 feet apart along the south side of Phase II where groundwater flow is typically side gradient. It is anticipated that these wells will eventually be abandoned when Phase III is permitted south of Phase II. ~~MW-17 will not be installed until after Cells 3 and 4 of Phase II are constructed.~~

~~Interim monitoring wells MW-13 and MW-14 will be constructed west of Cell 2 and will be abandoned when Cells 3 and 4 of Phase II are constructed.~~

Monitoring wells MW-18, MW-19, and MW-20 are located west of Phase II. These wells are also spaced approximately 500 feet apart since groundwater flow is typically toward the west in this area. ~~These wells will not be installed until after Cells 3 and 4 of Phase II are constructed.~~

Table 2.1 indicates that all of the proposed new monitoring wells will be detection wells monitoring the surficial aquifer. Due to the high groundwater table at the site, all wells will be constructed similar to the proposed replacement background monitoring well MW-1R.. Figure 2 is a typical detail for the proposed monitoring well construction. The proposed well construction including screened intervals is summarized in Table 2.2.

Table 2- 2
Proposed Monitoring Well Construction Information*

WELL NO.	APPROXIMATE EXISTING GRADE ELEVATION (Feet NGVD)	APPROXIMATE FINISH GRADE ELEVATION (Feet NGVD)	PROPOSED TOP OF SCREEN ELEVATION (Feet NGVD)	PROPOSED BOTTOM OF SCREEN ELEVATION (Feet NGVD)
~~MW-13~~	~~23~~	~~23**~~	~~21~~	~~11~~
~~MW-14~~	~~23~~	~~23**~~	~~21~~	~~11~~
MW-15	24	39	24	14
MW-16	33	39	24	14
MW-17	23	39	24	14
MW-18	22	36	24	14
MW-19	23	33.4	24	14
MW-20	23	33	24	14

* See Figure 2.0 for additional monitoring well construction information.

~~** It is anticipated that MW-13 and MW-14, being interim wells, will be installed at existing grade.~~

Once installed, the locations of each new monitoring well (in degrees, minutes, and seconds of latitude and longitude) and the elevation of the top of the well casing to the nearest .01 foot (NGVD 1929) will be determined by a registered Florida land surveyor. The wells will be clearly labeled and easily visible at all times. The wells will be locked at all times when not being sampled to minimize unauthorized access.

Record drawings for all newly installed groundwater monitoring wells will be submitted to the FDEP Southwest District Office on the Monitor Well Completion Form provided in Attachment A.

Upon full implementation of the modifications described in this addendum, the groundwater monitoring system at CCSWDC will consist of the wells presented in the table below.

Table 2- 3
Phase I/Phase II Groundwater Monitoring System

WELL NO.	AQUIFER MONITORED	TYPE OF WELL	LOCATION
MW-1R*	Surficial	Background	Northeast of Phase I
MW-3**	Surficial	Piezometer	East of Phase V
MW-5**	Surficial	Piezometer	East of Phase V
MW-8A	Surficial	Detection	South of Phase I
MW-9	Surficial	Detection	South of Phase I
MW-10R	Surficial	Detection	South of Phase I
~~MW-13~~	~~Surficial~~	~~Interim Detection~~	~~West of Cell2, Phase II~~
~~MW-14~~	~~Surficial~~	~~Interim Detection~~	~~West of Cell 2, Phase II~~
MW-15	Surficial	Detection	South of Phase II
MW-16	Surficial	Detection	South of Phase II
MW-17	Surficial	Detection	South of Phase II
MW-18	Surficial	Detection	West of Phase II
MW-19	Surficial	Detection	West of Phase II
MW-20	Surficial	Detection	West of Phase II

* MW-1R to be installed pending FDEP approval of pending Permit Modification #130542-004.

** These locations only require ground water level readings to be taken.

2.3 MONITORING WELL SAMPLING AND ANALYSIS

An initial sampling event will be conducted within seven (7) days of well installation and development for the analysis of the field and laboratory parameters currently required by the facility permit. Results of the initial sampling will be submitted to FDEP within 30 days of receipt from the analytical laboratory.

All groundwater samples will be unfiltered and will be obtained using dedicated sampling equipment installed within each well.

All monitoring wells installed at the site, except for MW-3 and MW-5, will be sampled semi-annually for the analysis of the field and laboratory parameters currently required by the facility permit. MW-3 and MW-5 are piezometers that require only groundwater elevations to be measured. Results will be reported to FDEP using the form contained in Attachment B.

Groundwater elevations will be measured at all active wells and piezometers during all sampling events to a precision of 0.01 foot. The water surface contour maps prepared for each sampling event will include ground water elevations (measured in feet NGVD) calculated for each well and piezometer, and surface water elevations calculated for each pond.

SECTION 3.0
LEACHATE MONITORING LOCATION REVISIONS

3.1 PHASE II LEACHATE MONITORING LOCATION

The four (4) proposed cells within Phase II will flow by gravity to a single duplex leachate pump station located on the perimeter berm north of Cell No. 2. The leachate pump station will therefore be an additional leachate sampling location. Leachate samples will be obtained from a sampling port located at the pump station valve box. This leachate sampling location will be added to the five (5) existing leachate sampling locations within Phase I. Upon operation of Phase II, the leachate sampling locations at CCSWDC will consist of the locations presented in the table below. These leachate sampling locations are shown on Figure 1.

Table 3- 1
Phase I/Phase II Leachate Sampling Locations

LOCATION ID	LOCATION
C-1	Cell No. 1, Phase I
C-2	Cell No. 2, Phase I
C-3	Cell No. 3, Phase I
C-4	Cell No. 4, Phase I
C-5	Cell No. 5, Phase I
P2-1	Cells No. 1-4, Phase II

3.2 LEACHATE SAMPLING AND ANALYSIS

Leachate samples will be obtained from each sampling location shown on Figure 1. Representative unfiltered leachate samples will be collected from the sampling ports at the leachate pump valve boxes. Leachate sampling will be conducted in accordance with the FDEP's standard operating procedures to comply with the requirements of FAC 62-701.510(5) and FAC 62-701.510(6)(c). A composite leachate sample may be prepared from the samples collected from the leachate sampling ports within Phase I for the analysis of the inorganic parameters only. Samples from Phase I and Phase II will not be composited. Otherwise, individual leachate samples will be collected from the leachate sampling ports at each sampling location and analyzed for the semi-annual and annual parameters required by the current Operation Permit for CCSWDC dated July 11, 2006.

SECTION 4.0
LANDFILL GAS MONITORING LOCATION REVISIONS

4.1 LANDFILL GAS MONITORING LOCATIONS

Figure 1 shows that landfill gas probe GP-1, located immediately west of Phase I, will have to be abandoned prior to construction of Phase II. GP-1 will be abandoned in accordance with the same requirements previously stipulated for abandonment of groundwater monitoring wells. A new gas probe, GP-9, will be installed when Phase II is constructed. ~~A new interim gas probe, GP-8, will be installed west of Cell 2 at the location shown on Figure 1 during the initial stage of Phase II construction. GP-8 will eventually be abandoned and replaced with GP-9 when Cells 3 and 4 are constructed.~~ Additional probes north of Phase II are not necessary due to the presence of Stormwater Pond No. 1 that will effectively cut off the migration route of landfill gas in that direction. Additional probes south of Phase II are not necessary due to the long distance between the edge of waste and the property line and structures that can be adversely affected by migrating landfill gas. The high water table at the site also makes it unlikely that gas will migrate significant distances.

No additional enclosed structures requiring landfill gas monitoring will be constructed as part of the Phase II expansion at CCSWDC. The existing six (6) gas monitoring locations required under the current Operation Permit dated July 11, 2006 will therefore be maintained.

The proposed landfill gas monitoring system at CCSWDC will consist of the following monitoring points:

Table 4- 1
Phase I/Phase II Landfill Gas Monitoring Points

MONITORING POINT	TYPE OF MONITORING	LOCATION
GP-2	Probe	North of Phase I
GP-3	Probe	East of Phase I
GP-7	Probe	North of C&D Processing Area
~~GP-8*~~	~~Interim Probe~~	~~West of Cell 2, Phase II~~
GP-9~~**~~	Probe	West of Cell 4, Phase II
GM-1	Monitoring Location	Contractor's Maintenance Bldg.
GM-2	Monitoring Location	C&D Processing Area
GM-3	Monitoring Location	County Maintenance Bldg.
GM-4	Monitoring Location	Administrative Bldg.
GM-5	Monitoring Location	Scale House
GM-7	Monitoring Location	Control Panel at Leachate Storage Tank

* ~~GP-8 will be installed when Cells 1 and 2 of Phase II are constructed and abandoned when Cells 3 and 4 of Phase II are constructed.~~
~~** GP-9 will be installed when Cells 3 and 4 of Phase II are constructed.~~

Figure 3 is a detail showing the proposed landfill gas monitoring probes at CCSWDC. The new probes will be screened across the seasonal low water table. All gas probes will be clearly labeled and easily visible at all times.

4.2 LANDFILL GAS SAMPLING

The landfill gas probes and monitoring locations shown on Figure 1 will be sampled at least quarterly for concentrations of combustible gases determined as a percent of the lower explosive limit (LEL) calibrated to methane as described in FAC 62-701.530.(2).

If the results of gas monitoring show that combustible gas concentrations exceed 25 percent of the LEL calibrated to methane in structures or 100 percent of the LEL calibrated to methane at the property boundary, Sarasota County will immediately take all necessary steps to ensure protection of human health and notify FDEP. Within 7 days of detection, a gas remediation plan detailing the nature and extent of the problem and the proposed remedy will be submitted to FDEP for approval. The remedy will be completed within 60 days of detection unless otherwise approved by FDEP.

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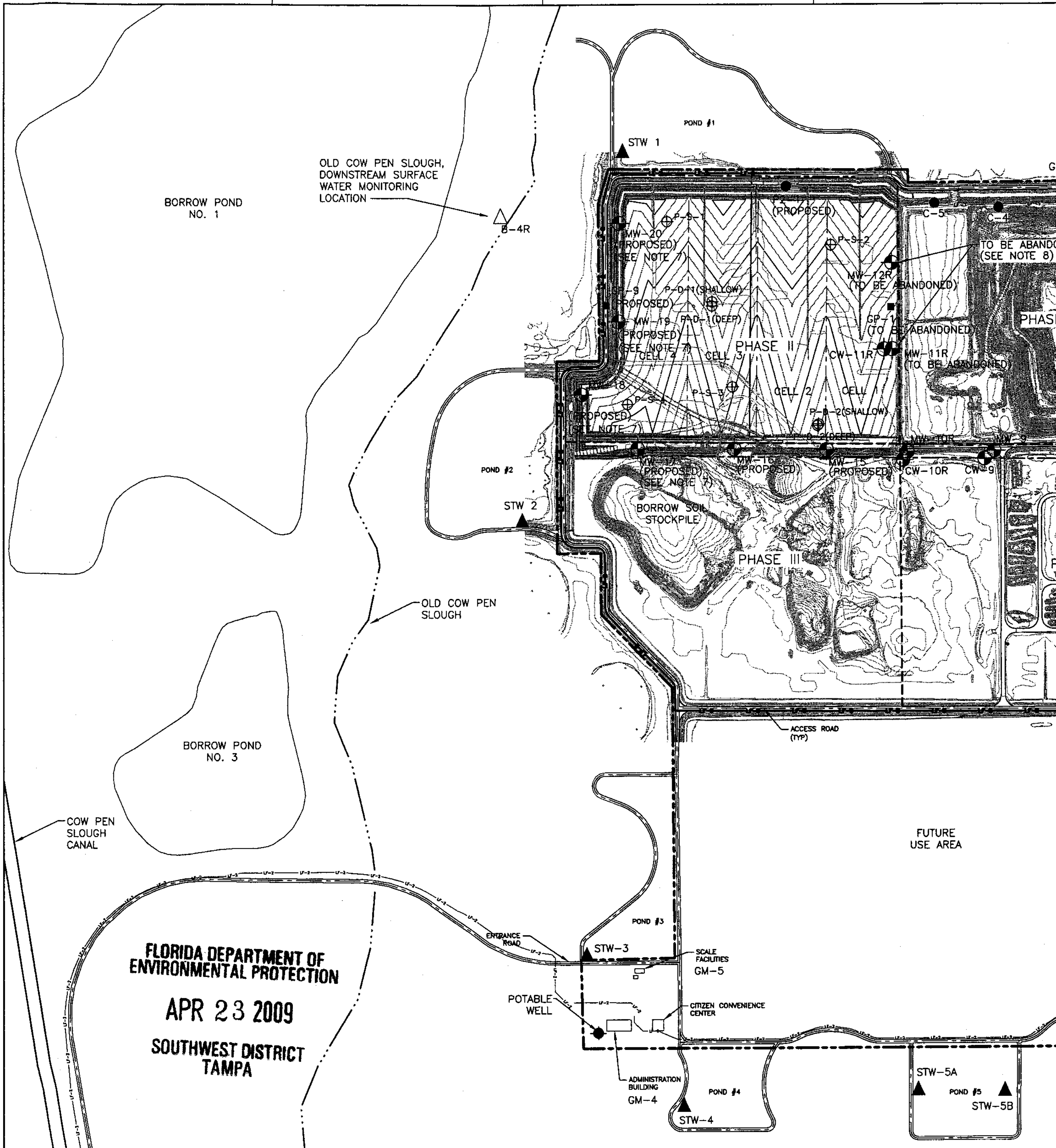

MONITORING WELL NOTES

1. LOCATIONS AND ELEVATIONS OBTAINED FROM SPECIFIC PURPOSE SURVEY BY SARASOTA COUNTY, MARCH 2008.

2. LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS AND ELEVATIONS WILL BE PROVIDED TO FDEP AT TIME OF INSTALLATION.

3. THESE WELLS ARE ONLY MONITORED FOR WATER LEVELS.

4. MONITORING WELLS MW-11R AND MW-12R ARE ... WHEN PHASE II IS CONSTRUCTED.

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F	04/2009	REVISED PER MINOR PERMIT MODIFICATION
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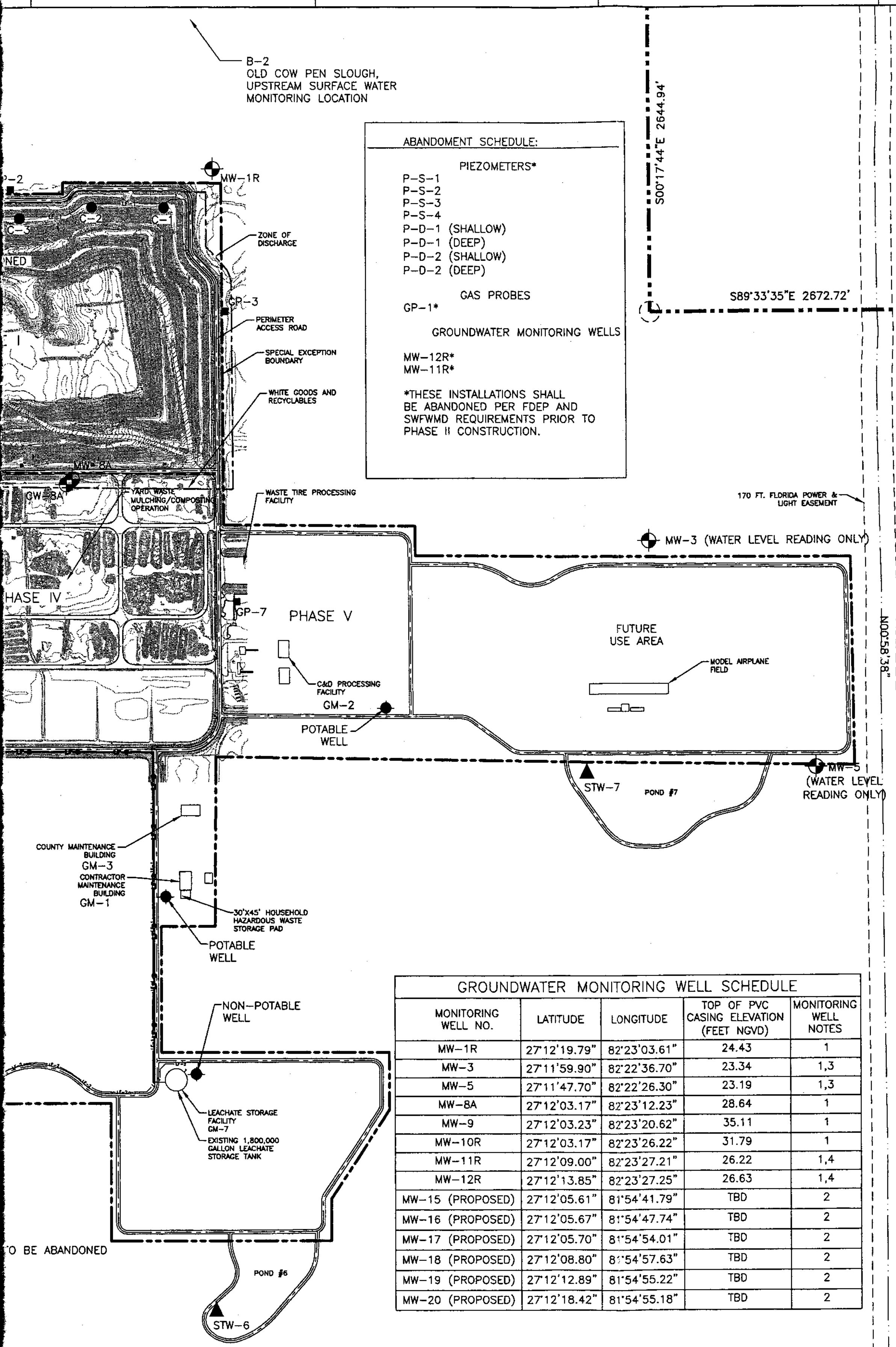
D	01/2008	REVISED PER RAI #3
C	09/2007	REVISED PER RAI #2
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON



ABANDOMENT SCHEDULE:

PIEZOMETERS*
P-S-1
P-S-2
P-S-3
P-S-4
P-D-1 (SHALLOW)
P-D-1 (DEEP)
P-D-2 (SHALLOW)
P-D-2 (DEEP)

GAS PROBES
GP-1*

GROUNDWATER MONITORING WELLS

MW-12R*
MW-11R*

*THESE INSTALLATIONS SHALL BE ABANDONED PER FDEP AND SWFWMD REQUIREMENTS PRIOR TO PHASE II CONSTRUCTION.

GROUNDWATER MONITORING WELL SCHEDULE

MONITORING WELL NO.	LATITUDE	LONGITUDE	TOP OF PVC CASING ELEVATION (FEET NGVD)	MONITORING WELL NOTES
MW-1R	27°12'19.79"	82°23'03.61"	24.43	1
MW-3	27°11'59.90"	82°22'36.70"	23.34	1,3
MW-5	27°11'47.70"	82°22'26.30"	23.19	1,3
MW-8A	27°12'03.17"	82°23'12.23"	28.64	1
MW-9	27°12'03.23"	82°23'20.62"	35.11	1
MW-10R	27°12'03.17"	82°23'26.22"	31.79	1
MW-11R	27°12'09.00"	82°23'27.21"	26.22	1,4
MW-12R	27°12'13.85"	82°23'27.25"	26.63	1,4
MW-15 (PROPOSED)	27°12'05.61"	81°54'41.79"	TBD	2
MW-16 (PROPOSED)	27°12'05.67"	81°54'47.74"	TBD	2
MW-17 (PROPOSED)	27°12'05.70"	81°54'54.01"	TBD	2
MW-18 (PROPOSED)	27°12'08.80"	81°54'57.63"	TBD	2
MW-19 (PROPOSED)	27°12'12.89"	81°54'55.22"	TBD	2
MW-20 (PROPOSED)	27°12'18.42"	81°54'55.18"	TBD	2

SITE PLAN NOTES

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV AREAS COMPILED BY LANDAIR MAPPING, INC. OF PEACHTREE CITY, GEORGIA USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 16, 2006.
2. LOCATIONS OF EXISTING PIEZOMETERS, MONITORING WELLS AND STAFF GAUGES OBTAINED FROM SPECIFIC PURPOSE SURVEY BY SARASOTA COUNTY, MARCH 2008.
3. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
4. APPROXIMATE LOCATION OF LEACHATE FORCEMAIN TO OFFSITE WWTP OBTAINED FROM CONFORMED DRAWINGS BY PBS&J DATED JULY 2005. VERIFY LOCATION IN FIELD.

GAS PROBE NOTES

1. GP-1 WILL BE ABANDONED AND GP-9 INSTALLED WHEN PHASE II IS CONSTRUCTED

LEGEND

GP-1	GAS PROBE
MW-10R	GROUNDWATER MONITORING WELL
GM-1	GAS MONITORING LOCATION
	WATER SUPPLY WELL
P-S-1	PHASE II BORING/ PIEZOMETER LOCATION
STW-1	STORMWATER MONITORING STATION
C-1 / B-4R	LEACHATE MONITORING LOCATION
	ZONE OF DISCHARGE
	WATERWAY
	LIMITS OF EASEMENT
	EASEMENT CENTERLINE
	EXISTING ROADWAY
	PHASE BOUNDARY
	PROPERTY BOUNDARY

D C B A

FOR PERMITTING

Thomas M. Yanoschak
4/23/09
Thomas M. Yanoschak, P.E.

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

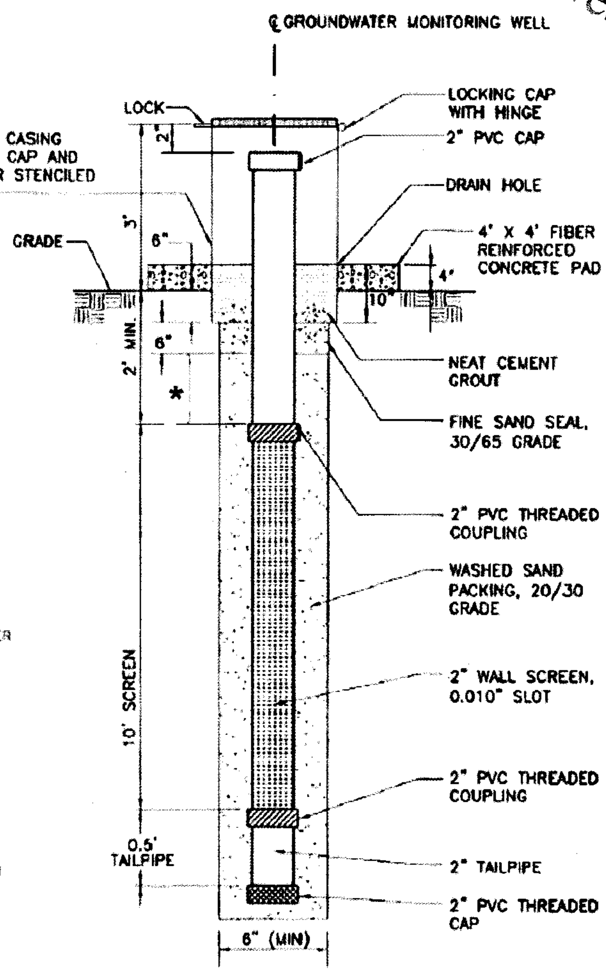
WATER QUALITY MONITORING PLAN

0 1" 2"

FILENAME	00G-03.dwg
SCALE	1"=400'

SHEET
FIGURE 1

Figure 2 Typical Groundwater Monitoring Well



CONSTRUCTION NOTES:

1. ALL WORK RELATED TO ABANDONMENT OR INSTALLATION OF MONITORING WELLS, SHALL BE DONE BY A FLORIDA CERTIFIED WATER WELL DRILLER.

2. ALL MONITORING WELLS, INDICATED ON THE DRAWINGS SHALL BE ABANDONED IN ACCORDANCE WITH F.A.C. RULE 62-532.440, AND THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD). THE DRILLER SHALL SUBMIT A WRITTEN REPORT TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, WITH COPIES TO THE OWNER AND ENGINEER, DOCUMENTING VERIFICATION OF THE WELL ABANDONMENT WITHIN 90 DAYS OF ABANDONMENT. DOCUMENTATION OF ABANDONMENT SHALL INCLUDE A MAP SHOWING LOCATIONS AND SWFWMD ABANDONMENT RECORDS.

3. NEW MONITORING WELLS AND PIEZOMETERS SHALL BE INSTALLED PER ASTM D-5092 (1995) E1-STANDARD PRACTICE FOR DESIGN AND INSTALLATION OF GROUND WATER MONITORING WELLS IN GRANULAR AQUIFERS, AND THE FOLLOWING DOCUMENTATION SUBMITTED TO FDEP WITH COPIES TO THE OWNER AND ENGINEER.

   A. FDEP FORM 62-522.900(3) MONITORING WELL COMPLETION REPORT

   B. A SURVEY DRAWING SHALL BE SUBMITTED IN ACCORDANCE WITH F.A.C. RULE 62-701.510(3) (D) (1), SHOWING THE LOCATION OF ALL MONITORING WELLS (ACTIVE AND ABANDONED) HORIZONTALLY LOCATED IN DEGREES, MINUTES AND SECONDS OF LATITUDE AND LONGITUDE, AND THE ELEVATION OF THE TOP OF THE WELL CASING TO THE NEAREST 0.01 FOOT, NATIONAL GEODETIC VERTICAL DATUM. THE SURVEYED DRAWING SHALL INCLUDE THE MONITOR WELL IDENTIFICATION NUMBERS, LOCATIONS AND ELEVATIONS OF ALL PERMANENT BENCHMARKS AND /OR CORNER MONUMENT MARKER AT THE SITE. THE SURVEY SHALL BE CONDUCTED BY A FLORIDA REGISTERED SURVEYOR.

4. ALL REPORTS SHALL BE SENT TO: JOHN MORRIS, P.G. SOLID WASTE SECTION, DEPARTMENT OF ENVIRONMENTAL PROTECTION, SOUTHWEST DISTRICT OFFICE, 13051 NORTH TELECOM PARKWAY, TEMPLE TERRACE, FL 33637-0926; AND ALSO TO: SOLID WASTE SECTION, DEPARTMENT OF ENVIRONMENTAL PROTECTION, 3900 COMMONWEALTH BOULEVARD, M.S. 4565, TALLAHASSEE, FL 32399-3000.

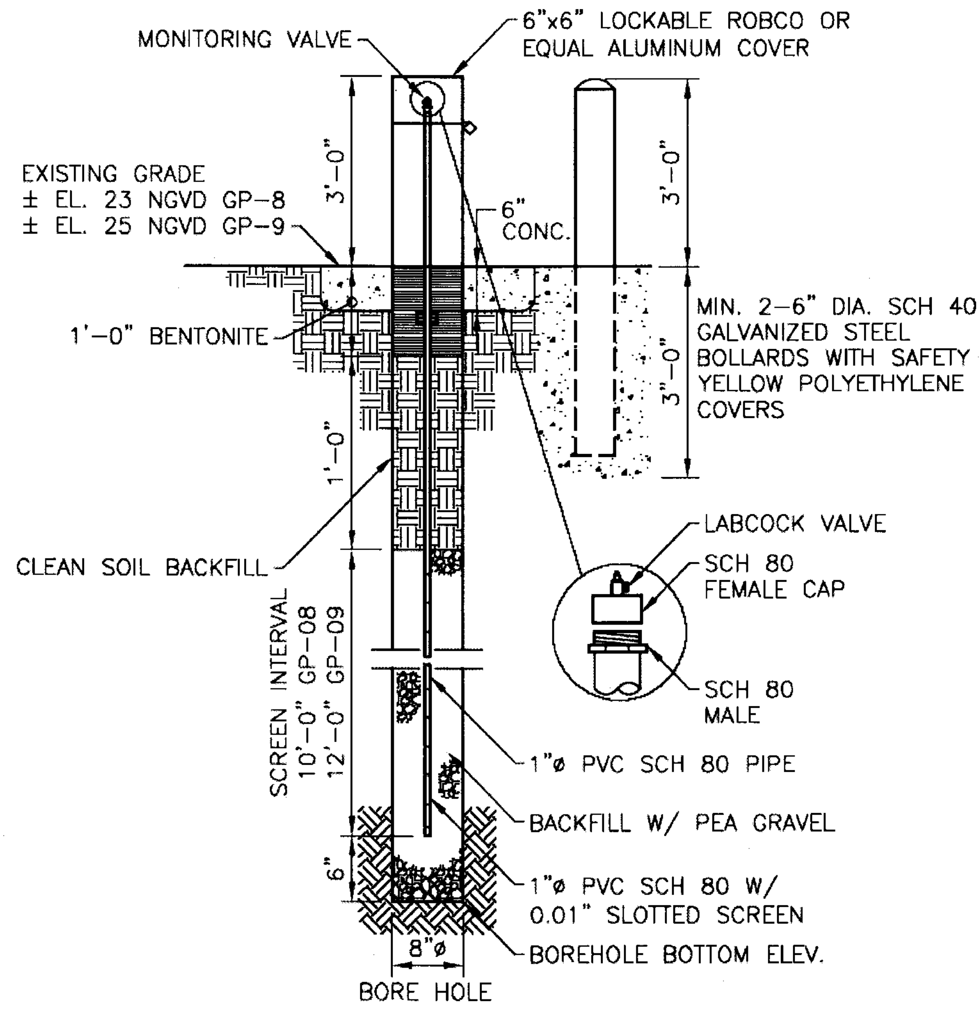
2" DIAMETER GROUNDWATER MONITORING WELL DETAIL

* DIMENSION VARIES: SEE TABLE 2.2 OF THE WATER QUALITY MONITORING PLAN ADDENDUM.

HDR	**TYPICAL PROPOSED GROUNDWATER MONITORING WELL** – SARASOTA COUNTY	DATE – FIGURE 2.0

Source: Pending Permit Modification #130542-004 (PBS&J, 2007)

Figure 3 Typical Gas Monitoring Probe



HDR	**TYPICAL GAS MONITORING PROBE** – SARASOTA COUNTY	DATE REVISED 9/07 FIGURE 3.0

ATTACHMENT A

MONITOR WELL COMPLETION REPORT

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: ______

INSTALLATION NAME: ______

DEP PERMIT NUMBER: ______ GMS NUMBER: ______

WELL NUMBER: ______ WELL NAME: ______

DESIGNATION: Background ______ Immediate ______ Compliance ______

LATITUDE/LONGITUDE: ______

AQUIFER MONITORED: ______

INSTALLATION METHOD: ______

INSTALLED BY: ______

TOTAL DEPTH: ______ (bls) DEPTH OF SCREEN: ______ (bls)

SCREEN LENGTH: ______ SCREEN SLOT SIZE: ______ SCREEN TYPE: ______

CASING DIAMETER: ______ CASING TYPE: ______

LENGTH OF CASING: ______ FILTER PACK MATERIAL: ______

TOP OF CASING ELEVATION (MSL): ______

GROUND SURFACE ELEVATION (MSL): ______

COMPLETION DATE: ______

DESCRIBE WELL DEVELOPMENT: ______

______

______

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): ______

DATE AND TIME MEASURED: ______

REMARKS: (soils information, stratigraphy, etc.) : ______

______

______

REPORT PREPARED BY: ______
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

ATTACHMENT B

GROUNDWATER MONITORING REPORT

DEP Form # 62-522.900(2)
Form Title Ground Water Monitoring Report
Effective Date ________
DEP Application No.________

Florida Department of Environmental Protection

Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

GROUND WATER MONITORING REPORT

Rule 62-522.600(11)

PART I GENERAL INFORMATION

(1) Facility Name ____________________

Address ____________________

City ____________________ Zip ____________________

Telephone Number ( ) ____________________

(2) The GMS Identification Number ____________________

(3) DEP Permit Number ____________________

(4) Authorized Representative Name ____________________

Address ____________________

City ____________________ Zip ____________________

Telephone Number ( ) ____________________

(5) Type of Discharge ____________________

(6) Method of Discharge ____________________

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Date:____________________ ____________________

Signature of Owner or Authorized Representative

PART II QUALITY ASSURANCE REQUIREMENTS

Sample Organization Comp QAP # ____________________

Analytical Lab Comp QAP # /HRS Certification # ____________________

*Comp QAP # /HRS Certification # ____________________

Lab Name ____________________

Address ____________________

Phone Number ( ) ____________________

PART III ANALYTICAL RESULTS

Facility GMS #:____________________ Sampling Date/Time: ____________________

t Site ID #: ____________________ Report Period: ____________________
(year/quarter)

Well Name: ____________________ Well Purged (Y/N): ____________________

Classification of Ground Water: ____________________

Ground Water Elevation (NGVD): ____________________

or (MSL): ____________________

Well Type:
( ) Background
( ) Intermediate
( ) Compliance
( ) Other

Storet Code	Parameter Monitored	Sampling Method	Field Filtered Y/N	Analysis Method	Analysis Date/Time	* Analysis Results/Units	Detection Limits/Units

* Attach Laboratory Reports

RECEIVED
JUN 28 2002
D.E.P.
SOUTHWEST DISTRICT

SECTION M

GROUNDWATER MONITORING PLAN ADDENDUM

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX SARASOTA COUNTY, FLORIDA

Prepared for:

Sarasota County Solid Waste Operations
4000 Knights Trail Road
Nokomis, Florida 34275

Prepared by:

SCS Engineers
3012 U.S. Highway 301 North, Suite 700
Tampa, Florida 33619
(813) 621-0080

File No. 09201010.05
June 28, 2002

Robert L. Wiley

TABLE OF CONTENTS

TABLES

SECTION 1

INTRODUCTION

On March 1, 2002, SCS Engineers (SCS) submitted the Operations Permit Renewal application for the Sarasota County Solid Waste Disposal Complex (facility) that included an evaluation of the facility's groundwater monitoring plan[1] (GWMP). The Florida Department of Environmental Protection (FDEP) reviewed SCS' evaluation of the GWMP and requested modifications to the plan based on the evaluation. This Groundwater Monitoring Plan Addendum (GWMPA) addresses the requested modifications.

Modifications to the GWMP which are included in this Addendum include:

- Modification of the leachate sampling method.
- Reduction of the number of surface water monitoring stations.
- Replacement of selected groundwater monitoring wells.
- Addition of monitoring wells for water levels measurements only.
- Addition of selected inorganic water quality parameters to sampling parameters.

The following sections of this GWMPA address each of the modifications listed above.

[1] "Operation Permit Application for the Sarasota County Central County Solid Waste Disposal Complex," prepared by Camp Dresser & McKee, December 1996 (Revised March 1997), Attachment 9.

SECTION 2

LEACHATE SAMPLING AND PARAMETERS

The current GWMP specifies that composite samples of leachate collected from landfill cell pump stations will be collected for analysis. The modified sampling method includes the following:

- Inorganic parameters will be analyzed in one composite sample of all active sumps.

- Field parameters and organic parameters will be analyzed in samples collected from each of the active sumps.

Field, laboratory, and additional cation and anions as listed below will be sampled semi-annually Sampling for parameters listed in 40 CFR part 258 Appendix II will be performed annually.

A composite leachate sample is collected once per year from the pump stations located at the landfill cells and analyzed for the following parameters. These remain unchanged from the current GWMP with the exception of the addition of selected cations and anions.

Field Parameters

- Specific conductivity
- pH
- Dissolved oxygen
- Color and sheen by observation

Laboratory Parameters

- Total ammonia – N
- Bicarbonate
- Chlorides
- Iron
- Mercury
- Nitrate
- Sodium
- TDS

Additional Cations and Anions (Unfiltered)

- Potassium
- Calcium
- Magnesium
- Sulfate
- Carbonate

Compositing of inorganics will be performed as follows:

Two liters of sample will be collected at each active leachate sump. These will be combined into a single container in the field. Three aliquots (sub-samples) will be collected from the container for analysis as indicated below:

Aliquot 1: 250 ml sample container, preserved with sulfuric acid, to be analyzed for:

- Total ammonia - nitrogen

Aliquot 2: 1,000 ml sample container, no preservatives, to be analyzed for:

- Bicarbonate
- Carbonate
- Chloride
- Nitrate
- Sulfate
- Total dissolved solids

Aliquot 3: 500 ml sample container, preserved with nitric acid, to be analyzed for:

- Calcium
- Iron
- Magnesium
- Mercury
- Potassium
- Sodium
- 40 CFR Part 258 Appendix II Metals (annually only)

SECTION 3

SURFACE WATER SAMPLING AND PARAMETERS

Surface water quality data has been collected from seven surface water-monitoring sites at the facility. Of these sample locations, only two sites along the Old Cow Pen Slough are immediately relevant to the landfill operations at the facility, B2 and B4R. Other sample locations along the Cow Pen Slough and Prairie System Wetlands do not directly receive runoff from areas of the landfill. Runoff from the landfill flows into stormwater ditches on the north and south sides of the landfill and into holding ponds west of the landfill prior to discharging into the Old Cow Pen Slough between monitoring locations B2 and B4R. Sampling surface water at B2 provides information about background surface water quality while sampling surface water at B4R provides information about surface water quality after runoff from the landfill has entered the Old Cow Pen Slough.

The surface water monitoring program is modified to include one hydraulically up gradient station, B2 and one hydraulically down gradient station, B4R. Frequency of sampling and sampling parameters remain unchanged from the GWMP.

These stations will continue to be sampled every six months for the following parameters which remain unchanged from the current GWMP with the exception of the addition of selected cations and anions.

Field Parameters

- Specific conductivity
- pH
- Dissolved oxygen
- Turbidity
- Temperature
- Color and sheen by observation

Laboratory Parameters

- Unionized ammonia
- Total hardness
- Biochemical oxygen demand (BOD)
- Copper
- Iron
- Mercury
- Nitrate
- Zinc
- TDS
- Total organic carbon (TOC)
- Fecal coliform

- Total phosphates
- Chlorophyll A
- Total nitrogen
- Chemical oxygen demand (COD)
- Total suspended solids (TSS)
- Those parameters listed in 40 CFR Part 258, Appendix I

<u>Additional Cations and Anions (Unfiltered)</u>

- Sodium
- Potassium
- Calcium
- Magnesium
- Sulfate
- Carbonate
- Bicarbonate

SECTION 4

GROUNDWATER SAMPLING AND PARAMETERS

The groundwater monitoring well program included three background wells (MW-1, MW-2 and MW-4), and five detection wells (MW-8, MW-9, MW-10R, MW-11 and MW-12). Six of these wells (MW-1, MW-2, MW-4, MW-8, MW-11 and MW-12) had screens that do not intercept the seasonal high groundwater level, and must be replaced.

REPLACEMENT OF SELECTED MONITORING WELLS

Monitoring wells MW-8A, MW-11R, and MW-12R will be installed immediately adjacent to the wells they are replacing. Background well MW-1R will replace MW-1, but will be located northeast of the landfill. Only one background well is needed, and locating this well northeast gives the 1,500 feet of coverage required by the regulations to adequately represent the background water quality upstream of the active landfill cells. Background wells MW-2 and MW-4 can be eliminated. Figure L-1 (Revised), included with this revised Section 4, shows the locations for the new ground water monitoring wells, existing groundwater monitoring wells to remain and existing groundwater monitoring wells abandoned. Figure L-1 also shows the locations for the piezometers (MW-3 and MW-5), staff gauges, surface water monitoring stations, soil monitoring gas probes and ambient gas monitoring locations. Figure GM-1 is a cross section through the landfill and background water monitoring well MW-1R. GM-2 is a well detail for the installation of the groundwater monitoring well.

Table 4-1 lists the proposed well construction characteristics for the replacement wells. The well screens were set based on the historical seasonal high and low water levels at each of the existing wells. Because of limitations of land surface elevation there are times when some of the replacement monitoring well screens will be submerged. However, the replacement of these wells decreases the frequency of submergence. Each replacement well is located near the existing well approximately 50-feet from the edge of the nearest hydraulically up gradient waste cell. Existing replaced wells will be abandoned in accordance with state regulations.

Table 4-1
Well Construction Characteristics for Replacement Wells

Monitoring Well	Length of Well Screen	Depth Below Ground Surface to Top of Screen	Depth Below Ground Surface to Bottom of Well Screen
MW-1R	10 ft.	2 ft.	12 ft.
MW-8A	10 ft.	3 ft.	13 ft.
MW-11R	10 ft	2 ft.	12 ft.
MW-12R	10 ft.	2 ft.	12 ft.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

FEB 26 2007

SOUTHWEST DISTRICT TAMPA

ACTIVATION OF WELLS FOR WATER LEVEL DATA

Monitoring wells MW-3 and MW-5 are inactive, but available for water level measurements. These wells are included in the groundwater monitoring program for water level data collection only. The water level measurement data will be used to draw potentiometric maps for the surficial aquifer water levels. The elevations and coordinates for MW-3 and MW-5 will be surveyed along with the other groundwater monitoring wells.

WATER QUALITY PARAMETERS AND SAMPLING FREQUENCY

Groundwater monitoring wells MW-1R, MW-8A, MW-9, MW-10, MW-11R and MW-12R will be sampled semi-annually for:

Field Parameters	Laboratory Parameters (Unfiltered)	Additional Cations and Anions (Unfiltered)
Specific conductivity	Total ammonia - nitrogen	Potassium
pH	Chlorides	Calcium
Dissolved oxygen	Iron	Magnesium
Turbidity	Mercury	Sulfate
Temperature	Nitrate	Carbonate
Color and sheen by observation	Sodium	Bicarbonate
-	Total Dissolved Solids (TDS)	-
Static Water Levels before pumping	Those parameters listed in 40 CFR Part 258, Appendix I	-

The major cations and anions will be used in Stiff diagram plots to assist in evaluating water quality characteristics.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

FEB 26 2007

SOUTHWEST DISTRICT TAMPA

Joseph L. Miller
P.E. # 39127

TABLE 4-1a. PROPOSED WELL REPLACEMENT CONSTRUCTION, ELEVATIONS AND PUMPING EQUIPMENT ADJUS
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX, SARASOTA COUNTY

Existing Well ID Number [1]	Replacement Well ID Number [1]	Proposed MP Elevation [2]	Proposed Height of Top of Casing [2]	WELL ELEVATIONS (feet NGVD) Land Surface Elevation	Top of Bentonite Seal [3]	Top of Sand Pack [4]	Top of Slotted Screen [5]	Top of Pump Equipment	Bottom Pum Equipm
MW-1	**MW-1R**	**24.50**	**3**	**21.50**	**21.0**	**20.0**	**19.50**	**13.50**	**10.5**
MW-2	**MW-2R**	**24.10**	**3**	**21.10**	**20.6**	**19.6**	**19.10**	**13.10**	**10.1**
MW-4	**MW-4R**	**23.53**	**3**	**20.53**	**20.0**	**19.0**	**18.53**	**12.53**	**9.53**
MW-11	**MW-11R**	**26.11**	**3**	**23.11**	**22.6**	**21.6**	**21.11**	**15.11**	**12.1**
MW-12	**MW-12R**	**25.55**	**3**	**22.55**	**22.1**	**21.1**	**20.55**	**14.55**	**11.5**

TABLE 4-1b. PROPOSED WELL REPLACEMENT CONSTRUCTION AND DEPTHS AND PUMPING EQUIPMENT ADJUS
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX, SARASOTA COUNTY

Well ID Number [1]	Replacement Well ID Number [1]	Land Surface Elevation	DEPTHS BELOW LAND SURFACE (feet) Top of Bentonite Seal [3]	Top of Sand Pack [4]	Top of Slotted Screen [5]	Top of Pump Equipment	Bottom of Pump Equipment [6]	Bottom of Slotted Screen [7]	Bottom PVC Endca
MW-1	**MW-1R**	**21.50**	**0.50**	**1.50**	**2.00**	**8.00**	**11.00**	**12.00**	**12.5**
MW-2	**MW-2R**	**21.10**	**0.50**	**1.50**	**2.00**	**8.00**	**11.00**	**12.00**	**12.5**
MW-4	**MW-4R**	**20.53**	**0.50**	**1.50**	**2.00**	**8.00**	**11.00**	**12.00**	**12.5**
MW-11	**MW-11R**	**23.11**	**0.50**	**1.50**	**2.00**	**8.00**	**11.00**	**12.00**	**12.5**
MW-12	**MW-12R**	**22.55**	**0.50**	**1.50**	**2.00**	**8.00**	**11.00**	**12.00**	**12.5**

NOTES:

[1] Replaced wells will be properly abandoned by a licensed drilling contractor. Proposed elevation or depth changes are shown in bold.

[2] MP Elevations will need to be resurveyed and top of casings will need to be remeasured upon completion of the well replacements. Pro

[3] Where possible, a 1-foot bentonite clay seal is used.

[4] Where possible, sand pack to be 0.5-feet above the top of screen.

[5] Top of screen to be 2-feet below land surface elevation.

[6] Bottom of dedicated pumping equipment is 1-foot above the bottom of screen elevation.

[7] Bottom of screen to be 10-feet below the top of screen.

[8] Bottom of well to be 0.5-feet below the bottom of screen.

feet NGVD = relative feet above the national geodedic vertical datum.

NA= Not Available.

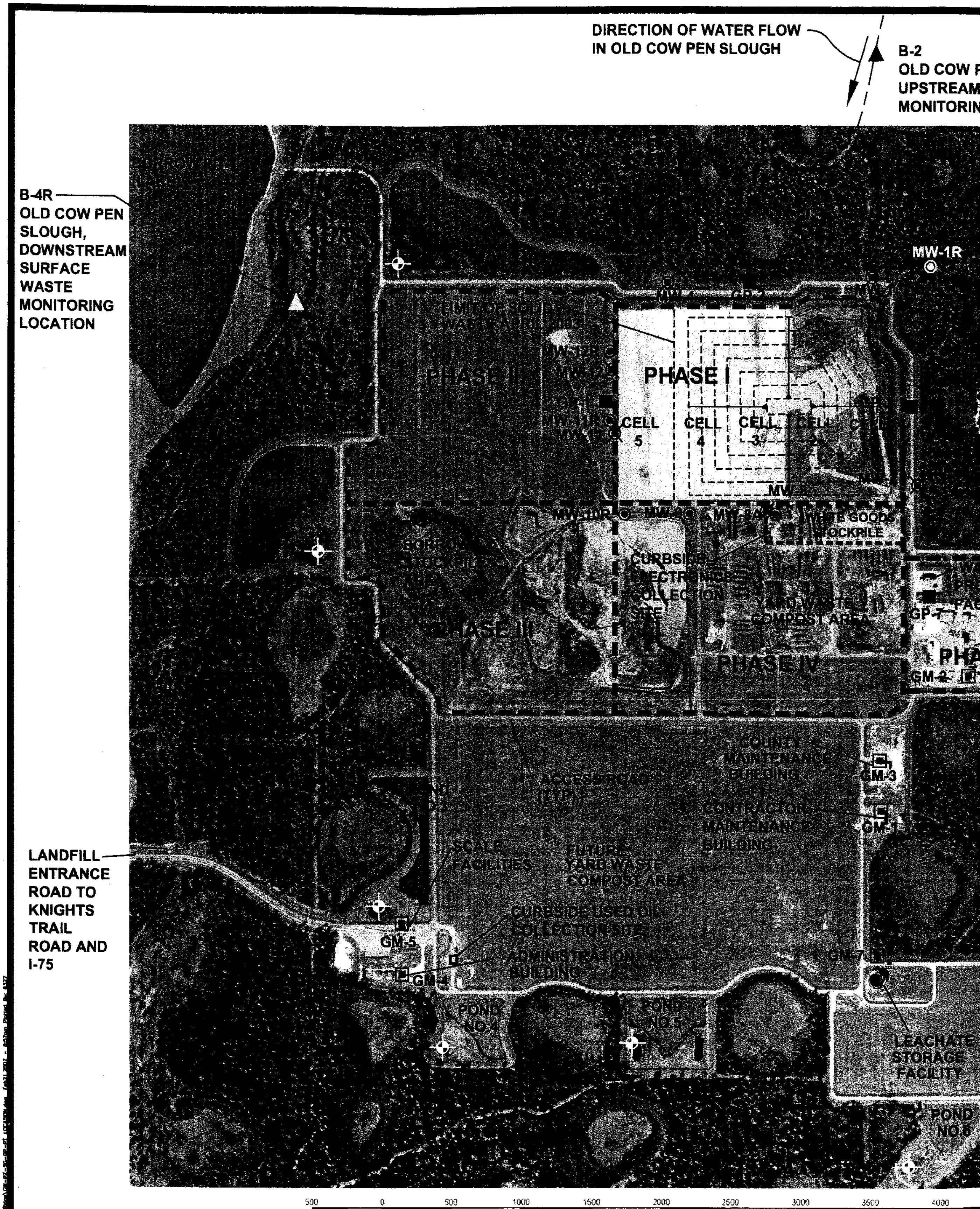
TMENTS,

			GROUNDWATER ELEVATIONS (feet NGVD)			
of nt[6]	Bottom of Slotted Screen[7]	Bottom of PVC Endcap[8]	Maximum	Average	Minimum	Max - Min
	9.50	9.00	20.57	18.82	16.45	4.12
	9.10	8.60	21.04	19.09	17.13	3.91
	8.53	8.03	20.36	18.74	16.32	4.04
	11.11	10.61	20.29	18.40	17.13	3.16
	10.55	10.05	20.24	18.24	16.97	3.27

MENTS,

n of p[8]
)
)
)
)

posed conditions will assume a 3-foot stickup for each well.



PBSJ

SARASOTA C
CENTRAL COUNTY SOLID WAS
LOCATION OF GROUND WATER MONITORING W
GAS MONITORING PROBES (GP) AND AMBIE
FEBRUARY

EN SLOUGH,
SURFACE WATER
G LOCATION

SARASOTA COUNTY CENTRAL
SOLID WASTE DISPOSAL
COMPLEX

Natural Resources
Aerial Date: 03/01

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
FEB 26 2007
SOUTHWEST DISTRICT
TAMPA

N

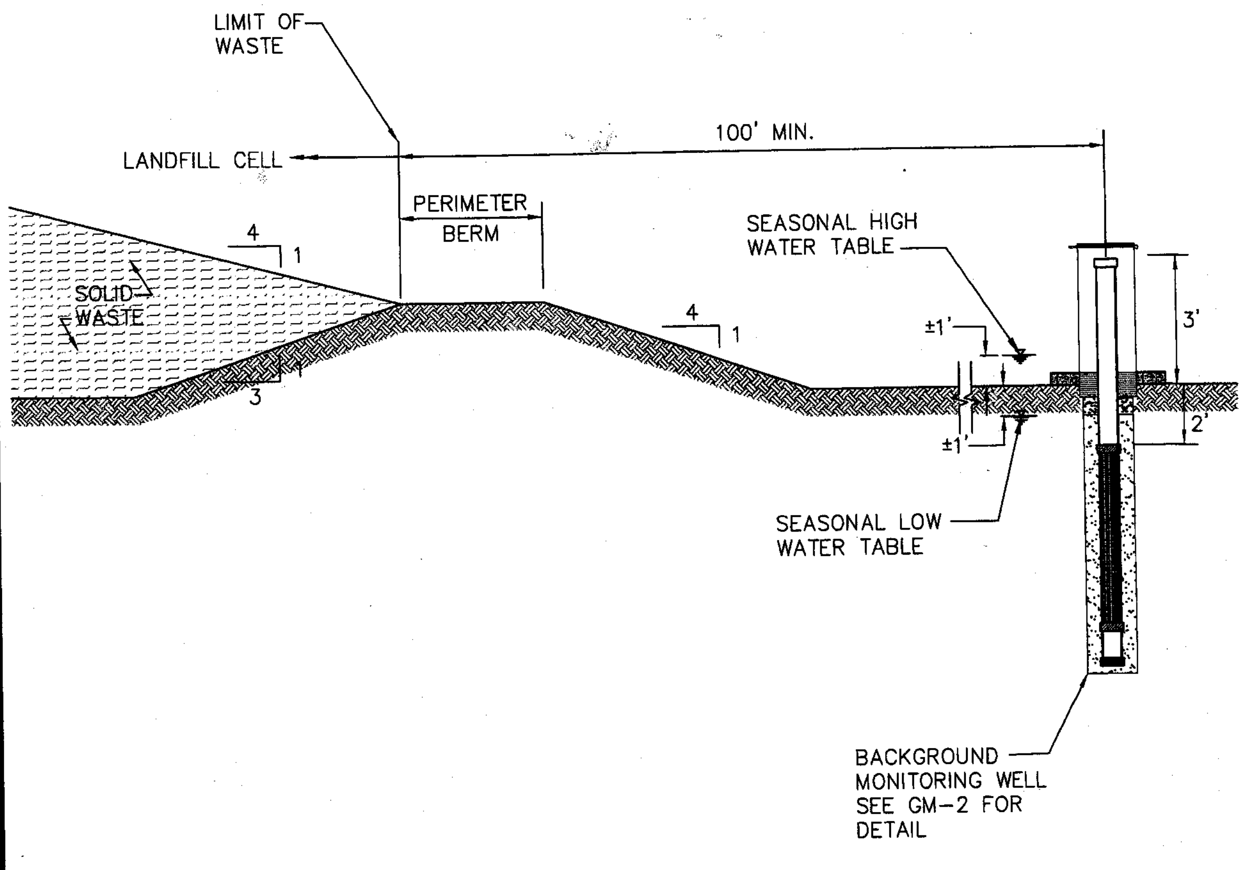
LEGEND:

- ● PIEZOMETERS (2) - MW-3 & MW-5
- ◉ GROUNDWATER MONITORING WELLS (6) - MW-1R, MW-8A, MW-9, MW-10R, MW-11R & MW-12R
- STAFF GAUGE LOCATIONS (7) - IN PONDS 1 THROUGH 7
- ▲ SURFACE WATER MONITORING STATIONS (2) - B-2 & B-4R
- ■ SOIL MONITORING GAS PROBES (4) - GP-1, GP-2, GP-3 & GP-7
- ▣ AMBIENT GAS MONITORING LOCATIONS (6) -
  - GM-1 CONTRACTOR'S MAINTENANCE BUILDING AND YARD
  - GM-2 C&D PROCESSING AREA
  - GM-3 COUNTY MAINTENANCE BUILDING
  - GM-4 ADMINISTRATION BUILDING
  - GM-5 SCALE HOUSE
  - GM-7 CONTROL PANEL AT LEACHATE STORAGE FACILITY
- ABANDONED GROUNDWATER MONITORING WELLS (6) MW-1, MW-2, MW-4, MW-8, MW-11 & MW-12
- ---- LIMITS OF SOLID WASTE

Map Version 02/03/03

OUNTY
TE DISPOSAL COMPLEX
LLS, PIEZOMETERS, STAFF GAUGES, SOIL
IT GAS MONITORING LOCATIONS (GM)
2007

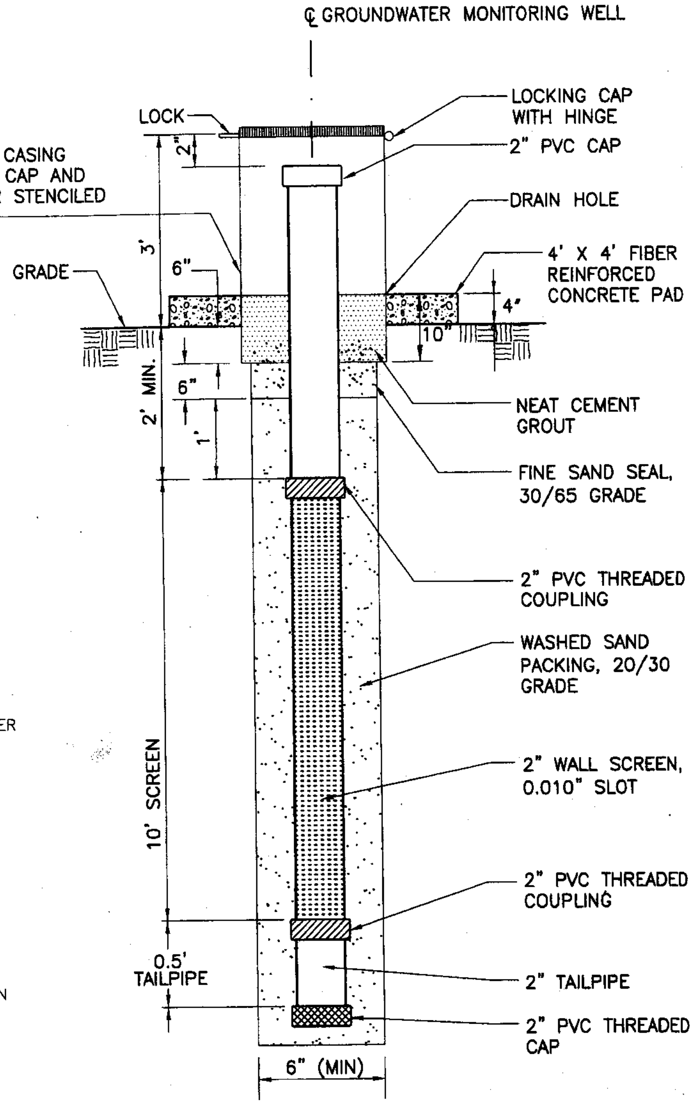
FIGURE L-1
REVISED



FEB. 19, 2007

PBS&J	SARASOTA COUNTY CENTRAL LANDFILL BACKGROUND WELL MW-1R SECTION	GM-1

U:\OldH_S\ENVCADD\WASTEMAN\Manatee\LenaRd\Permit-renewal-2004\SARASOTA CO_NEW WELL LOCATION.dwg Feb21,2007 - 6:03pm Plotted By: 9327



CONSTRUCTION NOTES:

1. ALL WORK RELATED TO ABANDONMENT OR INSTALLATION OF MONITORING WELLS, SHALL BE DONE BY A FLORIDA CERTIFIED WATER WELL DRILLER.

2. ALL MONITORING WELLS, INDICATED ON THE DRAWINGS SHALL BE ABANDONED IN ACCORDANCE WITH F.A.C. RULE 62-532.440, AND THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD). THE DRILLER SHALL SUBMIT A WRITTEN REPORT TO THE FLORIDA DEPARTMENT OF ENVIRONMNETAL PROTECTION, WITH COPIES TO THE OWNER AND ENGINEER, DOCUMENTING VERIFICATION OF THE WELL ABANDONMENT WITHIN 90 DAYS OF ABANDONMENT. DOCUMENTATION OF ABANDONMENT SHALL INCLUDE A MAP SHOWING LOCATIONS AND SWFWMD ABANDONMENT RECORDS.

3. NEW MONITORING WELLS AND PIEZOMETERS SHALL BE INSTALLED PER ASTM D-5092 (1995) E1-STANDARD PRACTICE FOR DESIGN AND INSTALLATION OF GROUND WATER MONITORING WELLS IN GRANULAR AQUIFERS, AND THE FOLLOWING DOCUMENTATION SUBMITTED TO FDEP WITH COPIES TO THE OWNER AND ENGINEER.

   A. FDEP FORM 62-522.900(3) MONITORING WELL COMPLETION REPORT

   B. A SURVEY DRAWING SHALL BE SUBMITTED IN ACCORDANCE WITH F.A.C. RULE 62-701.510(3) (D) (1). SHOWING THE LOCATION OF ALL MONITORING WELLS (ACTIVE AND ABONDONED) HORIZONTALLY LOCATED IN DEGREES, MINUTES AND SECONDS OF LATITUDE AND LONGITUDE, AND THE ELEVATION OF THE TOP OF THE WELL CASING TO THE NEAREST 0.01 FOOT. NATIONAL GEODETIC VERTICAL DATUM. THE SURVEYED DRAWING SHALL INCLUDE THE MONITOR WELL IDENTIFICATION NUMBERS, LOCATIONS AND ELEVATIONS OF ALL PERMANENT BENCHMARKS AND /OR CORNER MONUMENT MARKER AT THE SITE. THE SURVEY SHALL BE CONDUCTED BY A FLORIDA REGISTERED SURVEYOR.

4. ALL REPORTS SHALL BE SENT TO: JOHN MORRIS, P.G. SOLID WASTE SECTION, DEPARTMENT OF ENVIRONMENTAL PROTECTION, SOUTHWEST DISTRICT OFFICE, 13051 NORTH TELECOM PARKWAY, TEMPLE TERRACE, FL. 33637-0926; AND ALSO TO: SOLID WASTE SECTION, DEPARTMENT OF ENVIRONMENTAL PROTECTION, 3900 COMMONWEALTH BOULEVARD, M.S. 4565, TALLAHASSEE, FL 32399-3000.

2" DIAMETER GROUNDWATER MONITORING WELL DETAIL

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FEB 26 2007
SOUTHWEST DISTRICT
TAMPA

FEB. 19, 2007

PBSJ	SARASOTA COUNTY CENTRAL LANDFILL GROUND WATER MONITORING BACKGROUND WELL DETAIL	GM-2

U:\OldH_S\ENVCADD\WASTEMAN\Manatee\LenaRd\Permit-renewal-2004\GROUNDWATER MONITORING WELL DETAIL.dwg Feb21,2007 - 6:02pm Plotted By: 9327

SECTION M, APPENDIX A

P-1

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/13/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	340.0	420.0
Ammonia [3]	2.8	mg/l	---	0.20	---
Nitrate [1]	10.0	mg/l	<0.03	0.44	<.01
Chloride [2]	250.0	mg/l	16.50	20.00	19.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.2	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	4.00	4.00
Barium [1]	2000.0	ug/l	46.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	15.00	<5.4
Chromium [1]	100.0	ug/l	<2.0	<20.0	<3.4
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	5.22	5.39	4.60
Lead [1]	15.0	ug/l	2.00	<20.0	<1.7
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.2	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	11.30	11.20	11.00
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	24.00	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.00	---	6.88
Field Conductivity	NA	umhos	588.90	---	588.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	21.80	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane:EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone; (MEK);2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform; trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide:dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene; (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide; Iodomethane	NA	ug/l	---	---	---
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

CENTRAL COUNTY SOLID WAST DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

P-2

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION		
			05/18/1993	08/24/1993	12/13/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	—	360.0	408.0
Ammonia [3]	2.8	mg/l	—	0.04	—
Nitrate [1]	10.0	mg/l	0.03	0.50	<0.1
Chloride [2]	250.0	mg/l	13.90	17.00	18.00
Cobalt [3]	420.0	ug/l	—	—	—
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	—	—
Antimony [1]	6.0	ug/l	<3.0	—	—
Arsenic [1]	50.0	ug/l	<5.0	3.00	2.00
Barium [1]	2000.0	ug/l	37.00	—	—
Beryllium [1]	4.0	ug/l	<0.20	—	—
Cadmium [1]	5.0	ug/l	<0.40	12.00	7.50
Chromium [1]	100.0	ug/l	3.00	<20	<3.4
Copper [2]	1000.0	ug/l	<2.0	—	—
Iron [2]	0.3	mg/l	4.03	5.94	3.99
Lead [1]	15.0	ug/l	1.00	<20	<1.7
Nickel [1]	100.0	ug/l	3.00	—	—
Selenium [1]	50.0	ug/l	<1.20	—	—
Silver [2]	100.0	ug/l	<4.0	—	—
Sodium [1]	160.0	mg/l	16.60	15.10	23.70
Vanadium [3]	49.0	ug/l	—	—	—
Zinc [2]	5000.0	ug/l	2.00	—	—
Field Parameters:					
Field pH [2]	6.5-8.5	units	6.90	—	6.57
Field Conductivity	NA	umhos	463.20	—	537.00
Field Turbidity	NA	ntus	—	—	—
Field Dissolved Oxygen	NA	mg/l	—	—	—
Field Temperature	NA	deg. C	22.50	—	—
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	—	—
1,2-dibromoethane:EDB [1]	0.02	ug/l	—	—	—
Acetone [3]	700	ug/l	—	—	—
Acrylonitrile [3]	1	ug/l	<10	—	—
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	—	—	—
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	—
methyl ethyl ketone; (MEK);2-butenone [3]	4200	ug/l	—	—	—
Carbon Disulfide [3]	700	ug/l	—	—	—
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform; trichloromethane [3]	5.7	ug/l	<1.0	<1.0	—
methyl chloride;chloromethane [3]	2.7	ug/l	10.00	<1.0	—
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	—
Methylene bromide;dibromomethane [3]	70	ug/l	—	—	—
o-dichlorobenzene; (1,2-) [1]	600	ug/l	—	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	—	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	—	—	—
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	—
cis-1,2-dichloroethylene [1]	70	ug/l	—	—	—
trans-1,2-dichloroethylene [1]	100	ug/l	—	<0.3	—
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone;MBK [3]	280	ug/l	—	—	—
Methyl iodide; Iodomethane	NA	ug/l	—	—	—
methylene chloride;dichloromethane [1]	5	ug/l	<1.0	<0.3	—
4-methyl-2-pentanone;MIBK [3]	560	ug/l	—	—	—
Styrene [1]	100	ug/l	<1	—	—
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	—	—	—
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	—
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	—	—	—
Vinyl acetate [3]	88	ug/l	—	—	—
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	—	—

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
— = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

CENTRAL COUNTY SOLID WAST DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

09/16/2002
P-Well Data

P-2D

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/13/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	—	580.0	666.0
Ammonia [3]	2.8	mg/l	—	0.30	—
Nitrate [1]	10.0	mg/l	<0.030	0.11	<0.1
Chloride [2]	250.0	mg/l	118.00	134.00	137.00
Cobalt [3]	420.0	ug/l	—	—	—
Mercury [1]	2.0	ug/l	<0.20	<0.2	<0.014
Thallium [1]	2.0	ug/l	<1.0	—	—
Antimony [1]	6.0	ug/l	<3.0	—	—
Arsenic [1]	50.0	ug/l	<5.0	<1.0	<1.2
Barium [1]	2000.0	ug/l	32.00	—	—
Beryllium [1]	4.0	ug/l	<0.20	—	—
Cadmium [1]	5.0	ug/l	<0.40	15.00	<5.4
Chromium [1]	100.0	ug/l	7.00	<20	<3.4
Copper [2]	1000.0	ug/l	<2.0	—	—
Iron [2]	0.3	mg/l	0.60	0.61	0.403
Lead [1]	15.0	ug/l	4.00	<20	<1.7
Nickel [1]	100.0	ug/l	3.00	—	—
Selenium [1]	50.0	ug/l	<1.2	—	—
Silver [2]	100.0	ug/l	<4.0	—	—
Sodium [1]	160.0	mg/l	100.00	97.90	95.70
Vanadium [3]	49.0	ug/l	—	—	—
Zinc [2]	5000.0	ug/l	6.00	—	—
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.67	—	7.30
Field Conductivity	NA	umhos	927.80	—	979.00
Field Turbidity	NA	ntus	—	—	—
Field Dissolved Oxygen	NA	mg/l	—	—	—
Field Temperature	NA	deg. C	23.50	—	—
Organic Parameters:					
1,2-dibromo-3-chloropropane;DBCP) [1]	0.2	ug/l	<1.0	—	—
1,2-dibromoethane;EDB [1]	0.02	ug/l	—	—	—
Acetone [3]	700	ug/l	—	—	—
Acrylonitrile [3]	1	ug/l	<10	—	—
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	—	—	—
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	—
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	—	—	—
Carbon Disulfide [3]	700	ug/l	—	—	—
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	—
methyl chloride;chloromethane [3]	2.7	ug/l	<1.0	<1.0	—
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	—
Methylene bromide;dibromomethane [3]	70	ug/l	—	—	—
o-dichlorobenzene: (1,2-) [1]	600	ug/l	—	<2.0	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	—	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	—	—	—
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	—
cis-1,2-dichloroethylene [1]	70	ug/l	—	—	—
trans-1,2-dichloroethylene [1]	100	ug/l	—	<0.3	—
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	—	—	—
Methyl iodide; Iodomethane	NA	ug/l	—	—	—
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	—
4-methyl-2-pentanone:MIBK [3]	560	ug/l	—	—	—
Styrene [1]	100	ug/l	<1	—	—
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	—	—	—
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene: trichloroethene [1]	3	ug/l	<1.0	<0.3	—
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	—	—	—
Vinyl acetate [3]	88	ug/l	—	—	—
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	—	—

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
— = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

P-3

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/13/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	—	830.0	909.0
Ammonia [3]	2.8	mg/l	—	0.60	—
Nitrate [1]	10.0	mg/l	0.103	0.75	<0.1
Chloride [2]	250.0	mg/l	185.00	150.00	160.00
Cobalt [3]	420.0	ug/l	—	—	—
Mercury [1]	2.0	ug/l	<0.20	<0.2	<0.014
Thallium [1]	2.0	ug/l	<1.0	—	—
Antimony [1]	6.0	ug/l	<3.0	—	—
Arsenic [1]	50.0	ug/l	<5.0	<1.0	<1.2
Barium [1]	2000.0	ug/l	106.00	—	—
Beryllium [1]	4.0	ug/l	<0.20	—	—
Cadmium [1]	5.0	ug/l	<0.40	15.00	<5.4
Chromium [1]	100.0	ug/l	4.00	<20	<3.4
Copper [2]	1000.0	ug/l	<2.0	—	—
Iron [2]	0.3	mg/l	12.30	9.46	8.43
Lead [1]	15.0	ug/l	1.00	<20	<1.7
Nickel [1]	100.0	ug/l	3.00	—	—
Selenium [1]	50.0	ug/l	<1.20	—	—
Silver [2]	100.0	ug/l	<4.0	—	—
Sodium [1]	160.0	mg/l	126.00	106.00	114.00
Vanadium [3]	49.0	ug/l	—	—	—
Zinc [2]	5000.0	ug/l	9.00	—	—
Field Parameters:					
Field pH [2]	6.5-8.5	units	6.86	—	6.54
Field Conductivity	NA	umhos	1288.70	—	1256.00
Field Turbidity	NA	ntus	—	—	—
Field Dissolved Oxygen	NA	mg/l	—	—	—
Field Temperature	NA	deg. C	23.50	—	—
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	—	—
1,2-dibromoethane:EDB [1]	0.02	ug/l	—	—	—
Acetone [3]	700	ug/l	—	—	—
Acrylonitrile [3]	1	ug/l	<10	—	—
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	—	—	—
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	—
methyl ethyl ketone; (MEK):2-butenone [3]	4200	ug/l	—	—	—
Carbon Disulfide [3]	700	ug/l	—	—	—
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	—
methyl chloride;chloromethane [3]	2.7	ug/l	<1.0	<1.0	—
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	—
Methylene bromide:dibromomethane [3]	70	ug/l	—	—	—
o-dichlorobenzene; (1,2-) [1]	600	ug/l	—	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	—	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	—	—	—
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	—
cis-1,2-dichloroethylene [1]	70	ug/l	—	—	—
trans-1,2-dichloroethylene [1]	100	ug/l	—	<0.3	—
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	—	—	—
Methyl iodide; Iodomethane	NA	ug/l	—	—	—
methylene chloride;dichloromethane [1]	5	ug/l	<1.0	<0.3	—
4-methyl-2-pentanone:MIBK [3]	560	ug/l	—	—	—
Styrene [1]	100	ug/l	<1	—	—
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	—	—	—
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene: trichloroethene [1]	3	ug/l	<1.0	<0.3	—
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	—	—	—
Vinyl acetate [3]	88	ug/l	—	—	—
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	—	—

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

— = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

SEP 20 2002

SOUTHWEST DISTRICT TAMPA

P-4

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/01/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	340.0	353.0
Ammonia [3]	2.8	mg/l	---	0.20	---
Nitrate [1]	10.0	mg/l	<0.03	0.74	<0.1
Chloride [2]	250.0	mg/l	10.80	14.00	12.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.20	<0.2	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	4.00	3.30
Barium [1]	2000.0	ug/l	28.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	13.00	5.88
Chromium [1]	100.0	ug/l	6.00	<20	<3.4
Copper [2]	1000.0	ug/l	<2.0	<20	---
Iron [2]	0.3	mg/l	8.43	9.24	8.13
Lead [1]	15.0	ug/l	5.00	---	<1.7
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<0.40	---	---
Sodium [1]	160.0	mg/l	14.20	12.30	12.30
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	9.00	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.33	---	6.36
Field Conductivity	NA	umhos	385.40	---	421.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	23.00	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane;EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone; (MEK):2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide:dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene: (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide: Iodomethane	NA	ug/l	---	---	---
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

P-5

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/01/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	490.0	474.0
Ammonia [3]	2.8	mg/l	---	0.10	---
Nitrate [1]	10.0	mg/l	<0.03	0.73	<0.1
Chloride [2]	250.0	mg/l	92.90	91.00	94.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.20	<0.2	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	<1.0	<2.0
Barium [1]	2000.0	ug/l	37.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	9.00	<5.4
Chromium [1]	100.0	ug/l	4.00	<20	6.93
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	10.20	9.79	8.08
Lead [1]	15.0	ug/l	<1.0	<20	<1.7
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	55.90	45.50	47.20
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	17.00	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.50	---	6.48
Field Conductivity	NA	umhos	736.80	---	705.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	22.50	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane:EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform; trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride;chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide;dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene; (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide; Iodomethane	NA	ug/l	---	---	---
methylene chloride;dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone;MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

CENTRAL COUNTY SOLID WAST DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

P-6

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION		
			05/18/1993	08/24/1993	12/13/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	630.0	464.0
Ammonia [3]	2.8	mg/l	---	<0.1	---
Nitrate [1]	10.0	mg/l	0.26	0.96	<0.1
Chloride [2]	250.0	mg/l	53.60	139.00	67.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.20	<0.2	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	11.00	9.20
Barium [1]	2000.0	ug/l	15.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	13.00	8.96
Chromium [1]	100.0	ug/l	5.00	<20	7.70
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	11.00	12.10	10.10
Lead [1]	15.0	ug/l	3.00	70.00	<1.7
Nickel [2]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	49.40	---	45.40
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	<2.0	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.72	---	6.37
Field Conductivity	NA	umhos	526.30	---	598.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	22.50	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane:EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide:dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene: (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide: Iodomethane	NA	ug/l	---	---	---
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene: trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

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PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/13/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	—	330.0	900.0
Ammonia [3]	2.8	mg/l	—	<0.1	—
Nitrate [1]	10.0	mg/l	0.033	0.61	<0.1
Chloride [2]	250.0	mg/l	225.00	55.00	211.00
Cobalt [3]	420.0	ug/l	—	—	—
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	—	—
Antimony [1]	6.0	ug/l	<3.0	—	—
Arsenic [1]	50.0	ug/l	<5.0	1.00	3.00
Barium [1]	2000.0	ug/l	25.00	—	—
Beryllium [1]	4.0	ug/l	<0.20	—	—
Cadmium [1]	5.0	ug/l	<0.40	<10	8.00
Chromium [1]	100.0	ug/l	3.00	50.00	<3.4
Copper [2]	1000.0	ug/l	<2.0	—	—
Iron [2]	0.3	mg/l	9.44	2.66	9.42
Lead [1]	15.0	ug/l	2.00	<20	<1.7
Nickel [1]	100.0	ug/l	<2.0	—	—
Selenium [1]	50.0	ug/l	<1.20	—	—
Silver [2]	100.0	ug/l	<4.0	—	—
Sodium [1]	160.0	mg/l	134.00	59.90	106.00
Vanadium [3]	49.0	ug/l	—	—	—
Zinc [2]	5000.0	ug/l	40.00	—	—
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.98	—	6.42
Field Conductivity	NA	umhos	1197.90	—	1144.00
Field Turbidity	NA	ntus	—	—	—
Field Dissolved Oxygen	NA	mg/l	—	—	—
Field Temperature	NA	deg. C	23.00	—	—
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	—	—
1,2-dibromoethane:EDB [1]	0.02	ug/l	—	—	—
Acetone [3]	700	ug/l	—	—	—
Acrylonitrile [3]	1	ug/l	<10	—	—
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	—	—	—
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	—
methyl ethyl ketone; (MEK):2-butenone [3]	4200	ug/l	—	—	—
Carbon Disulfide [3]	700	ug/l	—	—	—
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform; trichloromethane [3]	5.7	ug/l	<1.0	<1.0	—
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	—
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	—
Methylene bromide:dibromomethane [3]	70	ug/l	—	—	—
o-dichlorobenzene; (1,2-) [1]	600	ug/l	—	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	—	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	—	—	—
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	—
cis-1,2-dichloroethylene [1]	70	ug/l	—	—	—
trans-1,2-dichloroethylene [1]	100	ug/l	—	<0.3	—
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	—	—	—
Methyl iodide; Iodomethane	NA	ug/l	—	—	—
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	—
4-methyl-2-pentanone:MIBK [3]	560	ug/l	—	—	—
Styrene [1]	100	ug/l	<1	—	—
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	—	—	—
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	—
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	—	—	—
Vinyl acetate [3]	88	ug/l	—	—	—
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	—	—

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

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PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/01/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	—	950.0	837.0
Ammonia [3]	2.8	mg/l	—	0.40	—
Nitrate [1]	10.0	mg/l	<0.03	1.08	<0.1
Chloride [2]	250.0	mg/l	176.00	199.00	—
Cobalt [3]	420.0	ug/l	—	—	—
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	—	—
Antimony [1]	6.0	ug/l	<3.0	—	—
Arsenic [1]	50.0	ug/l	<5.0	13.00	3.94
Barium [1]	2000.0	ug/l	39.00	—	—
Beryllium [1]	4.0	ug/l	<0.20	—	—
Cadmium [1]	5.0	ug/l	<0.40	13.00	7.52
Chromium [1]	100.0	ug/l	<2.0	<20	<3.4
Copper [2]	1000.0	ug/l	<2.0	—	—
Iron [2]	0.3	mg/l	8.03	12.50	10.20
Lead [1]	15.0	ug/l	2.00	30.00	<1.7
Nickel [1]	100.0	ug/l	<2.0	—	—
Selenium [1]	50.0	ug/l	<1.20	—	—
Silver [2]	100.0	ug/l	<4.0	—	—
Sodium [1]	160.0	mg/l	115.00	139.00	114.00
Vanadium [3]	49.0	ug/l	—	—	—
Zinc [2]	5000.0	ug/l	3.00	—	—
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.83	—	6.60
Field Conductivity	NA	umhos	1217.00	—	1328.00
Field Turbidity	NA	ntus	—	—	—
Field Dissolved Oxygen	NA	mg/l	—	—	—
Field Temperature	NA	deg. C	24.30	—	—
Organic Parameters:					
1,2-dibromo-3-chloropropane;DBCP) [1]	0.2	ug/l	<1.0	—	—
1,2-dibromoethane;EDB [1]	0.02	ug/l	—	—	—
Acetone [3]	700	ug/l	—	—	—
Acrylonitrile [3]	1	ug/l	<10	—	—
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	—	—	—
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1.0	<1.0	—
methyl ethyl ketone: (MEK);2-butenone [3]	4200	ug/l	—	—	—
Carbon Disulfide [3]	700	ug/l	—	—	—
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	—
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	—
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	—
Methylene bromide:dibromomethane [3]	70	ug/l	—	—	—
o-dichlorobenzene: (1,2-) [1]	600	ug/l	—	<2.0	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	—	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	—	—	—
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	—
cis-1,2-dichloroethylene [1]	70	ug/l	—	—	—
trans-1,2-dichloroethylene [1]	100	ug/l	—	<0.3	—
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	—	—	—
Methyl iodide: Iodomethane	NA	ug/l	—	—	—
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	—
4-methyl-2-pentanone:MIBK [3]	560	ug/l	—	—	—
Styrene [1]	100	ug/l	<1	—	—
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	—	—	—
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	—
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	—	—	—
Vinyl acetate [3]	88	ug/l	—	—	—
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	—	—

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
— = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

CENTRAL COUNTY SOLID WAST DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

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PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/14/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	450.0	579.0
Ammonia [3]	2.8	mg/l	---	0.20	---
Nitrate [1]	10.0	mg/l	0.199	0.93	<0.1
Chloride [2]	250.0	mg/l	103.00	101.00	---
Cobalt [3]	420.0	ug/l	---	---	94.00
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	18.00	8.03
Barium [1]	2000.0	ug/l	59.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	11.00	<5.4
Chromium [1]	100.0	ug/l	5.00	<20	5.94
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	9.76	10.30	8.27
Lead [1]	15.0	ug/l	2.00	<20	<1.7
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	73.50	71.50	68.00
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	4.00	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.54	---	6.48
Field Conductivity	NA	umhos	736.80	---	751.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	22.50	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane:EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone; (MEK):2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform; trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide:dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene: (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide; Iodomethane	NA	ug/l	---	---	---
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

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PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION		
			05/18/1993	08/24/1993	12/14/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	440.0	398.0
Ammonia [3]	2.8	mg/l	---	0.30	---
Nitrate [1]	10.0	mg/l	0.033	0.51	<0.1
Chloride [2]	250.0	mg/l	29.50	34.00	31.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	<1.0	<1.2
Barium [1]	2000.0	ug/l	30.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	15.00	<5.4
Chromium [1]	100.0	ug/l	3.00	<20	3.63
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	4.28	4.18	3.92
Lead [1]	15.0	ug/l	2.00	0.03	<1.7
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	23.50	25.60	24.60
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	<2.0	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	7.79	---	6.90
Field Conductivity	NA	umhos	638.30	---	635.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	22.00	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane;DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane;EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone; (MEK):2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride;chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide;dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene; (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide; Iodomethane	NA	ug/l	---	---	---
methylene chloride;dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

P-14

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/14/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	720.0	663.0
Ammonia [3]	2.8	mg/l	---	0.30	---
Nitrate [1]	10.0	mg/l	<0.03	0.40	<0.1
Chloride [2]	250.0	mg/l	99.80	117.00	106.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	1.00	<1.2
Barium [1]	2000.0	ug/l	48.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	14.00	<5.4
Chromium [1]	100.0	ug/l	<2.0	<20	<3.4
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	3.66	3.30	2.43
Lead [1]	15.0	ug/l	1.00	<20	<1.7
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	43.90	45.40	40.60
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	3.00	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	8.01	---	6.65
Field Conductivity	NA	umhos	1004.20	---	1078.00
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	22.30	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane;EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	<1
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	<1
Bromoform [3]	4.4	ug/l	<1.0	<1.0	<1
Methyl bromide; bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone; (MEK);2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	<1
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	<1
Chloroethane [3]	12	ug/l	<1.0	<1.0	<1.5
Chloroform; trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride;chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide;dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene; (1,2-) [1]	600	ug/l	---	<2.0	<1
p-dichlorobenzene; (1,4-) [1]	75	ug/l	---	<1.0	<1
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	<1
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	<1
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	<1
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	<1
ethylbenzene [1]	700	ug/l	<1.0	<1.0	<1
2-hexanone;MBK [3]	280	ug/l	---	---	---
Methyl iodide; Iodomethane	NA	ug/l	---	---	---
methylene chloride;dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	<1
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	<1
Toluene [1]	1000	ug/l	<1.0	<0.8	<1
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	<1
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane; CFC-11 [3]	2100	ug/l	<1.0	<0.3	<3.2
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	<2.1
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

P-14D

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/18/1993	08/24/1993	12/01/1993
Inorganic Parameters:					
Total Dissolved Solids (TDS) [2]	500.0	mg/l	---	540.0	539.0
Ammonia [3]	2.8	mg/l	---	0.30	---
Nitrate [1]	10.0	mg/l	<0.030	0.15	<0.1
Chloride [2]	250.0	mg/l	86.50	96.00	97.00
Cobalt [3]	420.0	ug/l	---	---	---
Mercury [1]	2.0	ug/l	<0.20	<0.20	<0.014
Thallium [1]	2.0	ug/l	<1.0	---	---
Antimony [1]	6.0	ug/l	<3.0	---	---
Arsenic [1]	50.0	ug/l	<5.0	8.00	1.30
Barium [1]	2000.0	ug/l	21.00	---	---
Beryllium [1]	4.0	ug/l	<0.20	---	---
Cadmium [1]	5.0	ug/l	<0.40	10.00	<5.4
Chromium [1]	100.0	ug/l	10.00	<20	20.50
Copper [2]	1000.0	ug/l	<2.0	---	---
Iron [2]	0.3	mg/l	1.27	2.31	1.95
Lead [1]	15.0	ug/l	4.00	30.00	2.30
Nickel [1]	100.0	ug/l	<2.0	---	---
Selenium [1]	50.0	ug/l	<1.20	---	---
Silver [2]	100.0	ug/l	<4.0	---	---
Sodium [1]	160.0	mg/l	52.10	54.50	47.40
Vanadium [3]	49.0	ug/l	---	---	---
Zinc [2]	5000.0	ug/l	13.00	---	---
Field Parameters:					
Field pH [2]	6.5-8.5	units	8.44	---	7.29
Field Conductivity	NA	umhos	694.40	---	---
Field Turbidity	NA	ntus	---	---	---
Field Dissolved Oxygen	NA	mg/l	---	---	---
Field Temperature	NA	deg. C	25.40	---	---
Organic Parameters:					
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1.0	---	---
1,2-dibromoethane:EDB [1]	0.02	ug/l	---	---	---
Acetone [3]	700	ug/l	---	---	---
Acrylonitrile [3]	1	ug/l	<10	---	---
Benzene [1]	1	ug/l	<1.0	<0.5	---
Bromochloromethane [3]	91	ug/l	---	---	---
Bromodichloromethane [3]	0.6	ug/l	<1.0	<0.3	---
Bromoform [3]	4.4	ug/l	<1.0	<1.0	---
Methyl bromide: bromomethane [3]	9.8	ug/l	<1.0	<1.0	---
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	---	---	---
Carbon Disulfide [3]	700	ug/l	---	---	---
Carbon Tetrachloride [1]	3	ug/l	<1.0	<0.3	---
Chlorobenzene [1]	100	ug/l	<1.0	<2.0	---
Chloroethane [3]	12	ug/l	<1.0	<1.0	---
Chloroform: trichloromethane [3]	5.7	ug/l	<1.0	<1.0	---
methyl chloride:chloromethane [3]	2.7	ug/l	<1.0	<1.0	---
Dibromochloromethane [3]	0.4	ug/l	<1.0	<1.0	---
Methylene bromide:dibromomethane [3]	70	ug/l	---	---	---
o-dichlorobenzene: (1,2-) [1]	600	ug/l	---	<2.0	---
p-dichlorobenzene: (1,4-) [1]	75	ug/l	---	<1.0	---
trans-1,4-dichloro-2-butene	na	ug/l	---	---	---
1,1-dichloroethane [3]	70	ug/l	<1.0	<0.3	---
1,2-dichloroethane [1]	3	ug/l	<1.0	<0.3	---
1,1-dichloroethylene [1]	7	ug/l	<1.0	<0.3	---
cis-1,2-dichloroethylene [1]	70	ug/l	---	---	---
trans-1,2-dichloroethylene [1]	100	ug/l	---	<0.3	---
1,2-dichloropropane [1]	5	ug/l	<1.0	<0.6	---
cis-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	---
trans-1,3-dichloropropene	NA	ug/l	<1.0	<1.0	---
ethylbenzene [1]	700	ug/l	<1.0	<1.0	---
2-hexanone:MBK [3]	280	ug/l	---	---	---
Methyl iodide: Iodomethane	NA	ug/l	---	---	---
methylene chloride:dichloromethane [1]	5	ug/l	<1.0	<0.3	---
4-methyl-2-pentanone:MIBK [3]	560	ug/l	---	---	---
Styrene [1]	100	ug/l	<1	---	---
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	---	---	---
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1.0	<0.3	---
Tetrachloroethylene [1]	3	ug/l	<1.0	<0.3	---
Toluene [1]	1000	ug/l	<1.0	<0.8	---
1,1,1-trichloroethane [1]	200	ug/l	<1.0	<0.3	---
1,1,2-trichloroethane [1]	5	ug/l	<1.0	<1.0	---
Trichloroethylene: trichloroethene [1]	3	ug/l	<1.0	<0.3	---
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1.0	<0.3	---
1,2,3-trichloropropane [3]	0.2	ug/l	---	---	---
Vinyl acetate [3]	88	ug/l	---	---	---
Vinyl chloride [1]	1	ug/l	<1.0	<0.6	---
Xylenes [1]	10000	ug/l	<1.0	---	---

Notes:
MCL = Maximum Contamination Level.
NA = Not Available.
--- = Not Tested.
Gray shading = Sample result above the MCL.
[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).
[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).
[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SEP 20 2002
SOUTHWEST DISTRICT TAMPA

MW-1 (BACKGROUND WELL)

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION 05/24/1994	10/14/1997	09/02/1998	04/28/1999	11/04/1999	03/21/2000	10/18/2000	04/02/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	3200.00	---	1930.0	1600.0	1600.0	1700	2000	1700
Ammonia [3]	2.8	mg/l	0.12	---	0.098	0.41	0.18	0.3	0.29	0.19
Nitrate [1]	10.0	mg/l	<0.03	---	<0.002	<0.01	<0.01	0.01	0.02	<0.01
Chloride [2]	250.0	mg/l	1200.00	---	713.0	670.0	550.0	660	720	670
Cobalt [3]	420.0	ug/l	<30.0	---	1.5	<1	<50	16	<10	<10
Mercury [1]	2.0	ug/l	<0.2	---	0.11	<0.2	<0.2	<.2	<0.2	<0.2
Thallium [1]	2.0	ug/l	<1	---	<1	<5	<1	<1	<1.0	<1.0
Antimony [1]	6.0	ug/l	<1.0	---	<5	<5	<5	<5.0	<5.0	<5.0
Arsenic [1]	50.0	ug/l	3.00	---	8.86	2.7	5.3	7.2	<5.0	<5.0
Barium [1]	2000.0	ug/l	<1	---	67.7	33.0	55.0	61	66	54
Beryllium [1]	4.0	ug/l	14.00	---	<1	<1	<1	<1	<1	<1
Cadmium [1]	5.0	ug/l	<0.8	---	<1.50	<1	<1	1.5	<1	<1
Chromium [1]	100.0	ug/l	1.00	---	6.66	<10	6.2	<5.0	6.9	<5
Copper [2]	1000.0	ug/l	<10.0	---	<0.50	<10	<10	<10	<10	<10
Iron [2]	0.3	mg/l	2.70	---	4.33	<0.1	1.4	3.2	2.2	0.83
Lead [1]	15.0	ug/l	<1	---	<0.50	<5	<5	<5	<5.0	<5.0
Nickel [1]	100.0	ug/l	5.00	---	8.4	<10	<10	<10	<10	<10
Selenium [1]	50.0	ug/l	<2	---	<1	23.0	<5	<5.0	<5	<5.0
Silver [2]	100.0	ug/l	<.8	---	<0.5	<10	<10	<10	<10	---
Sodium [1]	160.0	mg/l	730.00	---	443.0	23.0	440.0	390	490	380
Vanadium [3]	49.0	ug/l	<10	---	32.2	<10	24.0	17	34	16
Zinc [2]	5000.0	ug/l	<10	---	11.5	<25	56.0	26	32	<20
Field Parameters:			---							
Field pH [2]	6.5-8.5	units	7.10	---	6.91	7.22	7.33	7.32	6.18	6.94
Field Conductivity	NA	umhos	4948.00	---	246.0	3510.0	4180.0	2830	1840	3035
Conductivity (Lab)	NA	umhos	---	---	1770.0	---	---	---	---	---
Field Turbidity	NA	ntus	57.90	---	NA	5.00	17.40	16	22.1	7.9
Field Dissolved Oxygen	NA	mg/l	3.40	---	2.60	2.80	3.24	8.99	2.23	2.95
Field Temperature	NA	deg. C	23	---	25.90	22.40	22.60	21	---	---
Organic Parameters:										
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<.02	<.02	<0.02
1,2-dibromoethane:EDB [1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	<1
Benzene [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<.5	<1	<1
Bromochloromethane [3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<.5	<1	<0.60
Bromoform [3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<.5	<1	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [3]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloremethane [3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	na	ug/l	<50	---	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichloroethane [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.20
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.20
ethylbenzene [1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1.0
2-hexanone:MBK [3]	280	ug/l	---	---	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	<5
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	<10
Styrene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene: trichloroethene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Vinyl acetate [3]	88	ug/l	<50	---	<0.5	<2	<2	<0.5	<2	<2.0
Vinyl chloride [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

SEP 20 2002

SOUTHWEST DISTRICT TAMPA

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

MW-2 (BACKGROUND WELL)

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLECTION 05/24/1994	10/14/1997	09/02/1998	04/28/1999	11/04/1999	03/21/00	10/18/2000	04/02/2001[4]
Inorganic Parameters:										
Total Dissolved Solids (TDS)[2]	500.0	mg/l	780.0	---	431.0	550.0	410.0	520	570	---
Ammonia[3]	2.8	mg/l	0.12	---	0.151	0.30	0.23	0.14	0.3	---
Nitrate[1]	10.0	mg/l	<0.03	---	<0.002	<0.01	<0.01	0.01	0.01	---
Chloride[2]	250.0	mg/l	96.0	---	74.3	70.0	51.0	58	65	---
Cobalt[3]	420.0	ug/l	<3.0	---	1.0	1.3	<50	<10	<10	---
Mercury[1]	2.0	ug/l	<0.2	---	0.12	<0.2	<0.2	<0.2	<0.2	---
Thallium[1]	2.0	ug/l	---	---	<1	<5	<1	<1	<1	---
Antimony[1]	6.0	ug/l	<1	---	<5	<5	<5	<5	<5	---
Arsenic[1]	50.0	ug/l	3.000	---	8.1	4.2	<5	6.1	6.8	---
Barium[1]	2000.0	ug/l	<1.0	---	30.5	44.0	37.0	31	38	---
Beryllium[1]	4.0	ug/l	<0.8	---	<1	<1	<1	<1	<1	---
Cadmium[1]	5.0	ug/l	<0.8	---	<1.5	<1	<1	1.5	<1	---
Chromium[1]	100.0	ug/l	8.0	---	1.11	11.0	<5	5.8	9.8	---
Copper[2]	1000.0	ug/l	<1.0	---	<0.5	<10	<10	<10	<10	---
Iron[2]	0.3	mg/l	0.38	---	1.79	4.7	7.9	8.4	14	---
Lead[1]	15.0	ug/l	12.0	---	<0.5	13.0	<5	<5.0	5.3	---
Nickel[1]	100.0	ug/l	6.0	---	5.87	<10	<10	<10	<10	---
Selenium[1]	50.0	ug/l	<2.0	---	<1	<2	<5	<5.0	<5	---
Silver[2]	100.0	ug/l	<0.8	---	<0.5	<10	<10	<10	<10	---
Sodium[1]	160.0	mg/l	110.0	---	54.5	53.0	46.0	59	59	---
Vanadium[3]	49.0	ug/l	<10.0	---	9.47	14.0	<10	<10	15	---
Zinc[2]	5000.0	ug/l	<10.0	---	7.0	<25	<20	<20	<20	---
Field Parameters:										
Field pH[2]	6.5-8.5	units	7.09	---	6.91	7.24	6.83	7.27	6.01	---
Field Conductivity	NA	umhos	998.0	---	579.0	760.0	712.0	783	850	---
Conductivity	NA	umhos	---	---	717.0	---	---	---	---	---
Field Turbidity	NA	ntus	270.0	---	NA	11.00	41.20	28.4	231	---
Field Dissolved Oxygen	NA	mg/l	3.52	---	3.90	2.50	6.42	8.91	1.19	---
Field Temperature	NA	deg. C	25.1	---	26.80	21.90	21.80	20.5	---	---
Organic Parameters:			---							
1,2-dibromo-3-chloropropane:DBCP)[1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<.02	<.02	---
1,2-dibromoethane:EDB[1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<.02	<0.02	---
Acetone[3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	---
Acrylonitrile[3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	---
Benzene[1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<.5	<1	---
Bromochloromethane[3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Bromodichloromethane[3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<0.5	<1	---
Bromoform[3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Methyl bromide: bromomethane[3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
methyl ethyl ketone: (MEK):2-butenone[3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	---
Carbon Disulfide[3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	---
Carbon Tetrachloride[1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Chlorobenzene[1]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Chloroethane[3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Chloroform: trichloromethane[3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	---
methyl chloride:chloromethane[3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Dibromochloromethane[3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
Methylene bromide:dibromomethane[3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
o-dichlorobenzene: (1,2-)[1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
p-dichlorobenzene: (1,4-)[1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
trans-1,4-dichloro-2-butene	na	ug/l	<50	---	<0.5	<10	<10	<10	<10	---
1,1-dichloroethane[3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
1,2-dichloroethane[1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
1,1-dichloroethylene[1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	---
cis-1,2-dichloroethylene[1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
trans-1,2-dichloroethylene[1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
1,2-dichloropropane[1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
ethylbenzene[1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
2-hexanone:MBK[3]	280	ug/l	---	---	<6	<1	<1	<1	<10	---
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	---
methylene chloride:dichloromethane[1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	---
4-methyl-2-pentanone:MIBK[3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	---
Styrene[1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
1,1,1,2-tetrachloroethane[3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
1,1,2,2-tetrachloroethane[3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
Tetrachloroethylene[1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
Toluene[1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
1,1,1-trichloroethane[1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
1,1,2-trichloroethane[1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
Trichloroethylene: trichloroethene[1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
Trichlorofluoromethane; CFC-11[3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
1,2,3-trichloropropane[3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	---
Vinyl acetate[3]	88	ug/l	<50	---	<0.5	<2	<2	<2	<2	---
Vinyl chloride[1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---
Xylenes[1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	---

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

[4] MW-2 was purged dry during the April 2001 sampling event and was not sampled.

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

MW-4 (BACKGROUND)

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLETION							
			05/24/1994	10/14/1997	09/02/1998	04/28/1999	11/04/1999	03/31/2000	10/18/00	04/02/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	160.0	---	105.0	120.0	120.0	130	140	150
Ammonia [3]	2.8	mg/l	0.39	---	0.113	0.24	0.20	0.16	0.16	0.15
Nitrate [1]	10.0	mg/l	<0.03	---	<0.002	<0.01	<0.01	<0.01	0.11	<0.01
Chloride [2]	250.0	mg/l	18.0	---	21.1	21.0	17.0	17	16	19
Cobalt [3]	420.0	ug/l	<30.0	---	<1	<1	<50	<10	<10	<10
Mercury [1]	2.0	ug/l	<0.2	---	0.12	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium [1]	2.0	ug/l	<1.0	---	<1	<5	<1	<1	<1	<1
Antimony [1]	6.0	ug/l	<1.0	---	<5	<5	<5	<5	<5	<5
Arsenic [1]	50.0	ug/l	<2.0	---	2.6	1.0	<5	<5	<5	<5
Barium [1]	2000.0	ug/l	<1.0	---	14.2	20.0	16.0	11	16	13
Beryllium [1]	4.0	ug/l	<0.8	---	<1	<1	<1	<1.0	<1	<1
Cadmium [1]	5.0	ug/l	<0.8	---	1.69	<1	<1	<1	<1	<1
Chromium [1]	100.0	ug/l	27.0	---	6.57	14.0	8.3	9.8	12	9.8
Copper [2]	1000.0	ug/l	<10.0	---	<0.5	<10	<10	<10	<10	<10
Iron [2]	0.3	mg/l	2.0	---	2.63	1.8	1.8	2.1	2.1	2.1
Lead [1]	15.0	ug/l	1.0	---	<0.5	<5	<5	<5	<5	<5
Nickel [1]	100.0	ug/l	4.0	---	2.3	<10	<10	<10	<10	<10
Selenium [1]	50.0	ug/l	<2.0	---	<1	<2	<5	<5	<5	<5.0
Silver [2]	100.0	ug/l	<0.8	---	<0.5	<10	<10	<10	<10	missing
Sodium [1]	160.0	mg/l	9.2	---	10.8	10.0	8.4	9.8	10	9.9
Vanadium [3]	49.0	ug/l	<10.0	---		33.0	19.0	21	28	27
Zinc [2]	5000.0	ug/l	<10.0	---	11.4	<25	<20	<20	<20	<20
Field Parameters:										
Field pH [2]	6.5-8.5	units	5.53	---	6.93	5.86	6.45	6.67	5.55	5.41
Field Conductivity	NA	umhos	133.0	---	115.0	120.0	127.0	139	120	124
Conductivity (Lab)	NA	umhos	---	---	118.0	---	---	---	---	---
Field Turbidity	NA	ntus	34.3	---	NA	69.00	122.00	12.6	101.5	77.3
Field Dissolved Oxygen	NA	mg/l	2.50	---	3.75	5.30	5.40	9.17	---	2.45
Field Temperature	NA	deg. C	24.0	---	25.20	21.90	23.30	20	---	---
Organic Parameters:										
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	<.02	<0.02
1,2-dibromoethane:EDB [1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	<1
Benzene [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Bromochloromethane [3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<0.5	<1	<0.6
Bromoform [3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1.0
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1.0
methyl ethyl ketone: (MEK);2-butenone [3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [1]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloromethane [3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	na	ug/l	<50	---	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichloroethane [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1.0
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
ethylbenzene [1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
2-hexanone:MBK [3]	280	ug/l	---	---	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	<5
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	<10
Styrene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene: trichloroethene [1]	3	ug/l		---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	<0.20
Vinyl acetate [3]	88	ug/l	<50	---	<0.5	<2	<2	<2	<2	<2
Vinyl chloride [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SEP 20 2002
SOUTHWEST DISTRICT TAMPA

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

MW-8 (DETECTION)

PARAMETER	MCL	UNITS		DATE OF SAMPLE COLLECTION						
			05/25/1994	10/14/1997	09/02/1998	04/29/1999	11/02/1999	03/21/2000	10/17/00	04/11/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	350.0	---	684.0	550.0	600.0	530	620	630
Ammonia [3]	2.8	mg/l	0.33	---	2.92	4.00	5.30	6.1	4.3	3.6
Nitrate [1]	10.0	mg/l	<0.03	---	<0.002	<0.01	<0.01	0.02	0.02	0.01
Chloride [2]	250.0	mg/l	37.0	---	33.5	29.0	31.0	29	32	40
Cobalt [3]	420.0	ug/l	<30.0	---	<2.47	1.2	<50	12	<10	<10
Mercury [1]	2.0	ug/l	<0.2	---	<0.3	<0.2	<0.2	<0.20	<0.2	0.2
Thallium [1]	2.0	ug/l	<1.0	---	<1	<2	<1	1.1	<1	<1
Antimony [1]	6.0	ug/l	<1.0	---	<5	8.3	<5	<5	<5	<5
Arsenic [1]	50.0	ug/l	13.0	---	16.1	12.0	9.9	26	14	29
Barium [1]	2000.0	ug/l	<1.0	---	396.0	60.0	92.0	110	83	150
Beryllium [1]	4.0	ug/l	<0.8	---	<1	<1	<1	<1	<1	1.1
Cadmium [1]	5.0	ug/l	<0.8	---	<1.5	6.5	1.0	3.3	<1	2.9
Chromium [1]	100.0	ug/l	13.0	---	23.8	<10	34.0	36	19	40
Copper [2]	1000.0	ug/l	<10.0	---	1.78	<10	<10	<10	<10	36
Iron [2]	0.3	mg/l	5.4	---	35.4	22.0	21.0	46	21	48
Lead [1]	15.0	ug/l	2.0	---	<0.5	7.9	7.1	12	6.9	18
Nickel [1]	100.0	ug/l	8.0	---	11.3	<10	<10	<10	<10	11
Selenium [1]	50.0	ug/l	<2.0	---	<1	<2	<5	<5	<5	<5
Silver [2]	100.0	ug/l	<0.8	---	<0.5	<10	<10	<10	<10	<10
Sodium [1]	160.0	mg/l	24.0	---	72.9	80.0	76.0	76	71	61
Vanadium [3]	49.0	ug/l	<10.0	---	38.2	<10	42.0	49	29	64
Zinc [2]	5000.0	ug/l	<10.0	---	26.3	<25	<20	24	<20	140
Field Parameters:										
Field pH [2]	6.5-8.5	units	6.14	---	6.91	6.63	6.25	6.39	6.54	5.92
Field Conductivity	NA	umhos	392.0	---	1143.0	1300.0	1252.0	1056	1350	1168
Conductivity (Lab)	NA	umhos	---	---	1070.0	---	---	---	---	---
Field Turbidity	NA	ntus	182.00	---		122.00	63.00	101.5	65.2	43
Field Dissolved Oxygen	NA	mg/l	2.75	---	2.00	2.30	1.99	9.17	---	2
Field Temperature	NA	deg. C	23.50	---	27.50	25.30	---	19.9	---	---
Organic Parameters:										
1,2-dibromo-3-chloropropane;DBCP) [1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	---	<0.02
1,2-dibromoethane;EDB [1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	<1
Benzene [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Bromochloromethane [3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<0.5	<1	<0.6
Bromoform [3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [1]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloromethane [3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	na	ug/l	<50	---	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichloroethane [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
ethylbenzene [1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
2-hexanone:MBK [3]	280	ug/l	---	---	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	<5
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	<10
Styrene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene: trichloroethene [1]	3	ug/l		---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Vinyl acetate [3]	88	ug/l	<50	---	<0.5	<2	<2	<2	<2	<2
Vinyl chloride [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

MW-9 (DETECTION)

PARAMETER	MCL	UNITS		DATE OF SAMPLE COLLECTION						
			05/26/1994	10/14/1997	09/02/1998	04/29/1999	11/02/1999	03/21/2000	10/17/2000	04/09/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	1400.0	---	1250.0	1200.0	1000.0	800	1200	990
Ammonia [3]	2.8	mg/l	19.00	---	9.73	10.00	9.30	9.3	14	12
Nitrate [1]	10.0	mg/l	<0.03	---	<0.002	0.01	<0.01	<0.010	<0.01	0.06
Chloride [2]	250.0	mg/l	340.0	---	33.6	38.0	22.0	15	21	28
Cobalt [3]	420.0	ug/l	<30.0	---	2.04	1.7	<50	18	<10	<10
Mercury [1]	2.0	ug/l	<0.2	---	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium [1]	2.0	ug/l	<1.0	---	<1	<2	1.2	1.1	<1	<1
Antimony [1]	6.0	ug/l	<1.0	---	<5	<5	<5	<5	<5	<5
Arsenic [1]	50.0	ug/l	2.0	---	63.00	56.0	66.0	62	51	44
Barium [1]	2000.0	ug/l	<1.0	---	126.0	100.0	100.0	96	100	72
Beryllium [1]	4.0	ug/l	2.1	---	<1	<1	<1	<1	<1	<1
Cadmium [1]	5.0	ug/l	<0.8	---	1.5	<1	<1	1.7	<1	<1
Chromium [1]	100.0	ug/l	6.0	---	<1	<10	<5	<5.	<5	<5
Copper [2]	1000.0	ug/l	<10.0	---	<0.5	<10	<10	<10	<10	<10
Iron [2]	0.3	mg/l	0.1	---	50.5	46.0	44.0	45	37	43
Lead [1]	15.0	ug/l	7.0	---	<0.5	18.0	<5	<5.0	<5	<5
Nickel [1]	100.0	ug/l	112.0	---	18.9	<10	<10	<10	<10	<10
Selenium [1]	50.0	ug/l	<2.0	---	<1	<2	<5	<5	<5	<5
Silver [2]	100.0	ug/l	<0.8	---	<0.5	<10	<10	<10	<10	<10
Sodium [1]	160.0	mg/l	160.0	---	75.0	80.0	52.0	46	39	45
Vanadium [3]	49.0	ug/l	<10.0	---	3.12	<10	<10	<10	<10	<10
Zinc [2]	5000.0	ug/l	<10.0	---	7.52	<25	<20	<20	<20	<20
Field Parameters:										
Field pH [2]	6.5-8.5	units	7.17	---	6.62	6.86	6.40	6.6	6.49	6.42
Field Conductivity	NA	umhos	2211.0	---	1567.0	2230.0	2140.00	1890	1060	1943
Conductivity (Lab)	NA	umhos	---	---	2030.0	---	---	---	---	---
Field Turbidity	NA	ntus	58.20	---	NA	4.00	7.50	2.3	7.2	3
Field Dissolved Oxygen	NA	mg/l	2.02	---	2.25	2.00	2.49	9.17	---	2.15
Field Temperature	NA	deg. C	22.50	---	22.90	25.50	---	19.9	---	---
Organic Parameters:										
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	---	<0.02
1,2-dibromoethane:EDB [1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	<1
Benzene [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Bromochloromethane [3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<0.5	<1	<0.6
Bromoform [3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [1]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloromethane [3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	na	ug/l	<50	---	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichloroethane [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
ethylbenzene [1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1.	<1
2-hexanone:MBK [3]	280	ug/l	---	---	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	<5
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	<10
Styrene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene; trichloroethene [1]	3	ug/l		---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Vinyl acetate [3]	88	ug/l	<50	---	<0.5	<2	<2	<2	<2	<2
Vinyl chloride [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

MW-10 (DETECTION)

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLECTION							
			05/26/1994	10/14/1997	09/02/1998	04/29/1999	11/03/1999	03/21/2000	10/17/2000	04/09/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	680.0	621.0	678.0	610.0	660.0	580	660	780
Ammonia [3]	2.8	mg/l	0.18	0.302	3.21	5.30	5.80	5.5	5	2.7
Nitrate [1]	10.0	mg/l	<0.03	<0.001	<0.002	<0.01	0.02	0.01	0.01	0.17
Chloride [2]	250.0	mg/l	120.0	123.0	107.0	94.0	89.0	76	79	94
Cobalt [3]	420.0	ug/l	<30.0	1.3	1.38	1.7	<50	12	<10	<10
Mercury [1]	2.0	ug/l	<0.2	<0.001	0.12	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium [1]	2.0	ug/l	<1.0	0.59	<1	<2	<1	<1.0	<1	<1
Antimony [1]	6.0	ug/l	<1.0	5.0	<5	<5	<5	<5.0	<5	<5
Arsenic [1]	50.0	ug/l	5.0	<0.5	8.01	3.0	5.6	9.2	<5	9.9
Barium [1]	2000.0	ug/l	<1.0	40.8	66.3	48.0	57.0	57	52	66
Beryllium [1]	4.0	ug/l	2.1	<4	<1	<1	<1	<1.0	<1	<1
Cadmium [1]	5.0	ug/l	<0.8	<0.5	<1.5	<1	<1	1.6	<1	<1
Chromium [1]	100.0	ug/l	15.0	2.45	2.05	<10	<5	<5	<5	<5
Copper [2]	1000.0	ug/l	<10.0	3.4	<0.5	<10	<10	<10	<10	<10
Iron [2]	0.3	mg/l	14.0	0.0202	26.6	17.0	35.0	39	28	35
Lead [1]	15.0	ug/l	6.0	1.48	<0.5	7.7	<5	<5	<5	<5
Nickel [1]	100.0	ug/l	75.0	6.9	7.5	<10	<10	<10	<10	<10
Selenium [1]	50.0	ug/l	<2.0	<6.5	<1	<2	<5	<5	<5	<5
Silver [2]	100.0	ug/l	<0.8	<0.25	<0.5	<10	<10	<10	<10	<10
Sodium [1]	160.0	mg/l	68.0	78.2	80.9	89.0	77.0	82	74	93
Vanadium [3]	49.0	ug/l	<10.0	3.79	14.9	<10	12.0	11	<10	13
Zinc [2]	5000.0	ug/l	<10.0	25.3	7.17	<25	<20	<20	<20	<20
Field Parameters:										
Field pH [2]	6.5-8.5	units	6.65	6.61	6.34	6.68	6.88	6.7	6.42	6.36
Field Conductivity	NA	umhos	924.0	855.0	1148.0	1300.0	1311.0	1330	1400	1254
Conductiivity (Lab)	NA	umhos	---	---	1070.0	---	---	---	---	---
Field Turbidity	NA	ntus	3.29	4.01	18.90	4.00	8.80	2.1	18.9	2
Field Dissolved Oxygen	NA	mg/l	1.75	2.75	2.30	1.90	2.44	9.3	---	2.3
Field Temperature	NA	deg. C	23.70	26.20	22.90	23.90	---	18.8	---	---
Organic Parameters:										
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1	<0.5	<0.5	<0.020	<0.02	<0.02	---	<0.02
1,2-dibromoethane:EDB [1]	0.02	ug/l	<1	<0.5	<0.5	<0.020	<0.02	<0.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	<65	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	<10	<10	<100	<8	<8	<1	<1.0
Benzene [1]	1	ug/l	<1	1	<0.5	<0.5	<0.5	<0.5	<1	<1.0
Bromochloromethane [3]	91	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	<0.5	<0.5	<0.050	<0.5	<0.5	<1	<0.6
Bromoform [3]	4.4	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	<5	<8	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	<3	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [1]	100	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloromethane [3]	2.7	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	na	ug/l	<50	<4	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichloroethane [1]	3	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	<0.5	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
cis-1,3-dichloropropene	NA	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2
trans-1,3-dichloropropene	NA	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2
ethylbenzene [1]	700	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
2-hexanone:MBK [3]	280	ug/l	---	<4	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	<1	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	<7	<0.5	<1	<1	<1	<10	<10
Styrene [1]	100	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene: trichloroethene [1]	3	ug/l		<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Vinyl acetate [3]	88	ug/l	<50	<1	<0.5	<2	<2	<2	<2	<2
Vinyl chloride [1]	1	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
BIENNIAL GROUNDWATER MONITORING REPORT
FEBRUARY 2002

MW-11 (DETECTION)

PARAMETER	MCL	UNITS	05/26/1994	DATE OF SAMPLE COLLECTION 10/14/1997	09/02/1998	04/29/1999	11/02/1999	03/21/2000	10/17/2000	04/09/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	520.0	---	392.0	270.0	310.0	280	350	200
Ammonia [3]	2.8	mg/l	0.17	---	2.91	2.60	1.40	1.4	1.1	0.21
Nitrate [1]	10.0	mg/l	<0.03	---	<0.002	<0.01	<0.01	0.03	0.03	0.08
Chloride [2]	250.0	mg/l	42.0	---	5.84	4.0	4.6	4.2	4	4.4
Cobalt [3]	420.0	ug/l	<30.0	---	1.14	<1	<50	<10	<10	<10
Mercury [1]	2.0	ug/l	<0.2	---	0.15	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium [1]	2.0	ug/l	<1.0	---	<1	<2	<1	<1	<1	<1
Antimony [1]	6.0	ug/l	<1.0	---	<5	<5	<5	<5	<5	<5
Arsenic [1]	50.0	ug/l	8.0	---	13.9	5.0	24.0	17	23	<5
Barium [1]	2000.0	ug/l	<1.0	---	28.5	18.0	15.0	14	22	<10
Beryllium [1]	4.0	ug/l	<0.8	---	<1	<1	<1	<1	<1	<1
Cadmium [1]	5.0	ug/l	<0.8	---	1.97	<1	<1	<1	<1	<1
Chromium [1]	100.0	ug/l	25.0	---	<1	<10	<5	<5	<5	<5
Copper [2]	1000.0	ug/l	<10.0	---	3.94	16.0	<10	<10	<10	<10
Iron [2]	0.3	mg/l	12.0	---	3.33	1.8	1.1	4.9	1.2	0.93
Lead [1]	15.0	ug/l	1.0	---	<0.5	5.6	<5	<5	<5	<5.0
Nickel [1]	100.0	ug/l	77.0	---	8.89	<10	<10	<10	<10	<10
Selenium [1]	50.0	ug/l	<2.0	---	<1	<2	<5	<5	<5	<5
Silver [2]	100.0	ug/l	<0.8	---	0.53	<10	<10	<10	<10	<10
Sodium [1]	160.0	mg/l	49.0	---	10.4	8.0	3.7	3.9	3.8	3.1
Vanadium [3]	49.0	ug/l	<10.0	---	9.23	<10	<10	<10	<10	<10
Zinc [2]	5000.0	ug/l	<10.0	---	25.2	26.0	<20	<20	<20	<20
Field Parameters:										
Field pH [2]	6.5-8.5	units	6.73	---	6.26	6.88	6.60	6.59	6.52	6.76
Field Conductivity	NA	umhos	557.0	---	783.0	550.0	573.0	485	730	276
Conductivity (Lab)	NA	umhos	---	---	683.0	---	---	---	---	---
Field Turbidity	NA	ntus	15.90	---	NA	5.00	6.40	3.2	7.7	7
Field Dissolved Oxygen	NA	mg/l	2.25	---	3.00	3.30	2.70	8.99	---	2.5
Field Temperature	NA	deg. C	24.40	---	22.90	23.90	---	21	---	---
Organic Parameters:				---						
1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	---	<0.02
1,2-dibromoethane:EDB [1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	<1
Benzene [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Bromochloromethane [3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<0.5	<1	<0.6
Bromoform [3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [1]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloromethane [3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	ns	ug/l	<50	---	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichlornethane [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
ethylbenzene [1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
2-hexanone:MBK [3]	280	ug/l	---	---	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	<1
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	<1
Styrene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene: trichloroethene [1]	3	ug/l		---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	<0.20
Vinyl acetate [3]	88	ug/l	<50	---	<0.5	<2	<2	<2	<2	<2
Vinyl chloride [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

--- = Not Tested.

Gray shading = Sample result above the MCL.

[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

[2] Parameter MCL is a Secondary Drinking Water Standard (62-550 F.A.C.).

[3] Parameter MCL is a Groundwater Clean-up Standard (62-777 F.A.C.).

MW-12 (DETECTION)

PARAMETER	MCL	UNITS	DATE OF SAMPLE COLLECTION							
			05/26/1994	10/14/1997	09/02/1998	04/29/1999	11/02/1999	03/21/2000	10/17/2000	04/03/2001
Inorganic Parameters:										
Total Dissolved Solids (TDS) [2]	500.0	mg/l	760.0	---	379.0	360.0	370.0	360	340	200
Ammonia [3]	2.8	mg/l	0.17	---	5.94	6.70	3.80	3.8	2.5	0.19
Nitrate [1]	10.0	mg/l	<0.03	---	<0.002	<0.01	<0.01	0.01	0.03	0.27
Chloride [2]	250.0	mg/l	88.0	---	4.13	7.3	3.2	3.7	3.5	3.3
Cobalt [3]	420.0	ug/l	<30.0	---	<1	<1	<50	<10	<10	<10
Mercury [1]	2.0	ug/l	<0.2	---	0.16	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium [1]	2.0	ug/l	<1.0	---	<1	<2	<1	<1	<1	<1
Antimony [1]	6.0	ug/l	<1.0	---	<5	<5	<5	<5	<5	<5
Arsenic [1]	50.0	ug/l	8.0	---	5.83	9.3	<5	5.4	<5	5.2
Barium [1]	2000.0	ug/l	<1.0	---	23.3	22.0	22.0	20	23	11
Beryllium [1]	4.0	ug/l	<0.8	---	<1	<1	<1	<1	<1	<1
Cadmium [1]	5.0	ug/l	<0.8	---	1.5	<1	<1	<1	<1	<1
Chromium [1]	100.0	ug/l	24.0	---	<1	<10	<5	<5	<5	<5
Copper [2]	1000.0	ug/l	<10.0	---	<0.5	<10	<10	<10	<10	<10
Iron [2]	0.3	mg/l	18.0	---	4.67	2.5	4.9	5.4	4.2	0.18
Lead [1]	15.0	ug/l	6.0	---	<0.5	5.0	<5	<5.0	<5	<5
Nickel [1]	100.0	ug/l	23.0	---	5.5	<10	<10	<10	<10	<10
Selenium [1]	50.0	ug/l	<2.0	---	<1	<2	<5	<5	<5	<5
Silver [2]	100.0	ug/l	<0.8	---	<0.5	<10	<10	<10	<10	<10
Sodium [1]	160.0	mg/l	67.0	---	20.1	23.0	7.0	12	7	3.1
Vanadium [3]	49.0	ug/l	<10.0	---	2.14	<10	<10	<10	<10	<10
Zinc [2]	5000.0	ug/l	<10.0	---	6.010	<25	<20	<20	<20	<20
Field Parameters:										
Field pH [2]	6.5-8.5	units	6.19	---	6.02	6.70	6.34	7	6.85	6.71
Field Conductivity	NA	umhos	593.0	---	731.0	720.0	689.0	655	630	333
Conductivity (Lab)	NA	umhos	---	---	638.0	---	---	---	---	---
Field Turbidity	NA	ntus	131.00	---	NA	3.00	3.40	2.3	6	10.5
Field Dissolved Oxygen	NA	mg/l	4.25	---	4.00	5.60	3.87	9.32	---	4.25
Field Temperature	NA	deg. C	25.60	---	22.90	23.30	---	18.9	---	---
Organic Parameters:										
(1,2-dibromo-3-chloropropane:DBCP) [1]	0.2	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	---	<0.02
1,2-dibromoethane:EDB [1]	0.02	ug/l	<1	---	<0.5	<0.020	<0.02	<0.02	<0.02	<0.02
Acetone [3]	700	ug/l	<50	---	<58	<10	<10	<10	<10	<10
Acrylonitrile [3]	1	ug/l	<200	---	<10	<100	<8	<8	<1	<1
Benzene [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Bromochloromethane [3]	91	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Bromodichloromethane [3]	0.6	ug/l	<1	---	<0.5	<0.050	<0.5	<0.5	<1	<0.6
Bromoform [3]	4.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Methyl bromide: bromomethane [3]	9.8	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
methyl ethyl ketone: (MEK):2-butenone [3]	4200	ug/l	<5	---	<8	<1.0	<1	<1	<10	<10
Carbon Disulfide [3]	700	ug/l	<5	---	<0.3	<0.50	<0.5	<0.5	<1	<1
Carbon Tetrachloride [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chlorobenzene [1]	100	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroethane [3]	12	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Chloroform: trichloromethane [3]	5.7	ug/l	---	---	<0.5	<0.50	<0.5	<0.5	<1	<1
methyl chloride:chloromethane [3]	2.7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
Dibromochloromethane [3]	0.4	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<0.4
Methylene bromide:dibromomethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
o-dichlorobenzene: (1,2-) [1]	600	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
p-dichlorobenzene: (1,4-) [1]	75	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
trans-1,4-dichloro-2-butene	na	ug/l	<50	---	<0.5	<10	<10	<10	<10	<10
1,1-dichloroethane [3]	70	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,2-dichloroethane [1]	3	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
1,1-dichloroethylene [1]	7	ug/l	<1	---	<0.5	<0.50	<0.5	<0.5	<1	<1
cis-1,2-dichloroethylene [1]	70	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
trans-1,2-dichloroethylene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2-dichloropropane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1.	<1
cis-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
trans-1,3-dichloropropene	NA	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
ethylbenzene [1]	700	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
2-hexanone:MBK [3]	280	ug/l	---	---	<6	<1	<1	<1	<10	<10
Methyl iodide: Iodomethane	NA	ug/l	<5	---	<0.5	<2	<2	<2	<1	<1
methylene chloride:dichloromethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<5	<5
4-methyl-2-pentanone:MIBK [3]	560	ug/l	<5	---	<0.5	<1	<1	<1	<10	<10
Styrene [1]	100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1,2-tetrachloroethane [3]	1.3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2,2-tetrachloroethane [3]	0.2	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Tetrachloroethylene [1]	3	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Toluene [1]	1000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,1-trichloroethane [1]	200	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,1,2-trichloroethane [1]	5	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichloroethylene; trichloroethene [1]	3	ug/l	---	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Trichlorofluoromethane: CFC-11 [3]	2100	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
1,2,3-trichloropropane [3]	0.2	ug/l	<10	---	<0.5	<0.5	<0.5	<0.5	<1	<0.2
Vinyl acetate [3]	88	ug/l	<50	---	<0.5	<2	<2	<2	<2	<2.0
Vinyl chloride [1]	1	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1
Xylenes [1]	10000	ug/l	<1	---	<0.5	<0.5	<0.5	<0.5	<1	<1

Notes:

MCL = Maximum Contamination Level.

NA = Not Available.

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[1] Parameter MCL is a Primary Drinking Water Standard (62-550 F.A.C.).

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Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex Phase II Leachate Recirculation Plan

February 2007
Revised June 2007
Revised September 2007

The Leachate Recirculation Plan has been deleted.
Leachate recirculation is not being requested
with this permit application.

Prepared by
HDR Engineering, Inc.
2202 N. West Shore Blvd, Suite 250
Tampa, Florida 33607-5755
(813) 282-2300

HDR Project No. 001916-43485-018

Appendix E
Permit Drawings – Summary of Revisions

The following list provides a summary of all revisions made to the permit drawings based on FDEP's Request for Additional Information #4 dated February 15, 2008. **Only revised sheets are being provided with this submittal. Please insert them into the appropriate locations within the Phase II permit application submittal.** (NC indicates no change.)

SHEET G-01
Added revision date
Added new Sheet G-13B to Index of Drawings

SHEET G-02 NC

SHEET G-03
Updated monitoring well locations based on latest survey data
Added newly installed compliance wells

SHEET G-04
Updated monitoring well locations based on latest survey data
Added newly installed compliance wells

SHEET G-05 NC

SHEET C-01
Revised limits of overlay liner system
Revised callouts for overlay liner system

SHEET C-01A
Revised limits of overlay liner system
Revised callouts for overlay liner system

SHEET C-02
Revised limits of overlay liner system
Revised callouts for overlay liner system

SHEET C-02A
Revised limits of overlay liner system
Revised callouts for overlay liner system

SHEET C-02B
Revised Elevations

Appendix E
Permit Drawings – Summary of Revisions

The following list provides a summary of all revisions made to the permit drawings based on FDEP's Request for Additional Information #3 dated October 24, 2007. **Due to the number of revisions, the entire permit application is being resubmitted. Please discard previous versions of the permit application.** (NC indicates no change.)

SHEET G-01
Deleted leachate recirculation sheets and renumbered closure detail sheets.

SHEET G-02 NC
SHEET G-03 NC
SHEET G-04 NC
SHEET G-05 NC

SHEET C-01
Revised basegrades
Added Phase I/Phase II Overlay Liner System

SHEET C-01A
Revised basegrades
Added Phase I/Phase II Overlay Liner System

SHEET C-02
Revised basegrades
Added Phase I/Phase II Overlay Liner System
Removed leachate recirculation pump station

SHEET C-02A
Revised basegrades
Added Phase I/Phase II Overlay Liner System
Removed leachate recirculation pump station

SHEET C-02B
Removed leachate recirculation pump station
Removed connector pipe to leachate recirculation pump station
Added additional cleanout to Cell 1 Piping Plan View Detail

SHEET C-03
Revised top of protective cover grades
Added Phase I/Phase II Overlay Liner System

SHEET C-03A
Revised top of protective cover grades
Added Phase I/Phase II Overlay Liner System

SHEET C-04

Revised detail callouts to correlate with new sheet numbers

SHEET C-05

Expanded Section A to include overlay liner system
Removed Sections B and C
Revised basegrades and top of protective cover grades

SHEET C-05A

New drawing sheet for Sections B and C
Revised basegrades and top of final cover grades

SHEET C-06

Revised detail callouts to correlate with new sheet numbers

SHEET C-07

Revised top of protective cover grades

SHEET C-08

Revised top of protective cover grades

SHEET C-09 NC

SHEET C-10

Removed leachate recirculation system

SHEET C-11

Removed leachate recirculation system

SHEET C-12 NC

SHEET C-13

Revised Phase I/Phase II Liner Tie-In Details to show overlay liner system

SHEET C-13A

Revised dimension of Temporary Liner Termination detail
Added overlay liner system details

SHEET C-14

Revised elevations of Interior Perimeter Berm detail

SHEET C-15 NC
SHEET C-16 NC
SHEET C-16A NC

SHEET C-17

Removed connector pipe to leachate recirculation pump station

SHEET C-18 NC

SHEET C-19

Deleted previous Sheet C-19

Renumbered previous Sheet C-22 as Sheet C-19

SHEET C-19A

Deleted sheet

SHEET C-20

Deleted previous Sheet C-20

Renumbered previous Sheet C-23 as Sheet C-20

SHEET C-21

Deleted previous Sheet C-21

Renumbered previous Sheet C-24 as Sheet C-21

SHEET C-22

Renumbered as Sheet C-19

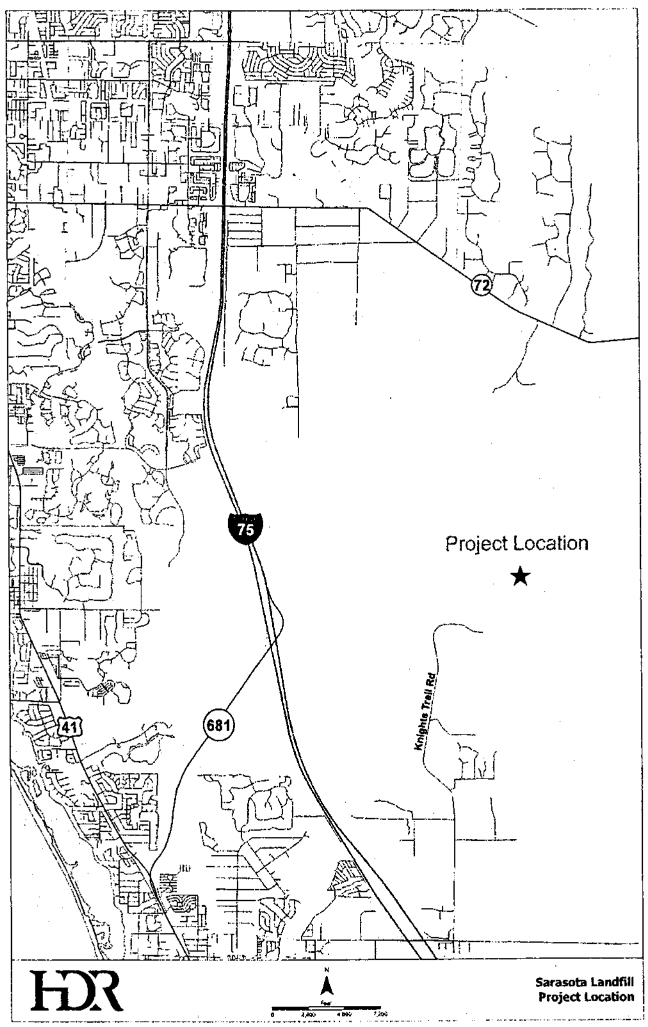
SHEET C-23

Renumbered as Sheet C-20

SHEET C-24

Renumbered as Sheet C-21

Sarasota County



LOCATION MAP

Permit Drawi

Phase
Landf

Central
Waste

FOR PE

Project No.
001916-43485

Sarasota Coun

Issued for
FEBRUARY 2
REVISED JUN
REVISED SEP
REVISED JAN
REVISED MA

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HDR

HDR Engineering, Inc.

2202 N. WEST SHORE BLVD. SUITE 250
TAMPA, FL 33607-5755
(813) 282-2300
FLORIDA CERTIFICATE OF AUTHORIZATION
NO. 00004213

ngs For

e II Class I
fill Expansion

County Solid
Disposal Complex

RMITTING

-018

ity, Florida

Approval
)07
E 2007
TEMBER 2007
UARY 2008
RCH 2008

INDEX OF DRAWINGS

02/28/08

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

1 | 2 | 3 | 4

SITE PLAN SYMBOLOGY

	EMBANKMENT SLOPE
	VEGETATION (SIZE)
CO	CLEANOUT
MH	MANHOLE
MW	GROUNDWATER MONITORING WELL
P	PIEZOMETER
	WATER SUPPLY WELL
STW	STORMWATER MONITORING STATION
GP	GAS PROBE
UV	UTILITY VAULT
PP	POWER POLE
TP	TELEPHONE POLE
FH	FIRE HYDRANT
YH–X	YARD HYDRANT
X75.5	EXISTING SPOT ELEVATION
75.8	FINISHED SPOT ELEVATION
	HORIZONTAL CONTROL POINT OR BENCHMARK
X17.5	SPOT ELEVATION
TH–"X"	IDENTIFICATION AND APPROXIMATE LOCATION OF SOIL TEST HOLE
	DOWNGUY
	EXTERIOR PAD MOUNTED TRANSFORMER
Y	ELECTRICAL HANDHOLE OR MANHOLE Y – MHX OR HHX, WHERE X INDICATES SEQUENCE NUMBER
	SWAMP OR WETLANDS

NOTES:

1. UTILITIES THAT ARE SUSPENDED ABOVE GRADE ARE DESIGNATED BY THE PREFIX "OH" (OVERHEAD).

——T——	TELEPHONE LINE
——E——	ELECTRIC LINE
——F——	FIBER OPTIC
——C——	COMMUNICATION
	HANDRAIL AND GUARDRAIL
	PIPELINE
	LARGE PIPELINE
	UTILITY BENEATH STRUCTURE
	RAILROAD
	DRAINAGE FLOW
	NATURAL WATERWAY
—X——X—	CHAIN LINK FENCE
—X—–X—	FIELD FENCE
	PROPERTY BOUNDARY
	CENTERLINE
——RB——	ROCK BERM
——SF——	SILT FENCE
	EASEMENT
	LIMITS OF CONSTRUCTION

	ROW
	SPECIAL EXCEPTION BOUNDARY
30	EXISTING ELEVATION CONTOUR
30	PROPOSED ELEVATION CONTOUR
	LIMITS OF PROPOSED LINER
	APPROXIMATE LIMITS OF EXISTING LINER

GENE

	ASPHALT (PLAN OR SMALL–SCALE SE
	ASPHALT (LARGE–SCALE SECTION)
	COMPACTED SOIL FILL (SECTION)
	CHECKERED PLATE (PLAN)
	CONCRETE (PLAN AND/OR SECTION)
	CONCRETE MASONRY (PLAN AND/OR SECTION)
	SOLID WASTE (SECTION)
	FABRIC–FORMED CONCRETE (PLAN)
	FABRIC–FORMED CONCRETE (SECTION
	FINISHED WOOD (SECTION)
	GRANULAR FILL (SECTION)
	GRATING (PLAN)
	GROUT (SECTION)
	METAL (SECTION)
	PRECAST CONCRETE (PLAN AND/OR SECTION)
	RIPRAP OR RUBBLE (PLAN AND/OR
	DRAINAGE STONE (SECTION)
	SAND (SECTION)
	TOPSOIL (SECTION)
	SOD OR GRASS (SECTION)
	WOOD – CONTINUOUS (SECTION)
	WOOD BLOCKING (SECTION)
	GEOSYNTHETIC DRAINAGE LAYER (SECTION)
	GEOMEMBRANE (SECTION)
	GEOSYNTHETIC CLAY LINER (GCL) (SECTION)
	GEOTEXTILE (SECTION)

HDR

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Tampa, FL 33607-5755
(813) 282-2300
Florida Certificate of Authorization No. 00004213

ISSUE	DATE	DESCRIPTION
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
PROJECT NUMBER	001916-43485-018

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RAL SYMBOLOGY

CTION)

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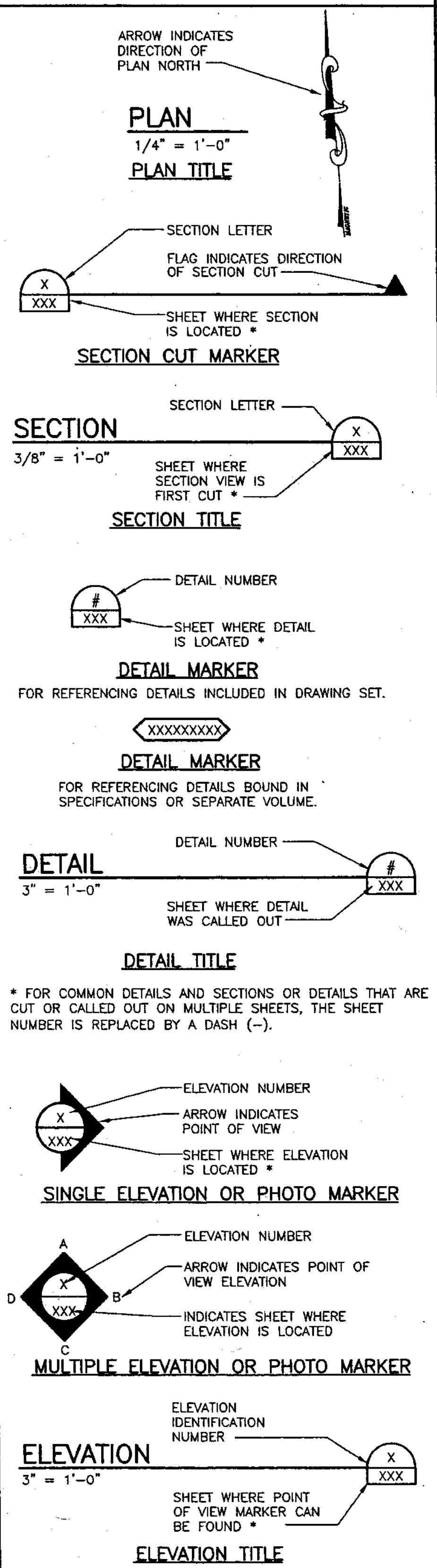
SECTION)



ABBREVIATIONS

CONC – CONCRETE

CPP – CORRUGATED PLASTIC PIPE

DIA – DIAMETER

FES – FLARED END SECTION

FDOT – FLORIDA DEPARTMENT OF TRANSPORTATION

GCL – GEOSYNTHETIC CLAY LINER

GDL – GEOSYNTHETIC DRAINAGE LINER

GM – GAS MONITORING LOCATION

GP – GAS PROBE

HDPE – HIGH DENSITY POLYETHYLENE

HP – HIGH POINT

INV – INVERT

LF – LINEAL FEET

LFG – LANDFILL GAS

LP – LOW POINT

MH – MANHOLE

MIN – MINIMUM

MW – GROUNDWATER MONITORING WELL

OC – ON CENTER

P – PIEZOMETER

RCP – REINFORCED CONCRETE PIPE

SCH – SCHEDULE

SDR – STANDARD DIMENSION RATIO

SS – STAINLESS STEEL

STD – STANDARD

STW – STORMWATER MONITORING STATION

TRM – TURF REINFORCEMENT MATTING

W.E. – WATER ELEVATION

WWTP – WASTE WATER TREATMENT PLANT

SHEET NAMING CONVENTION

DISCIPLINE DESIGNATOR & DISCIPLINE ORDER

G	GENERAL
V	SURVEYING/MAPPING
X	DEMOLITION
C	CIVIL
U	MULTI–DISCIPLINE
S	STRUCTURAL
A	ARCHITECTURAL
D	PROCESS
M	MECHANICAL (HVAC)
P	PLUMBING
E	ELECTRICAL
Y	INSTRUMENTATION

D

GENERAL NOTES

1. THIS IS A STANDARD SHEET SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. TOPOGRAPHY WITHIN PHASES I THROUGH IV AREAS COMPILED BY LANDAIR MAPPING, INC. OF PEACHTREE CITY, GEORGIA USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 16, 2006
4. LOCATIONS OF PIEZOMETERS AND MONITORING WELLS OBTAINED FROM SPECIFIC PURPOSE SURVEY BY GEORGE F. YOUNG, INC., DATED OCTOBER 31, 2006.

C

B

A

FOR PERMITTING

Thomas M. Yonoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

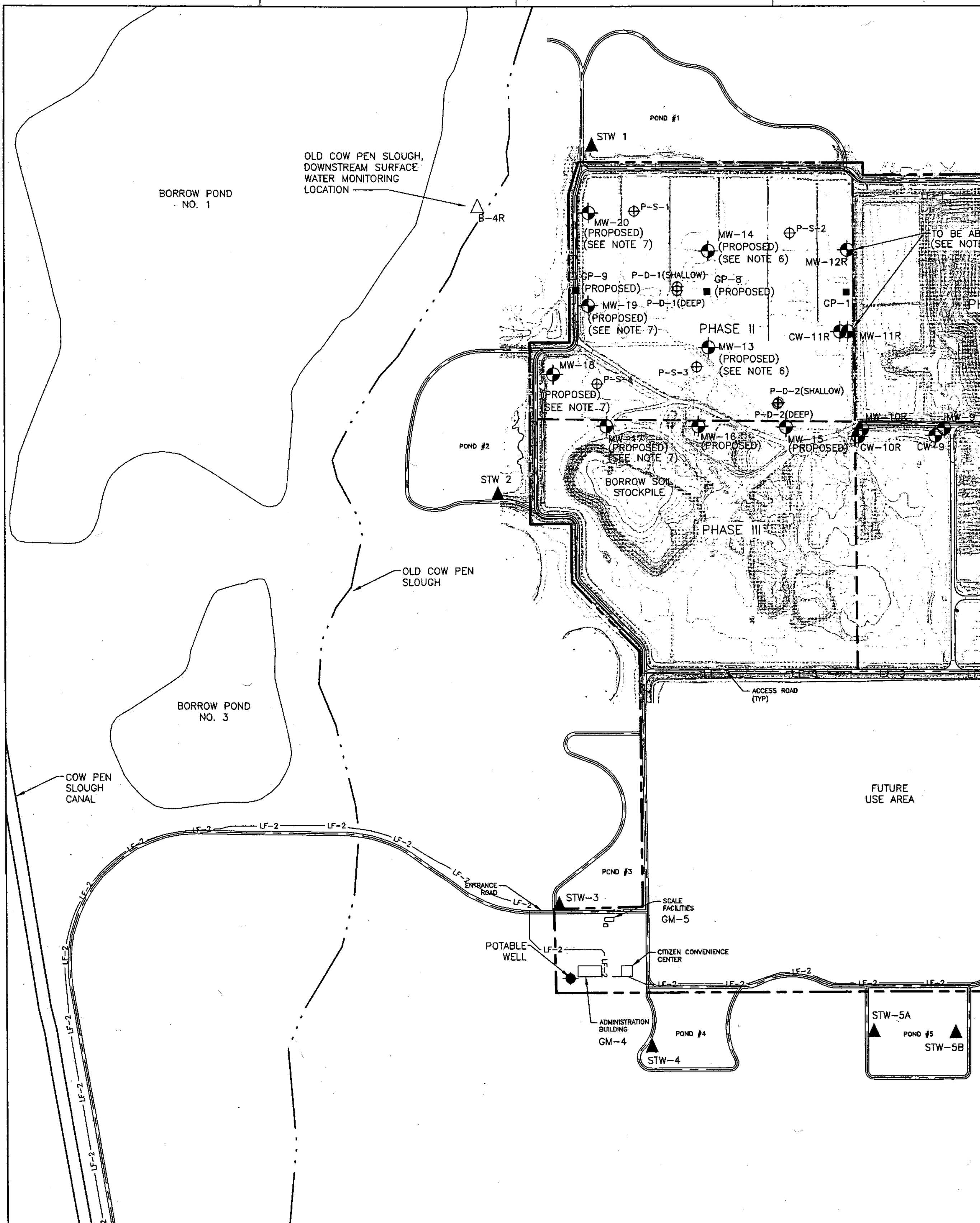
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

SYMBOLS/LEGEND/NOTES

0 1" 2"

FILENAME	00G-02.dwg	SHEET
SCALE	AS SHOWN	G-02



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ISSUE	DATE	DESCRIPTION
D	03/2008	REVISED PER RAI #4
C	08/2007	REVISED PER RAI #2
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
PROJECT NUMBER	001916-43485-018

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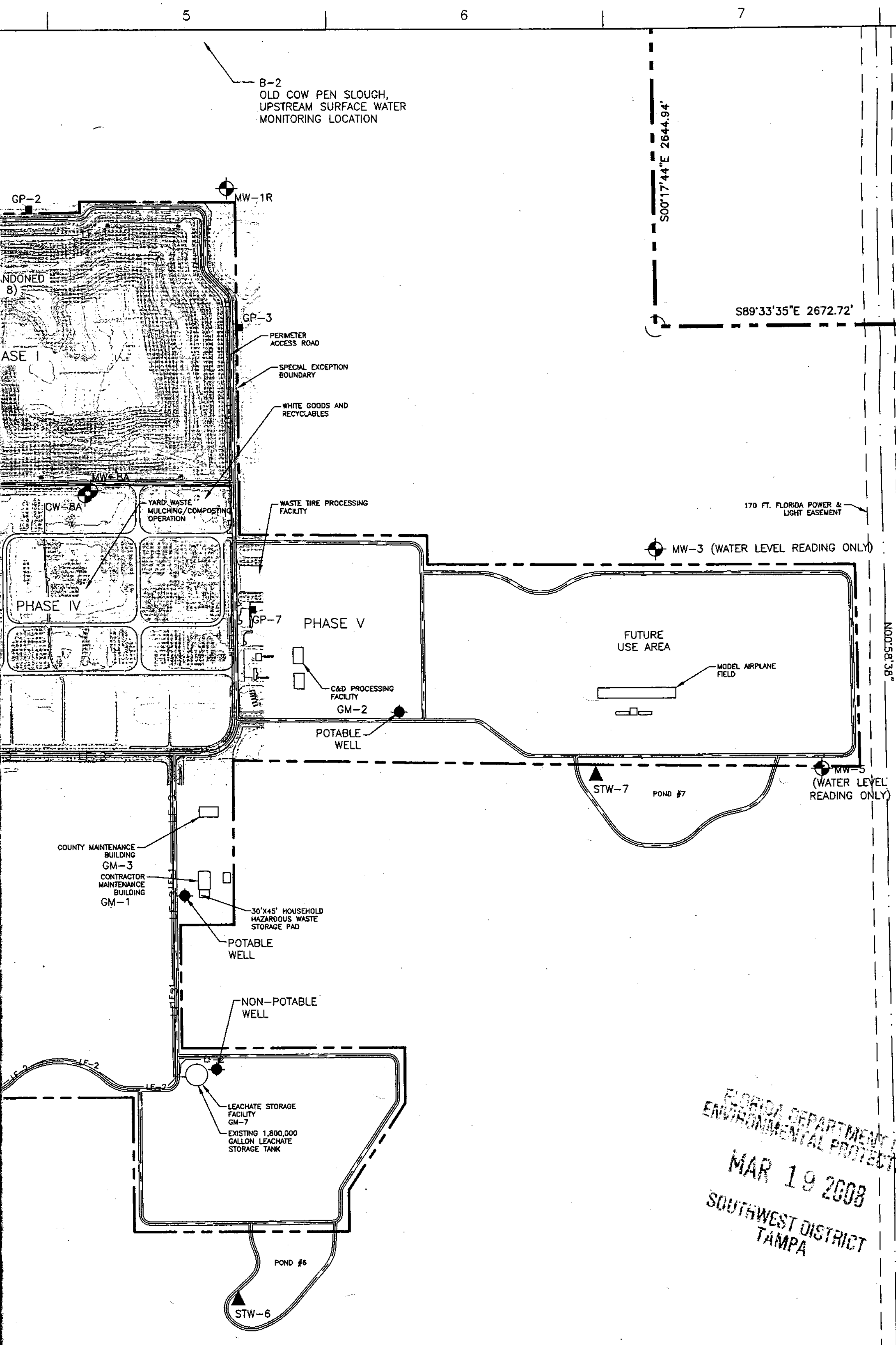


N

NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV AREAS COMPILED BY LANDAIR MAPPING, INC. OF PEACHTREE CITY, GEORGIA USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 16, 2006.
2. LOCATIONS OF EXISTING PIEZOMETERS, MONITORING WELLS AND STAFF GAUGES OBTAINED FROM SPECIFIC PURPOSE SURVEY BY SARASOTA COUNTY, MARCH 2008.
3. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
4. APPROXIMATE LOCATION OF LEACHATE FORCEMAIN TO OFFSITE WWTP OBTAINED FROM CONFORMED DRAWINGS BY PBS&J DATED JULY 2005. VERIFY LOCATION IN FIELD.
5. EXISTING MONITORING WELLS REFLECT LOCATIONS PROPOSED IN PENDING PERMIT MODIFICATION #130542-004
6. THESE ARE INTERIM MONITORING WELLS TO BE INSTALLED WHEN CELLS 1 AND 2 OF PHASE II ARE CONSTRUCTED AND ABANDONED WHEN CELL 3 AND 4 ARE CONSTRUCTED.
7. THESE MONITORING WELLS ARE TO BE INSTALLED WHEN CELL 3 AND 4 OF PHASE II ARE CONSTRUCTED.
8. MONITORING WELLS MW-11R AND MW-12R ARE TO BE ABANDONED WHEN CELLS 1 AND 2 OF PHASE II ARE CONSTRUCTED.

LEGEND

GP-1	GAS PROBE
MW-10R	GROUNDWATER MONITORING WELL
GM-1	GAS MONITORING LOCATION
	WATER SUPPLY WELL
P-S-1	PHASE II BORING/ PIEZOMETER LOCATION
STW-1	STORMWATER MONITORING STATION
B4-R	SURFACE WATER MONITORING STATION
	WATERWAY
	LIMITS OF EASEMENT
	EASEMENT CENTERLINE
	SPECIAL EXCEPTION BOUNDARY
	EXISTING ROADWAY
	PHASE BOUNDARY
	PROPERTY BOUNDARY
LF-1	EXISTING PHASE I LEACHATE FORCEMAIN (SEE NOTE 3)
LF-2	LEACHATE FORCEMAIN TO OFFSITE WWTP (UNDER CONSTRUCTION) (SEE NOTE 4)
LF-3	PROPOSED PHASE II LEACHATE FORCEMAIN

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

FOR PERMITTING

03/18/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

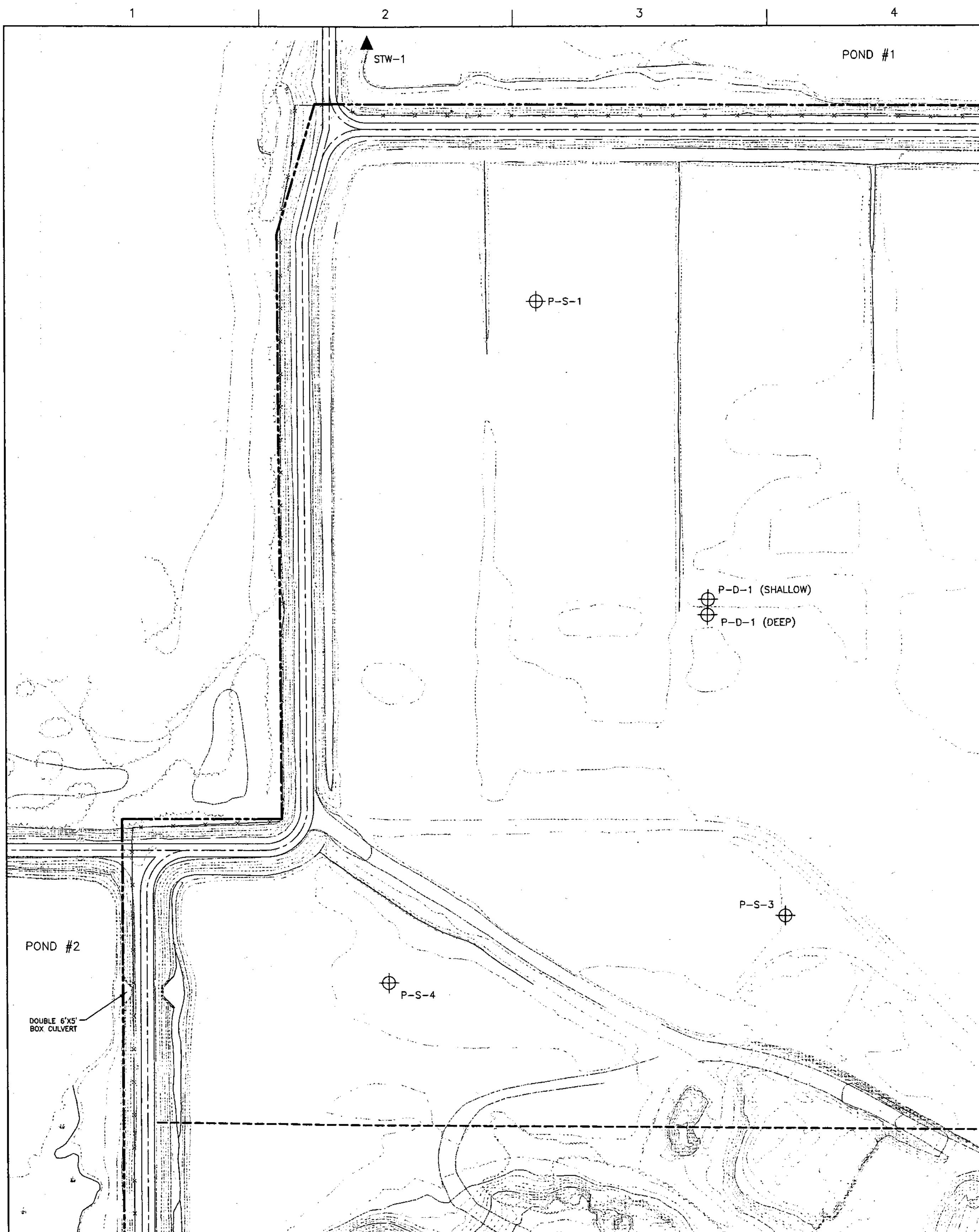
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

OVERALL SITE PLAN AND PHASING PLAN

0 1" 2"

FILENAME	00G-03.dwg
SCALE	1"=400'
SHEET	G-03



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HDR Engineering, Inc.
2202 N. West Shore Blvd., Suite 250
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(813) 282-2300
Florida Certificate of Authorization
No. 00004213

ISSUE	DATE	DESCRIPTION
C	03/2008	REVISED PER RAI #4
B	06/2007	REVISED PER RAI #1
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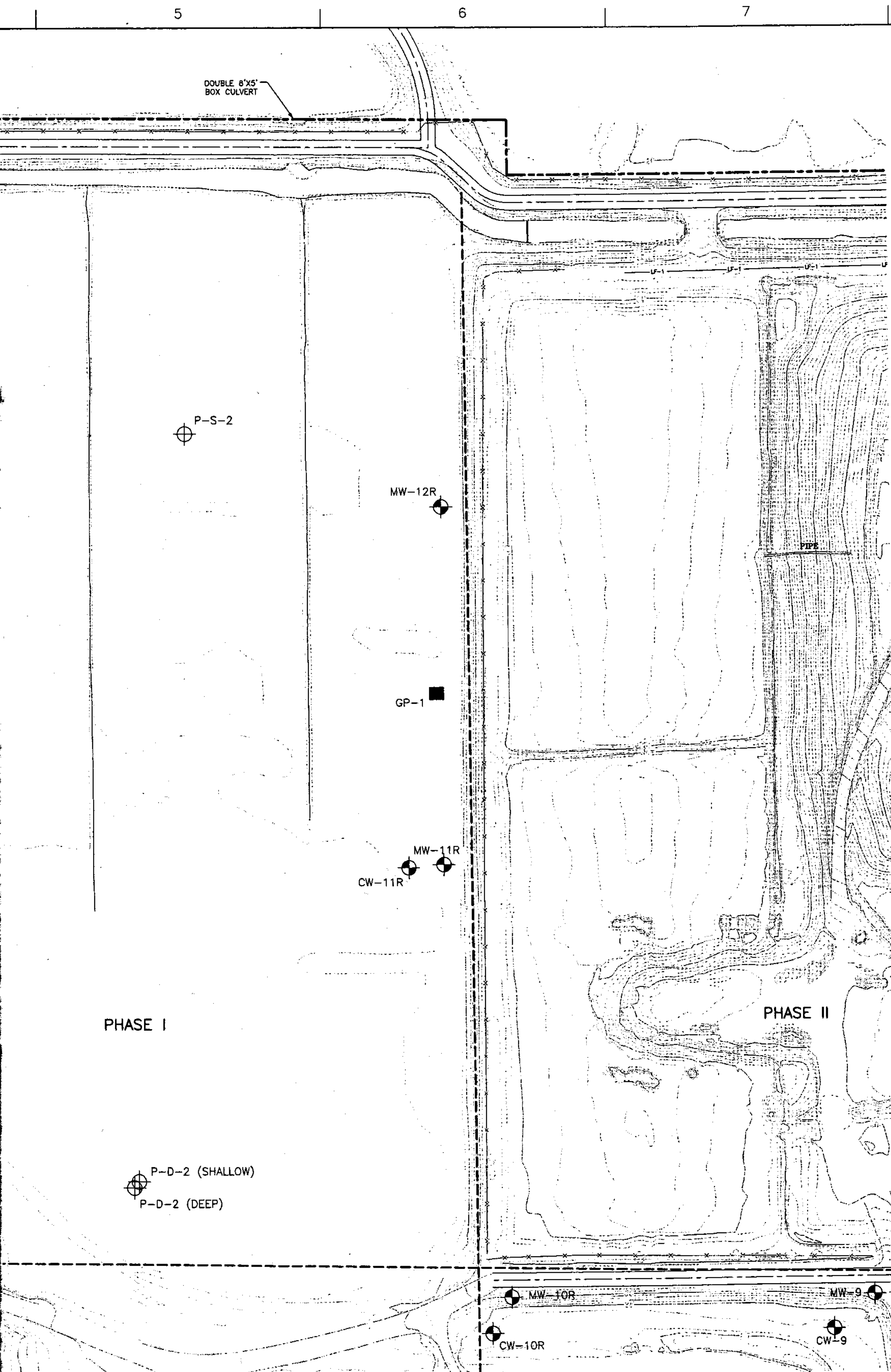

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LEGEND

GP-1	GAS PROBE
MW-10R	GROUNDWATER MONITORING WELL
P-S-1	PHASE II BORING/ PIEZOMETER LOCATION
STW-1	STORMWATER MONITORING STATION
	SPECIAL EXCEPTION BOUNDARY
	EXISTING ROADWAY
LF-1	EXISTING PHASE I LEACHATE FORCEMAIN (SEE NOTE 3)
	PHASE BOUNDARY

ABANDONMENT SCHEDULE*:

PIEZOMETERS

P-S-1
P-S-2
P-S-3
P-S-4
P-D-1 (SHALLOW)
P-D-1 (DEEP)
P-D-2 (SHALLOW)
P-D-2 (DEEP)

GAS PROBES

GP-1

GROUNDWATER MONITORING WELLS

MW-12R
MW-11R

*THESE INSTALLATIONS SHALL BE ABANDONED PER FDEP AND SWFWMD REQUIREMENTS PRIOR TO CELL CONSTRUCTION.

FOR PERMITTING

FLORIDA DEPARTMENT ENVIRONMENTAL PROTE
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

Thomas M. Yanoschak 03/18/08

Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

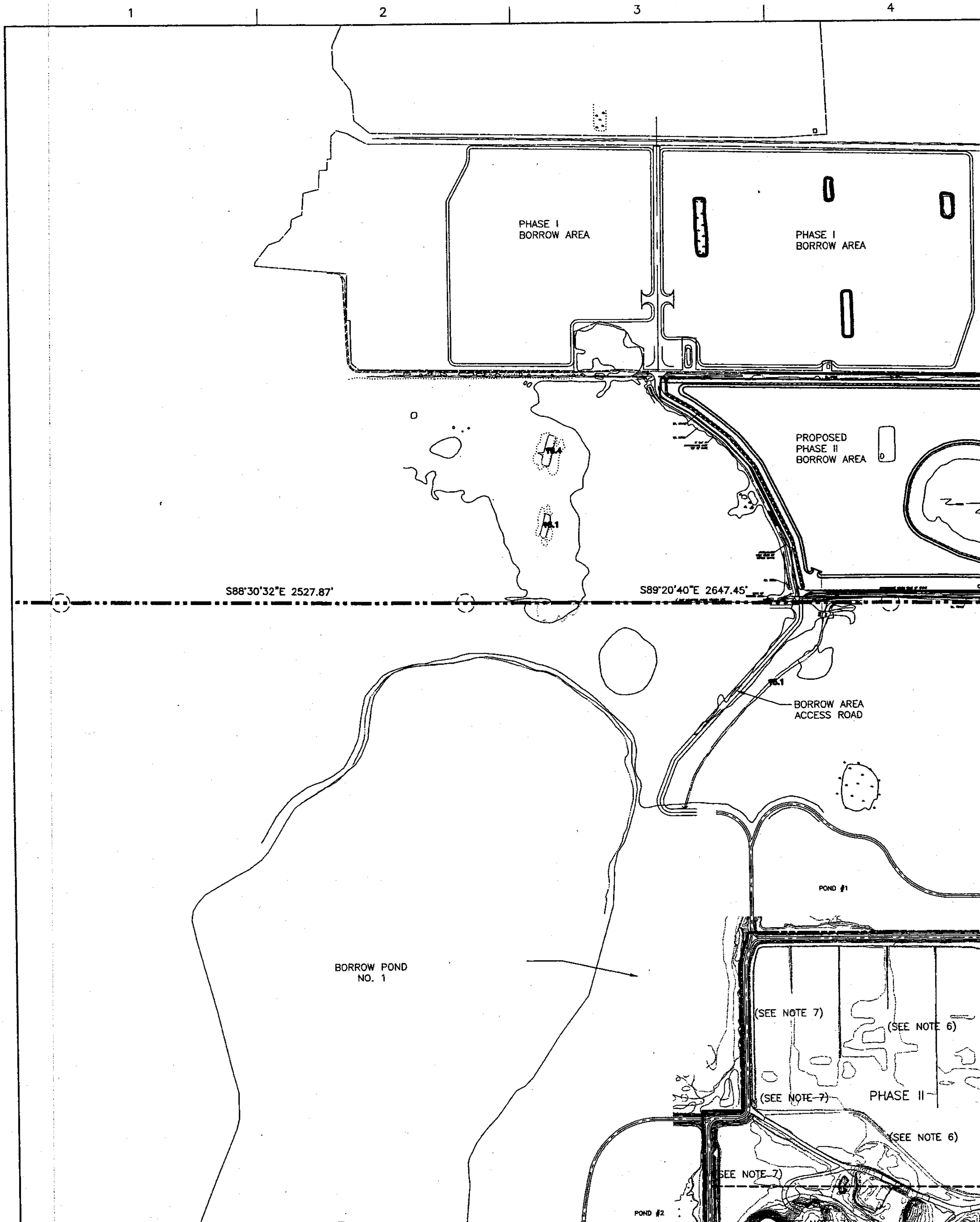
SARASOTA COUNTY FLORIDA

EXISTING SITE CONDITIONS

0 1" 2"

FILENAME	00G-04.dwg
SCALE	1"=100'

SHEET **G-04**



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REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
PROJECT NUMBER	001916-43485-018

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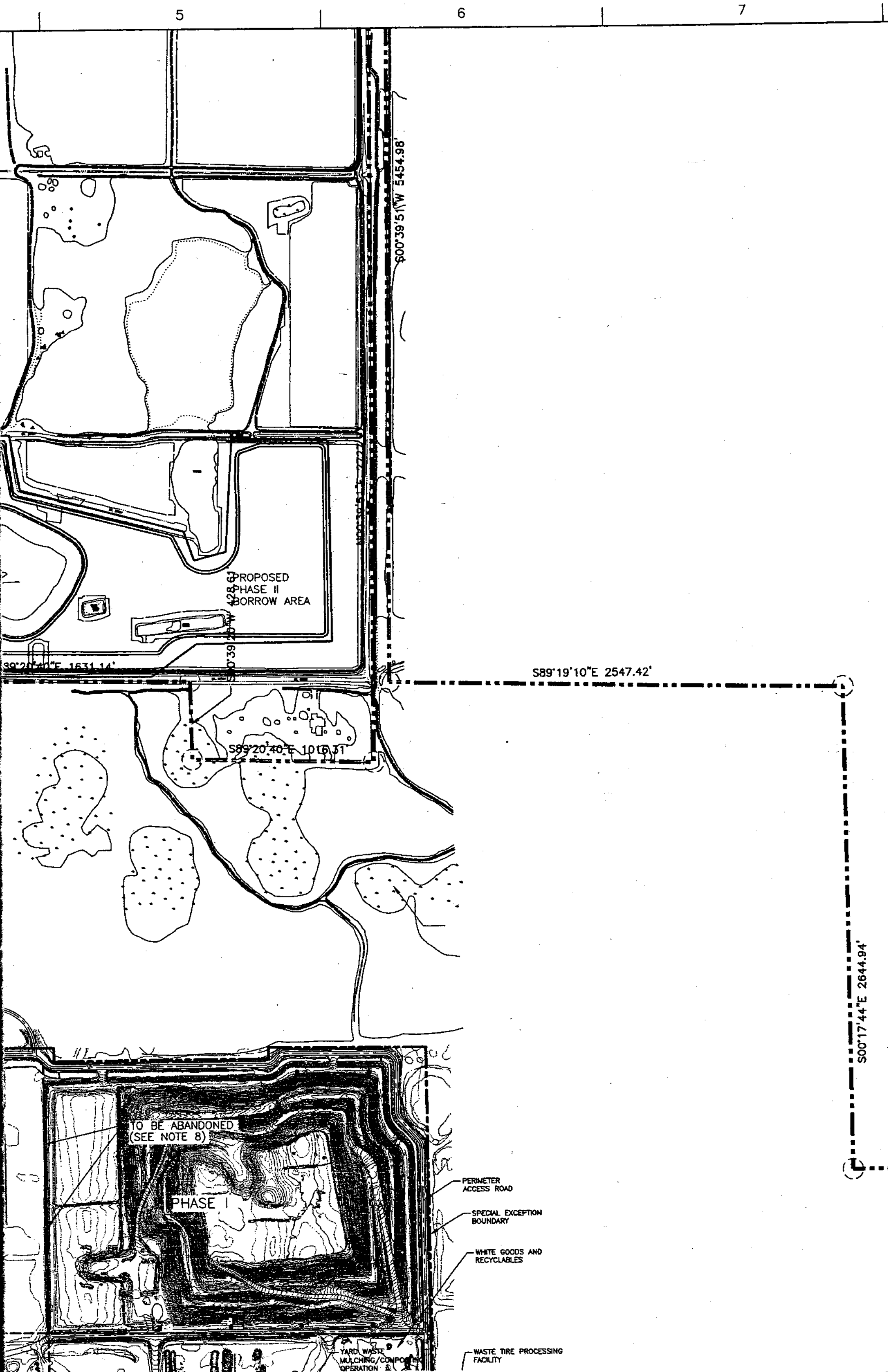

NOTES:

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2. BORROW AREA DESIGN AND TOPOGRAPHIC INFORMATION OBTAINED FROM "CONSTRUCTION PLANS FOR CENTRAL COUNTY SOLID WASTE DISPOSAL CENTER ALBRITION BORROW FACILITY, PHASE 2" BY PBS&J, JULY 2006

LEGEND

- SPECIAL EXCEPTION BOUNDARY
- EXISTING ROADWAY
- PHASE BOUNDARY
- PROPERTY BOUNDARY

FOR PERMITTING

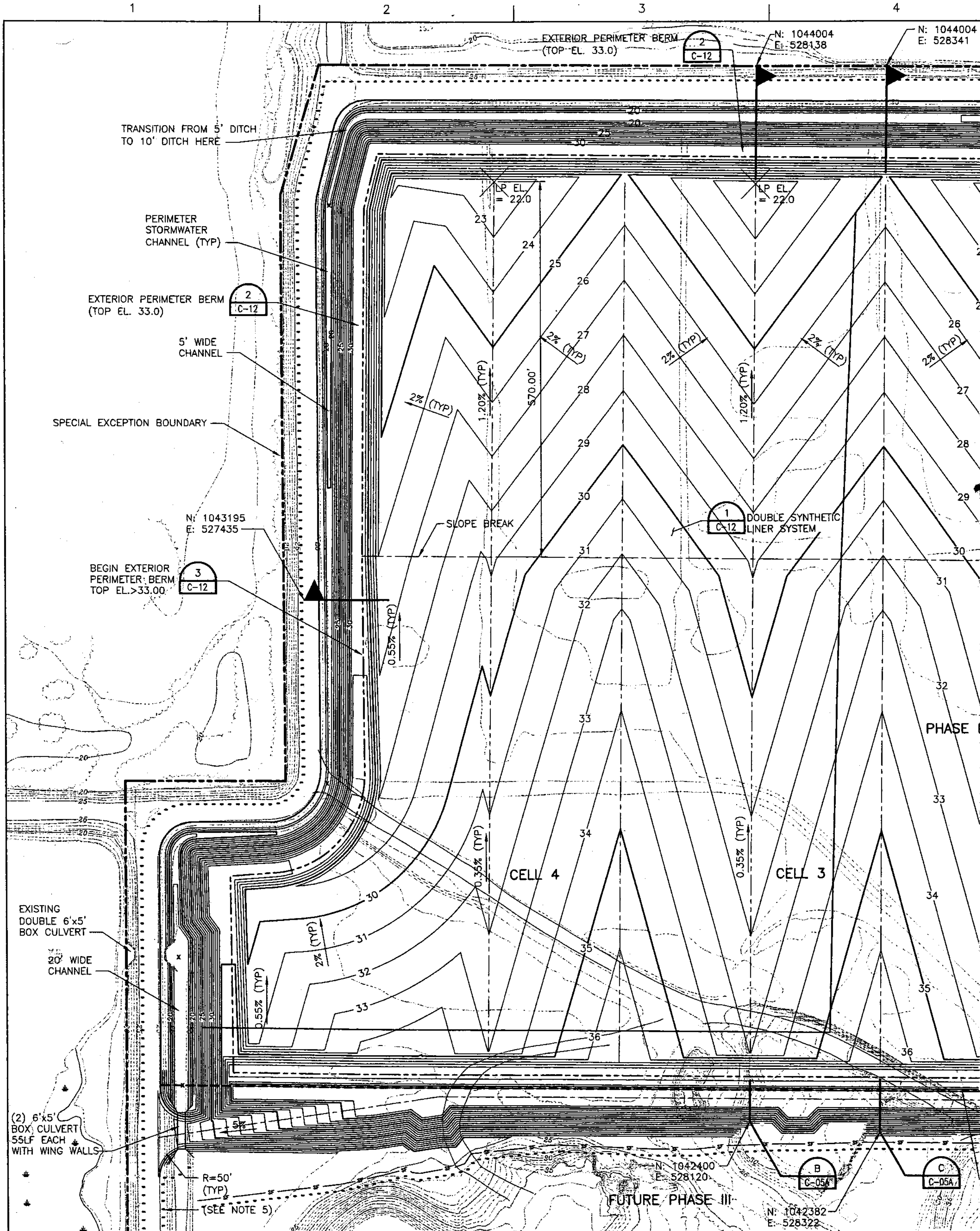
Thomas M. Yanoschak, P.E.
Certificate No. 44200

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

BORROW AREA MAP

FILENAME	00G-05.dwg	SHEET	G-05
SCALE	1"=400'		



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REVIEWED BY	J. READLING
DRAWN BY	J. GAUL
	G. BLUE
PROJECT NUMBER	001916-43485-018

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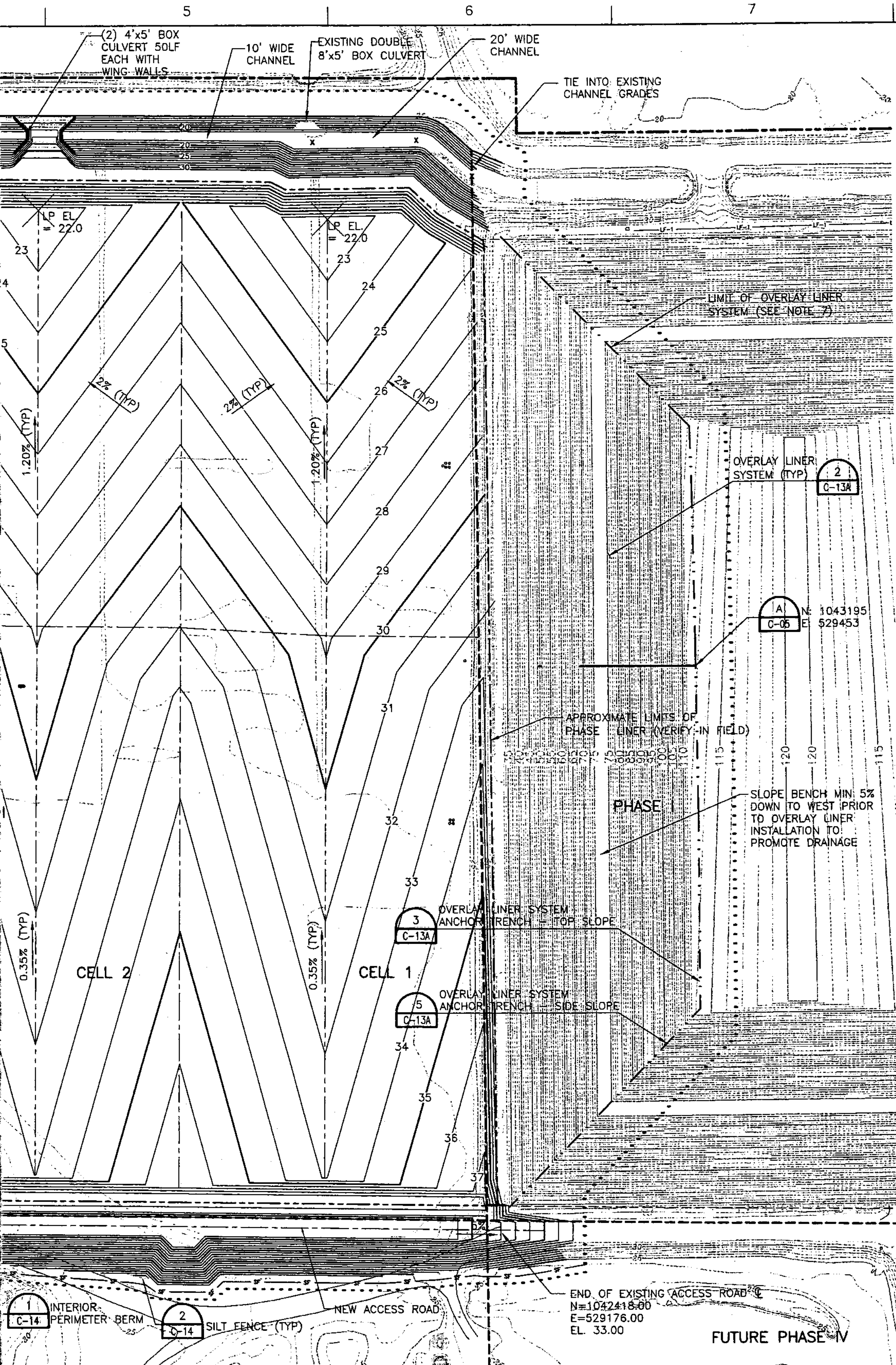


D

NOTES:

1. CONTOURS WITHIN CELLS REPRESENT TOP OF PREPARED SUBGRADE. TOP OF PERIMETER BERM REPRESENTS MAX. LINER ELEVATION AT ANCHOR TRENCH. OTHER CONTOURS REPRESENT FINAL GRADE.
2. 2' OF FILL WILL BE ADDED TO THE TOP OF THE PERIMETER BERMS AFTER LINER SYSTEM INSTALLATION. (SEE TOP OF PROTECTIVE COVER ON SHEET C-03 FOR FINAL BERM GRADING)
3. SEE DETAILS FOR GRAVITY DRAIN INVERT INFORMATION NOT SHOWN IN THIS SHEET
4. SEE DETAILS FOR VALVES NOT SHOWN ON THIS SHEET.
5. LIMITS OF CONSTRUCTION EXTEND ALONG ROAD TO LEACHATE STORAGE TANK FOR INSTALLATION OF NEW LEACHATE FORCEMAIN.
6. ALL CELLS ARE SHOWN FOR ILLUSTRATIVE PURPOSES. CELLS 1 AND 2 WILL BE CONSTRUCTED BEFORE CELLS 3 AND 4
7. LIMITS OF OVERLAY LINER SYSTEM SHOWN REPRESENT MAXIMUM EXTENT OF LINER SYSTEM. OWNER MAY ELECT TO INSTALL OVERLAY LINER SYSTEM IN STAGES BASED ON THE EXTENT OF THE WEST SIDE OF PHASE I THAT IS FILLED TO FINAL GRADE. SEE DETAIL 4, SHEET C-13A FOR TEMPORARY OVERLAY LINER SYSTEM TERMINATION

C

B

LEGEND

- 30 EXISTING ELEVATION CONTOUR
- 30 PROPOSED ELEVATION CONTOUR
- SPECIAL EXCEPTION BOUNDARY
- LIMITS OF PROPOSED LINER
- APPROXIMATE LIMITS OF EXISTING LINER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- 8" PROPOSED DRAIN OR FORCEMAIN
- SF SILT FENCE
- LIMITS OF CONSTRUCTION
- EXISTING PHASE I LEACHATE FORCEMAIN
- VEGETATION
- HP HIGH POINT
- LP LOW POINT

A

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200
03/18/08

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

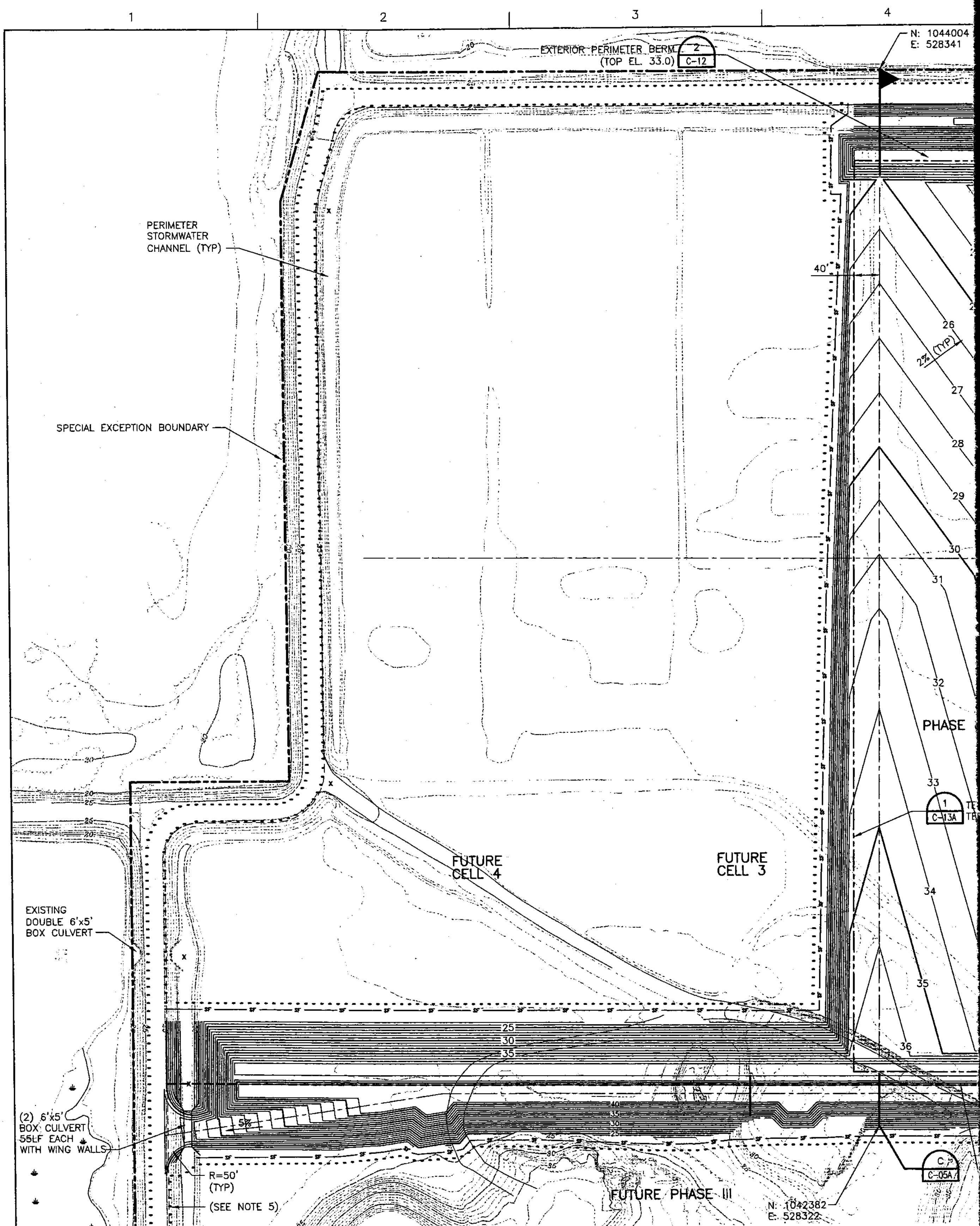
SARASOTA COUNTY FLORIDA

BASEGRADE PLAN CELLS 1-4

0 1" 2"

FILENAME	00C-01.dwg
SCALE	1"=100'

SHEET **C-01**



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REVIEWED BY	J. READLING
DRAWN BY	G. BLUE
PROJECT NUMBER	001916-43485-018

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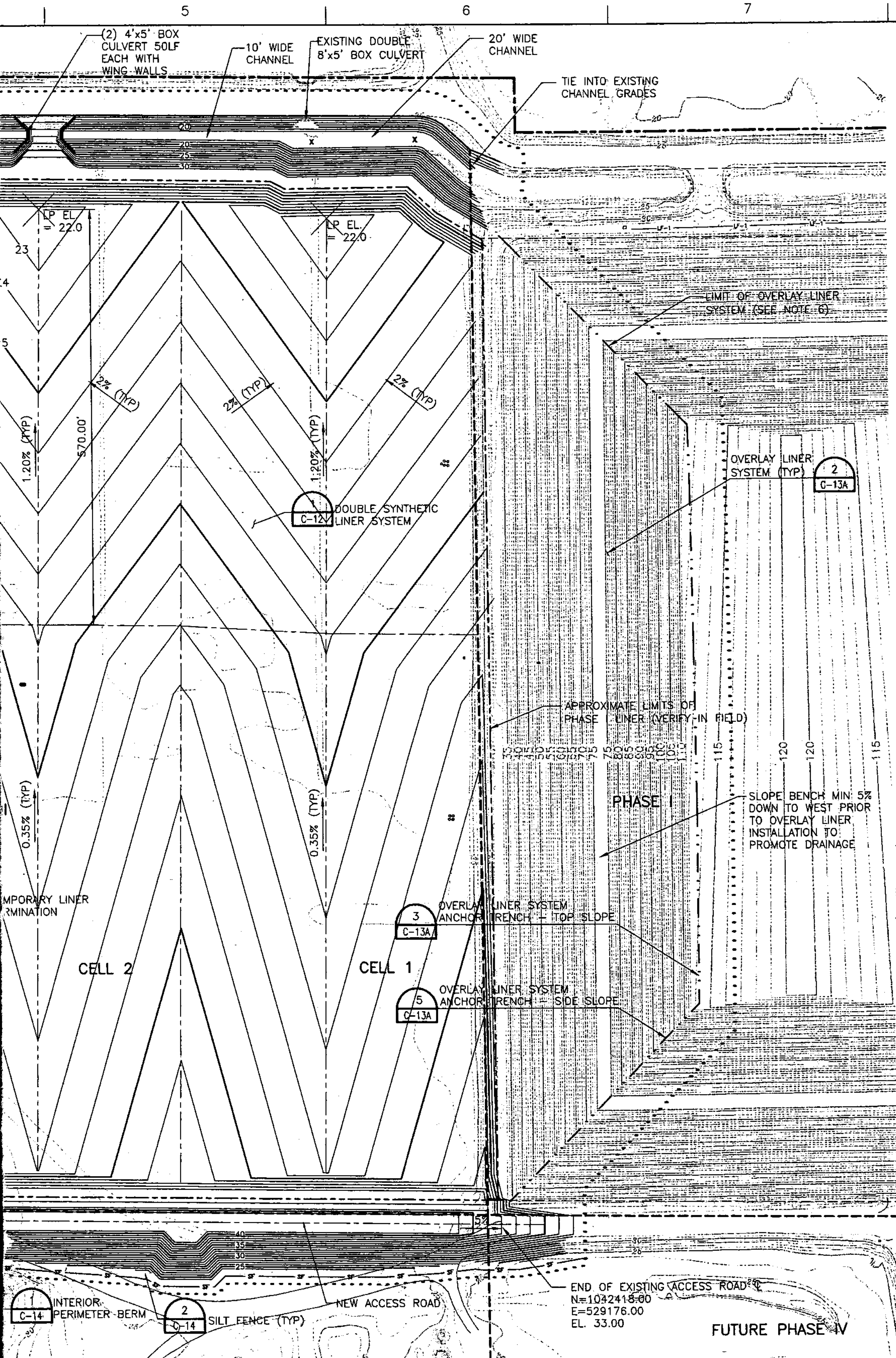

N

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LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- SPECIAL EXCEPTION BOUNDARY
- LIMITS OF PROPOSED LINER
- APPROXIMATE LIMITS OF EXISTING LINER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- 8" PROPOSED DRAIN OR FORCEMAIN
- SILT FENCE
- LIMITS OF CONSTRUCTION
- EXISTING PHASE I LEACHATE FORCEMAIN
- VEGETATION
- HP HIGH POINT
- LP LOW POINT

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT
TAMPA

FOR PERMITTING

Thomas M. Yanoschak 03/19/08
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SARASOTA COUNTY

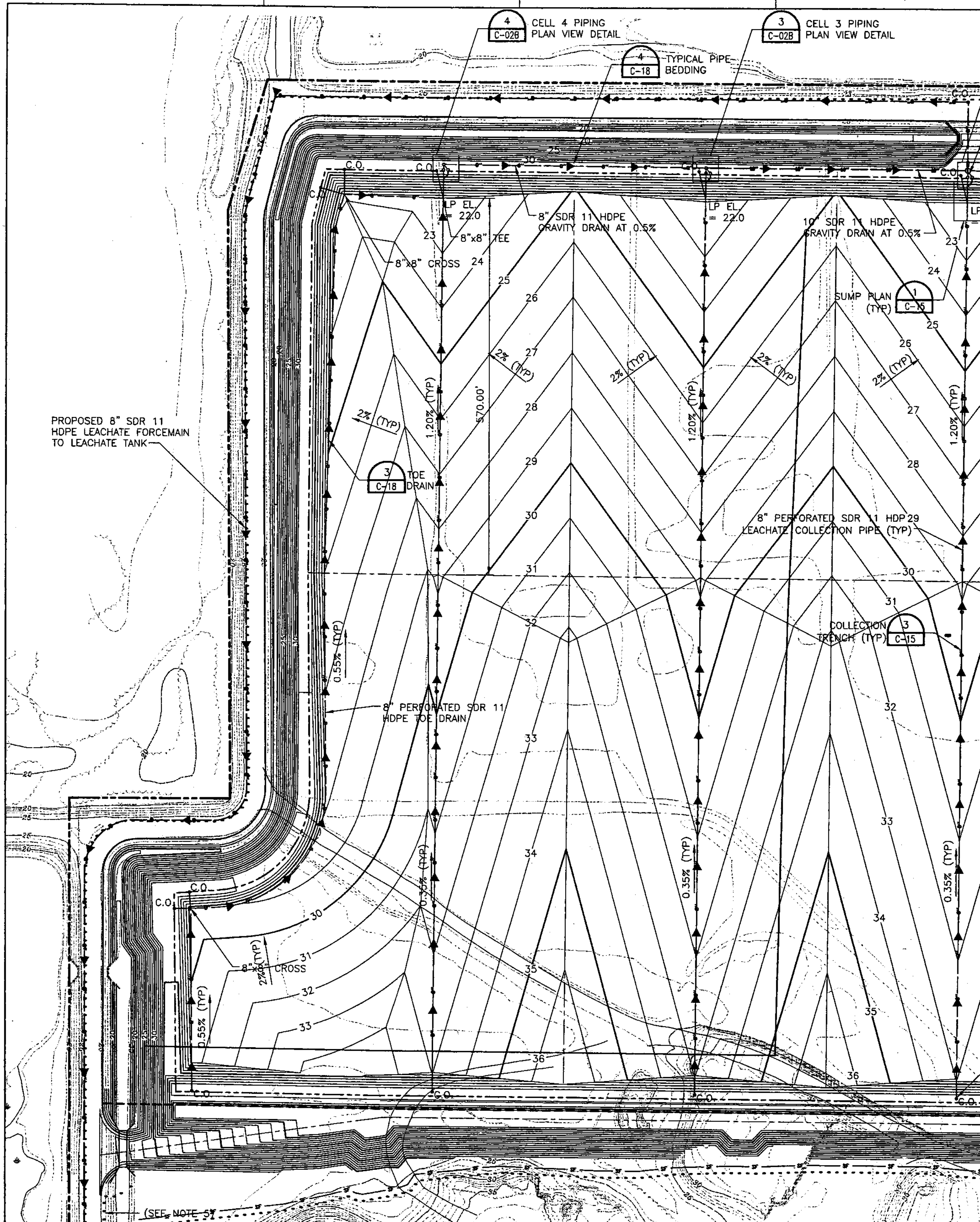
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

BASEGRADE PLAN
CELLS 1 AND 2 ONLY

0 1" 2"

FILENAME	00C-01A.dwg	SHEET
SCALE	1"=100'	C-01A



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D	01/2008	REVISED PER RAI #3
C	09/2007	REVISED PER RAI #2
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
	G.J. BLUE
PROJECT NUMBER	001916-43485-018

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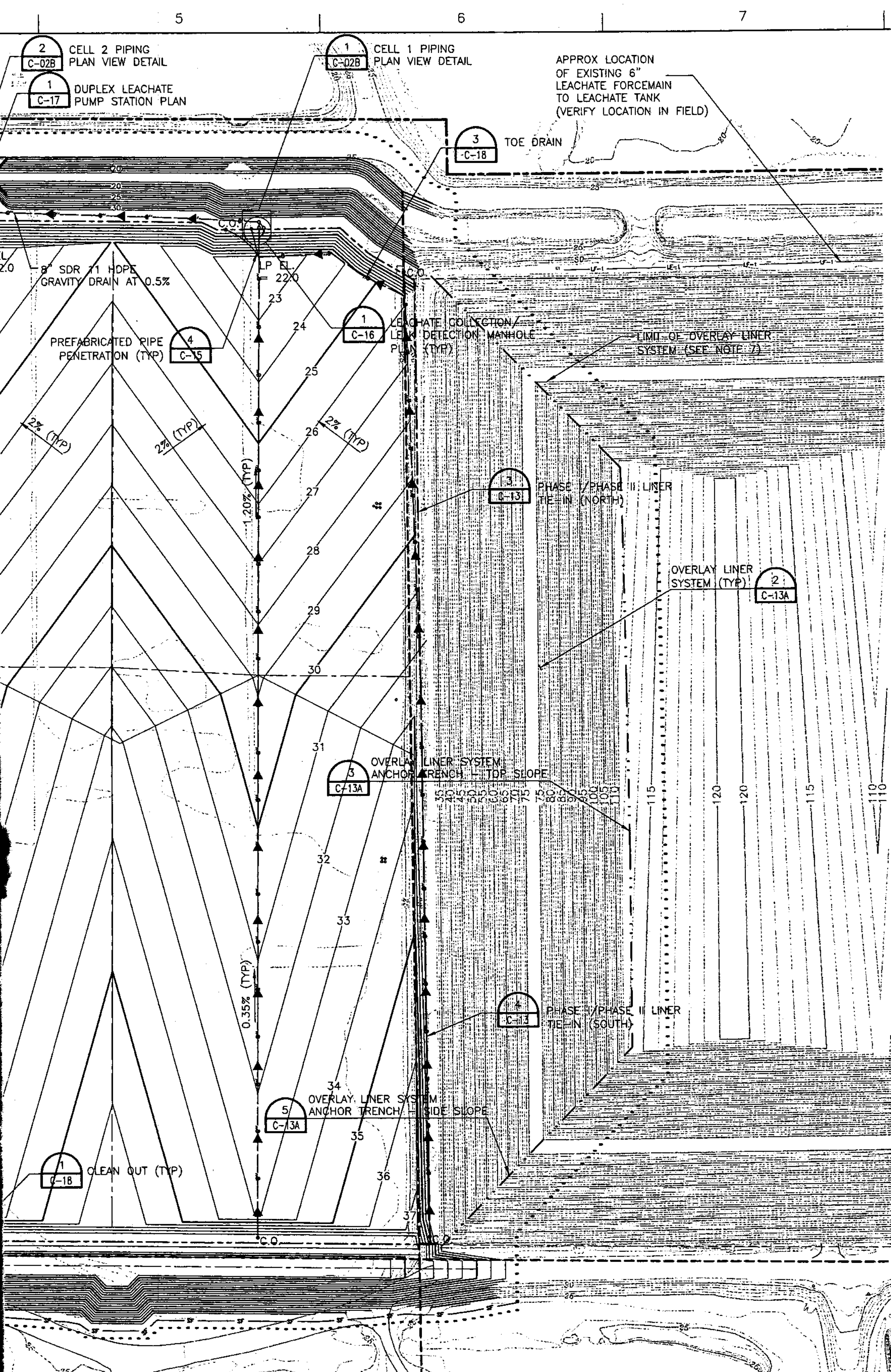

N

D

C

B

A

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LEGEND

- 80 EXISTING ELEVATION CONTOUR
- 30 PROPOSED ELEVATION CONTOUR
- SPECIAL EXCEPTION BOUNDARY
- LIMITS OF PROPOSED LINER
- APPROXIMATE LIMITS OF EXISTING LINER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- 8" PROPOSED DRAIN OR FORCEMAIN
- SF SILT FENCE
- LIMITS OF CONSTRUCTION
- LF-I EXISTING PHASE I LEACHATE FORCEMAIN
- VEGETATION
- HP HIGH POINT
- LP LOW POINT

FOR PERMITTING

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

03/13/08
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SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

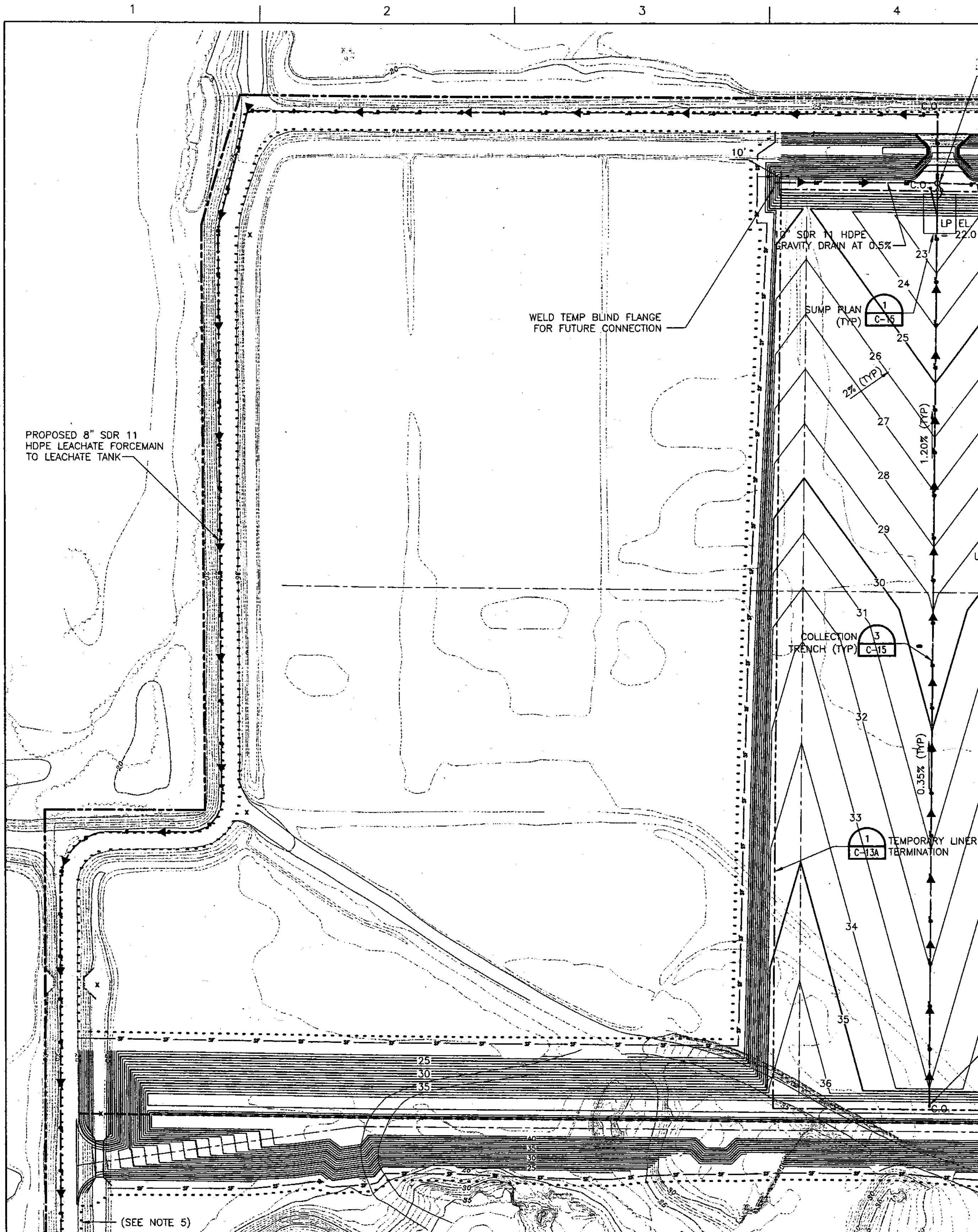
SARASOTA COUNTY FLORIDA

LEACHATE COLLECTION SYSTEM CELLS 1 - 4

0 1" 2"

FILENAME	00C-02.dwg
SCALE	1"=100'

SHEET **C-02**



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DRAWN BY	G.J. BLUE
PROJECT NUMBER	001916-43485-018

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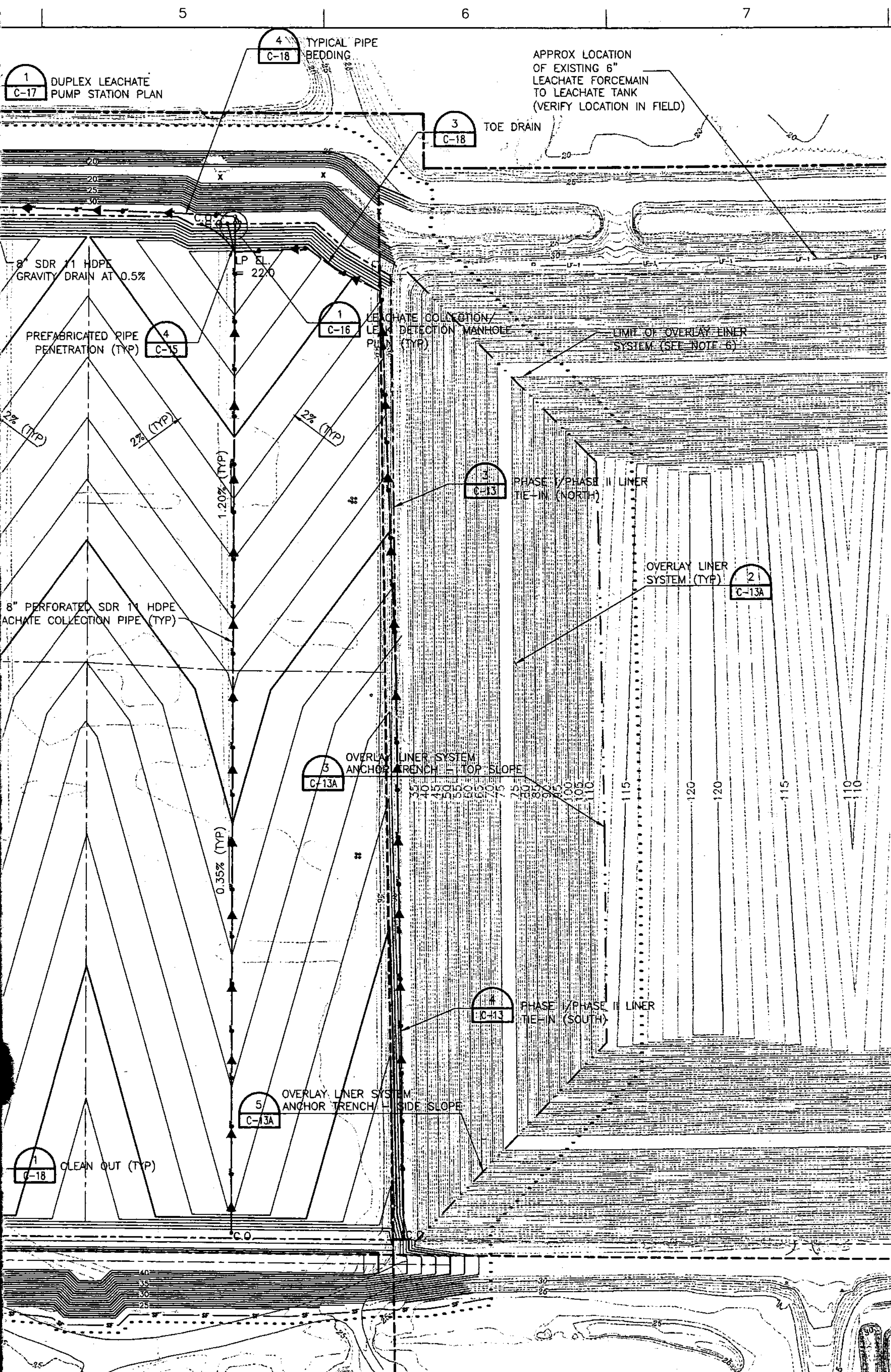

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LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- SPECIAL EXCEPTION BOUNDARY
- LIMITS OF PROPOSED LINER
- APPROXIMATE LIMITS OF EXISTING LINER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- 8" PROPOSED DRAIN OR FORCEMAIN
- SILT FENCE
- LIMITS OF CONSTRUCTION
- EXISTING PHASE I LEACHATE FORCEMAIN
- VEGETATION
- HP HIGH POINT
- LP LOW POINT

FOR PERMITTING

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MAR 19 2008
SOUTHWEST DISTRICT TAMPA

03/19/08
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SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

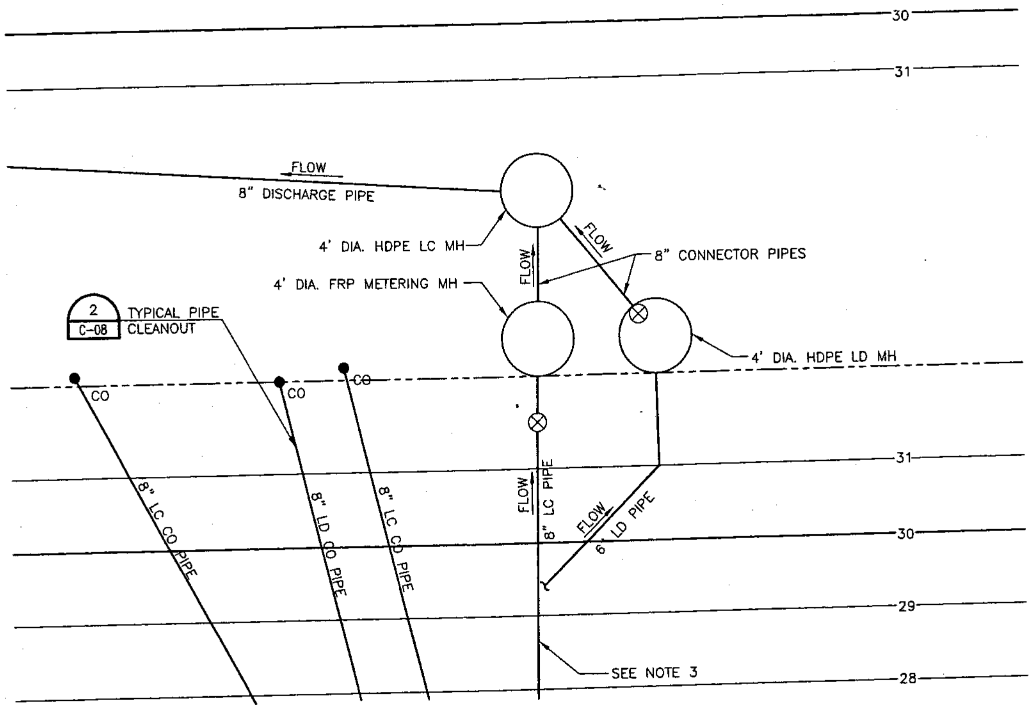
SARASOTA COUNTY FLORIDA

LEACHATE COLLECTION SYSTEM CELLS 1 AND 2 ONLY

0 1" 2"

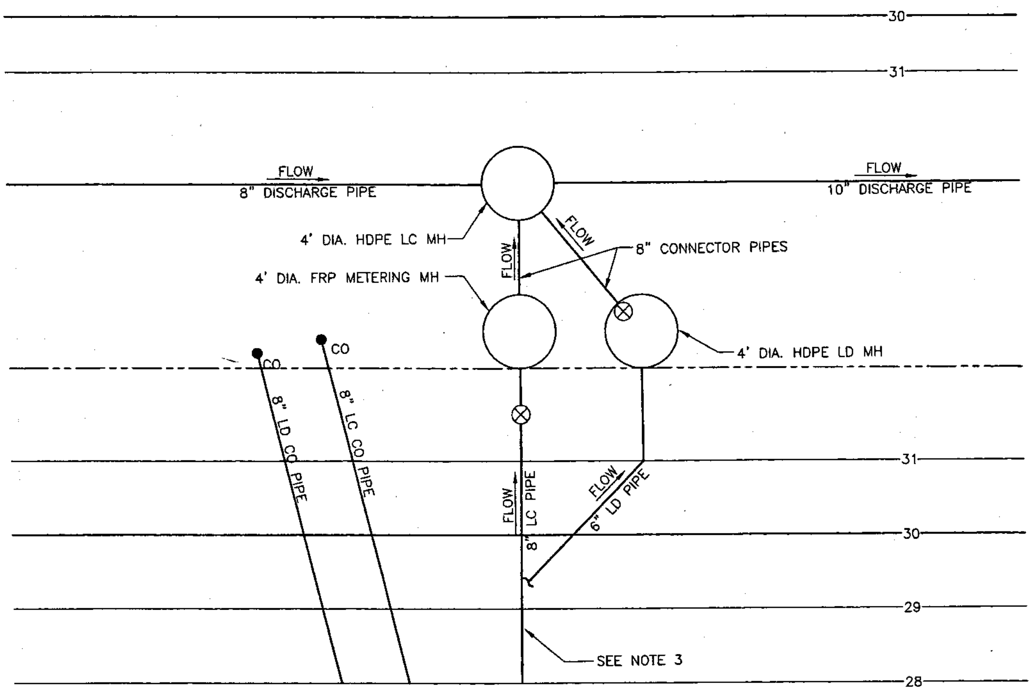
FILENAME	00C-02A.dwg
SCALE	1"=100'
SHEET	C-02A

1 2 3 4



CELL 1 PIPING PLAN VIEW DETAIL 1 C-02

1"=5'



CELL 3 PIPING PLAN VIEW DETAIL 3 C-02

1"=5'

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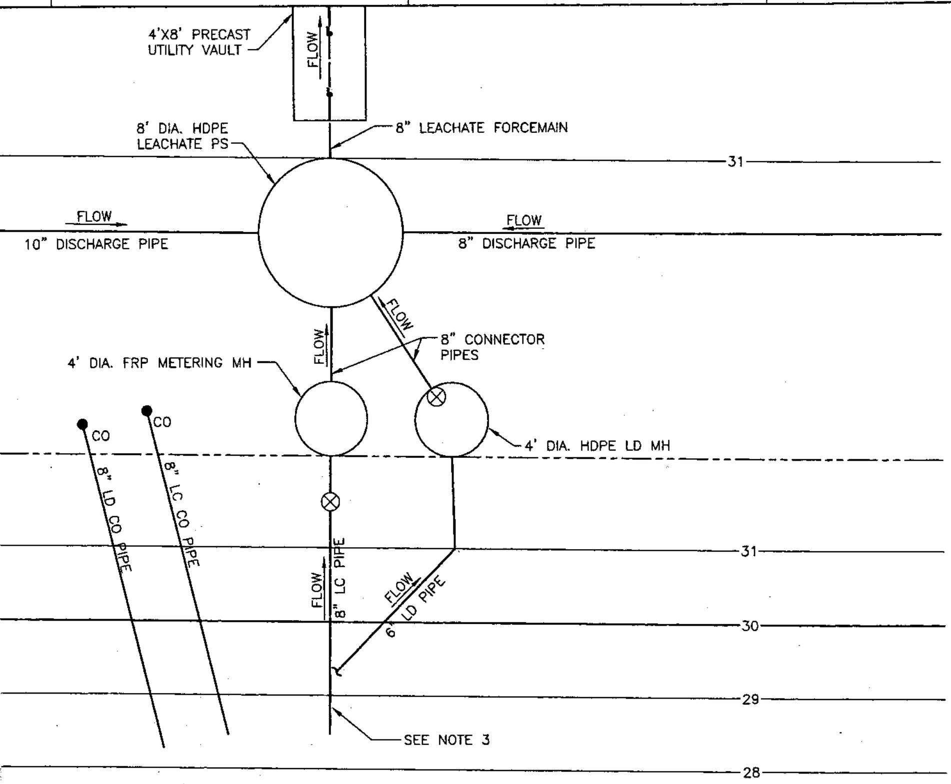
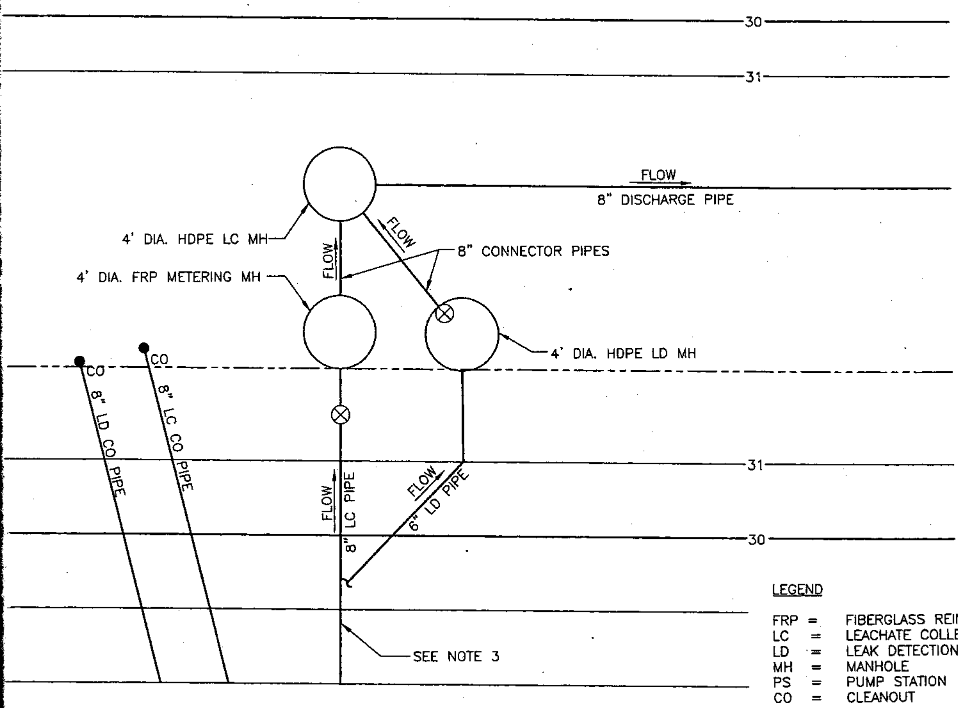
DRAWN BY	L.E. PATTERSON
	G.J. BLUE
PROJECT NUMBER	001916-43485-018

5 6 7 8



CELL 2 PIPING PLAN VIEW DETAIL (2 / C-02)

1"=5'



CELL 4 PIPING PLAN VIEW DETAIL (4 / C-02)

1"=5'

N

TABLE OF LEACHATE PIPING DESIGN ELEVATIONS (FT NGUD)
(ALL ELEVATIONS REFER TO PIPE INVERT)

CELL 1	
8" LC PIPE @ S. END OF CELL FLOOR	32.93
6" LD PIPE @ S. END OF CELL FLOOR	31.93
8" LC PIPE @ PIPE PENETRATION	22.00
6" LD PIPE @ PIPE PENETRATION	21.00
8" LC PIPE INTO METERING MH	21.82
8" CONNECTOR PIPE FROM METERING MH	21.78
8" CONNECTOR PIPE INTO LC MH FROM METERING MH	21.74
6" LD PIPE INTO LD MH	20.80
8" CONNECTOR PIPE FROM LD MH	15.80
8" CONNECTOR PIPE INTO LC MH FROM LD MH	15.40
8" LEACHATE DISCHARGE PIPE FROM LC MH	15.30
CELL 2	
8" LC PIPE @ S. END OF CELL FLOOR	32.98
6" LD PIPE @ S. END OF CELL FLOOR	31.98
8" LC PIPE @ PIPE PENETRATION	22.00
6" LD PIPE @ PIPE PENETRATION	21.00
8" LC PIPE INTO METERING MH	21.82
8" CONNECTOR PIPE FROM METERING MH	21.78
8" CONNECTOR PIPE INTO LEACHATE PS FROM METERING MH	21.74
6" LD PIPE INTO LD MH	20.80
8" CONNECTOR PIPE FROM LD MH	15.80
8" CONNECTOR PIPE INTO LEACHATE PS FROM LD MH	15.40
8" LEACHATE DISCHARGE PIPE FROM CELL 1 INTO LEACHATE PS	13.40
10" LEACHATE DISCHARGE PIPE FROM CELL 3 INTO LEACHATE PS	11.20
CELL 3	
8" LC PIPE @ S. END OF CELL FLOOR	32.98
6" LD PIPE @ S. END OF CELL FLOOR	31.98
8" LC PIPE @ PIPE PENETRATION	22.00
6" LD PIPE @ PIPE PENETRATION	21.00
8" LC PIPE INTO METERING MH	21.82
8" CONNECTOR PIPE FROM METERING MH	21.78
8" CONNECTOR PIPE INTO LC MH FROM METERING MH	21.74
6" LD PIPE INTO LD MH	20.80
8" CONNECTOR PIPE FROM LD MH	15.80
8" CONNECTOR PIPE INTO LC MH FROM LD MH	15.40
8" LEACHATE DISCHARGE PIPE FROM CELL 4 INTO LC MH	13.30
10" LEACHATE DISCHARGE PIPE FROM LC MH	13.20
CELL 4	
8" LC PIPE @ S. END OF CELL FLOOR	32.98
6" LD PIPE @ S. END OF CELL FLOOR	31.98
8" LC PIPE @ PIPE PENETRATION	22.00
6" LD PIPE @ PIPE PENETRATION	21.00
8" LC PIPE INTO METERING MH	21.82
8" CONNECTOR PIPE FROM METERING MH	21.78
8" CONNECTOR PIPE INTO LC MH FROM METERING MH	21.74
6" LD PIPE INTO LD MH	20.80
8" CONNECTOR PIPE FROM LD MH	15.80
8" CONNECTOR PIPE INTO LC MH FROM LD MH	15.40
8" LEACHATE DISCHARGE PIPE FROM LC MH	15.30

D C B A

NOTES:

1. SEE SHEETS C-15, C-16, C-16A, C-17, AND C-21 FOR ADDITIONAL PIPING DETAILS IN THESE AREAS.
2. ALL PIPE SHALL BE SDR 11 HDPE PIPE EXCEPT STUBOUTS FOR 4' DIA. FRP METERING MH WHICH SHALL BE SCH 40 PVC.
3. LEAK DETECTION PIPE CONTINUES BENEATH LEACHATE COLLECTION PIPE TO SUMP.
4. GRADES SHOWN ARE PRIOR TO THE PLACEMENT OF 2' OF PROTECTIVE COVER.

LEGEND

FRP = FIBERGLASS REINFORCED PLASTIC
LC = LEACHATE COLLECTION
LD = LEAK DETECTION
MH = MANHOLE
PS = PUMP STATION
CO = CLEANOUT
LIMITS OF PROPOSED LINER
8" PROPOSED DRAIN OR FORCEMAIN
⊗ GATE VALVE WITH EXTENSION

FOR PERMITTING

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

Thomas M. Yanoschak, P.E.
Certificate No. 44200
02/11/08

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

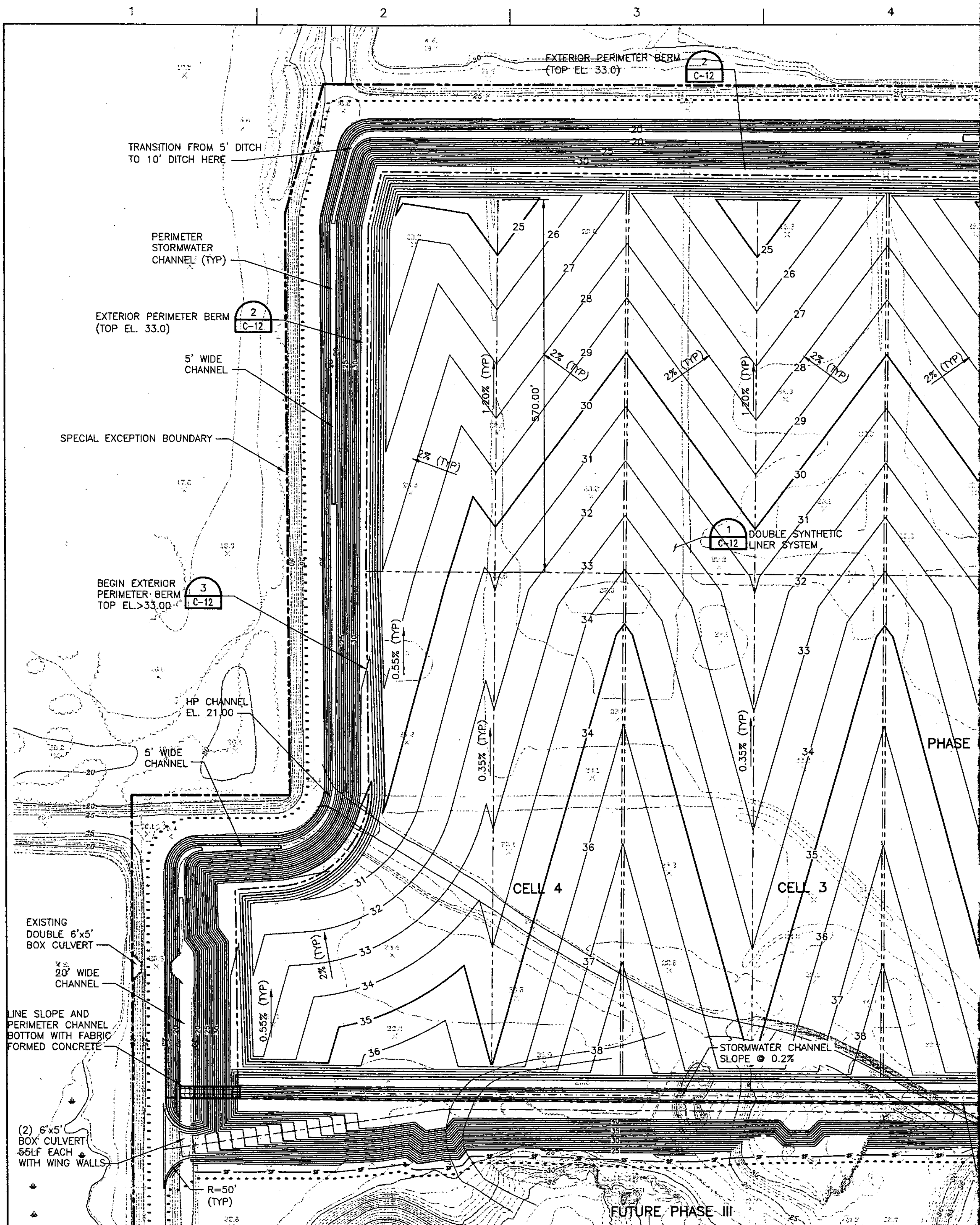
SARASOTA COUNTY FLORIDA

PIPING PLAN VIEW DETAIL

0 1" 2"

FILENAME	00C-02B.dwg
SCALE	1"=5'

SHEET
C-02B



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(813) 282-2300
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No. 00004213

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D	03/2008	REVISED PER RAI #4
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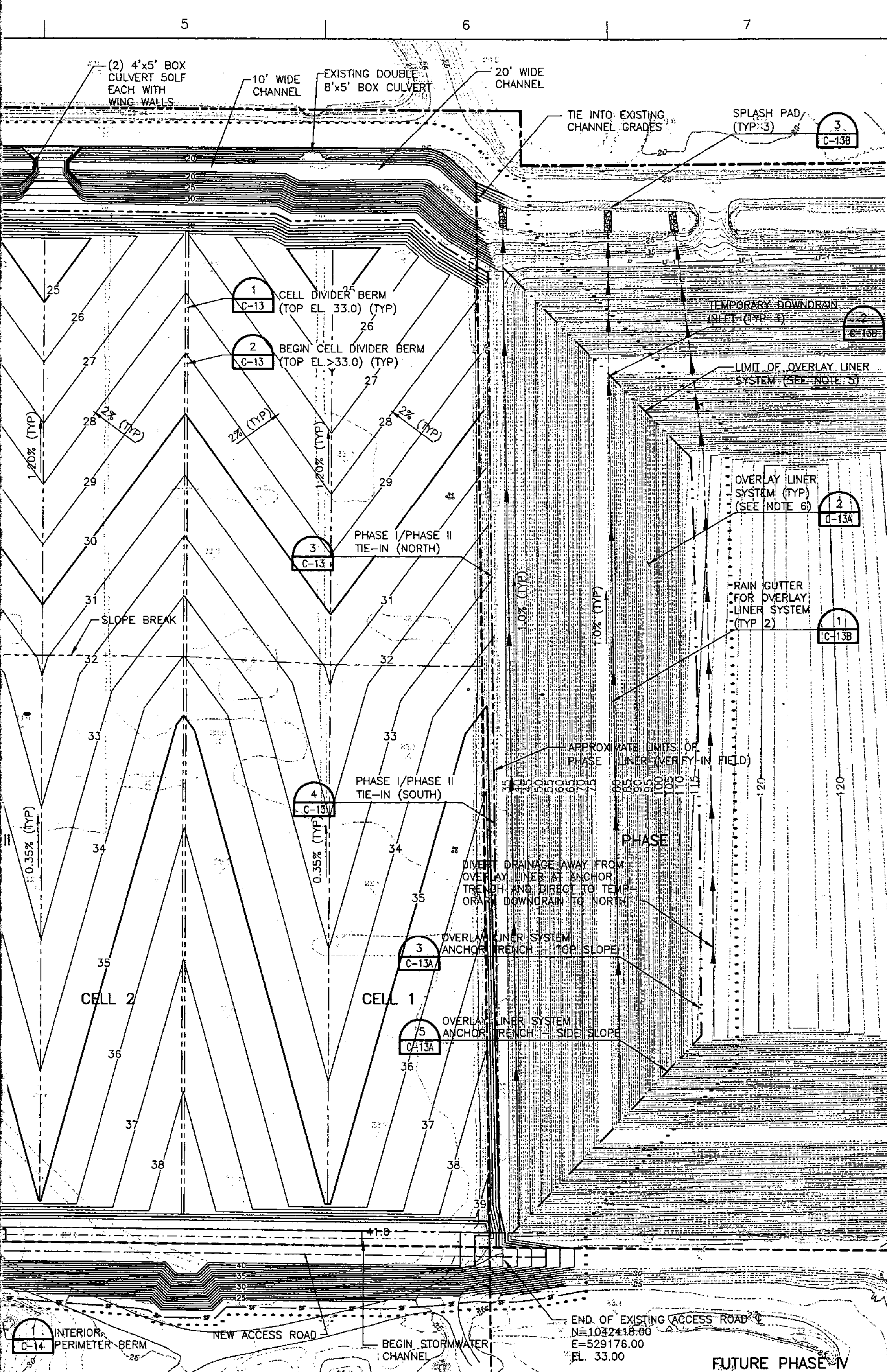
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
	G.J. BLUE
PROJECT NUMBER	001916-43485-018



NOTES:

1. SLOPE BOTTOM OF PERIMETER STORMWATER CHANNEL AT CONSTANT SLOPE BETWEEN SPOT ELEVATIONS.
2. CONTOURS WITHIN CELLS REPRESENT TOP OF 2' OF PROTECTIVE COVER. CONTOURS OUTSIDE OF CELL REPRESENT FINAL GRADE.
3. SEE DETAILS FOR GRADING AND DIMENSIONS OF ANCHOR TRENCH.
4. ALL CELLS ARE SHOWN FOR ILLUSTRATIVE PURPOSES. CELLS 1 AND 2 WILL BE CONSTRUCTED BEFORE CELLS 3 AND 4.
5. LIMITS OF OVERLAY LINER SYSTEM SHOWN REPRESENT MAXIMUM EXTENT OF LINER SYSTEM. OWNER MAY ELECT TO INSTALL OVERLAY LINER SYSTEM IN STAGES BASED ON THE EXTENT OF THE WEST SIDE OF PHASE I THAT IS FILLED TO FINAL GRADE. SEE DETAIL 4, SHEET C-13A FOR TEMPORARY OVERLAY LINER SYSTEM TERMINATION.
6. GRADES IN PHASE I/PHASE II OVERLAY AREA REPRESENT 2' OF PROTECTIVE COVER PLACED OVER MAXIMUM EXTENT OF OVERLAY LINER SYSTEM. OWNER MAY ELECT TO INSTALL PROTECTIVE COVER IN STAGES BASED ON OPERATIONAL REQUIREMENTS.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- SPECIAL EXCEPTION BOUNDARY
- LIMITS OF PROPOSED LINER
- APPROXIMATE LIMITS OF EXISTING LINER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- CELL DIVIDER BERM
- SILT FENCE
- LIMITS OF CONSTRUCTION
- VEGETATION
- HP HIGH POINT
- LP LOW POINT
- TEMPORARY 24" DIA CPP DOWNDRAIN
- TEMPORARY RAIN COVER DRAINAGE GUTTER

FOR PERMITTING

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

Thomas M. Yanoschak, P.E.
Certificate No. 44200
03/18/08

SARASOTA COUNTY

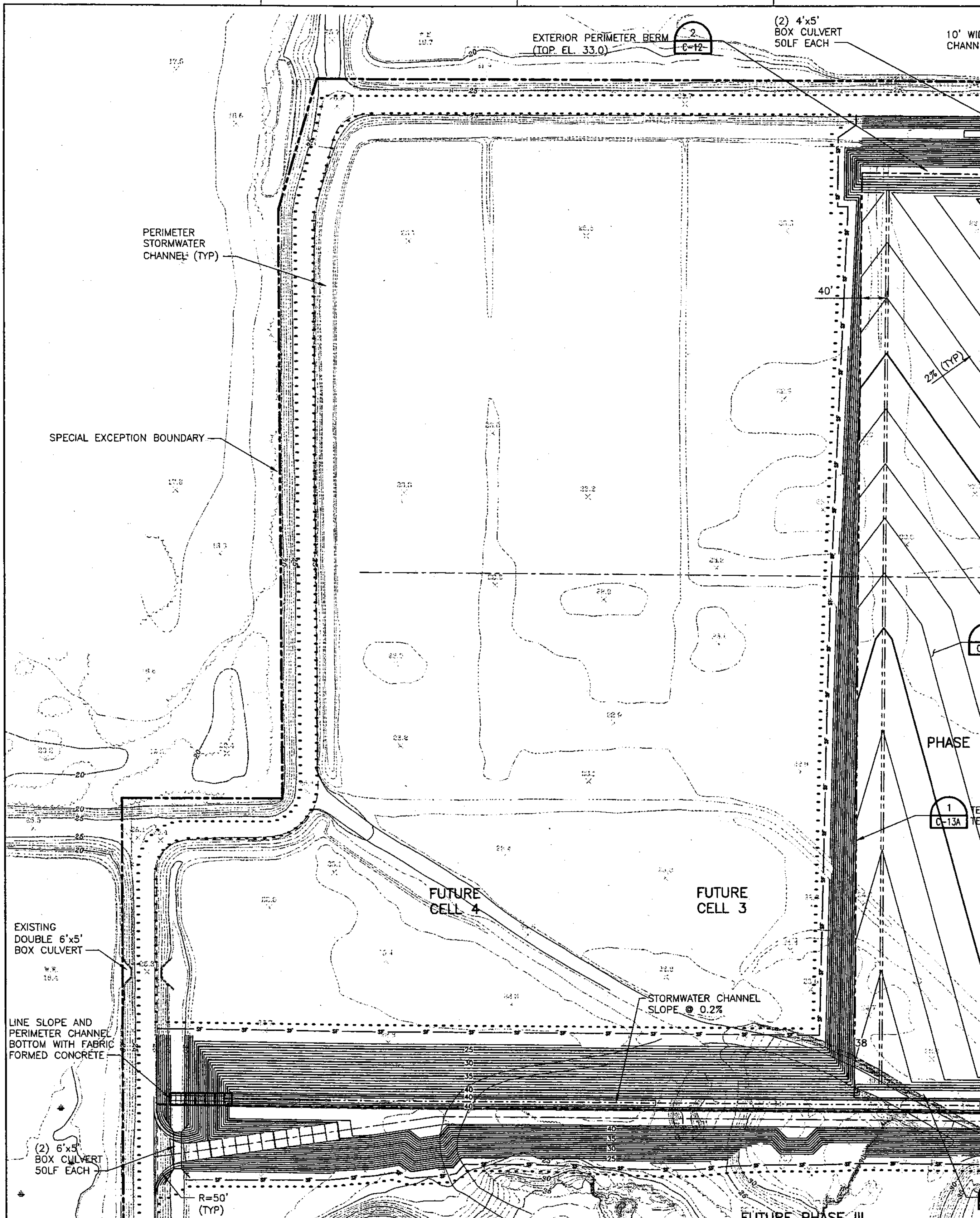
Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

TOP OF PROTECTIVE COVER CELLS 1 - 4

FILENAME	00C-03.dwg
SCALE	1"=100'
SHEET	C-03



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A	06/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	G.J. BLUE
PROJECT NUMBER	001916-43485-018

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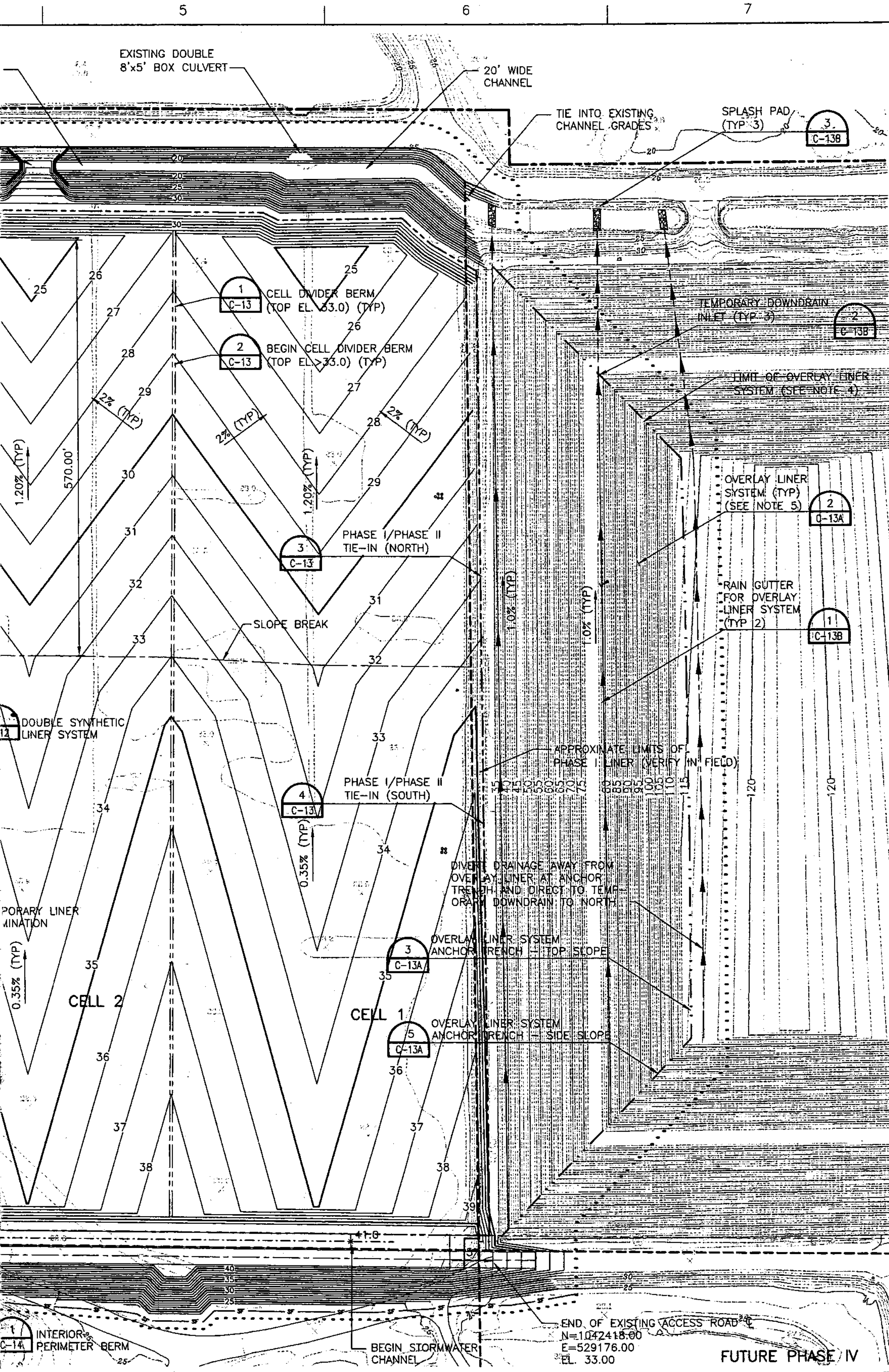


NOTES:

1. SLOPE BOTTOM OF PERIMETER STORMWATER CHANNEL AT CONSTANT SLOPE BETWEEN SPOT ELEVATIONS.
2. CONTOURS WITHIN CELLS REPRESENT TOP OF 2' OF PROTECTIVE COVER. CONTOURS OUTSIDE OF CELL REPRESENT FINAL GRADE.
3. SEE DETAILS FOR GRADING AND DIMENSIONS OF ANCHOR TRENCH.
4. LIMITS OF OVERLAY LINER SYSTEM SHOWN REPRESENT MAXIMUM EXTENT OF LINER SYSTEM. OWNER MAY ELECT TO INSTALL OVERLAY LINER SYSTEM IN STAGES BASED ON THE EXTENT OF THE WEST SIDE OF PHASE I THAT IS FILLED TO FINAL GRADE. SEE DETAIL 4, SHEET C-13A FOR TEMPORARY OVERLAY LINER SYSTEM TERMINATION.
5. GRADES IN PHASE I/PHASE II OVERLAY AREA REPRESENT 2' OF PROTECTIVE COVER PLACED OVER MAXIMUM EXTENT OF OVERLAY LINER SYSTEM. OWNER MAY ELECT TO INSTALL PROTECTIVE COVER IN STAGES BASED ON OPERATIONAL REQUIREMENTS.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- SPECIAL EXCEPTION BOUNDARY
- LIMITS OF PROPOSED LINER
- APPROXIMATE LIMITS OF EXISTING LINER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- CELL DIVIDER BERM
- SILT FENCE
- LIMITS OF CONSTRUCTION
- VEGETATION
- HP HIGH POINT
- LP LOW POINT
- TEMPORARY 24" DIA CPP DOWNDRAIN
- TEMPORARY RAIN COVER DRAINAGE GUTTER

FOR PERMITTING

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

03/19/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

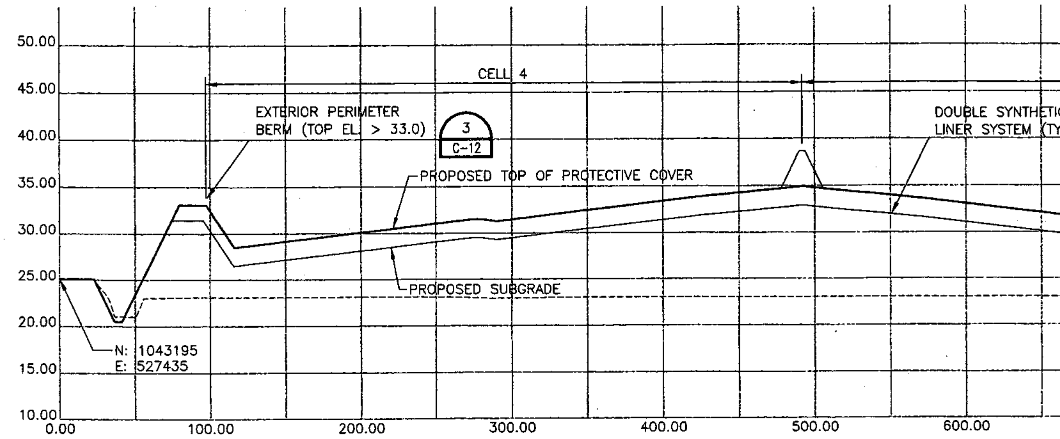
SARASOTA COUNTY FLORIDA

TOP OF PROTECTIVE COVER CELLS 1 AND 2 ONLY

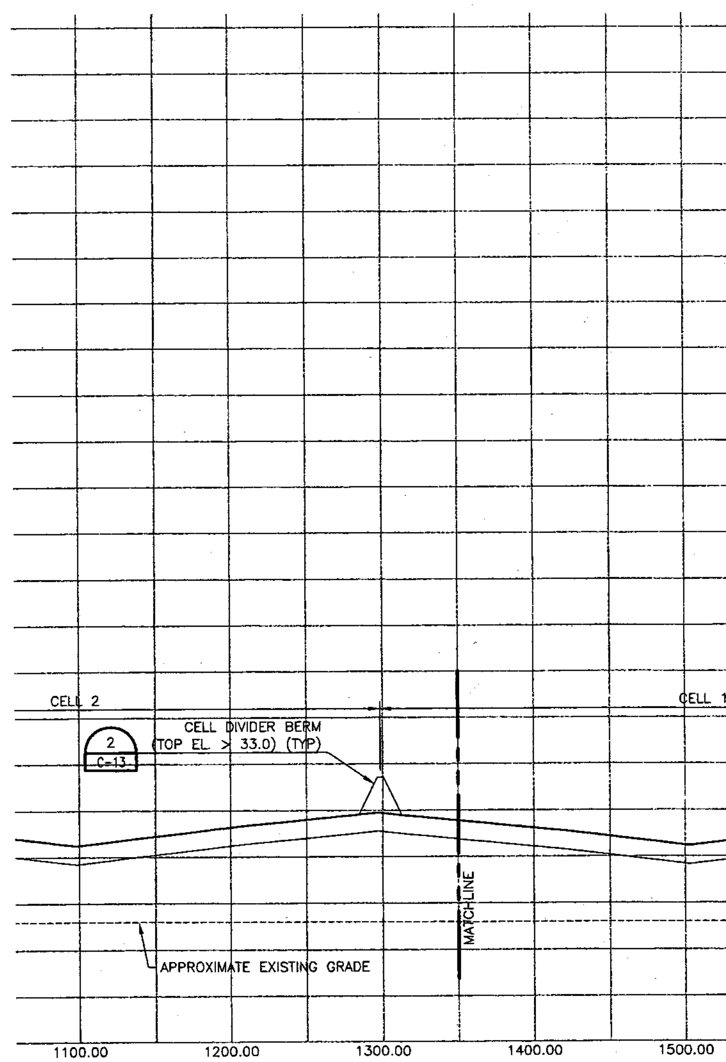
0 1" 2"

FILENAME	00C-03A.dwg	SHEET
SCALE	1"=100'	C-03A

1 2 3 4



SECTION
HORIZ. 1"=60' VERT. 1"=10'



SECTION
HORIZ. 1"=60' VERT. 1"=10'

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PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
	G.J. BLUE
PROJECT NUMBER	000000000043485

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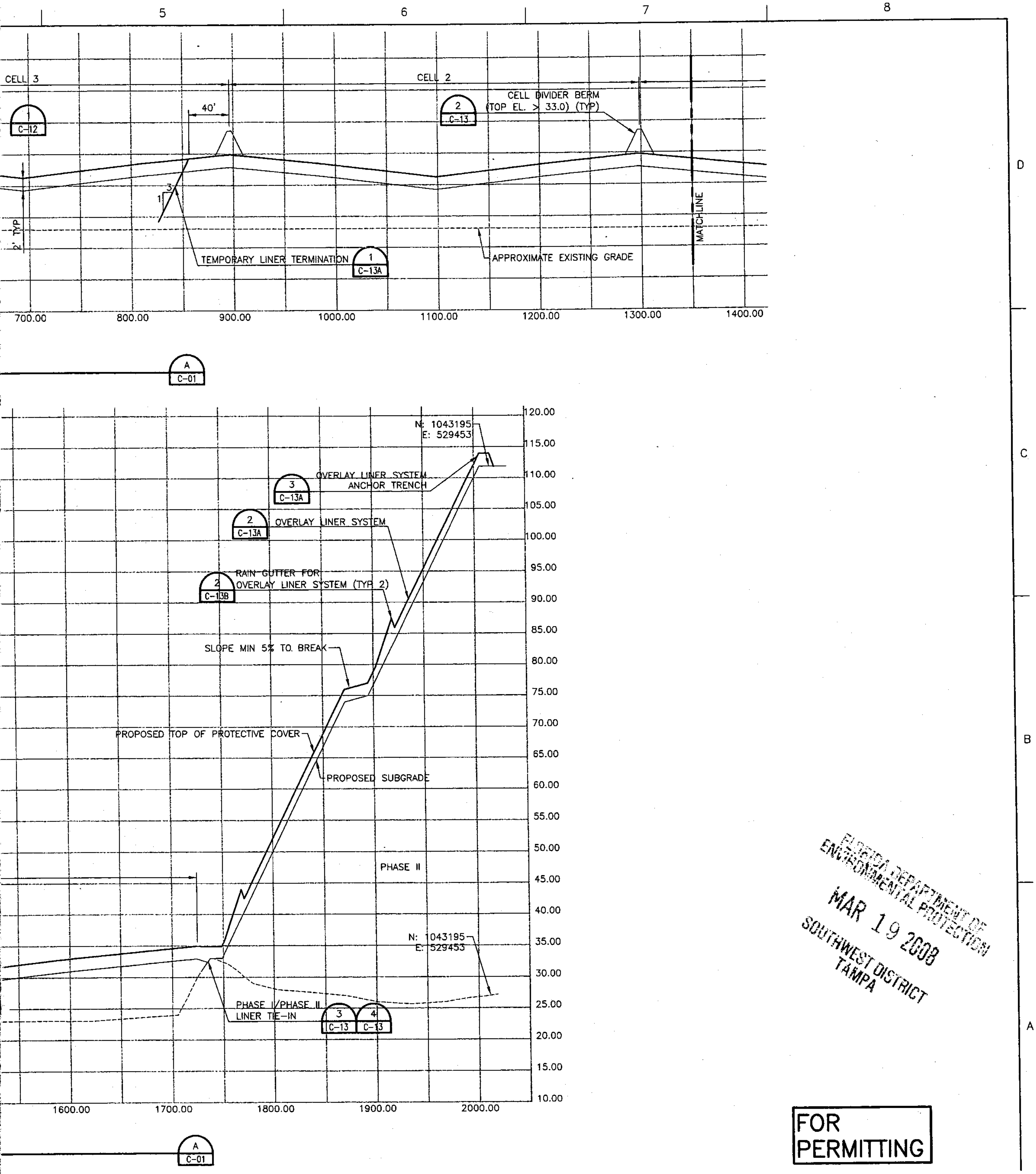


FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT
TAMPA

FOR PERMITTING

03/18/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

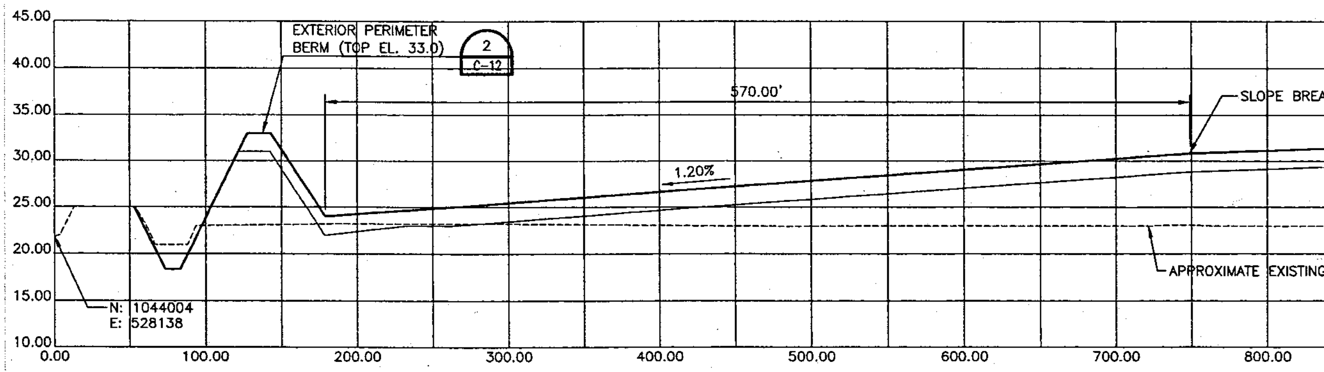
PHASE II SECTIONS

0 1" 2"

FILENAME	00C-05.dwg
SCALE	AS SHOWN

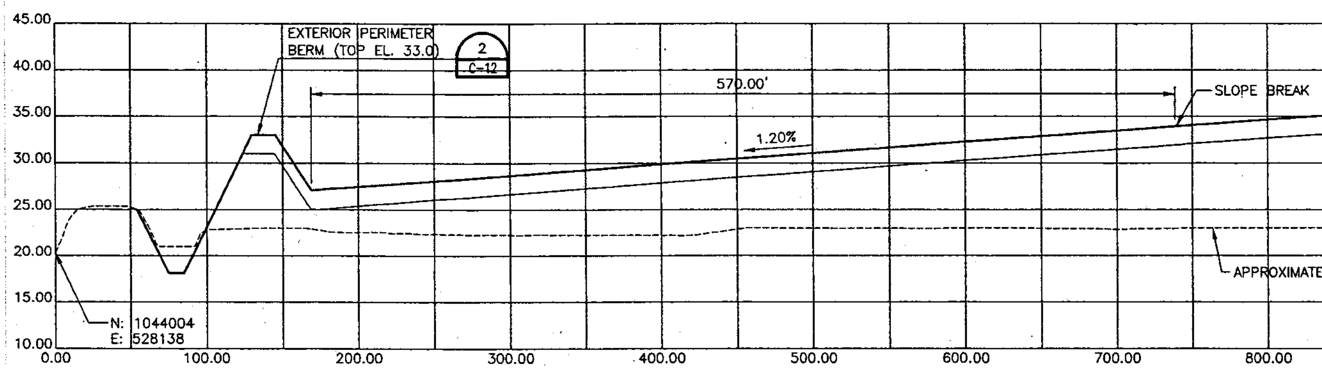
SHEET **C-05**

1	2	3	4



SECTION

HORIZ. 1"=60' VERT. 1"=10'



SECTION

HORIZ. 1"=60' VERT. 1"=10'

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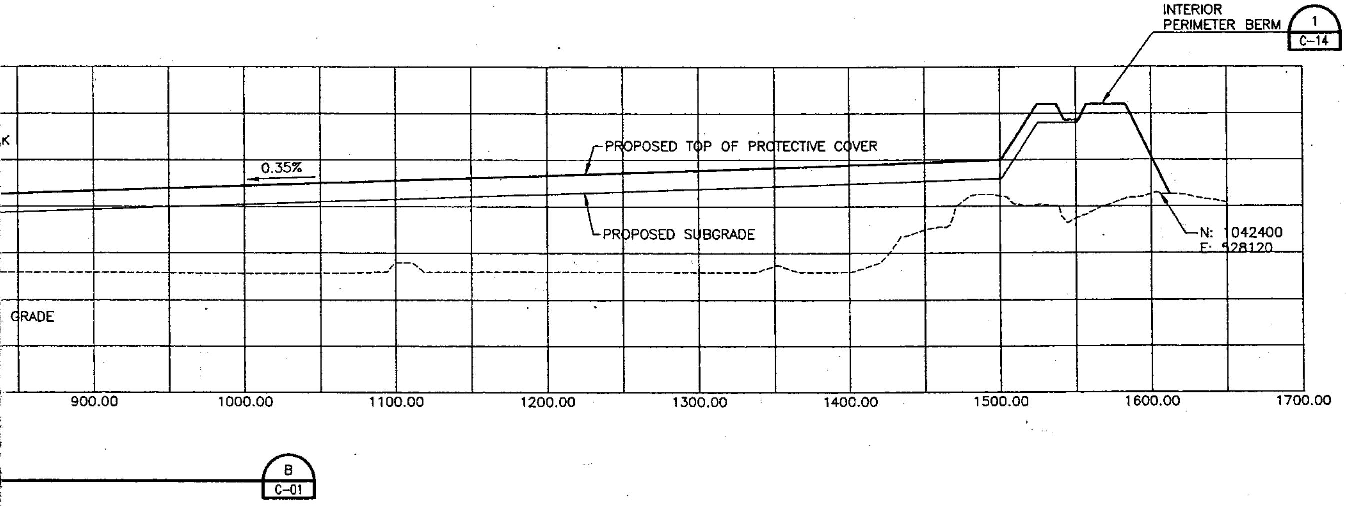
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
	G.J. BLUE
PROJECT NUMBER	000000000043485

5 6 7 8

D



C

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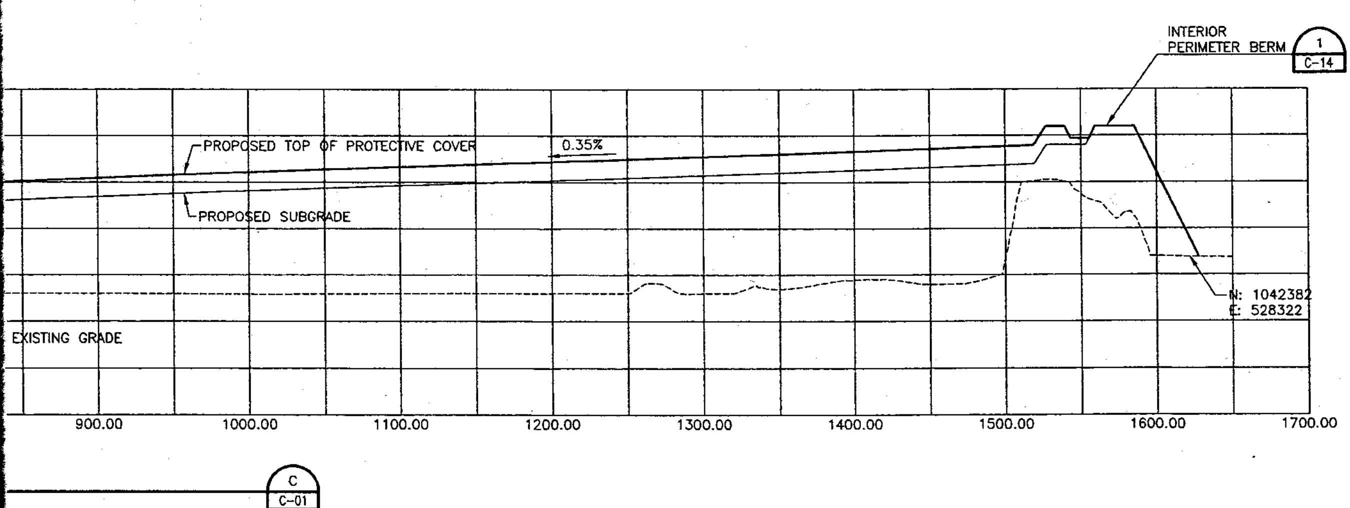

A

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

PHASE II SECTIONS

0 1" 2"

FILENAME	00C-05A.dwg
SCALE	AS SHOWN

SHEET
C-05A

1	2	3	4

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PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
PROJECT NUMBER	000000000043485

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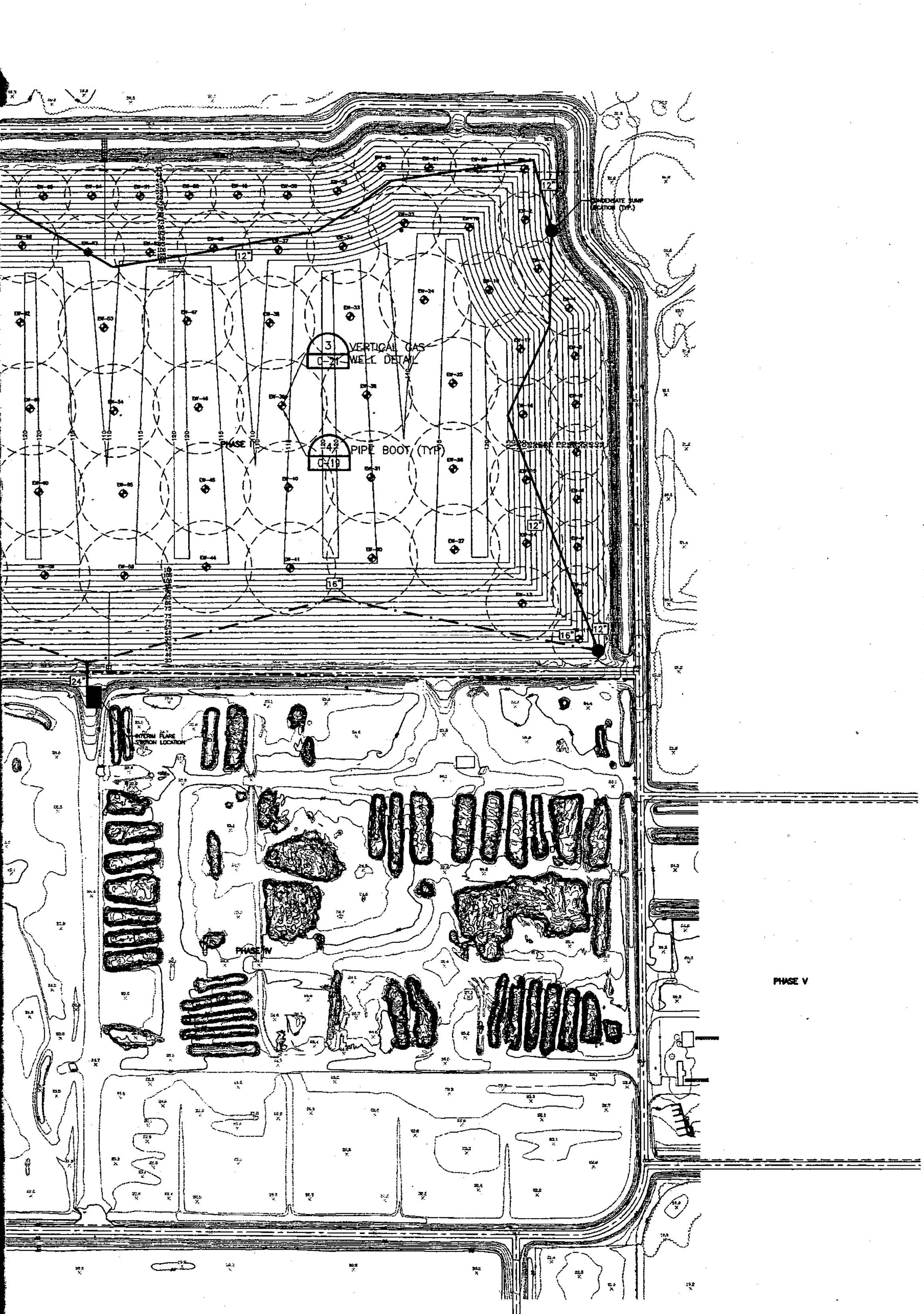


NOTES:

1. CONTOURS WITHIN PHASES I AND II REPRESENT TOP OF FINAL COVER EXCEPT FOR THE SOUTH SLOPES WHICH REPRESENT TOP OF INTERMEDIATE COVER.
2. MINIMUM OF 5% SLOPE HAS BEEN USED IN THE HEADER LAYOUT.
3. GAS WELL LOCATIONS ON SOUTH SLOPES OF PHASES I AND II REPRESENT INTERIM CONDITIONS PRIOR TO THE CONSTRUCTION AND OPERATION OF PHASE III AND IV.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- PERMANENT LANDFILL GAS HEADER
- INTERIM LANDFILL GAS HEADER
- 12" PROPOSED LANDFILL GAS HEADER DIAMETER
- PHASE LIMITS
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- VEGETATION
- HP HIGH POINT
- LP LOW POINT
- EW PROPOSED LANDFILL GAS EXTRACTION WELL LOCATION
- ESTIMATED RADIUS OF INFLUENCE FOR PROPOSED LANDFILL GAS EXTRACTION WELLS

FOR PERMITTING

Thomas M. Yanoschak P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION

PERMIT DRAWINGS

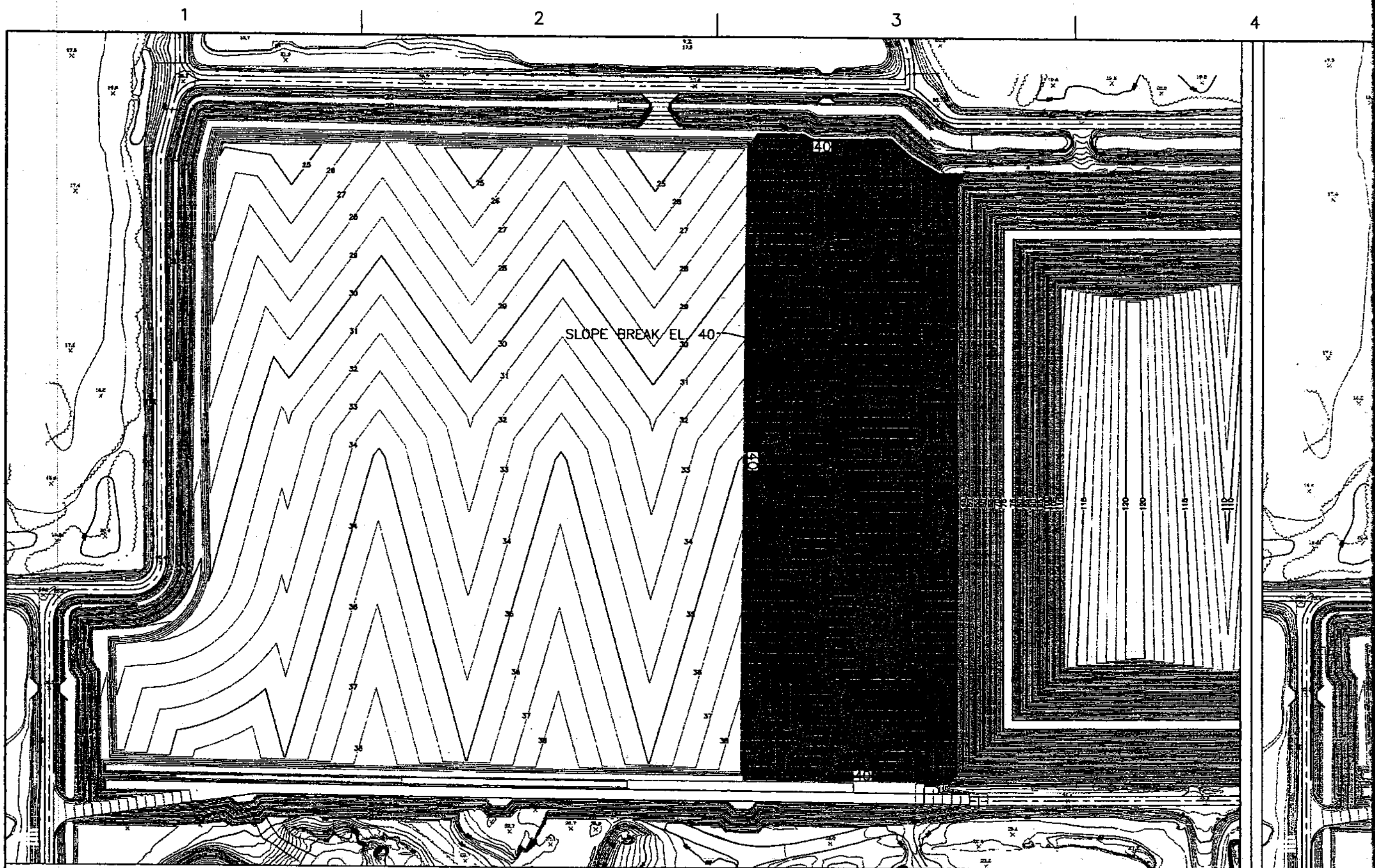
SARASOTA COUNTY FLORIDA

CONCEPTUAL GAS MANAGEMENT PLAN

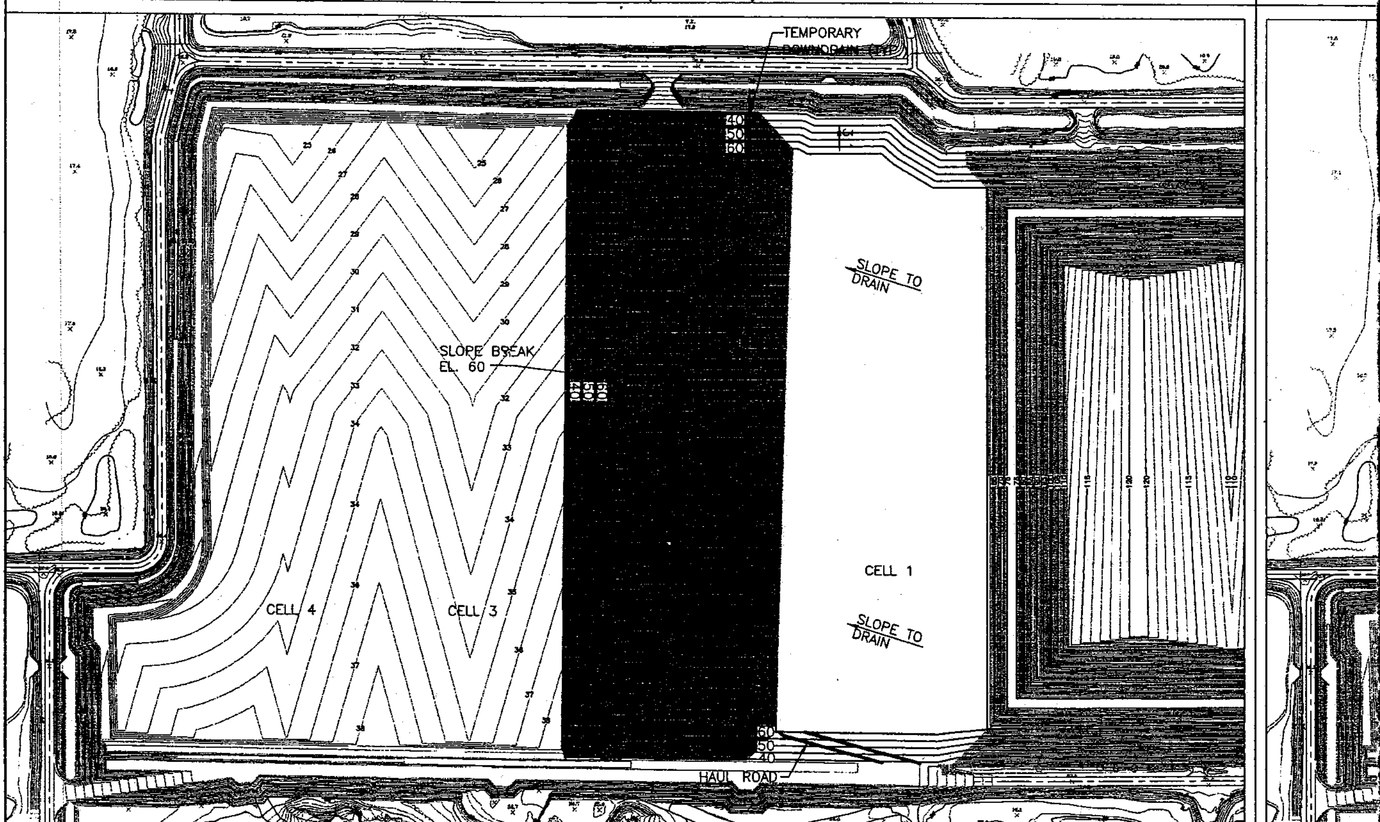
0 1" 2"

FILENAME	00C-06.dwg
SCALE	1"=200'

SHEET C-06



CELL 1 LIFT 1 (MAY 2010)



CELL 2 LIFT 3 (MAY 2012)

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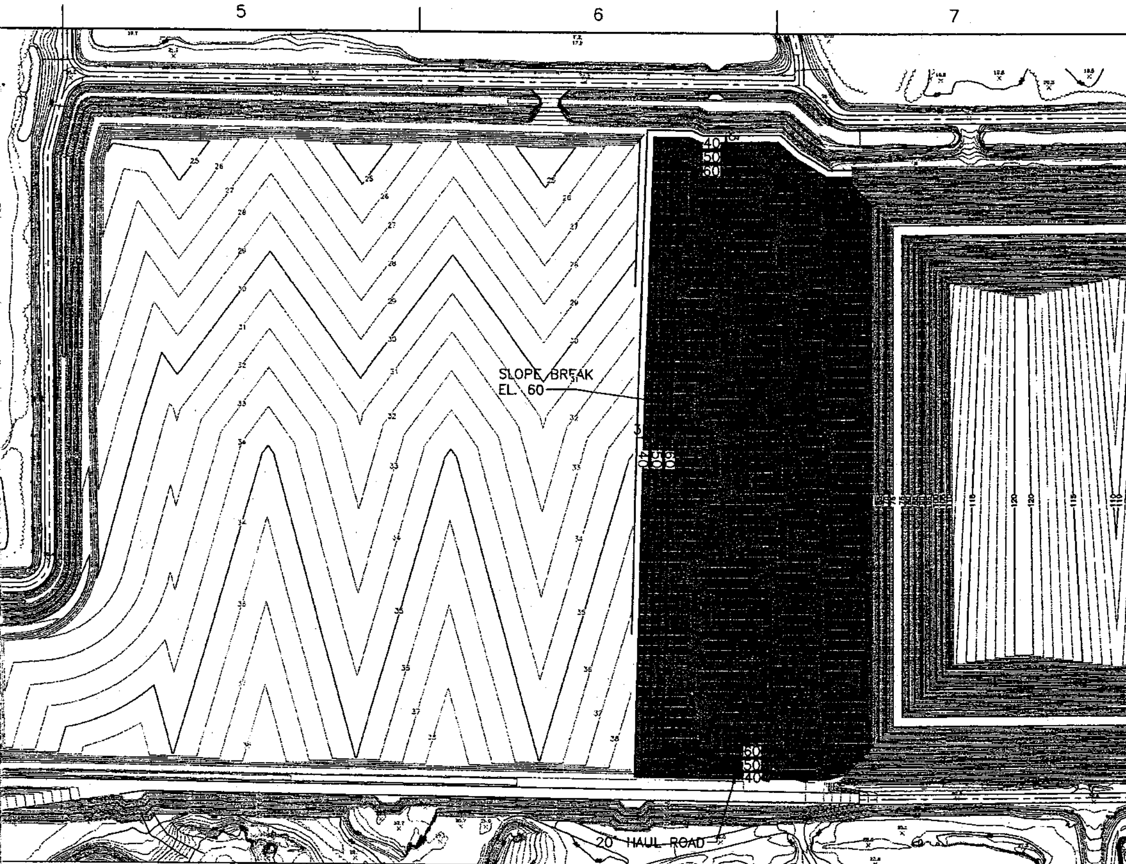
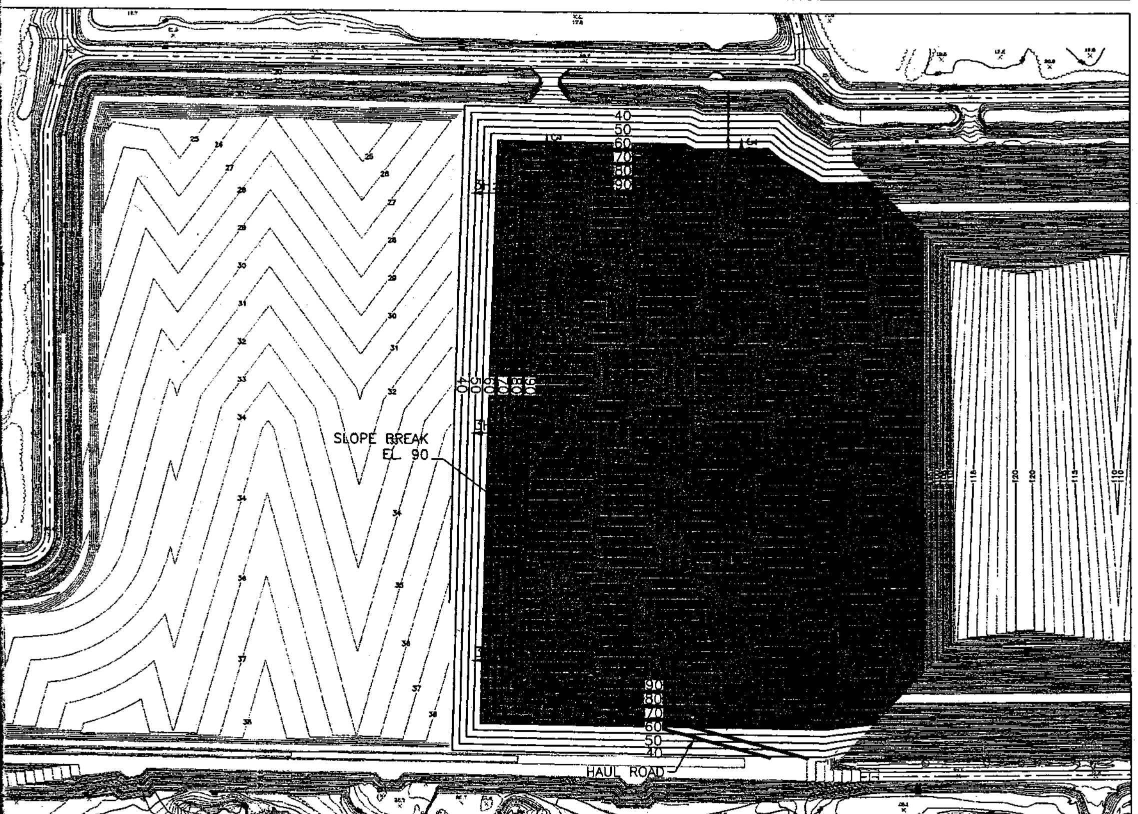
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
	G.J. BLUE
PROJECT NUMBER	000000000043485



CELL 1 LIFT 3 (MARCH 2011)



CELLS 1&2 LIFT 6 (MAY 2014)

NOTES:

1. CONTOURS WITHIN UNFILLED CELLS REPRESENT TOP OF PROTECTIVE COVER.
2. TYPICAL LIFT THICKNESS IS 10 FEET. EACH LIFT WILL TYPICALLY PROGRESS FROM SOUTH TO NORTH.
3. ALL STORMWATER THAT COMES IN CONTACT WITH WASTE WILL BE HANDLED AS LEACHATE AND WILL BE DIRECTED TO THE LEACHATE COLLECTION SYSTEM.
4. STORMWATER RUNOFF FROM PORTIONS OF LANDFILL WITH DAILY AND INTERMEDIATE COVER WILL BE DIRECTED TO PERIMETER DRAINAGE CHANNEL.
5. DATES SHOWN REPRESENT ESTIMATED DATE STAGE WILL BE FILLED ASSUMING ALL CLASS I WASTE RECEIVED WILL BE DISPOSED IN PHASE II BEGINNING IN JANUARY 2010 WITH AN AVERAGE IN-PLACE WASTE DENSITY OF 1,400 LBS/CY AND A PER CAPITA GENERATION RATE OF 0.723 TONS/YEAR.
6. ALL CELLS ARE SHOWN FOR ILLUSTRATIVE PURPOSES. CELLS 1 AND 2 WILL BE CONSTRUCTED BEFORE CELLS 3 AND 4.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- CELL WASTE FILLING
- VEGETATION
- TEMPORARY DRAINAGE SWALE
- TEMPORARY RIDGE LINE
- TEMPORARY DOWNDRAIN

INCREMENTAL VOLUME

CELL 1	LIFT 1 –	205,244 CU. YDS.
CELL 1	LIFT 3 –	429,736 CU. YDS.
CELL 2	LIFT 3 –	586,374 CU. YDS.
CELLS 1&2	LIFT 6 –	1,093,701 CU. YDS.

TOTAL VOLUME

2,315,055 CU. YDS.

FOR PERMITTING

Thomas M. Yanoschak
01/11/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

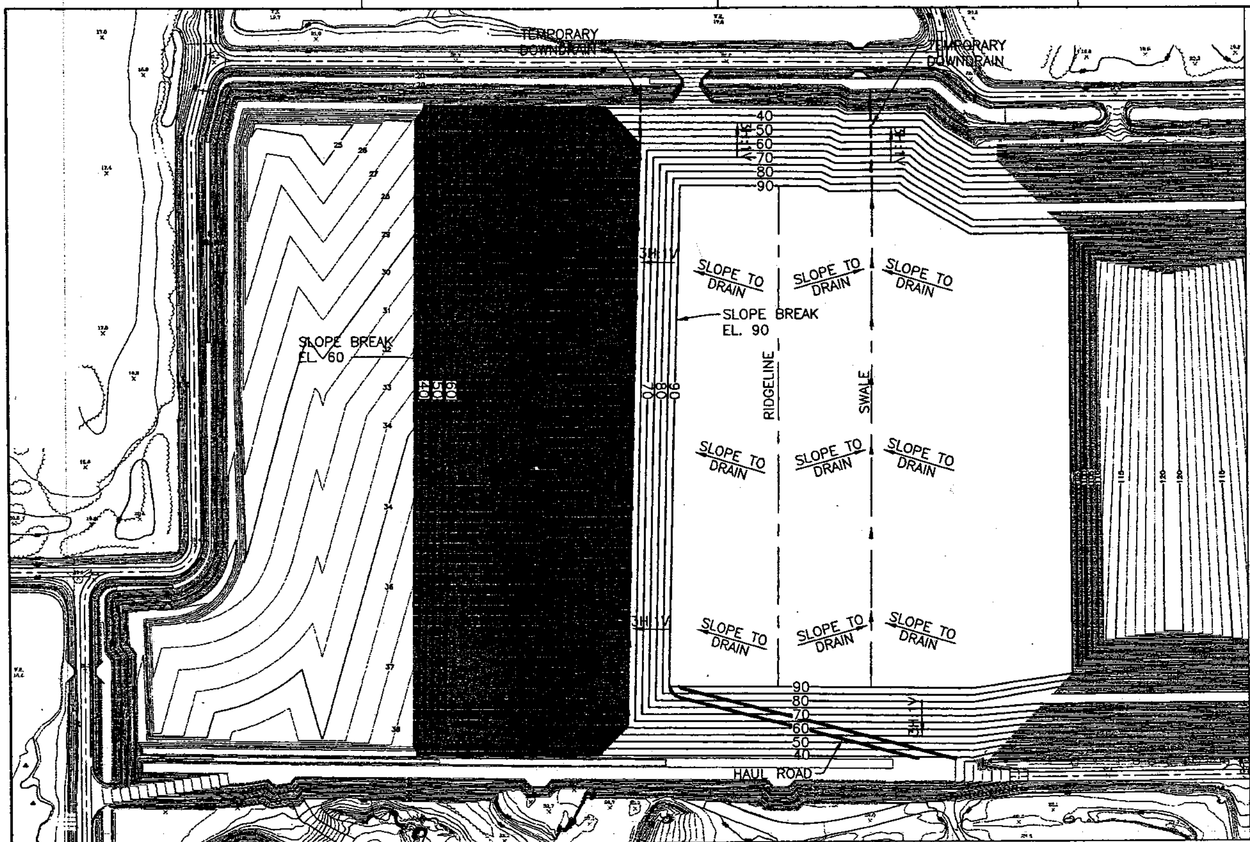
SARASOTA COUNTY FLORIDA

LANDFILL STAGING PLAN

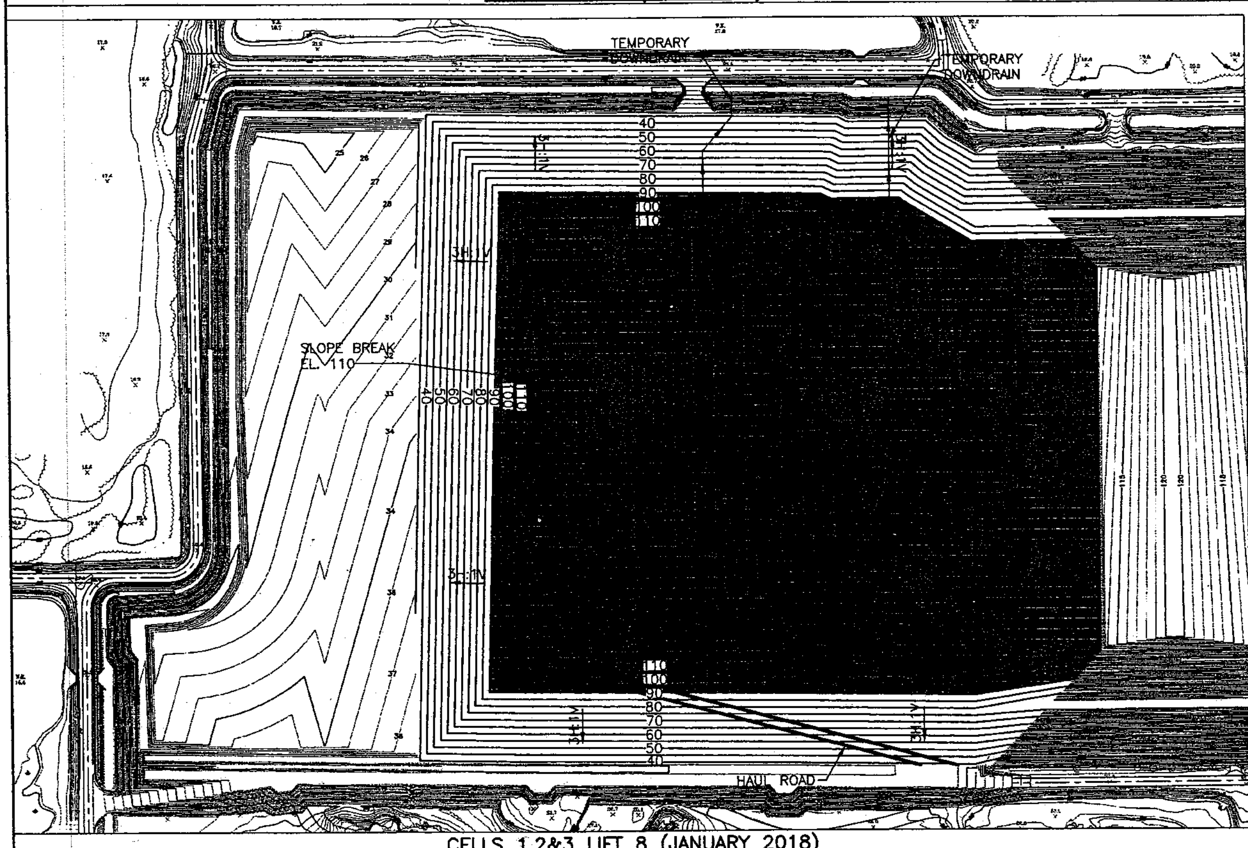
0 1" 2"

FILENAME 00C–07.dwg
SCALE 1"=200'
SHEET C-07

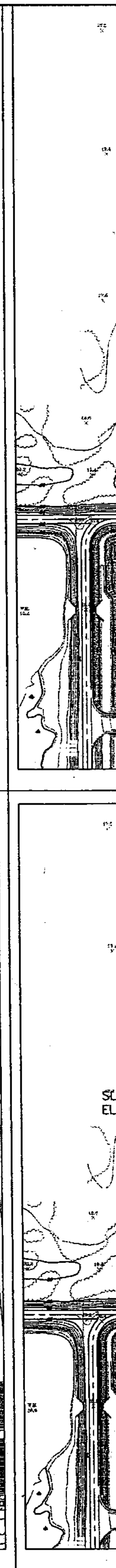
1	2	3	4



CELL 3 LIFT 3 (JUNE 2015)



CELLS 1,2&3 LIFT 8 (JANUARY 2018)



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ISSUE	DATE	DESCRIPTION
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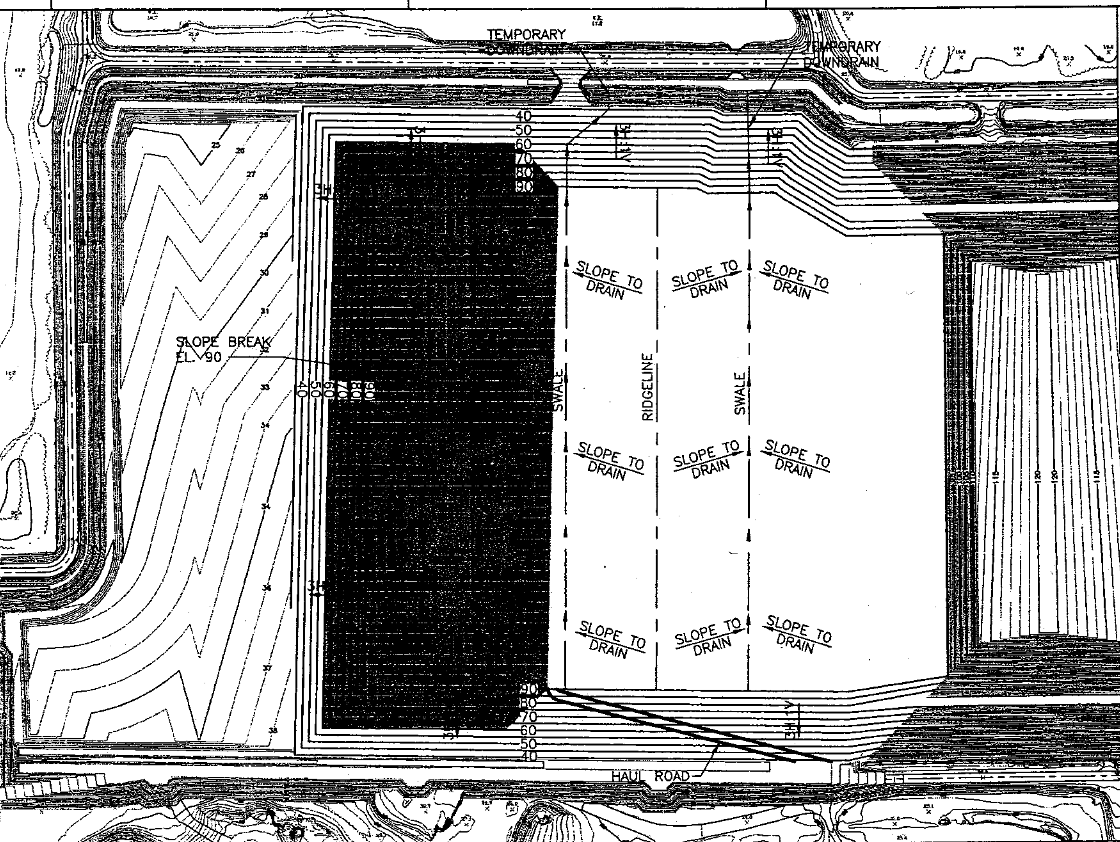
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
	G.J. BLUE
PROJECT NUMBER	000000000043485

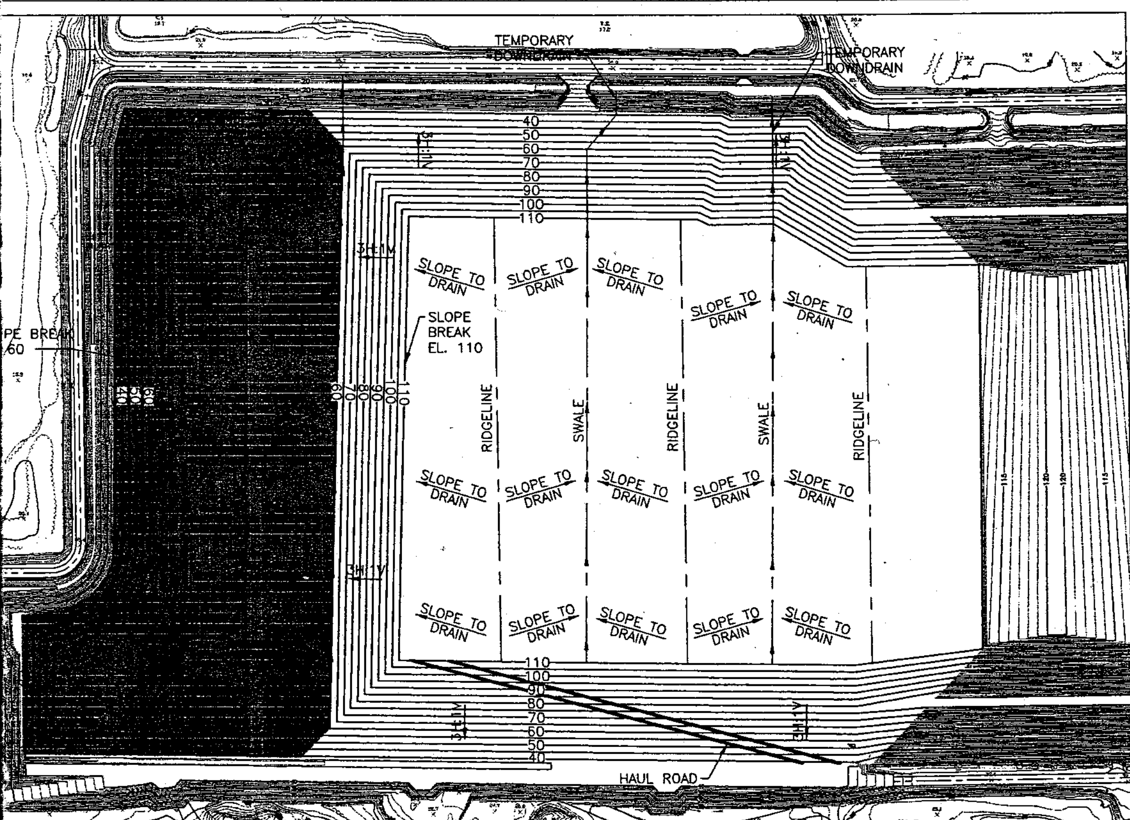
5	6	7	8



CELL 3 LIFT 6 (MAY 2016)

NOTES:

1. CONTOURS WITHIN UNFILLED CELLS REPRESENT TOP OF PROTECTIVE COVER.
2. TYPICAL LIFT THICKNESS IS 10 FEET. EACH LIFT WILL TYPICALLY PROGRESS FROM SOUTH TO NORTH.
3. ALL STORMWATER THAT COMES IN CONTACT WITH WASTE WILL BE HANDLED AS LEACHATE AND WILL BE DIRECTED TO THE LEACHATE COLLECTION SYSTEM.
4. STORMWATER RUNOFF FROM PORTIONS OF LANDFILL WITH DAILY AND INTERMEDIATE COVER WILL BE DIRECTED TO PERIMETER DRAINAGE CHANNEL.
5. DATES SHOWN REPRESENT ESTIMATED DATE STAGE WILL BE FILLED ASSUMING ALL CLASS I WASTE RECEIVED WILL BE DISPOSED IN PHASE II BEGINNING IN JANUARY 2010 WITH AN AVERAGE IN-PLACE WASTE DENSITY OF 1,400 LBS/CY AND A PER CAPITA GENERATION RATE OF 0.723 TONS/YEAR.
6. ALL CELLS ARE SHOWN FOR ILLUSTRATIVE PURPOSES. CELLS 1 AND 2 WILL BE CONSTRUCTED BEFORE CELLS 3 AND 4.



CELL 4 LIFT 3 (MARCH 2019)

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- CELL WASTE FILLING
- VEGETATION
- TEMPORARY DRAINAGE SWALE
- TEMPORARY RIDGE LINE
- TEMPORARY DOWNDRAIN

INCREMENTAL VOLUME

CELL 3	LIFT 3 – 588,614 CU. YDS.	
CELL 3	LIFT 6 – 526,600. CU. YDS.	
CELLS 1,2,3	LIFT 8 – 937,066 CU. YDS.	
CELL 4	LIFT 3 – 663,924 CU. YDS.	

TOTAL VOLUME AREA RECEIVING FINAL COVER

5,031,259 CU. YDS.

FOR PERMITTING

Thomas M. Yonesehak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

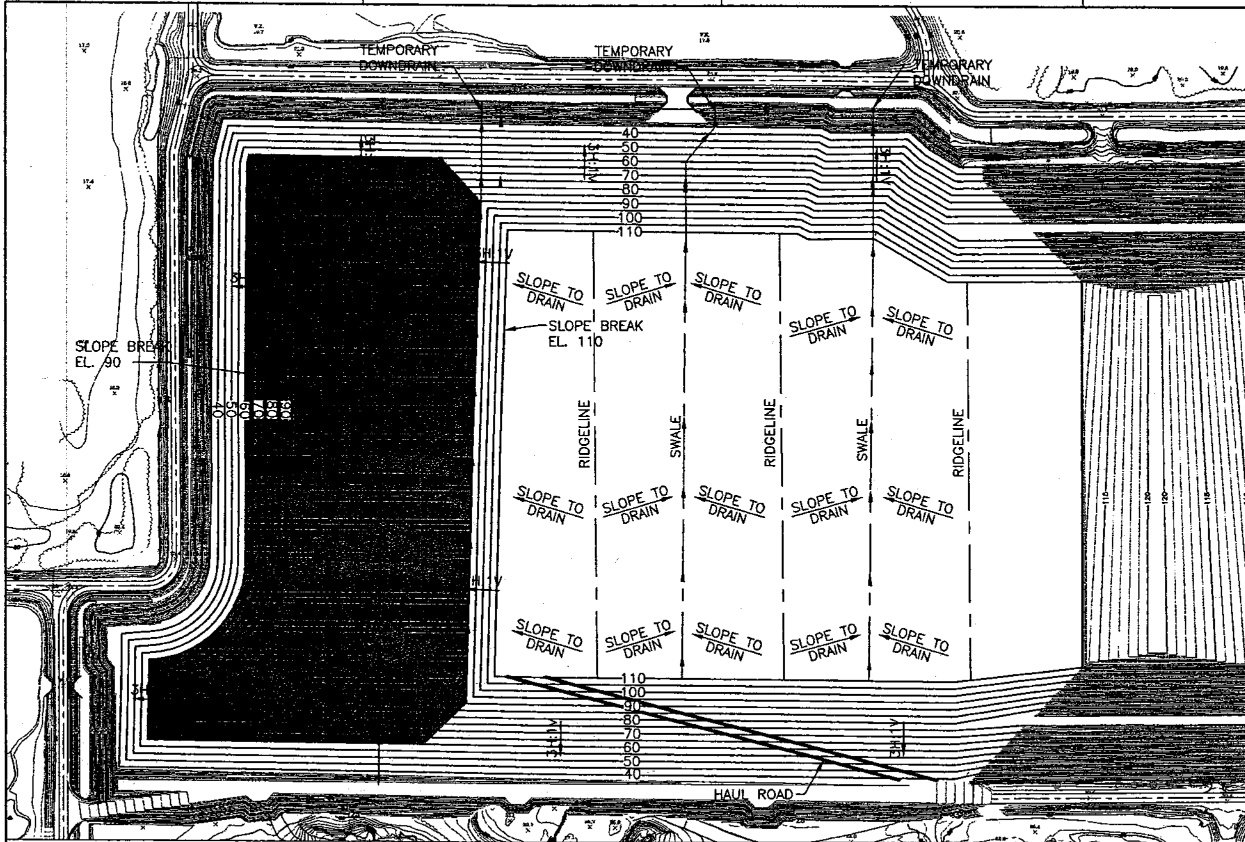
LANDFILL STAGING PLAN

0 1" 2"

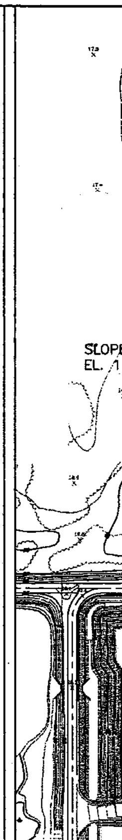
FILENAME	00C–08.dwg
SCALE	1"=200'

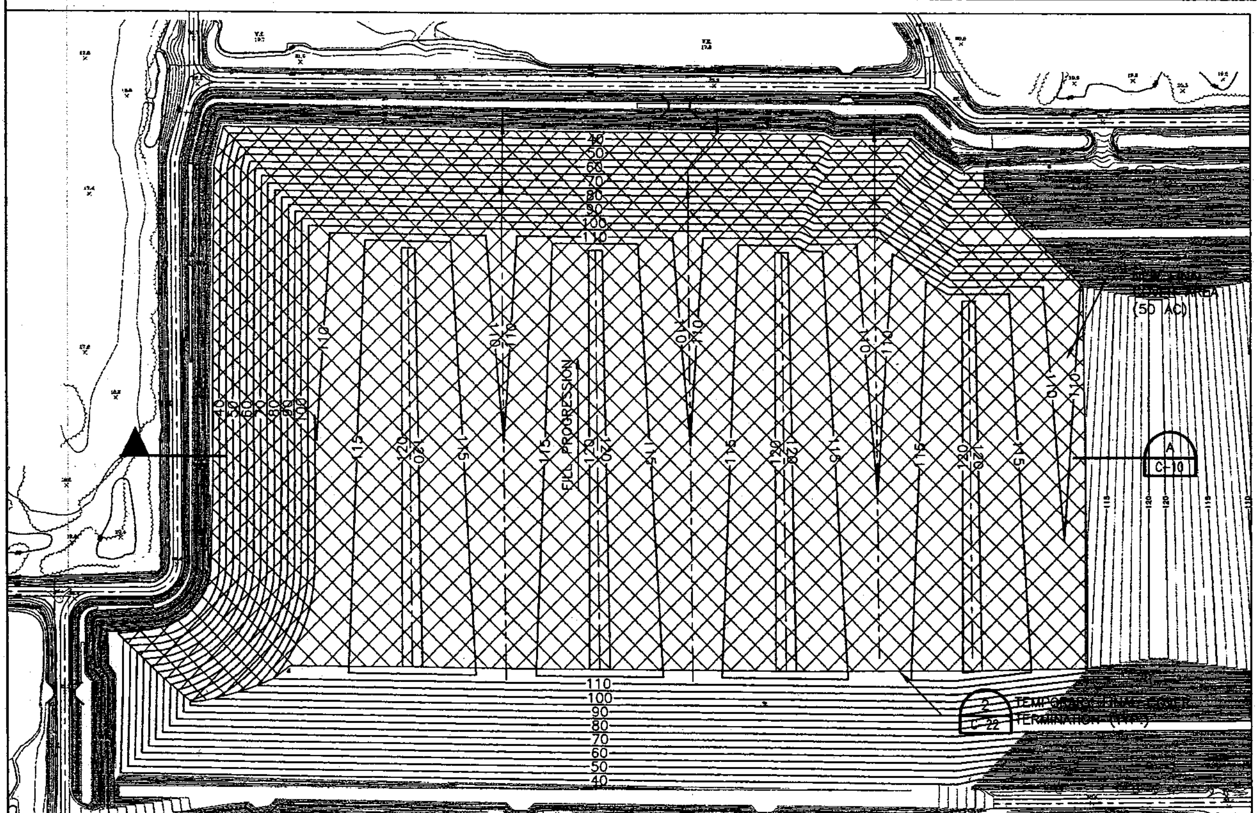
SHEET **C-08**

1 2 3 4



CELL 4 LIFT 6 (FEBRUARY 2020)





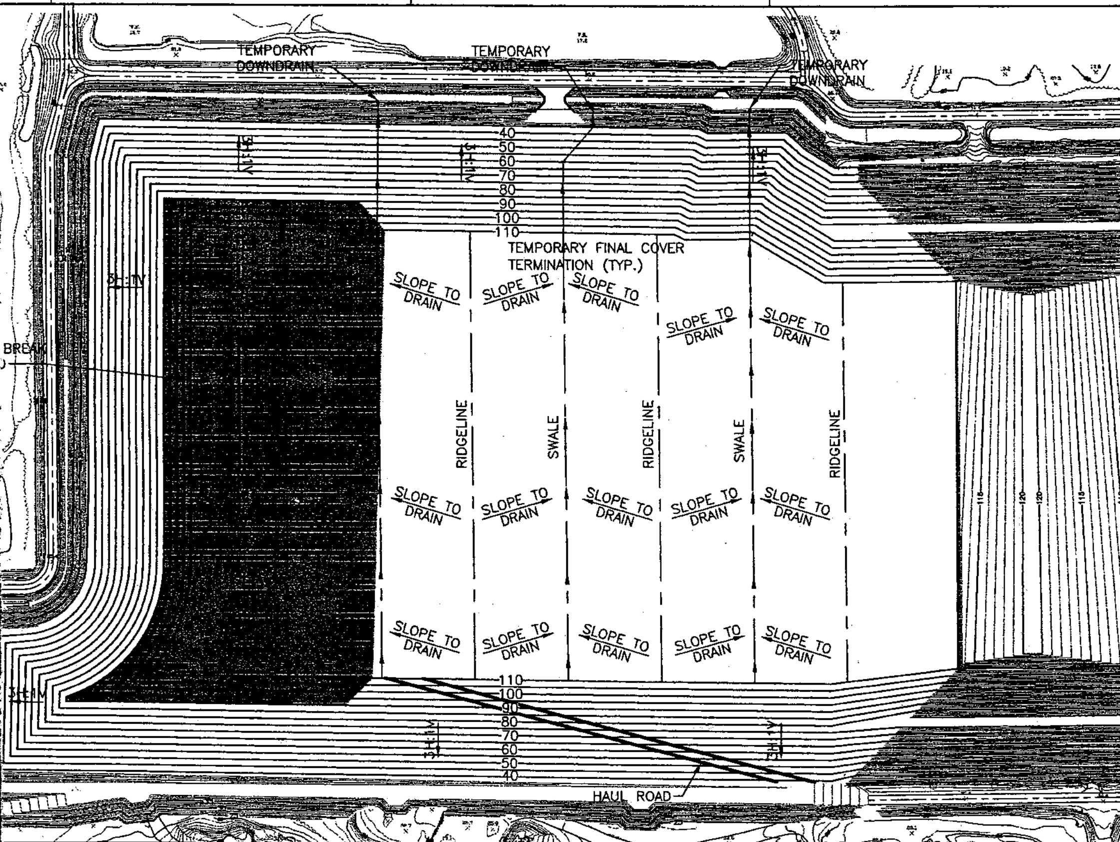
CELLS 1,2,3&4 LIFT 9 (OCTOBER 2020)

HDR

HDR Engineering, Inc.
2202 N. West Shore Blvd., Suite 250
Tampa, FL 33607-5755
(813) 282-2300
Florida Certificate of Authorization
No. 00004213

ISSUE	DATE	DESCRIPTION
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
PROJECT NUMBER	000000000043485



CELL 4 LIFT 8 (SEPTEMBER 2020)

N

NOTES:

1. CONTOURS WITHIN UNFILLED CELLS REPRESENT TOP OF PROTECTIVE COVER.
2. TYPICAL LIFT THICKNESS IS 10 FEET. EACH LIFT WILL TYPICALLY PROGRESS FROM SOUTH TO NORTH.
3. ALL STORMWATER THAT COMES IN CONTACT WITH WASTE WILL BE HANDLED AS LEACHATE AND WILL BE DIRECTED TO THE LEACHATE COLLECTION SYSTEM.
4. STORMWATER RUNOFF FROM PORTIONS OF LANDFILL WITH DAILY AND INTERMEDIATE COVER WILL BE DIRECTED TO PERIMETER DRAINAGE CHANNEL.
5. DATES SHOWN REPRESENT ESTIMATED DATE STAGE WILL BE FILLED ASSUMING ALL CLASS I WASTE RECEIVED WILL BE DISPOSED IN PHASE II BEGINNING IN JANUARY 2010 WITH AN AVERAGE IN-PLACE WASTE DENSITY OF 1,400 LBS/CY AND A PER CAPITA GENERATION RATE OF 0.723 TONS/YEAR.
6. STAGING ASSUMES FINAL COVER WILL NOT BE PLACED ON SOUTH SLOPE OF PHASE II PENDING CONSTRUCTION OF PHASE III.
7. ALL CELLS ARE SHOWN FOR ILLUSTRATIVE PURPOSES. CELLS 1 AND 2 WILL BE CONSTRUCTED BEFORE CELLS 3 AND 4.
8. DUE TO THE LIMITED HEIGHT AND LARGE TOP DECK FOR PHASE II, SUFFICIENT ACREAGE TO MAKE IT PRACTICAL TO PARTIALLY CLOSE PHASE II WILL NOT OCCUR UNTIL APPROXIMATELY OCTOBER 2020.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- CELL WASTE FILLING
- VEGETATION
- TEMPORARY DRAINAGE SWALE
- TEMPORARY RIDGE LINE
- TEMPORARY DOWNDRAIN
- AREA RECEIVING FINAL COVER

INCREMENTAL VOLUME

CELL 4	LIFT 6	572,208 CU. YDS.
CELL 4	LIFT 8	320,362 CU. YDS.
CELLS 1,2,3&4	LIFT 9	311,395 CU. YDS.

TOTAL VOLUME

6,235,224 CU. YDS.

FOR PERMITTING

Thomas M. Yonaschok, P.E.
Certificate No. 44200

SARASOTA COUNTY

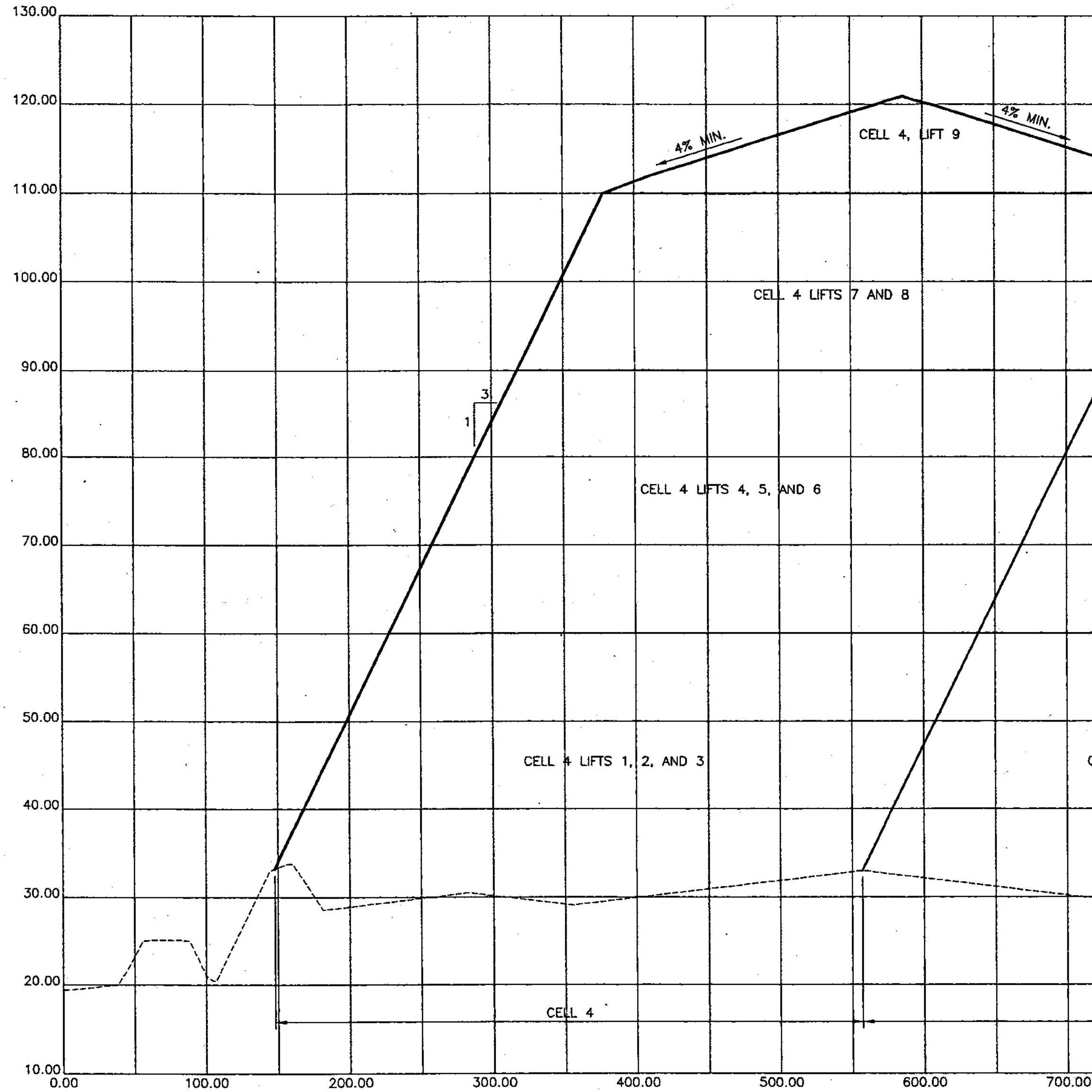
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

LANDFILL STAGING PLAN

FILENAME 00C-09.dwg
SCALE 1"=200'
SHEET C-09

1 2 3 4



SECTION

HORIZ – 1"=60' VERT. – 1"=10'

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PROJECT MANAGER	T.E. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J.E GAUL
PROJECT NUMBER	000000000043485

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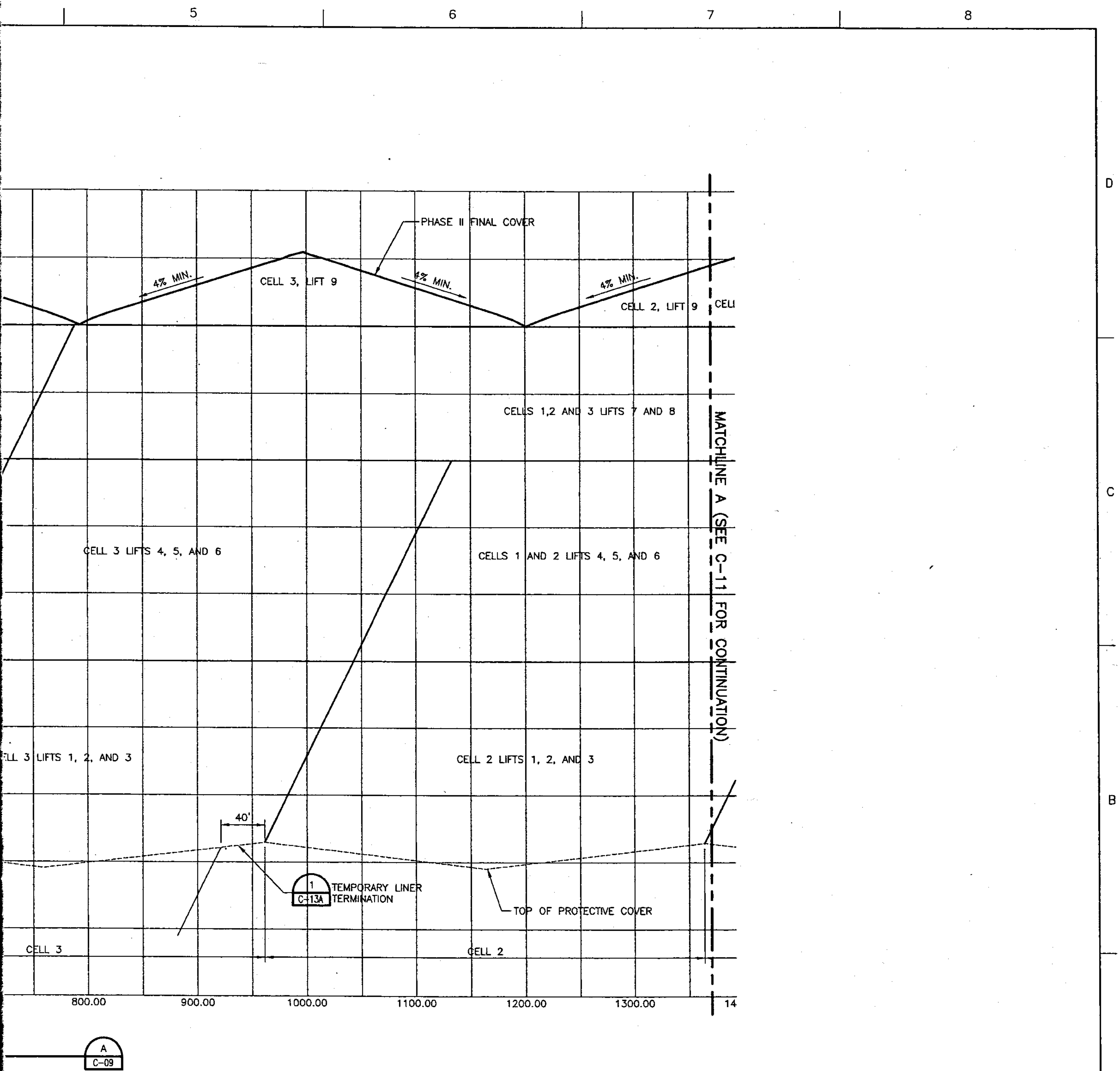


FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

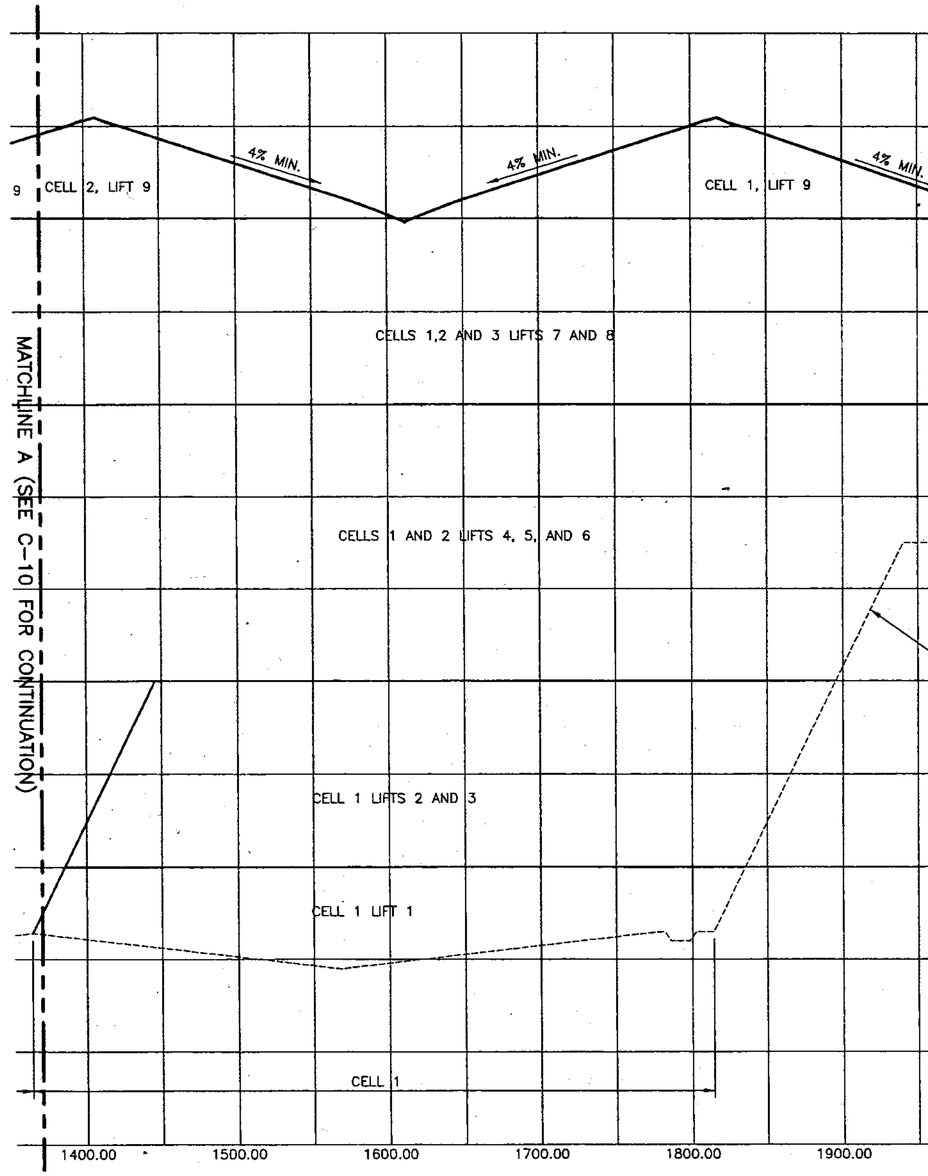
LANDFILL STAGING SECTIONS

0 1" 2"

FILENAME	00C-10.dwg
SCALE	AS SHOWN

SHEET **C-10**

1 2 3 4



SECTION (CONT.)

HORIZ – 1"=60' VERT. – 1"=10'

HDR

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REVIEWED BY	J.C. READLING
DRAWN BY	J.E. GAUL
PROJECT NUMBER	000000000043485

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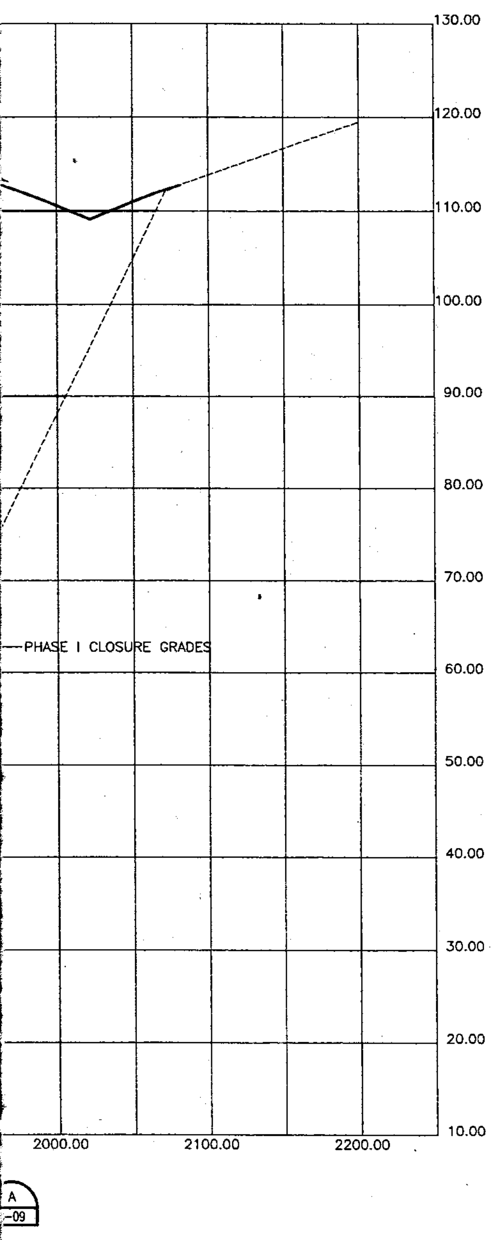


PROPOSED PHASE II FILL SEQUENCE

1. CELL 1 – LIFT 1
2. CELL 1 – LIFT 2
3. CELL 1 – LIFT 3
4. CELL 2 – LIFT 1
5. CELL 2 – LIFT 2
6. CELL 2 – LIFT 3
7. CELLS 1 AND 2 – LIFT 4
8. CELLS 1 AND 2 – LIFT 5
9. CELLS 1 AND 2 – LIFT 6
10. CELL 3 – LIFT 1
11. CELL 3 – LIFT 2
12. CELL 3 – LIFT 3
13. CELL 3 – LIFT 4
14. CELL 3 – LIFT 5
15. CELL 3 – LIFT 6
16. CELLS 1, 2, AND 3 – LIFT 7
17. CELLS 1, 2, AND 3 – LIFT 8
18. CELL 4 – LIFT 1
19. CELL 4 – LIFT 2
20. CELL 4 – LIFT 3
21. CELL 4 – LIFT 4
22. CELL 4 – LIFT 5
23. CELL 4 – LIFT 6
24. CELL 4 – LIFT 7
25. CELL 4 – LIFT 8
26. CELLS 1, 2, 3, AND 4 – LIFT 9

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

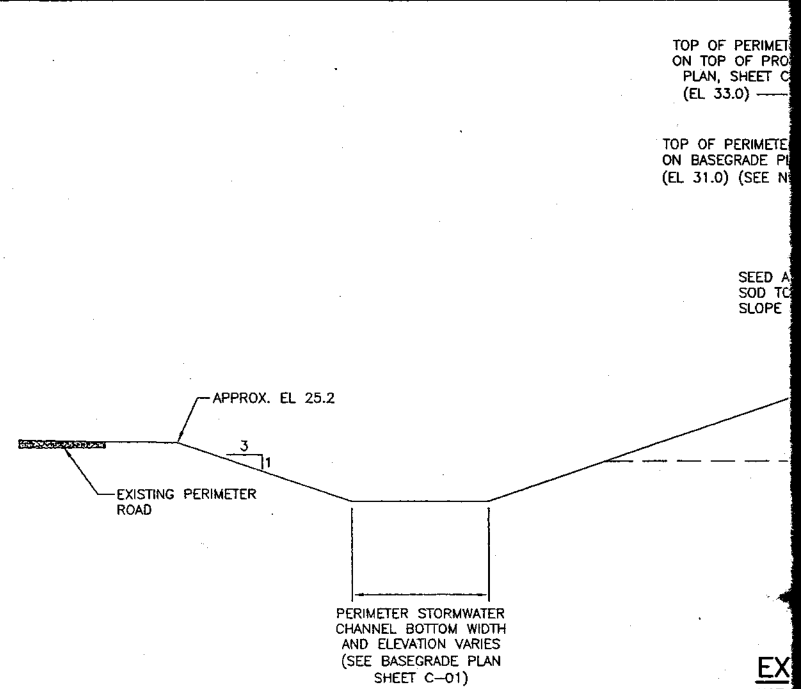
LANDFILL STAGING SECTIONS

0 1" 2"

FILENAME	00C-11.dwg
SCALE	AS SHOWN

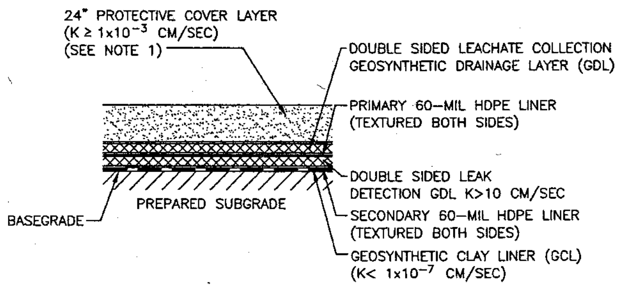
SHEET **C-11**

1 2 3 4



EX

NOT

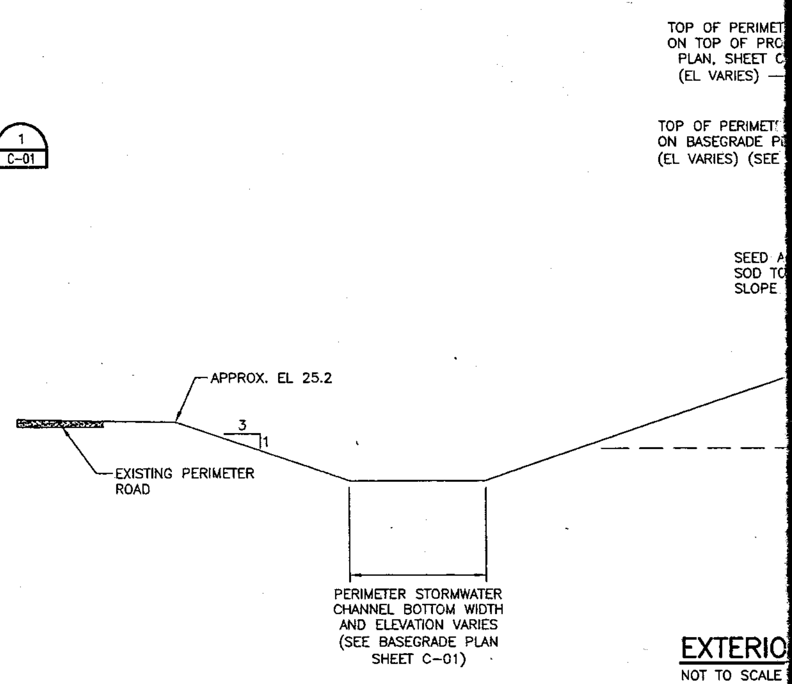


NOTE:

1. CLEAN CRUSHED GLASS MAY BE USED FOR UPPER 12" OF PROTECTIVE COVER PROVIDED IT MEETS THE SAME HYDRUALIC CONDUCTIVITY REQUIREMENTS.

DOUBLE SYNTHETIC LINER SYSTEM (1 / C-01)

NOT TO SCALE



EXTERIO

NOT TO SCALE

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PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
PROJECT NUMBER	001916-43485-018

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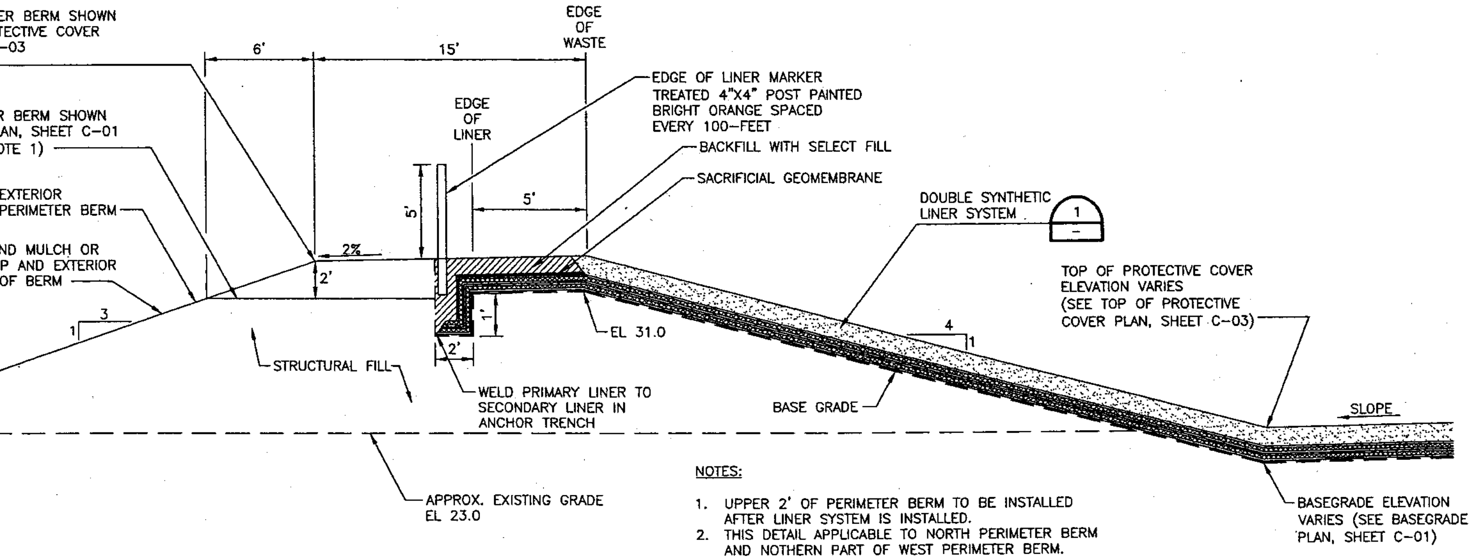
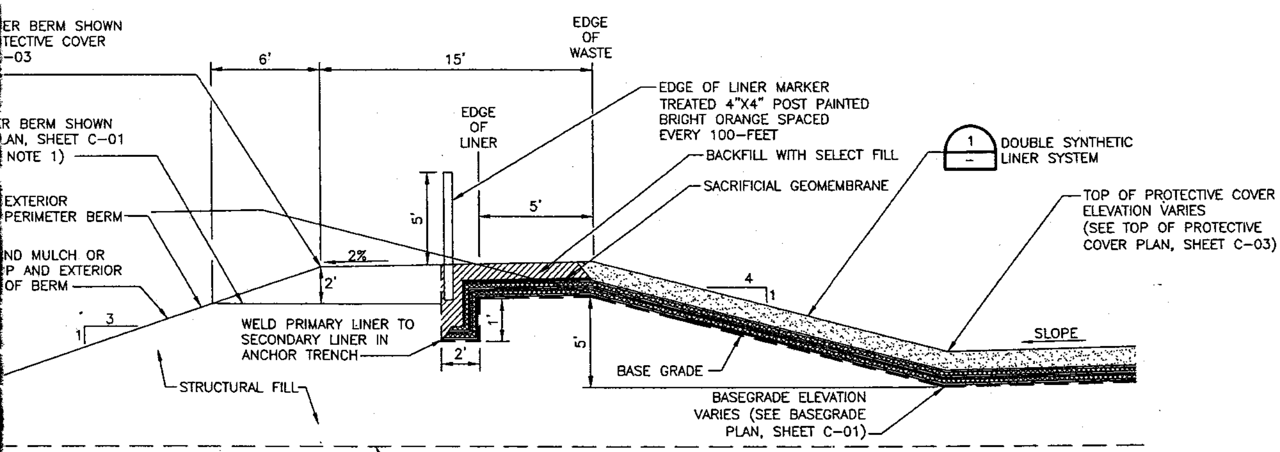


NOTES:

1. UPPER 2' OF PERIMETER BERM TO BE INSTALLED AFTER LINER SYSTEM IS INSTALLED.
2. THIS DETAIL APPLICABLE TO NORTH PERIMETER BERM AND NORTHERN PART OF WEST PERIMETER BERM.

TERIOR PERIMETER BERM (TOP EL 33.0) 2 C-01

TO SCALE



NOTES:

1. UPPER 2' OF PERIMETER BERM TO BE INSTALLED AFTER LINER SYSTEM IS INSTALLED.
2. THIS DETAIL APPLICABLE TO SOUTHERN PART OF WEST PERIMETER BERM.

R PERIMETER BERM (TOP EL > 33.0) 3 C-01

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

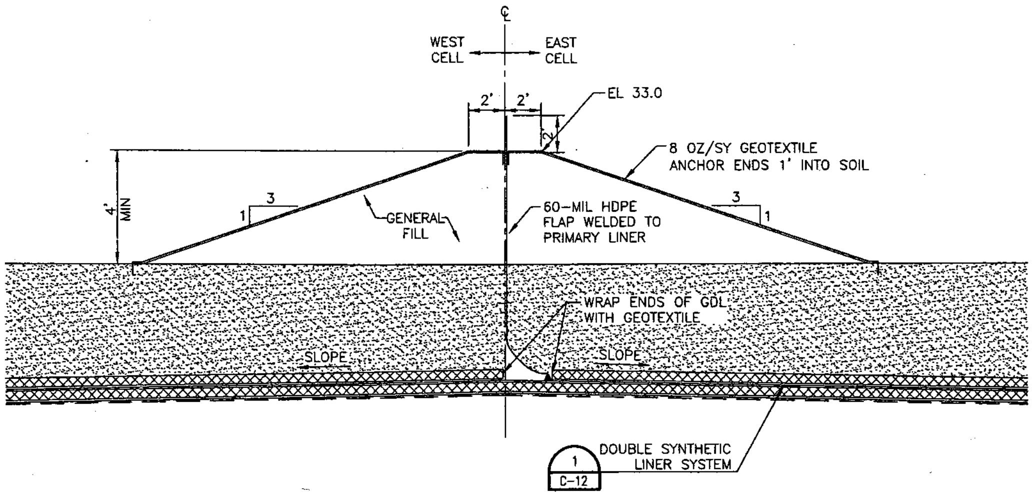
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

LINER AND BERM DETAILS

FILENAME	00C-12.dwg
SCALE	AS SHOWN
SHEET	C-12

1	2	3	4



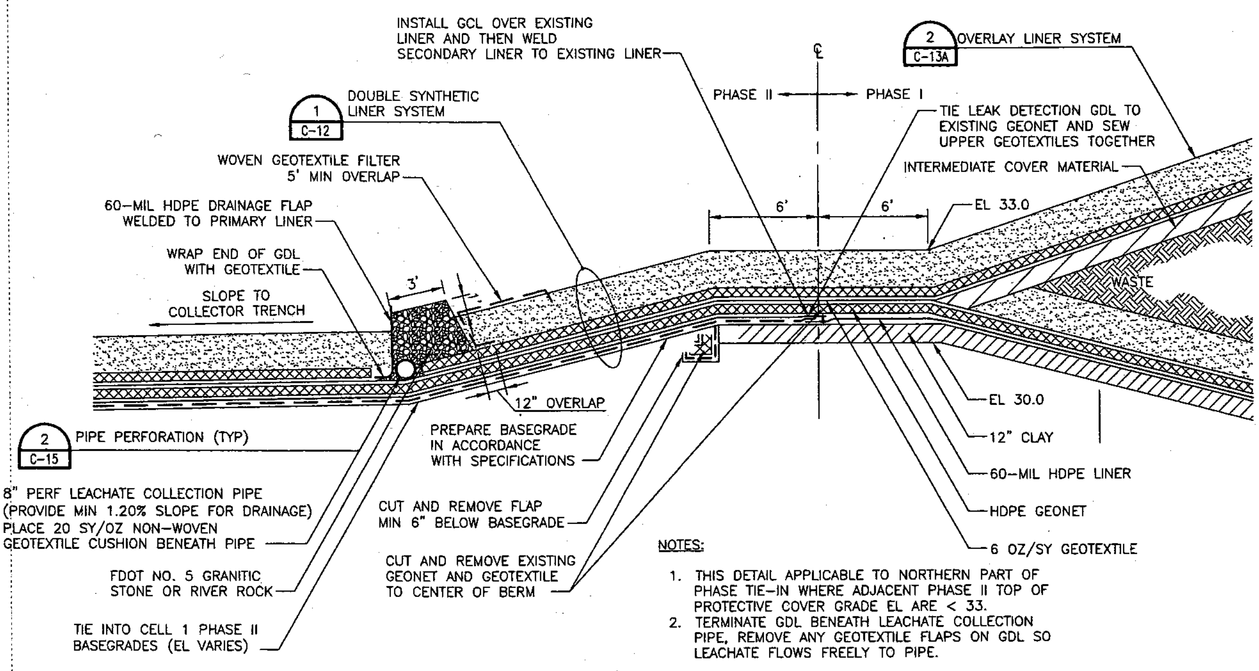
NOTE:

1. THIS DETAIL APPLICABLE TO NORTHERN PART OF CELL WHERE TOP OF PROTECTIVE COVER EL < 29.

CELL DIVIDER BERM (TOP EL 33.0)

1 C-03

NOT TO SCALE



NOTES:

1. THIS DETAIL APPLICABLE TO NORTHERN PART OF PHASE TIE-IN WHERE ADJACENT PHASE II TOP OF PROTECTIVE COVER GRADE EL ARE < 33.
2. TERMINATE GDL BENEATH LEACHATE COLLECTION PIPE, REMOVE ANY GEOTEXTILE FLAPS ON GDL SO LEACHATE FLOWS FREELY TO PIPE.

PHASE I/PHASE II LINER TIE-IN (NORTH)

3 C-01

NOT TO SCALE

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B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
	G.J. BLUE
PROJECT NUMBER	001916-43485-018

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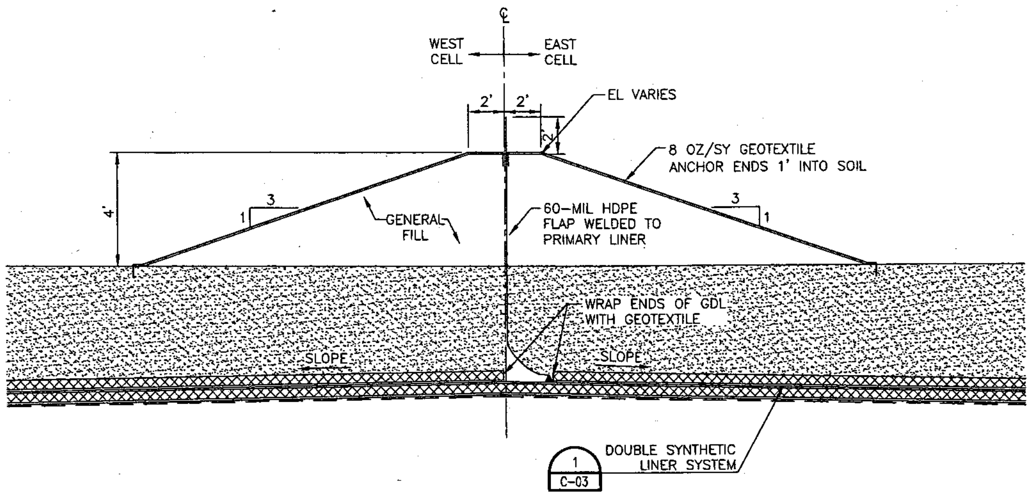


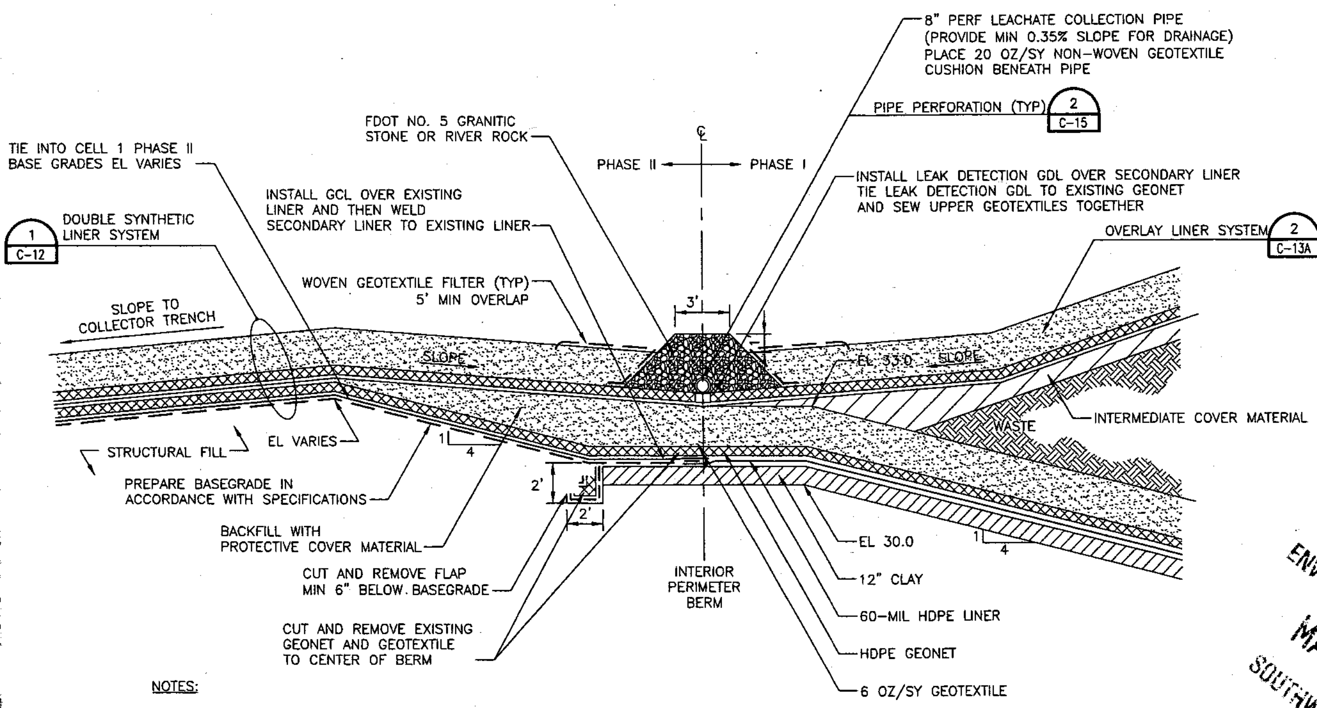
NOTE:

1. THIS DETAIL APPLICABLE TO SOUTHERN PART OF CELL WHERE TOP OF PROTECTIVE COVER EL > 29.

CELL DIVIDER BERM (TOP EL > 33.0)

2 / C-03

NOT TO SCALE



NOTES:

1. THIS DETAIL APPLICABLE TO SOUTHERN PART OF PHASE TIE-IN WHERE ADJACENT PHASE II TOP OF PROTECTIVE COVER GRADE EL ARE > 33.
2. TERMINATE GDL BENEATH LEACHATE COLLECTION PIPE, REMOVE ANY GEOTEXTILE FLAPS ON GDL SO LEACHATE FLOWS FREELY TO PIPE.

PHASE I/PHASE II LINER TIE-IN (SOUTH)

4 / C-01

NOT TO SCALE

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2009
SOUTHWEST DISTRICT TAMPA

FOR PERMITTING

D C B

03/18/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

LINER AND BERM DETAILS

0 1" 2"

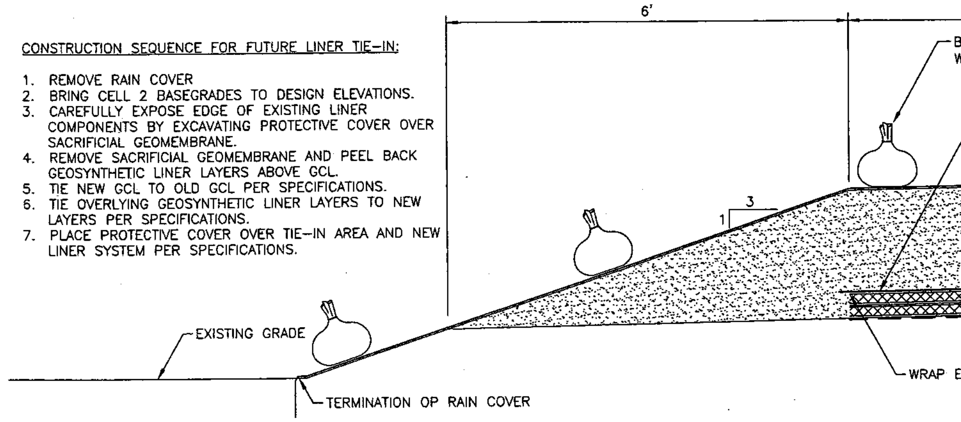
FILENAME	00C-13.dwg
SCALE	AS SHOWN

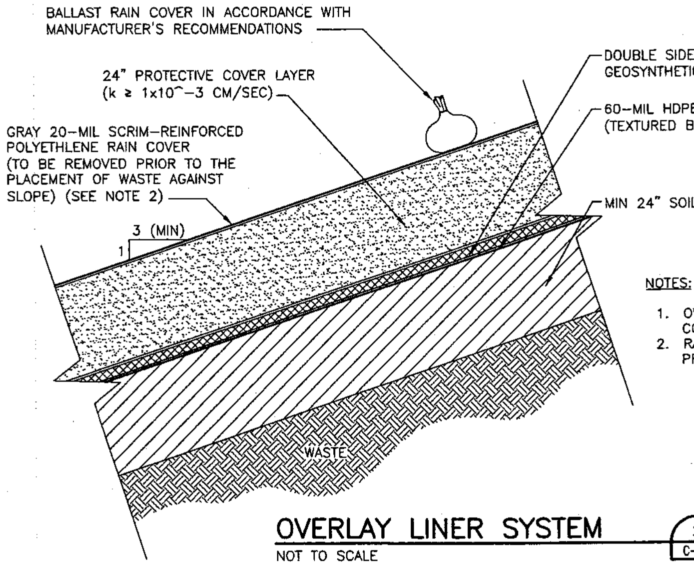
SHEET **C-13**

1 | 2 | 3 | 4

CONSTRUCTION SEQUENCE FOR FUTURE LINER TIE-IN:

1. REMOVE RAIN COVER
2. BRING CELL 2 BASEGRADES TO DESIGN ELEVATIONS.
3. CAREFULLY EXPOSE EDGE OF EXISTING LINER COMPONENTS BY EXCAVATING PROTECTIVE COVER OVER SACRIFICIAL GEOMEMBRANE.
4. REMOVE SACRIFICIAL GEOMEMBRANE AND PEEL BACK GEOSYNTHETIC LINER LAYERS ABOVE GCL.
5. TIE NEW GCL TO OLD GCL PER SPECIFICATIONS.
6. TIE OVERLYING GEOSYNTHETIC LINER LAYERS TO NEW LAYERS PER SPECIFICATIONS.
7. PLACE PROTECTIVE COVER OVER TIE-IN AREA AND NEW LINER SYSTEM PER SPECIFICATIONS.



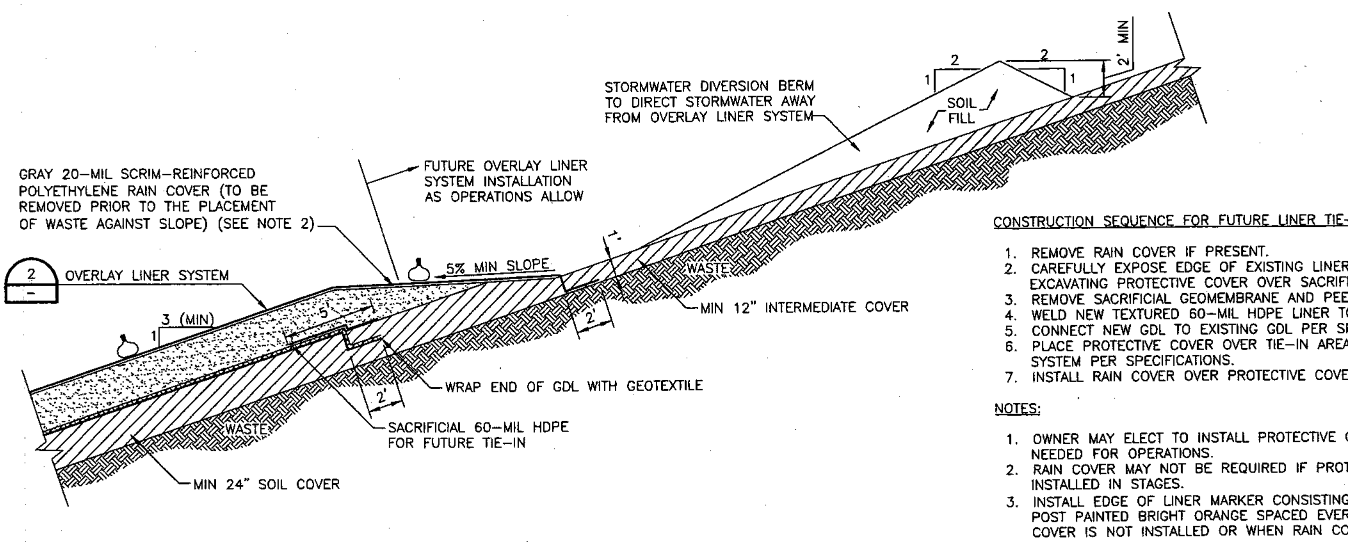


NOTES:

1. OWNER MAY ELECT TO INSTALL PROTECTIVE COVER IN STAGES AS NEEDED FOR OPERATIONS.
2. RAIN COVER MAY NOT BE REQUIRED IF PROTECTIVE COVER IS INSTALLED IN STAGES.

OVERLAY LINER SYSTEM (2 / C-01)

NOT TO SCALE



CONSTRUCTION SEQUENCE FOR FUTURE LINER TIE-

1. REMOVE RAIN COVER IF PRESENT.
2. CAREFULLY EXPOSE EDGE OF EXISTING LINER EXCAVATING PROTECTIVE COVER OVER SACRIFI
3. REMOVE SACRIFICIAL GEOMEMBRANE AND PEE
4. WELD NEW TEXTURED 60-MIL HDPE LINER T
5. CONNECT NEW GDL TO EXISTING GDL PER S
6. PLACE PROTECTIVE COVER OVER TIE-IN ARE SYSTEM PER SPECIFICATIONS.
7. INSTALL RAIN COVER OVER PROTECTIVE COVE

NOTES:

1. OWNER MAY ELECT TO INSTALL PROTECTIVE NEEDED FOR OPERATIONS.
2. RAIN COVER MAY NOT BE REQUIRED IF PROT INSTALLED IN STAGES.
3. INSTALL EDGE OF LINER MARKER CONSISTING POST PAINTED BRIGHT ORANGE SPACED EVER COVER IS NOT INSTALLED OR WHEN RAIN CO

TEMPORARY OVERLAY LINER SYSTEM TERMINATION (4 / C-01)

NOT TO SCALE

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C	09/2007	REVISED PER RAI #2
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A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	G.J. BLUE
	L.E. PATTERSON
PROJECT NUMBER	001916-43485-018

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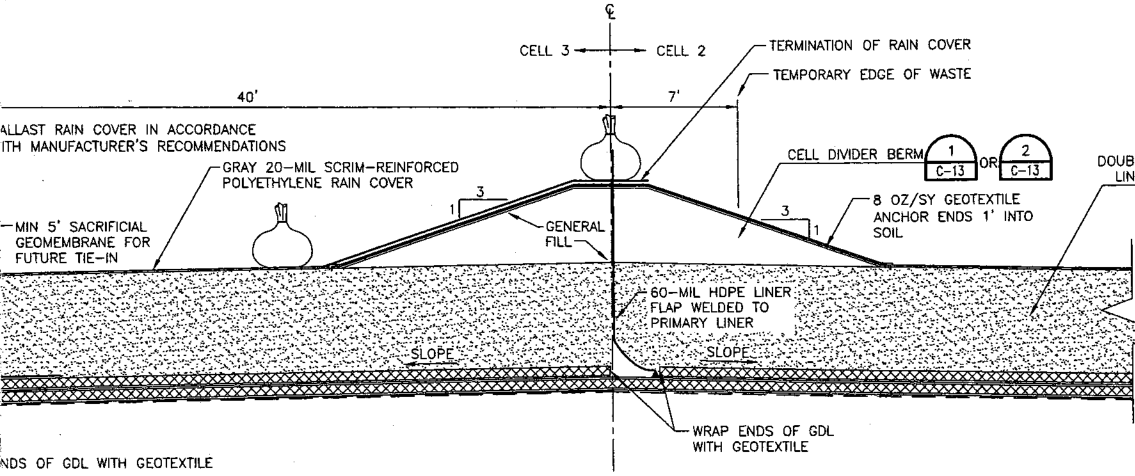
5 | 6 | 7 | 8



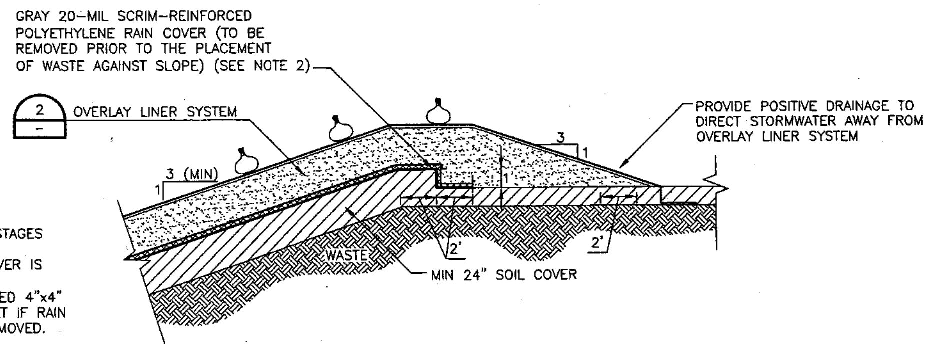
TEMPORARY LINER TERMINATION

1 C-03A

NOT TO SCALE

NOTES:

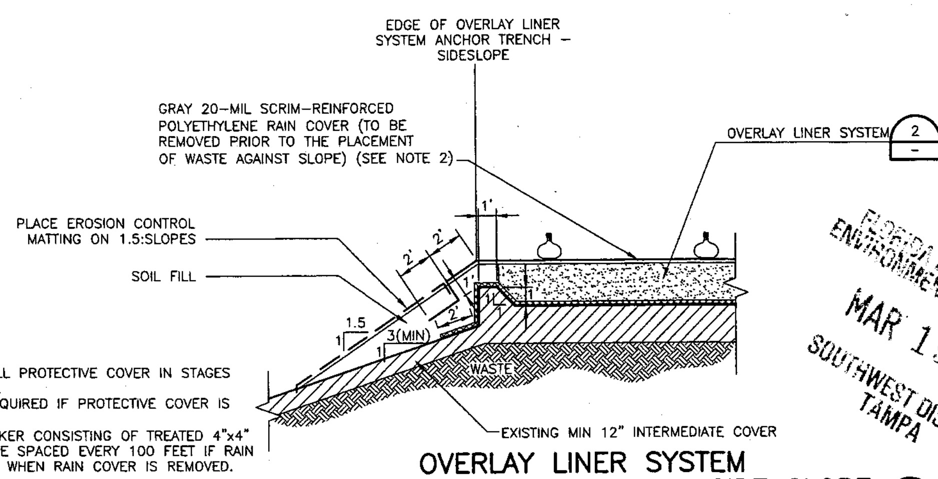
1. OWNER MAY ELECT TO INSTALL PROTECTIVE COVER IN STAGES AS NEEDED FOR OPERATIONS.
2. RAIN COVER MAY NOT BE REQUIRED IF PROTECTIVE COVER IS INSTALLED IN STAGES.
3. INSTALL EDGE OF LINER MARKER CONSISTING OF TREATED 4"x4" POST PAINTED BRIGHT ORANGE SPACED EVERY 100 FEET IF RAIN COVER IS NOT INSTALLED OR WHEN RAIN COVER IS REMOVED.



OVERLAY LINER SYSTEM ANCHOR TRENCH – TOP SLOPE

3 C-01

NOT TO SCALE



IN

COMPONENTS BY
CIAL GEOMEMBRANE.
. BACK GDL.
EXISTING LINER.
ECIFICATIONS.
AND NEW LINER

R AS REQUIRED.

OVER IN STAGES AS

ECTIVE COVER IS

OF TREATED 4"X4"
Y 100 FEET IF RAIN
/ER IS REMOVED.

NOTES:

1. OWNER MAY ELECT TO INSTALL PROTECTIVE COVER IN STAGES AS NEEDED FOR OPERATIONS.
2. RAIN COVER MAY NOT BE REQUIRED IF PROTECTIVE COVER IS INSTALLED IN STAGES.
3. INSTALL EDGE OF LINER MARKER CONSISTING OF TREATED 4"x4" POST PAINTED BRIGHT ORANGE SPACED EVERY 100 FEET IF RAIN COVER IS NOT INSTALLED OR WHEN RAIN COVER IS REMOVED.

OVERLAY LINER SYSTEM ANCHOR TRENCH – SIDE SLOPE

5 C-01

NOT TO SCALE

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAR 19 2008
SOUTHWEST DISTRICT TAMPA

FOR PERMITTING

D | C | B | A

03/18/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

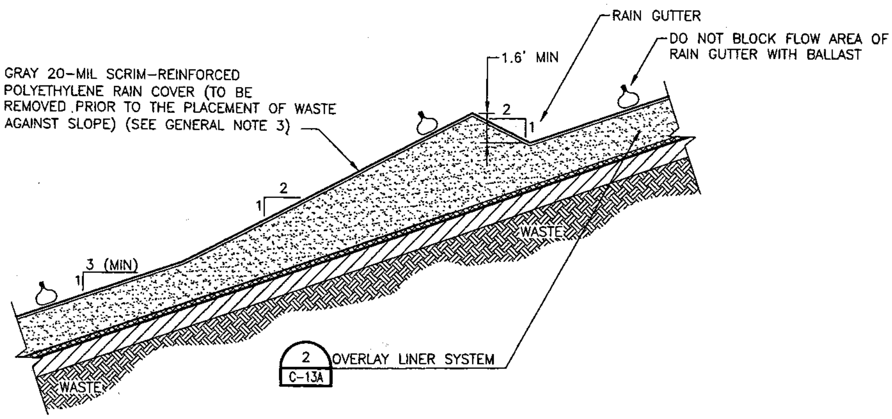
SARASOTA COUNTY | FLORIDA

LINER AND BERM DETAILS

0 1" 2"

FILENAME	00C-13A.dwg	SHEET	
SCALE	AS SHOWN		C-13A

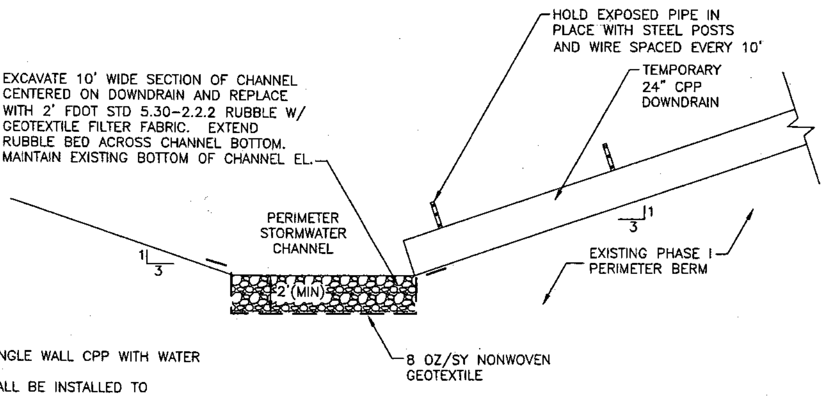
1 | 2 | 3 | 4



RAIN GUTTER FOR OVERLAY LINER SYSTEM

NOT TO SCALE

1
C-03



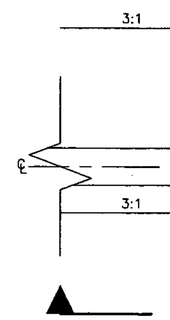
NOTES:

1. ALL PIPE SHALL BE SINGLE WALL CPP WITH WATER TIGHT JOINTS.
2. PIPE AND FITTINGS SHALL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL NOT PUNCTURE OVERLAY LINER SYSTEM OR BASE LINER SYSTEM AT BASE OF SLOPE WITH STEEL POSTS. CONTRACTOR SHALL REPAIR ANY DAMAGE TO LINER SYSTEMS CAUSED BY HIS ACTIVITIES AT HIS EXPENSE.

SPLASH PAD

NOT TO SCALE

3
C-13B

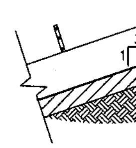


NOTES:

1. ALL PIPE
WATER TI
2. DASHED
3. ALL FITTI
4. PIPE AND
MANUFACT
5. CONTRACT
LINER SY
BASE OF
CONTRACT
LINER SY
HIS EXPE

TEMPORARY
24" CPP DOW

STEEL POSTS EVE
ON EACH SIDE OF



GENERAL NOTES:

1. BALLAST RAIN COVER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. OWNER MAY ELECT TO INSTALL PROTECTIVE COVER IN STAGES AS NEEDED FOR OPERATIONS.
3. RAIN COVER MAY NOT BE REQUIRED IF PROTECTIVE COVER IS INSTALLED IN STAGES.
4. ALTERNATE MEANS OF STORMWATER CONTROL ON OVERLAY LINER SYSTEM SHALL BE SUBMITTED TO FDEP FOR APPROVAL PRIOR TO CONSTRUCTION IF OWNER ELECTS TO INSTALL PROTECTIVE COVER IN STAGES.

HDR

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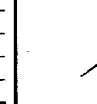
A	03/2008	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
	G.J. BLUE
PROJECT NUMBER	001916-43485-018



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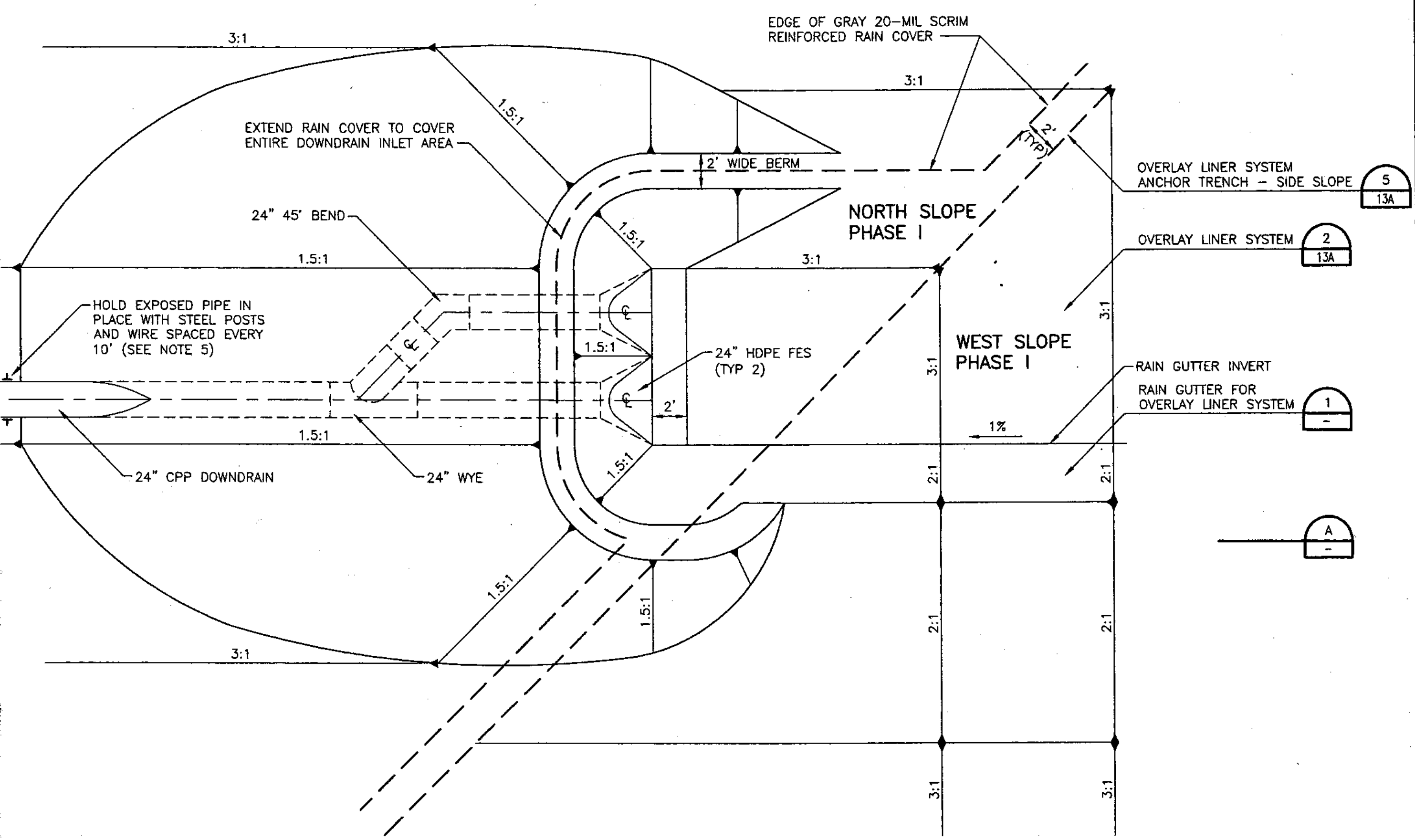
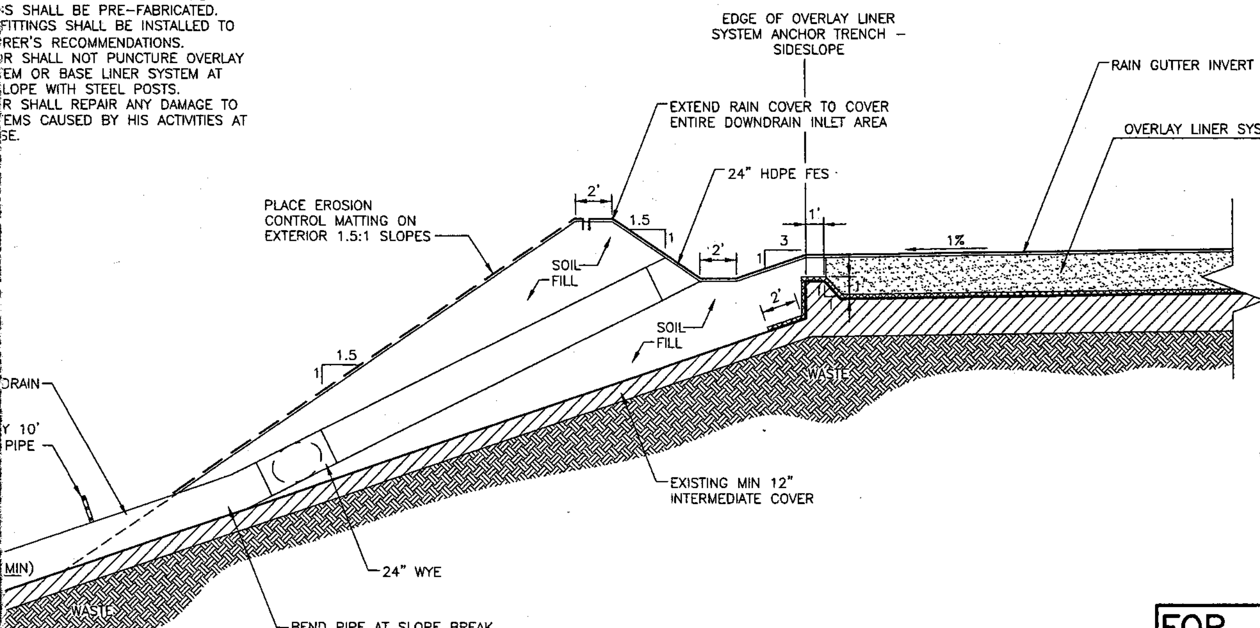


TEMPORARY DOWNDRAIN INLET 2 C-03

NOT TO SCALE

SHALL BE SINGLE WALL CPP WITH
HT JOINTS.
NES REPRESENT BURIED PIPE.
S SHALL BE PRE-FABRICATED.
FITTINGS SHALL BE INSTALLED TO
RER'S RECOMMENDATIONS.
R SHALL NOT PUNCTURE OVERLAY
EM OR BASE LINER SYSTEM AT
LOPE WITH STEEL POSTS.
R SHALL REPAIR ANY DAMAGE TO
EMS CAUSED BY HIS ACTIVITIES AT
GE.



A

SECTION A A –

NOT TO SCALE

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03/18/08
Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

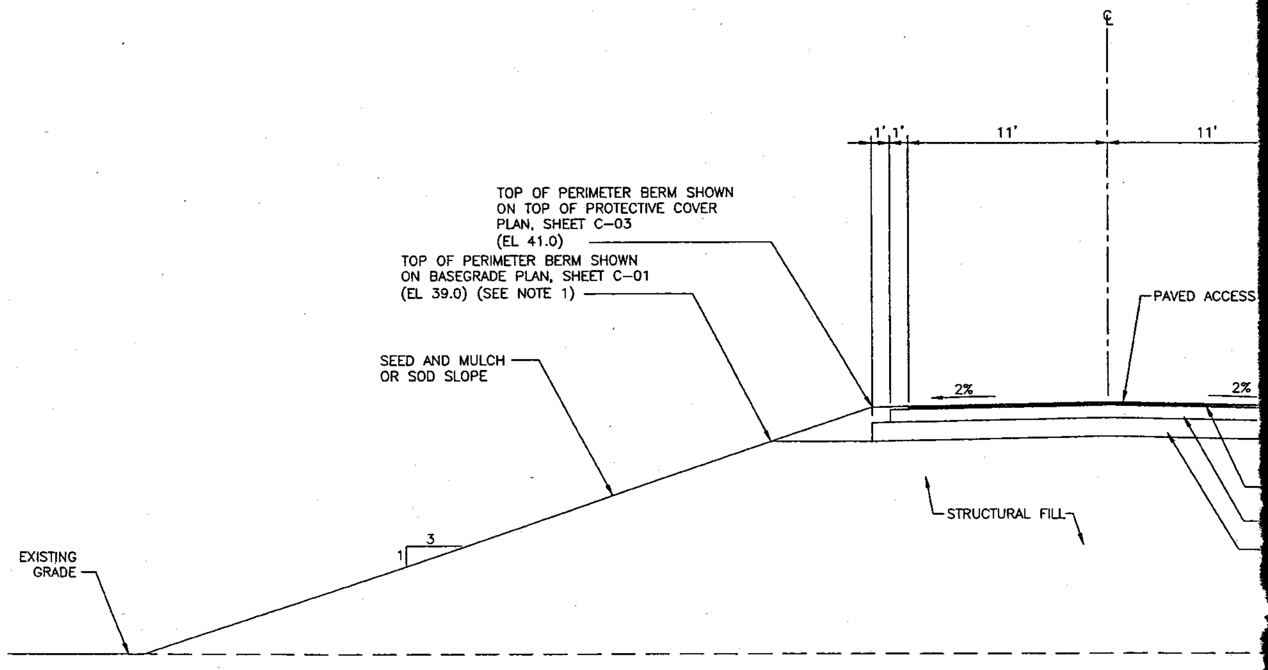
LINER AND BERM DETAILS

0 1" 2"

FILENAME	00C-13B.dwg
SCALE	AS SHOWN

SHEET **C-13B**

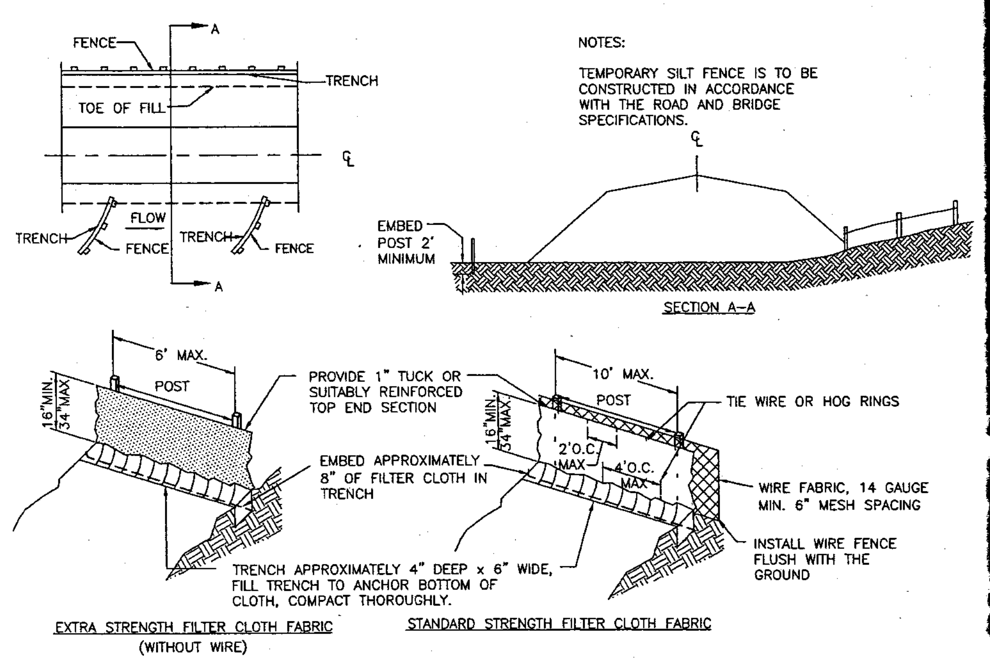
1 | 2 | 3 | 4



NOTES
1. UPPER 2'
AFTER LINER

INTERIOR PERIMETER BERM

NOT TO SCALE



NOTES:

TEMPORARY SILT FENCE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS.

SILT FENCE

NOT TO SCALE

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ISSUE	DATE	DESCRIPTION
C	01/2008	REVISED PER RAI #3
B	06/2007	REVISED PER RAI #1
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PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	L.E. PATTERSON
PROJECT NUMBER	001916-43485-018

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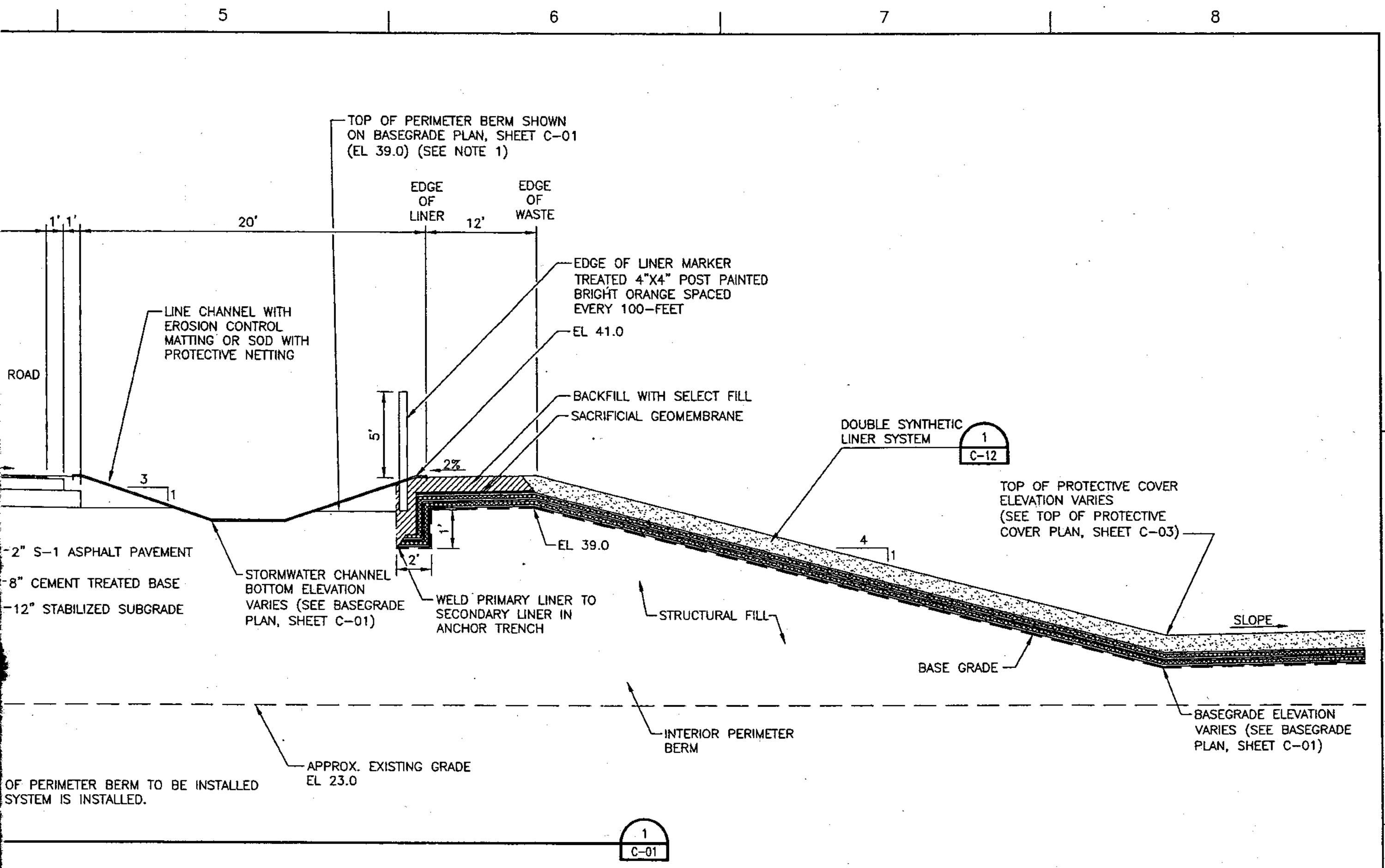

CONSTRUCTION SPECIFICATIONS

MATERIALS

1. SYNTHETIC FILTER FABRIC SHALL BE A PERVIOUS SHEET OF POLYPROPYLENE, NYLON PLOYESTER, OR ETHYLENE YARN AND SHALL BE CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE FOLLOWING REQUIREMENTS:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
FILTERING EFFICIENCY	ASTM D-5141	75% (MIN)
TENSILE STRENGTH AT 20% (MAX.) ELONGATION*	VTM-52	EXTRA STRENGTH- 50 LBS./LIN. IN. (MIN.) STANDARD STRENGTH- 30 LBS./LIN. IN. (MIN.)
FLOW RATE	ASTM D-5141	0.3 GAL./SQ. FT./MIN.
ULTRAVIOLET RADIATION	ASTM D-4355 AND G-28	90% (MIN.)

* REQUIREMENTS REDUCED BY 50% AFTER 6 MONTHS OF INSTALLATION.

2. SYNTHETIC FILTER FABRIC SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 F TO 120 F.

2
C-01

FOR PERMITTING

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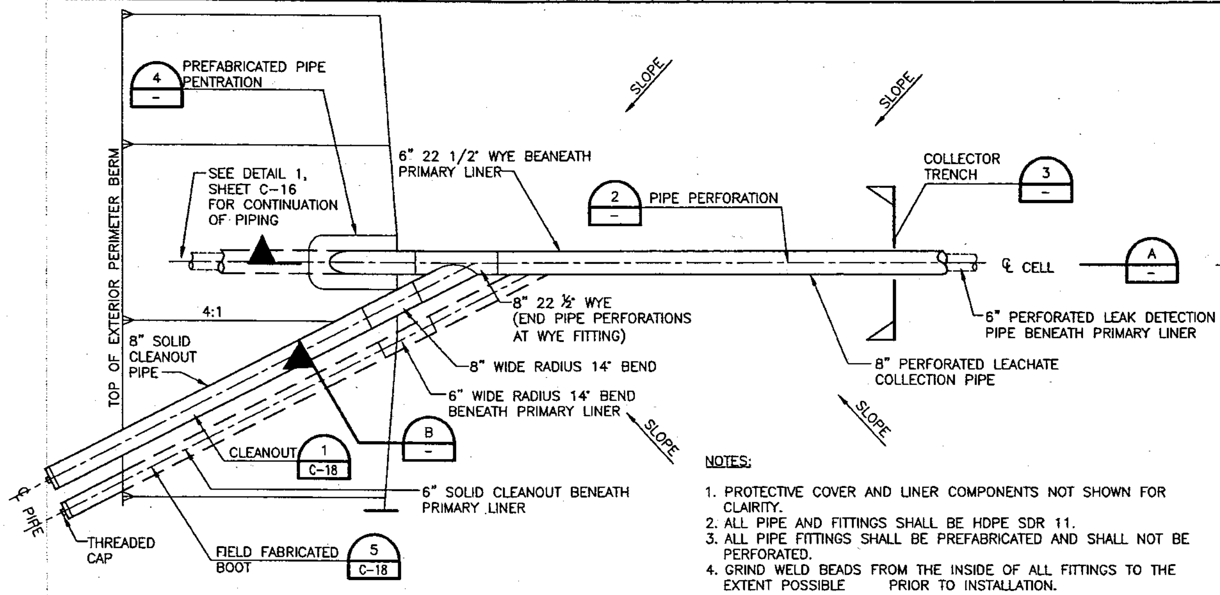
LINER AND BERM DETAILS

0 1" 2"

FILENAME	00C-14.dwg	SHEET	C-14
SCALE	AS SHOWN		

1 | 2 | 3 | 4



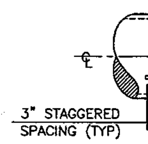
NOTES:

1. PROTECTIVE COVER AND LINER COMPONENTS NOT SHOWN FOR CLAIRITY.
2. ALL PIPE AND FITTINGS SHALL BE HDPE SDR 11.
3. ALL PIPE FITTINGS SHALL BE PREFABRICATED AND SHALL NOT BE PERFORATED.
4. GRIND WELD BEADS FROM THE INSIDE OF ALL FITTINGS TO THE EXTENT POSSIBLE PRIOR TO INSTALLATION.

SUMP PLAN

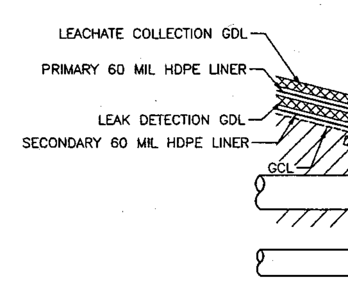
NOT TO SCALE

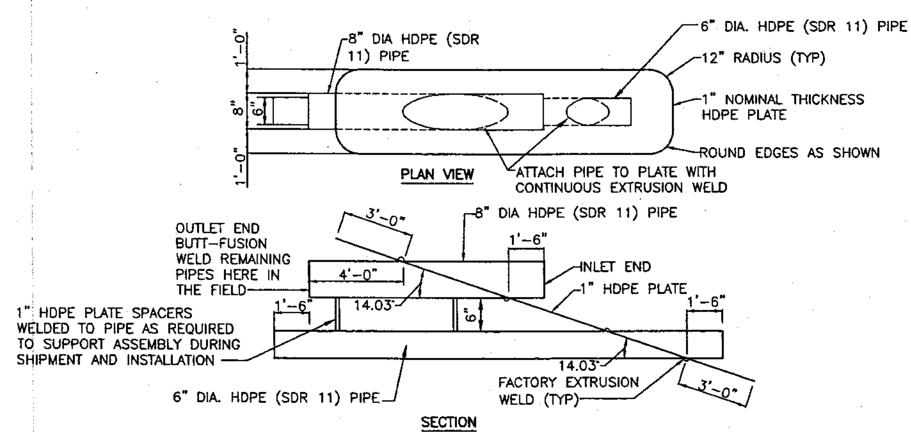
1
C-02



PIPE P

NOT TO SCALE





NOTES:

1. ALL WELDS SHALL BE SPARK TESTED AT THE SHOP. SUPPLIER SHALL VERIFY THAT PREFABRICATED PIPE PENETRATIONS ARE LEAK FREE PRIOR TO DELIVERY TO THE SITE.
2. ENSURE AREA BETWEEN PIPES IS ADEQUATELY BACKFILLED BY USING A PIPE HAUNCH TOOL OR OTHER MEANS TO ENSURE THERE ARE NO VOIDS AND THAT THE BACKFILL MATERIAL IS ADEQUATELY COMPACTED.

PREFABRICATED PIPE PENETRATION

NOT TO SCALE

4
-

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PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J. HATCHER
PROJECT NUMBER	001916-43485-018

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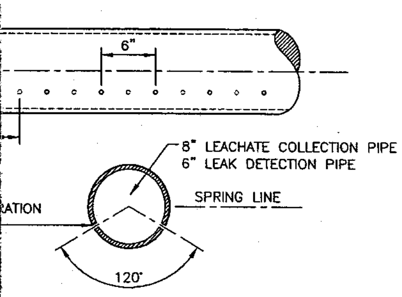
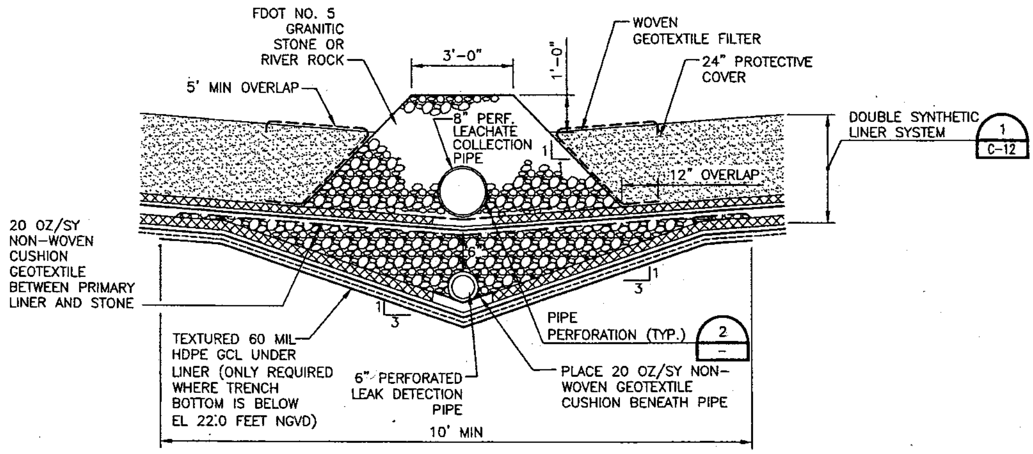


RFORATION (2/–)

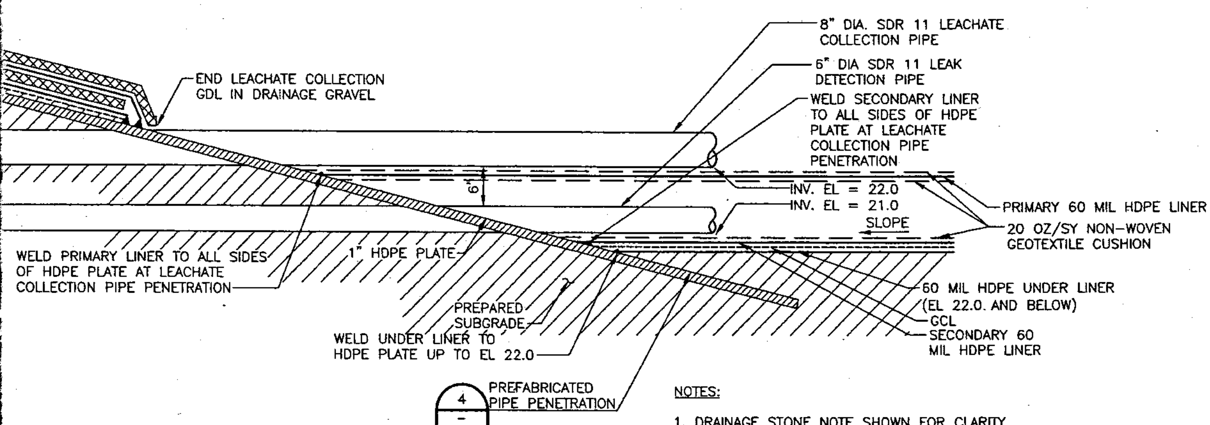


NOTES:

1. TERMINATE GDL BENEATH LEACHATE COLLECTION AND LEAK DETECTION PIPES. REMOVE ANY GEOTEXTILE FLAPS ON GDL SO IT DRAINS FREELY TO PIPES.

COLLECTOR TRENCH (3/C-02)

NOT TO SCALE

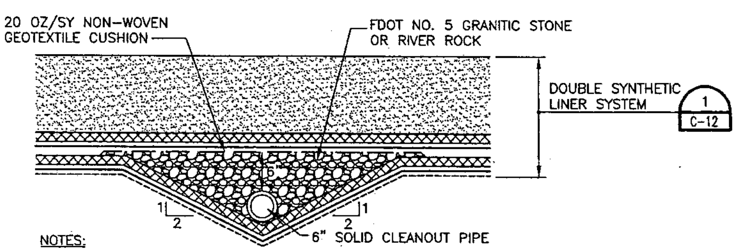


NOTES:

1. DRAINAGE STONE NOTE SHOWN FOR CLARITY.
2. LEACHATE COLLECTION AND LEAK DETECTION GDL NOT PRESENT BENEATH PIPE BUT EXISTS ON BOTH SIDES OF PIPE AS SHOW ON DETAIL 3, THIS SHEET.

SECTION (A/–)

NOT TO SCALE



NOTES:

1. FIELD FABRICATE WATER TIGHT BOOT WHERE CLEANOUT PIPE PENETRATES PRIMARY LINER AT TOP OF PERIMETER BERM. (SEE DETAIL 5, SHEET C-18)
2. ALL PIPE SHALL BE SDR II HDPE

SECTION (B/–)

NOT TO SCALE

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

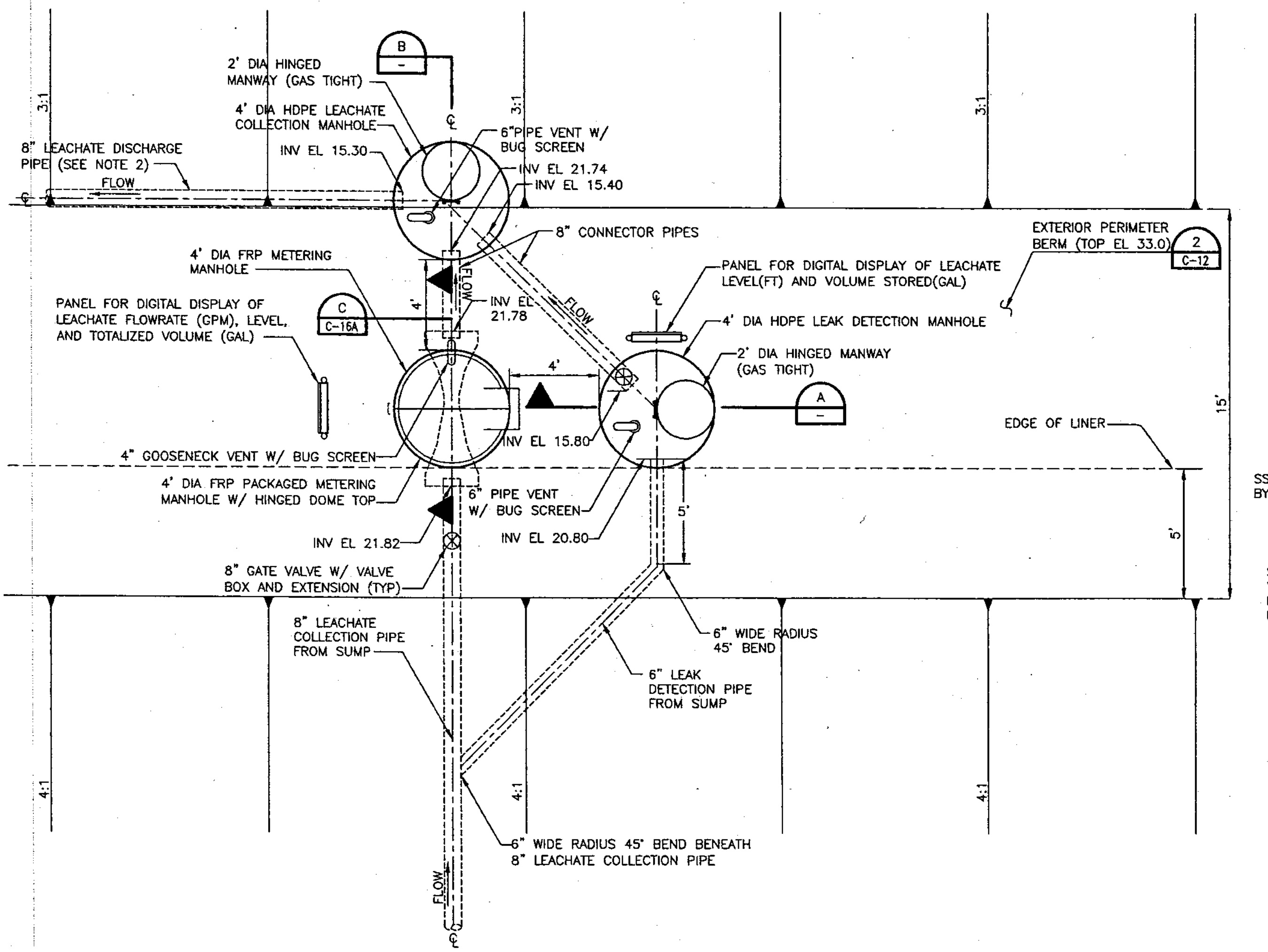
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

LEACHATE COLLECTION SYSTEM DETAILS

FILENAME	00C-15.dwg
SCALE	AS SHOWN
SHEET	C-15

D C B A



(SEE NOTE 4)

NOTES:

1. ALL PIPE SHALL BE SDR 11 HDPE.
2. ORIENTATION OF LEACHATE DISCHARGE PIPING IS FOR CELL 1. SEE LEACHATE COLLECTION SYSTEM (SHEET C-02A) FOR ORIENTATION OF DISCHARGE PIPING AT OTHER CELLS AND INVERT ELEVATIONS.
3. LEAK DETECTION PIPE CONTINUES BENEATH LEACHATE COLLECTION PIPE TO SUMP.
4. INVERTS OF LEACHATE COLLECTION PIPE AND LEAK DETECTION PIPE AT SUMP ARE 22.0 FEET NGVD AND 21.0 FEET NGVD, RESPECTIVELY (SEE SECTION A ON SHEET C-15)

LEACHATE COLLECTION / LEAK DETECTION MANHOLE PLAN CELL 1

NOT TO SCALE

1
C-02

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C	09/2007	REVISED PER RAI #2
B	06/2007	REVISED PER RAI #1
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PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J. HATCHER
PROJECT NUMBER	001916-43485-018

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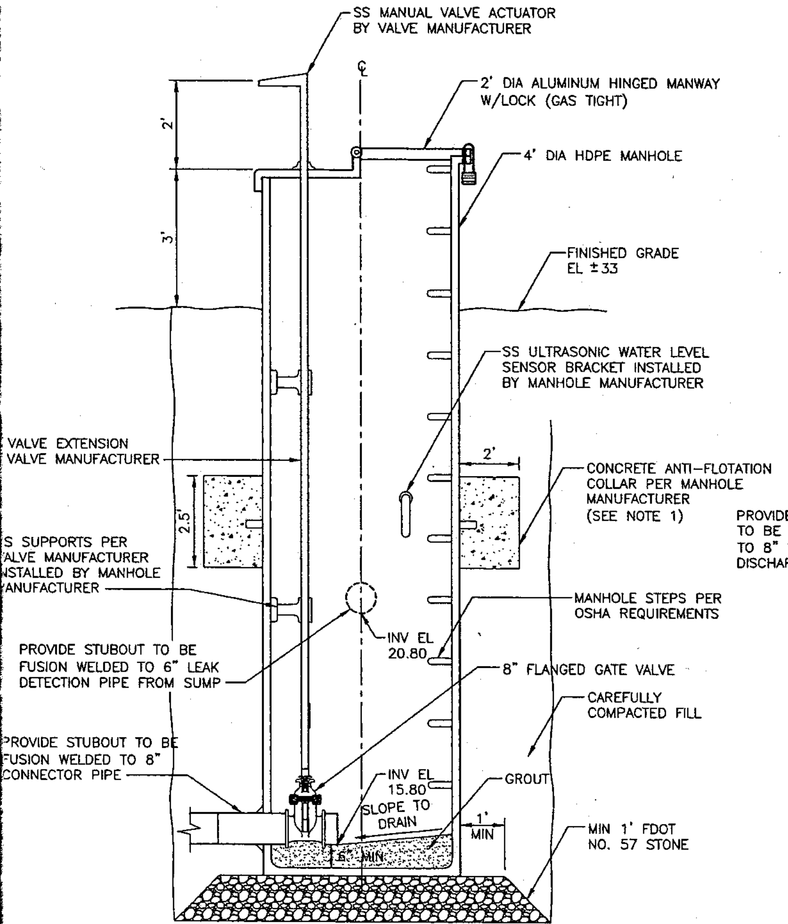
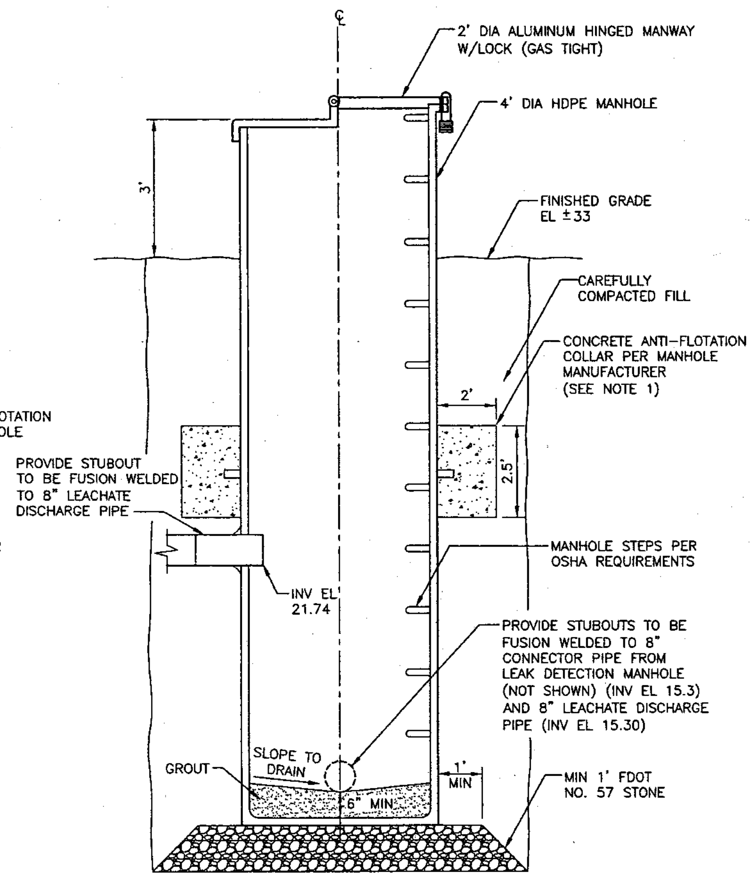


NOTES:

1. CONCRETE COLLAR SHALL BE DESIGNED BY MANHOLE MANUFACTURER. COMPUTATIONS FOR UPLIFT AND SHOP DRAWINGS SHALL BE SUBMITTED TO ENGINEER.
2. LOCATIONS OF PIPE STUBOUTS HAVE BEEN ADJUSTED FOR EASE OF REPRESENTATION. SEE PLAN VIEWS FOR PROPER PIPE ORIENTATION.
3. PROVIDE ULTRASONIC WATER LEVEL SENSOR TO MEASURE LEACHATE LEVELS IN MANHOLE WITH DIGITAL DISPLAY MOUNTED ON PANEL LOCATED ADJACENT TO MANHOLE.

LEAK DETECTION MANHOLE (A/-)

NOT TO SCALE



NOTES:

1. CONCRETE COLLAR SHALL BE DESIGNED BY MANHOLE MANUFACTURER. COMPUTATIONS FOR UPLIFT AND SHOP DRAWINGS SHALL BE SUBMITTED TO ENGINEER.
2. LOCATIONS OF PIPE STUBOUTS HAVE BEEN ADJUSTED FOR EASE OF REPRESENTATION. SEE PLAN VIEWS FOR PROPER PIPE ORIENTATION.
3. SECTION SHOWS LEACHATE COLLECTION FOR CELL 1. LEACHATE COLLECTION MANHOLES FOR CELLS 3 AND 4 WILL BE CONSTRUCTED SIMILARLY EXCEPT FOR VARIATIONS IN PIPING. SEE SHEET C-02B FOR PIPING REQUIRED AT EACH CELL AND ELEVATIONS.

LEACHATE COLLECTION MANHOLE (B/-)

NOT TO SCALE

D C B A

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PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

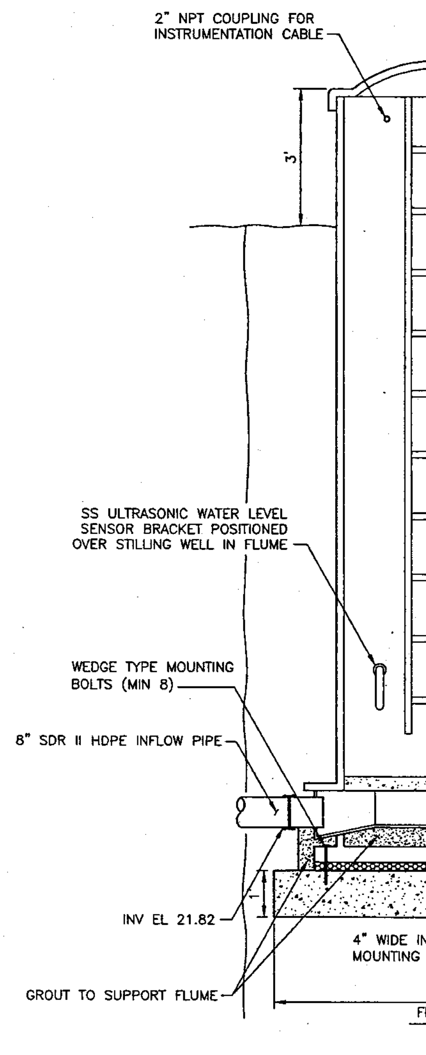
LEACHATE COLLECTION SYSTEM DETAILS

0 1" 2"

FILENAME	00C-16.dwg
SCALE	AS SHOWN

SHEET C-16

1 2 3 4



PACKAGED METERING

NOT TO SCALE

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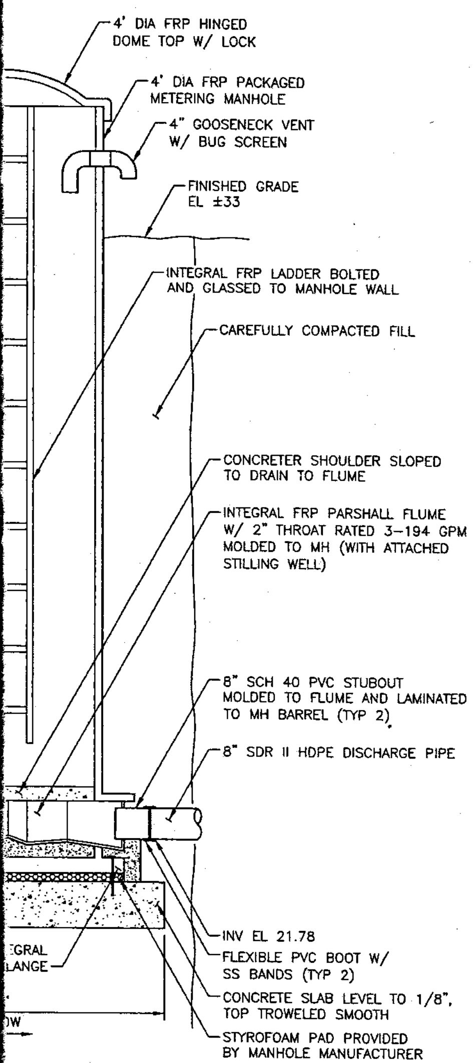
A	09/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	G.J. BLUE
PROJECT NUMBER	001916-43485-018



MANHOLE C / C-16

FOR PERMITTING

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Certificate No. 44200

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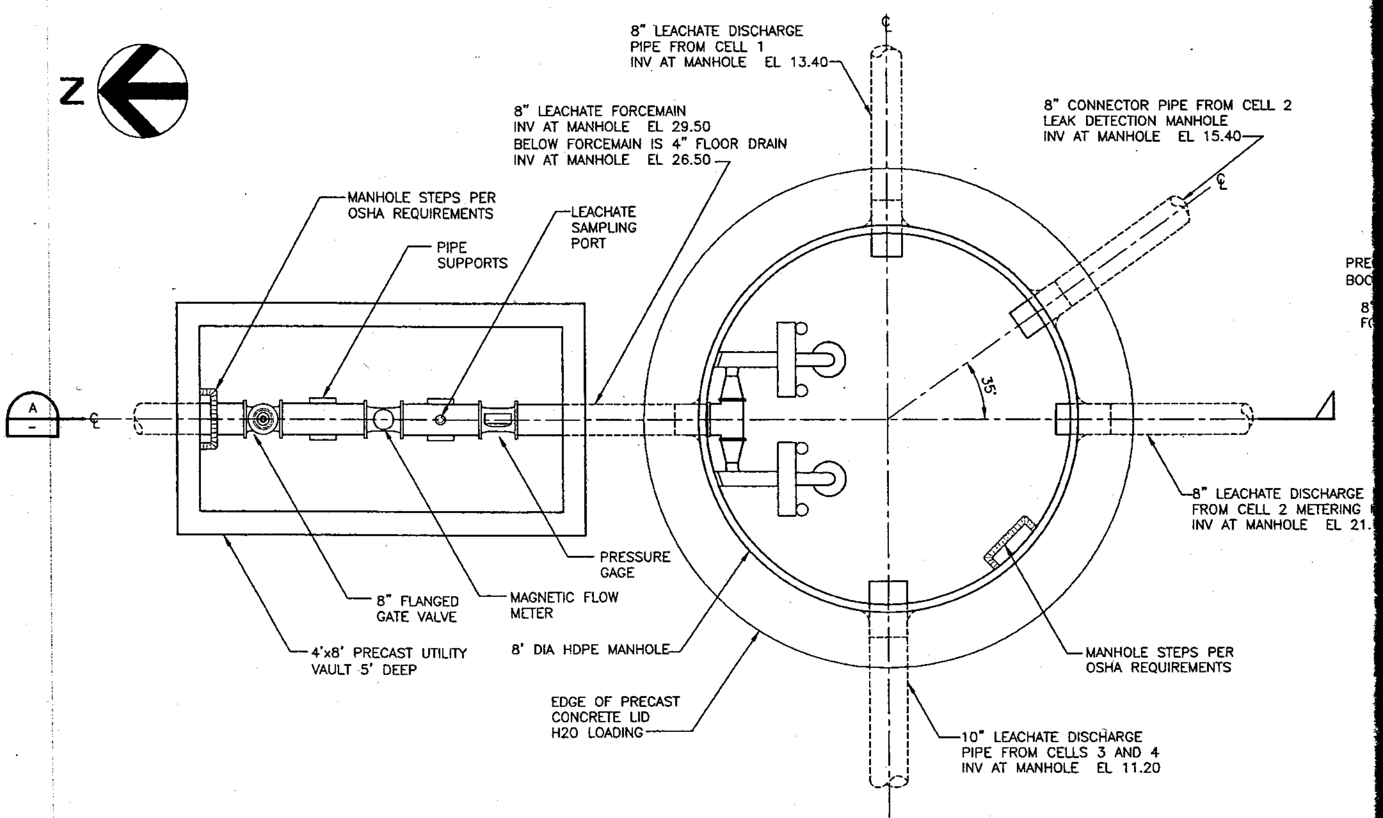
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

FLORIDA

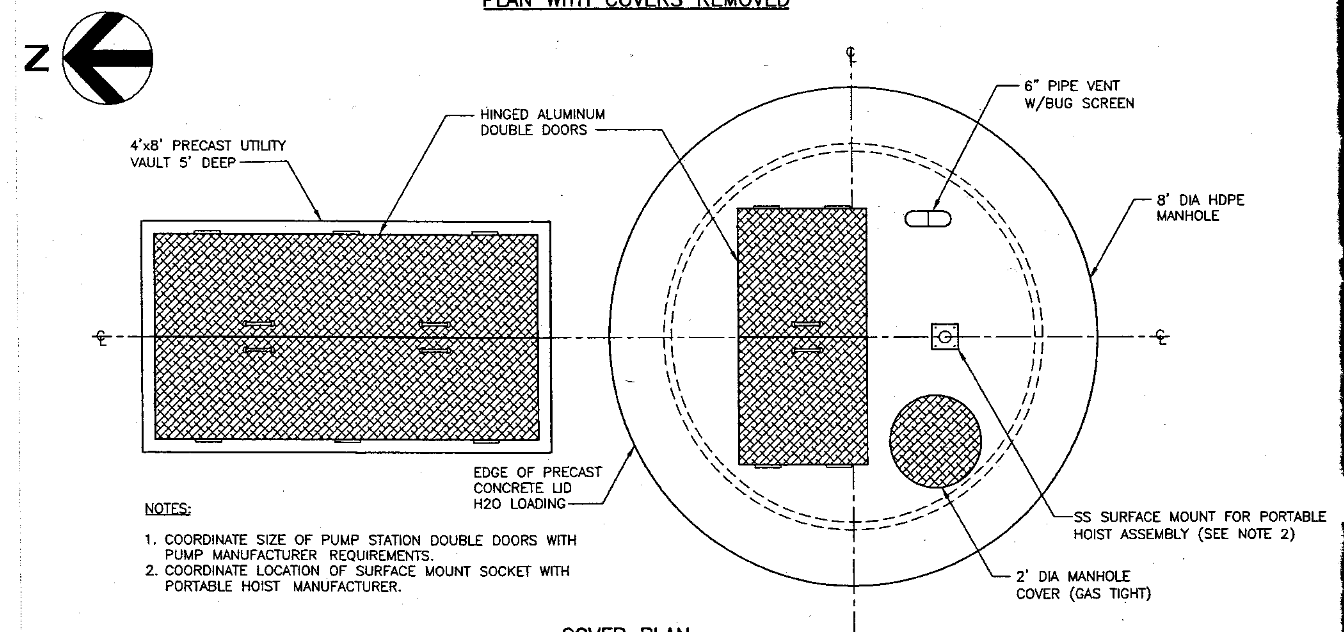
LEACHATE COLLECTION SYSTEM DETAILS

FILENAME	00C-16A.dwg
SCALE	AS SHOWN

SHEET **C-16A**



PLAN WITH COVERS REMOVED



NOTES:

1. COORDINATE SIZE OF PUMP STATION DOUBLE DOORS WITH PUMP MANUFACTURER REQUIREMENTS.
2. COORDINATE LOCATION OF SURFACE MOUNT SOCKET WITH PORTABLE HOIST MANUFACTURER.

COVER PLAN

DUPLEX LEACHATE PUMP STATION PLAN

NOT TO SCALE

1 / C-02

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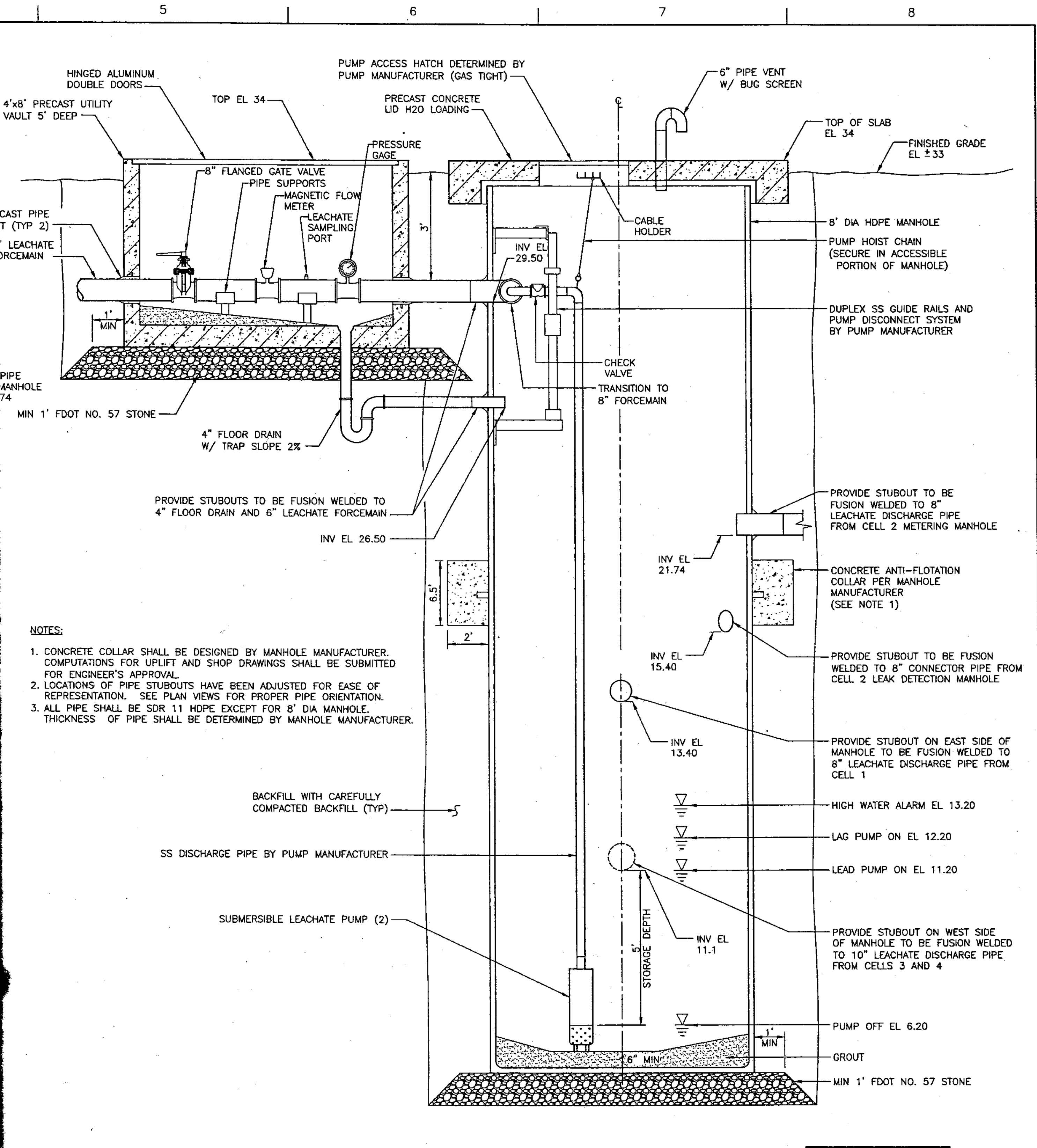

NOTES:

1. CONCRETE COLLAR SHALL BE DESIGNED BY MANHOLE MANUFACTURER. COMPUTATIONS FOR UPLIFT AND SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL.
2. LOCATIONS OF PIPE STUBOUTS HAVE BEEN ADJUSTED FOR EASE OF REPRESENTATION. SEE PLAN VIEWS FOR PROPER PIPE ORIENTATION.
3. ALL PIPE SHALL BE SDR 11 HDPE EXCEPT FOR 8' DIA MANHOLE. THICKNESS OF PIPE SHALL BE DETERMINED BY MANHOLE MANUFACTURER.

SECTION A
NOT TO SCALE

FOR PERMITTING

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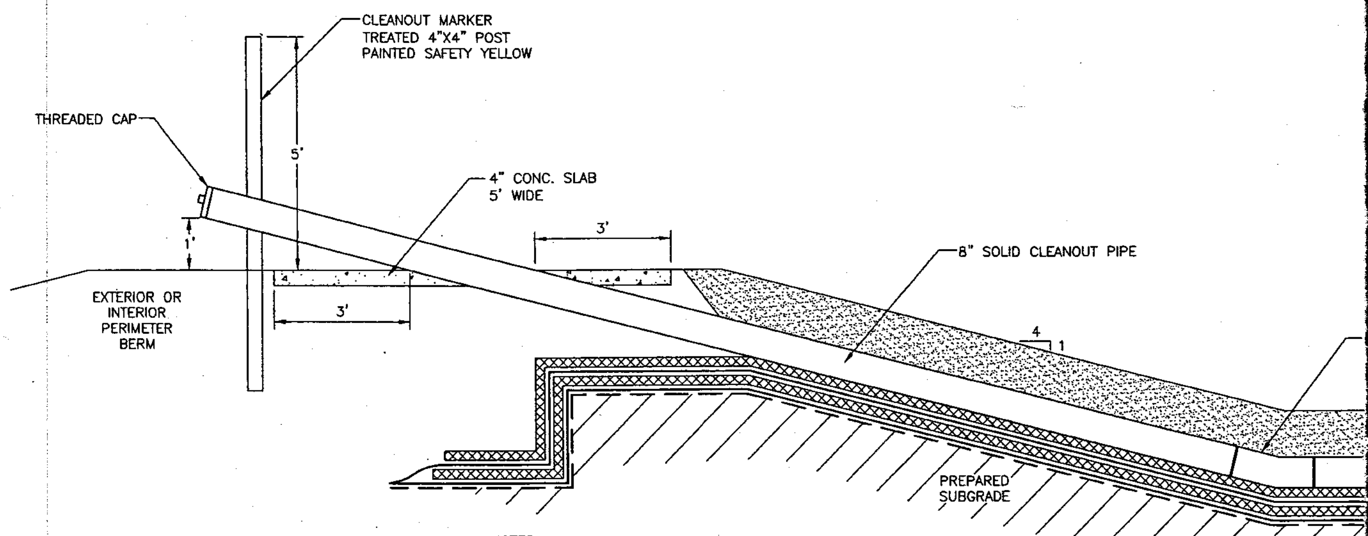
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY — FLORIDA

LEACHATE COLLECTION SYSTEM DETAILS

FILENAME	00C-17.dwg	SHEET
SCALE	AS SHOWN	C-17

1	2	3	4



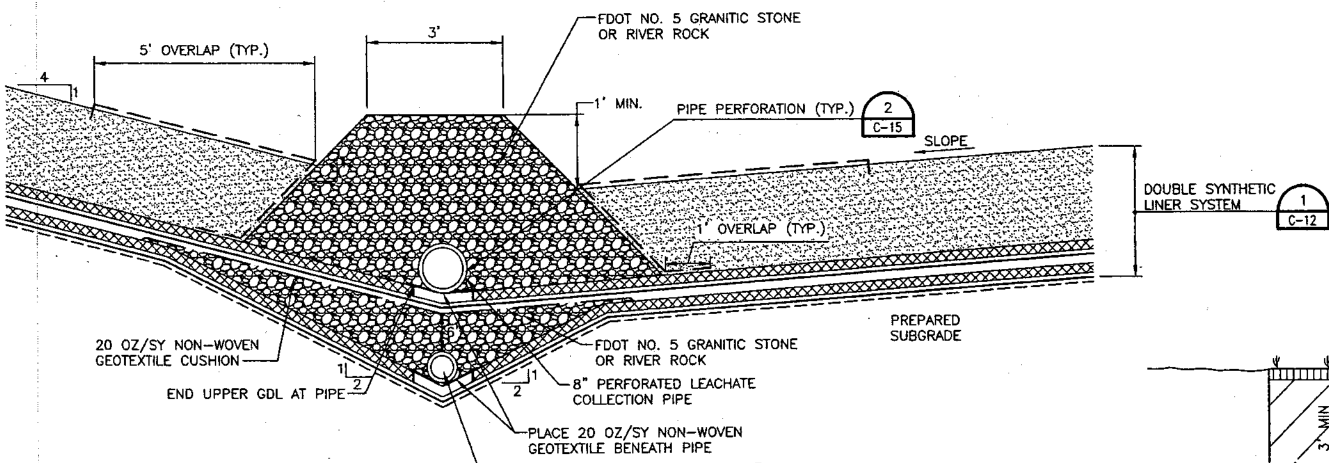
NOTES:

1. SEE PLAN SHEETS FOR LOCATIONS OF CLEANOUTS AND ANGLE OF PIPE ON PERIMETER BERM SLOPE.
2. ALL PIPE SHALL BE SDR 11 HDPE.

CLEANOUT

NOT TO SCALE

1 / C-02



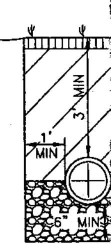
NOTES:

1. TERMINATE GDL BENEATH LEACHATE COLLECTION AND LEAK DETECTION PIPES. REMOVE ANY GEOTEXTILE FLAPS ON GDL SO IT DRAINS FREELY TO PIPES.
2. PROVIDE TEXTURED 60 MIL HDPE GCL UNDER LINER WHERE TRENCH BOTTOM IS BELOW EL. 22.0 NGVD (SEE DETAIL 3, SHEET C-15).
3. 6" LEAK DETECTION PIPE AND SURROUNDING STONE NOT REQUIRED FOR TOE DRAIN LOCATED ON NORTH END OF CELL 1. SECONDARY LINER SYSTEM SHALL BE PLACED IMMEDIATELY BENEATH PRIMARY LINER AT THIS LOCATION.

TOE DRAIN

NOT TO SCALE

3 / C-02



TYPICAL PIPE BE

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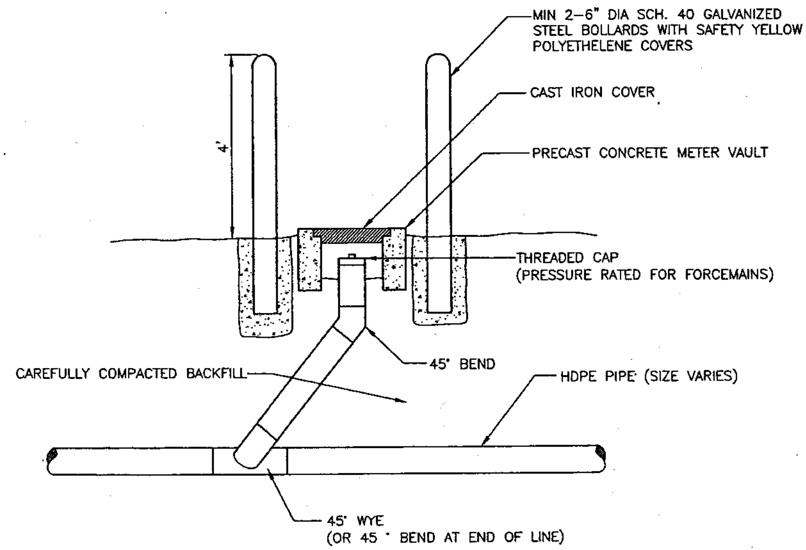


NOTES:

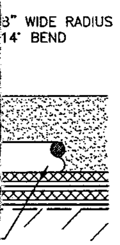
1. SEE PLAN SHEETS FOR DIAMETER AND SDR OF PIPE.
2. SEE TYPICAL BEDDING DEATAIL FOR INSTALLATION REQUIREMENTS.

TYPICAL PIPE CLEANOUT

NOT TO SCALE

2 / C-02

D



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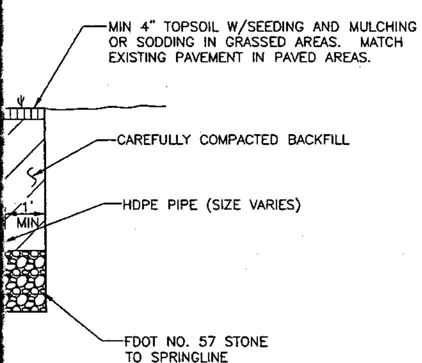
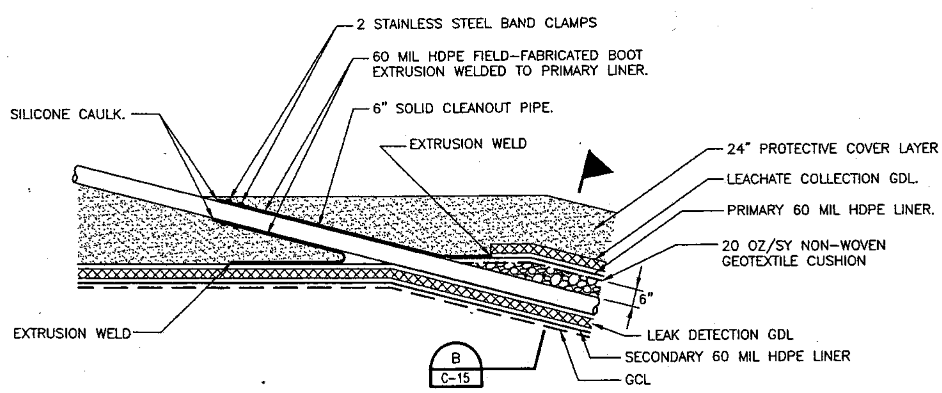
B



DDING

4 / C-02



FIELD FABRICATED BOOT

NOT TO SCALE

5 / C-15

A

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION
PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

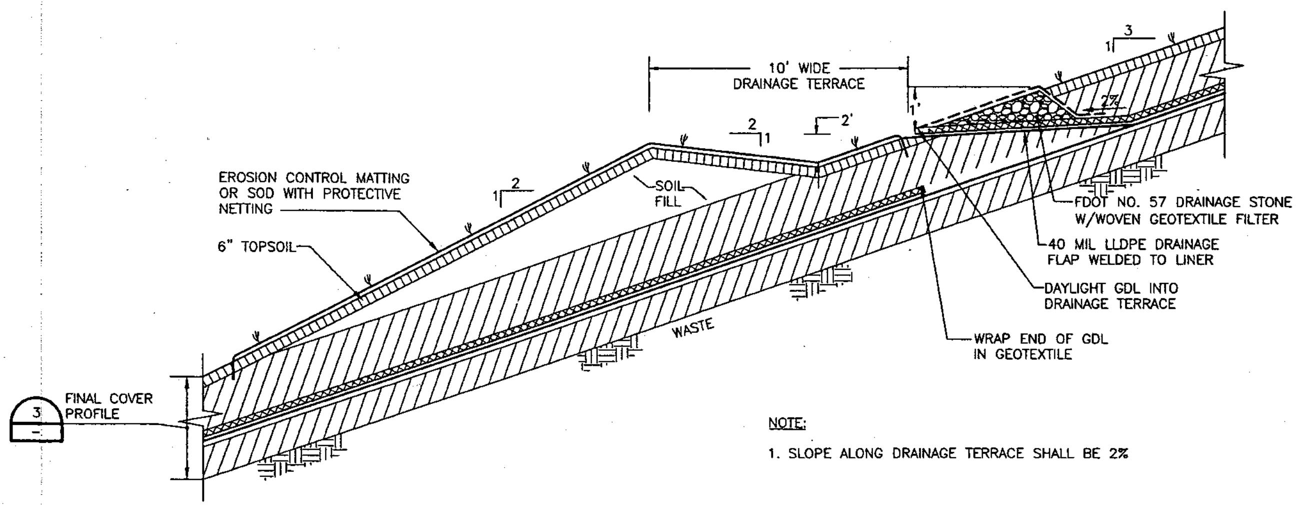
LEACHATE COLLECTION SYSTEM DETAILS

0 1" 2"

FILENAME	00C–18.dwg
SCALE	AS SHOWN

SHEET **C-18**

1 2 3 4



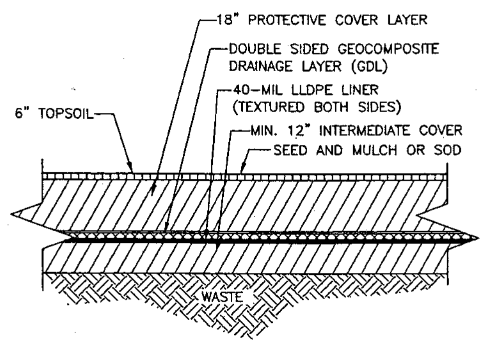
NOTE:

1. SLOPE ALONG DRAINAGE TERRACE SHALL BE 2%

DRAINAGE TERRACE

NOT TO SCALE

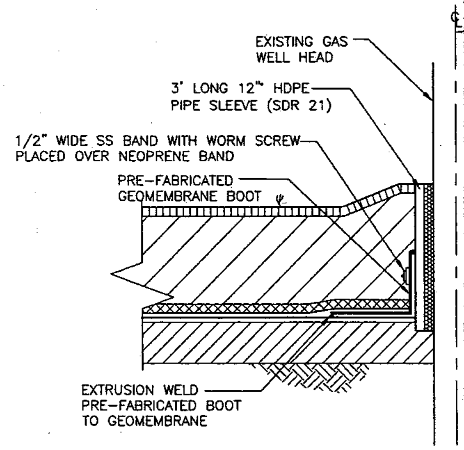
1
C-04



FINAL COVER PROFILE

NOT TO SCALE

3
C-04



PIPE BOOT

NOT TO SCALE

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DRAWN BY	J. HATCHER
PROJECT NUMBER	001916-43485-018

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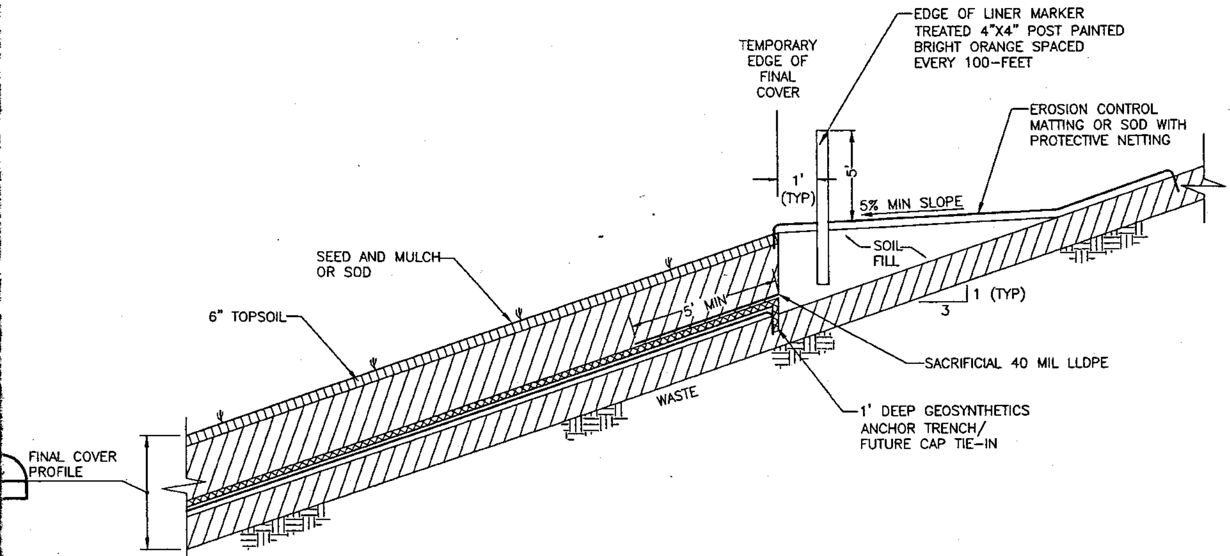
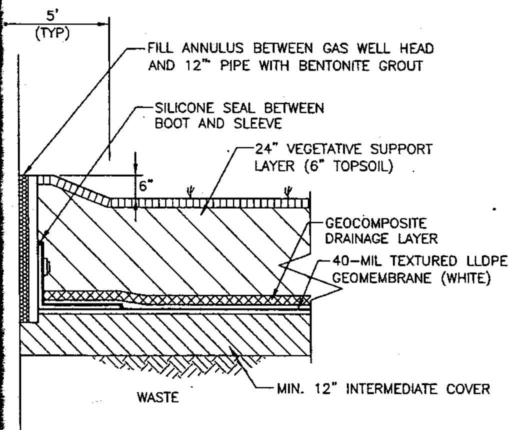


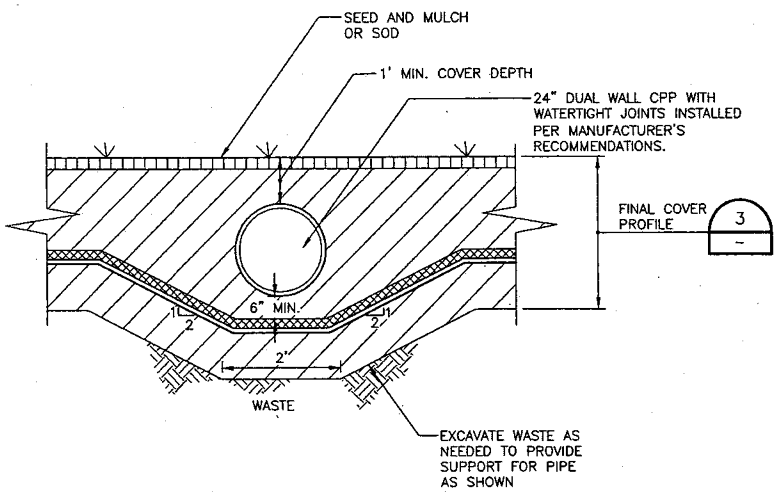
TEMPORARY FINAL COVER TERMINATION

NOT TO SCALE

2 C-09



4 C-06



DOWNDRAIN TRENCH

NOT TO SCALE

5 C-04

D C B A

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

CLOSURE DETAILS

0 1" 2"

FILENAME	00C-22.dwg
SCALE	AS SHOWN

SHEET **C-19**

SARASOTA COUNTY GOVERNMENT
CAPITAL MANAGEMENT SERVICES
1001 SARASOTA CENTER BLVD
SARASOTA, FL 34240
PHONE: (941) 915-3421, FAX: (941) 861-0589

Transmittal

To:	Steven G. Morgan, FDEP	**From:**	Spencer Anderson
Fax:	813-632-7664	**Date:**	February 2, 2009
Phone:		**Pages:**	2 (incl this 1)
Re:	Sarasota County Permit No. 130542-006-SC/01	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☑ **Please Reply** ☐ **Please Recycle**

☑ **Fax** ☑ **Letter** ☐ **Envelope** ☑ **Plan Set** ☐ **Data Disc** ☐ **Other:**

•Comments:

Included in this transmittal is notification of the pre-construction meeting for the subject permit.

Please contact Jack Gibson, Sarasota County Construction Administrator, at jgibson@scgov.net or 941.650.2606 if you have any questions or require additional information.

Thank you,

Spencer Anderson, P.E.

Sarasota County

November 7, 2008

Steven G. Morgan
Environmental Engineer
Solid Waste Section
Southwest District
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926

Subject: Sarasota County Permit No. 130542-006-SC/01, Pre-Construction Meeting Notification

Dear Mr. Morgan:

In accordance with subject permit Specific Condition No. B.5, Sarasota County is providing this notice and invitation to the Central County Solid Waste Disposal Complex Phase II Pre-Construction meeting.

The meeting will take place as follows:

What: Central County Solid Waste Disposal Complex Phase II Pre-Construction Meeting

Where: Central County Solid Waste Disposal Complex Administration Office, 4000 Knights Trail Road, Nokomis, FL 34275

When: February 16, 2009, 1:30 – 3:00pm

Directions: Interstate 75 to Exit 195, Laurel Rd. East on Laurel Rd to Knights Trail Rd. North to 4000 Knights Trail Rd.

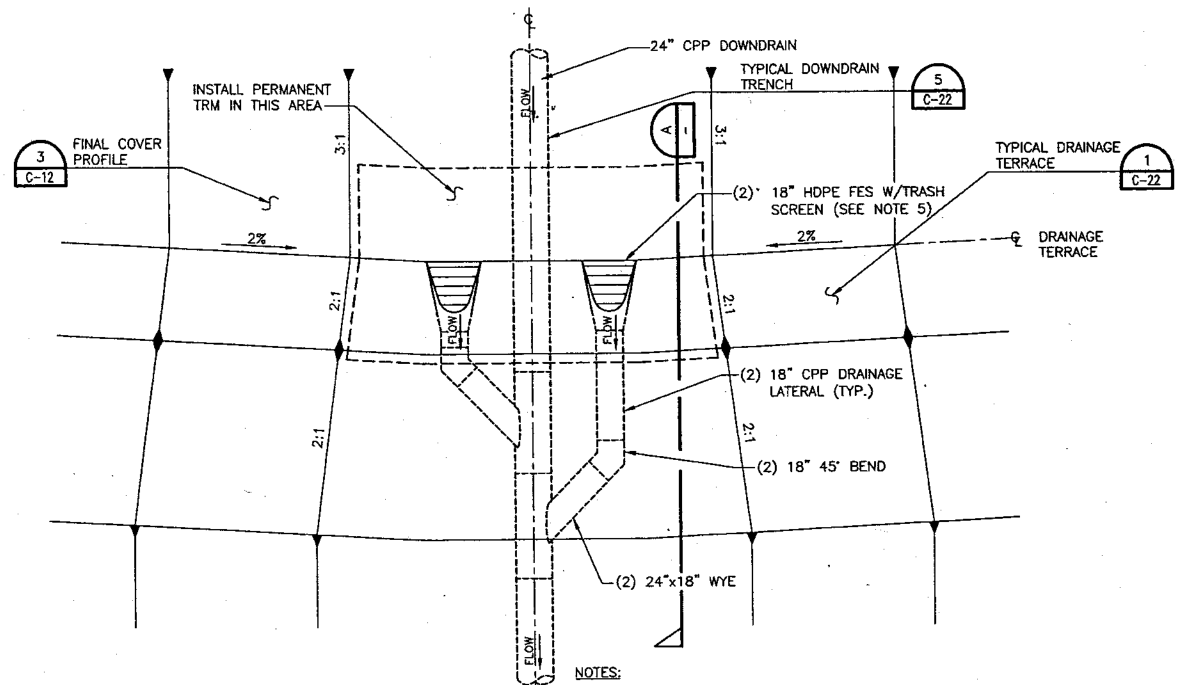
Please notify us of your planned attendance or absence by contacting Jack Gibson, Sarasota County Construction Administrator, at jgibson@scgov.net or 941.650.2606.

We hope you will be able to attend to help kick-off a successful project.

Sincerely,

Spencer L. Anderson, P.E.
Environmental Infrastructure Program Manager

Cc: Project File



NOTES:

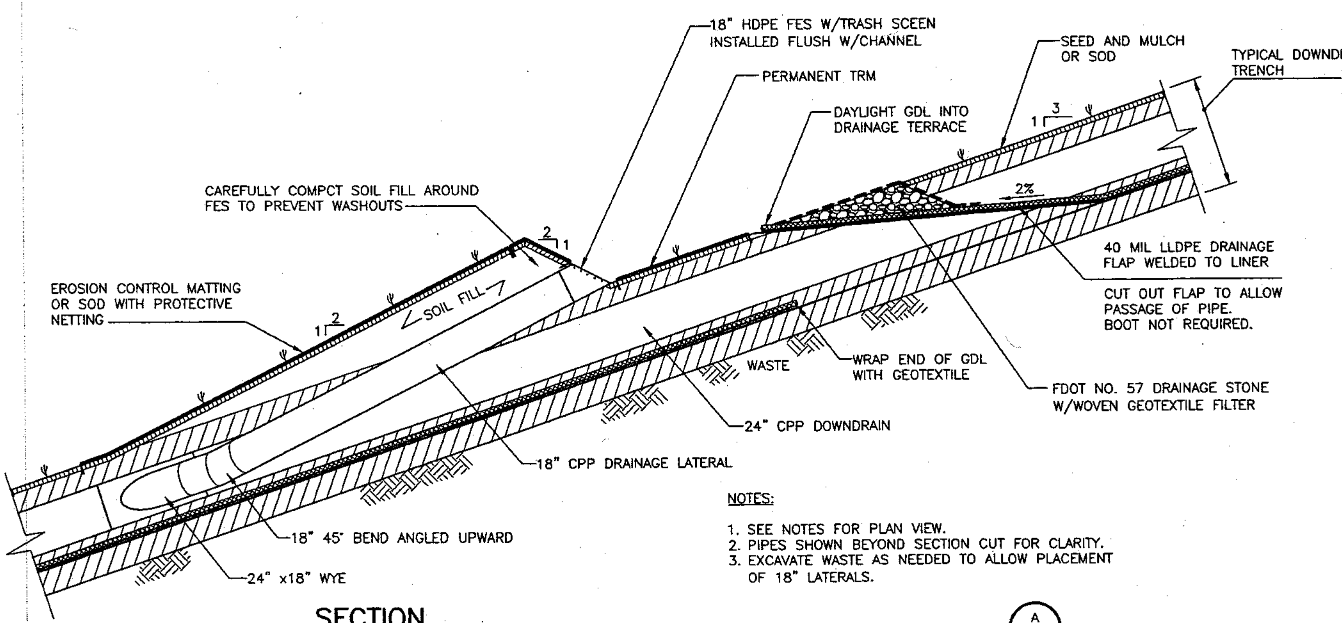
1. ALL PIPE SHALL BE DUAL WALLED CPP WITH WATER TIGHT JOINTS.
2. DASHED LINES REPRESENT BURIED PIPE.
3. ALL FITTING SHALL BE PRE-FABRICATED.
4. PIPE AND FITTINGS SHALL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.
5. TRASH SCREEN SHALL BE CONSTRUCTED FROM 1/2" DIA REBAR INSERTED THROUGH HOLES DRILLED IN FES. BARS SHALL BE 6" OC AND HELD IN PLACE WITH LOCKNUTS.

PLAN VIEW

DRAINAGE TERRACE / DOWNDRAIN INTERSECTION

1 C-04

NOT TO SCALE



NOTES:

1. SEE NOTES FOR PLAN VIEW.
2. PIPES SHOWN BEYOND SECTION CUT FOR CLARITY.
3. EXCAVATE WASTE AS NEEDED TO ALLOW PLACEMENT OF 18" LATERALS.

SECTION

A –

NOT TO SCALE

HDR

HDR Engineering, Inc.
2202 N. West Shore Blvd., Suite 250
Tampa, FL 33607-5755
(813) 282-2300
Florida Certificate of Authorization No. 00004213

ISSUE	DATE	DESCRIPTION
C	01/2008	REVISED PER RAI #3
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J. HATCHER
PROJECT NUMBER	001916-43485-018

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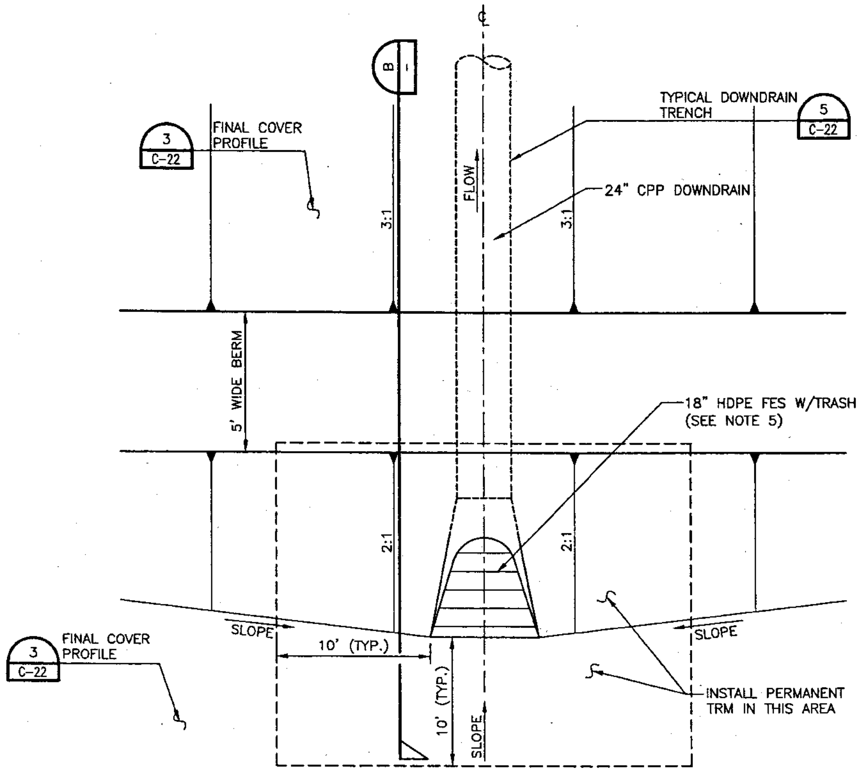

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1. ALL PIPE SHALL BE DUAL WALLED CPP WITH WATER TIGHT JOINTS.
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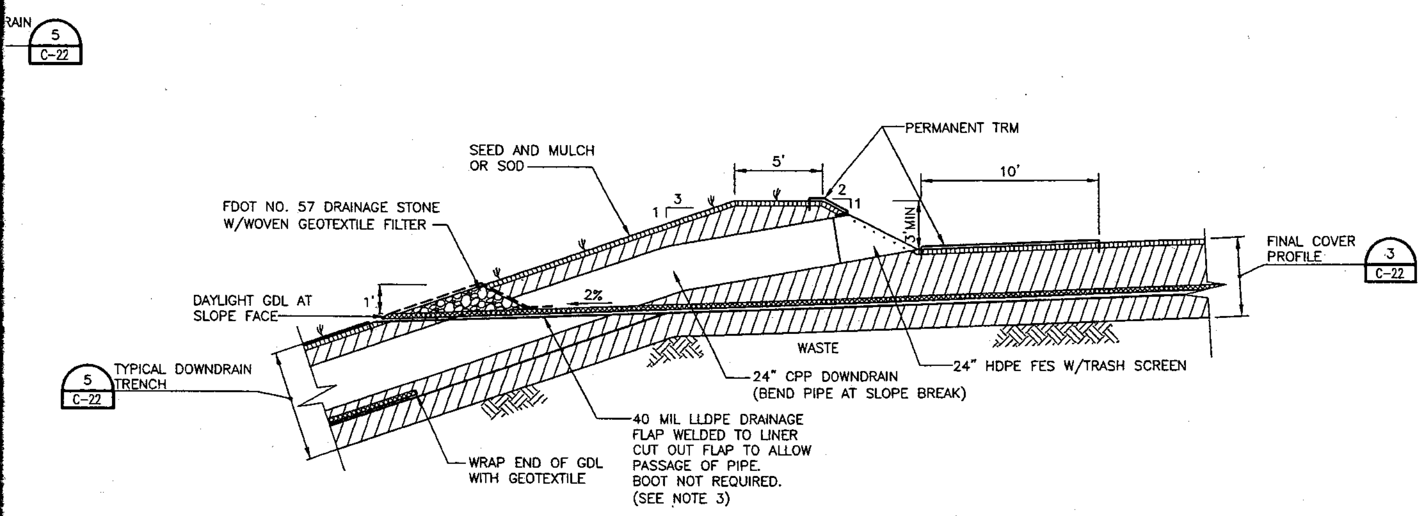
5. TRASH SCREEN SHALL BE CONSTRUCTED FROM 1/2" DIA REBAR INSERTED THROUGH HOLES DRILLED IN FES. BARS SHALL BE 6" OC AND HELD IN PLACE WITH LOCKNUTS.

PLAN VIEW

DOWNDRAIN AT TOP OF LANDFILL

NOT TO SCALE

2 / C-04



NOTES:

1. SEE NOTES FOR PLAN VIEW.
2. PIPES SHOWN BEYOND SECTION CUT FOR CLARITY.
3. DRAINAGE FLAP AND STONE OUTLET REQUIRED ALONG ENTIRE PERIMETER OF TOP OF LANDFILL.

FOR PERMITTING

SECTION

NOT TO SCALE

B / –

Thomas M. Yonoschak, P.E.
Certificate No. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

CLOSURE DETAILS

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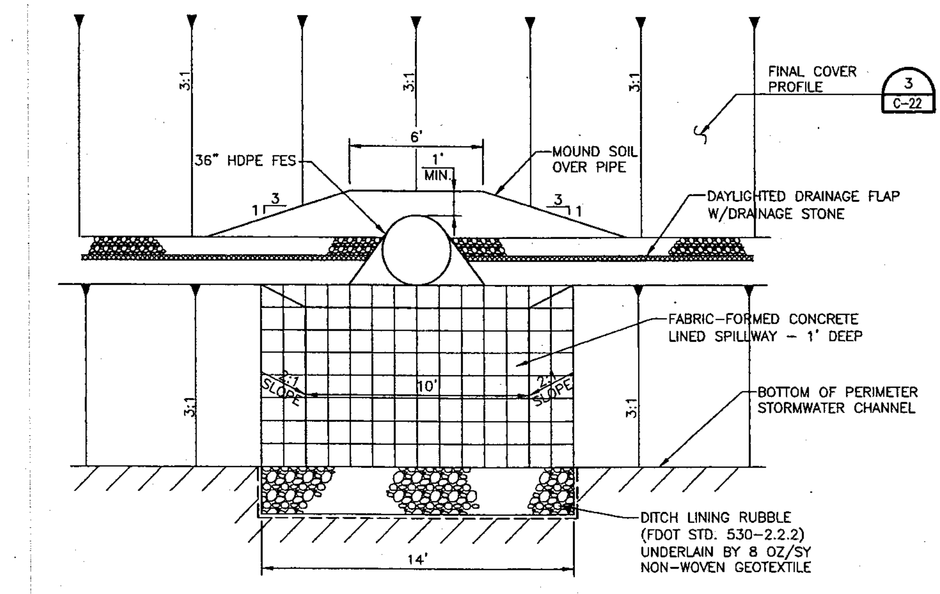

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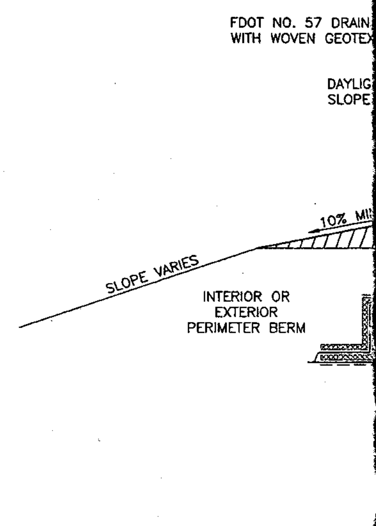

FINAL COVER TIE-

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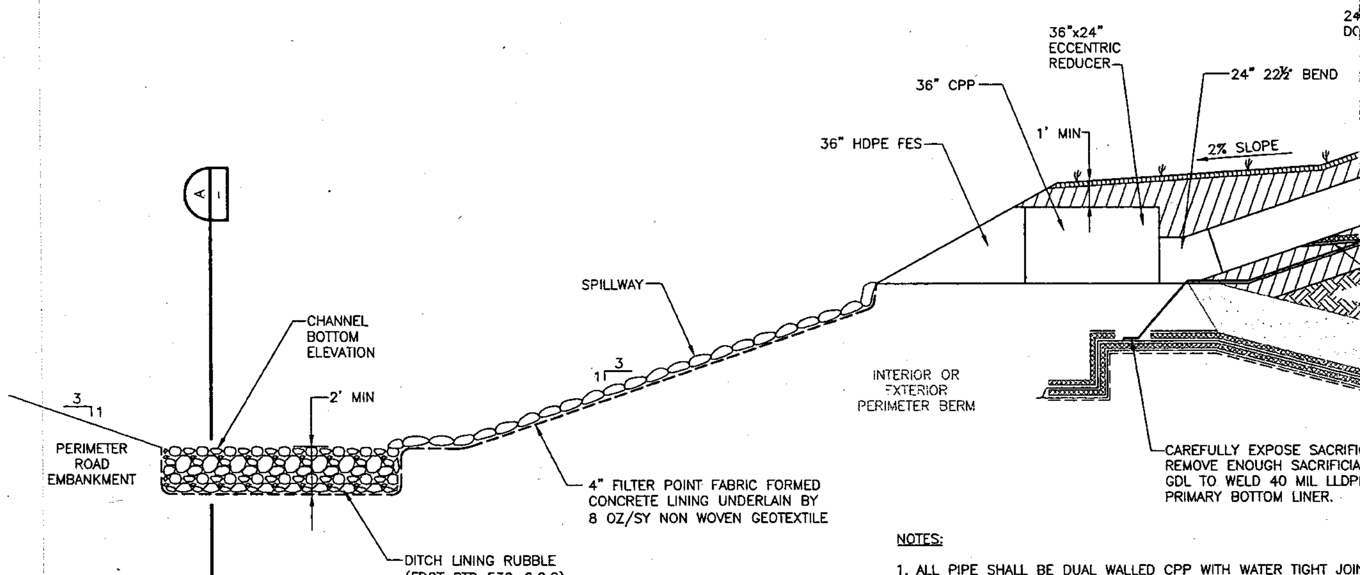

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4. DRAINAGE FLAP AND DRAINAGE STONE NOT SHOWN FOR CLARIT SEE DETAIL 1 THIS SHEET FOR TYPICAL FLAP CONSTRUCTION A

ENERGY DISSIPATOR

NOT TO SCALE

HDR

HDR Engineering, Inc.
2202 N. West Shore Blvd., Suite 250
Tampa, FL 33607-5755
(813) 282-2300
Florida Certificate of Authorization No. 00004213

ISSUE	DATE	DESCRIPTION
C	01/2008	REVISED PER RAI #3
B	06/2007	REVISED PER RAI #1
A	02/2007	ISSUED FOR APPROVAL

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	J.C. READLING
DRAWN BY	J. HATCHER
PROJECT NUMBER	001916-43485-018

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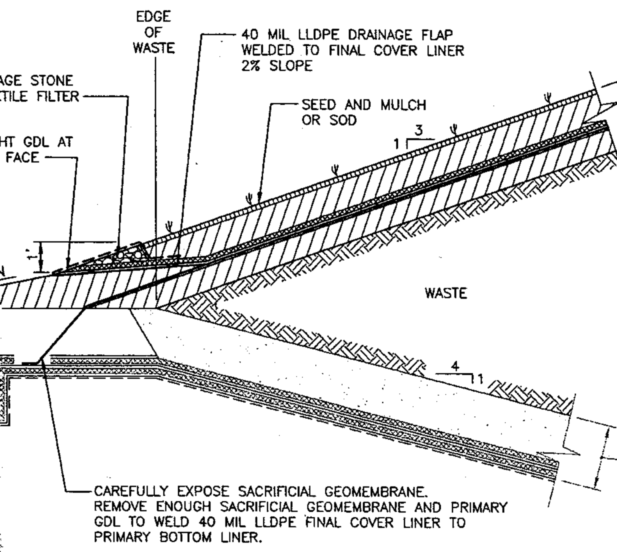

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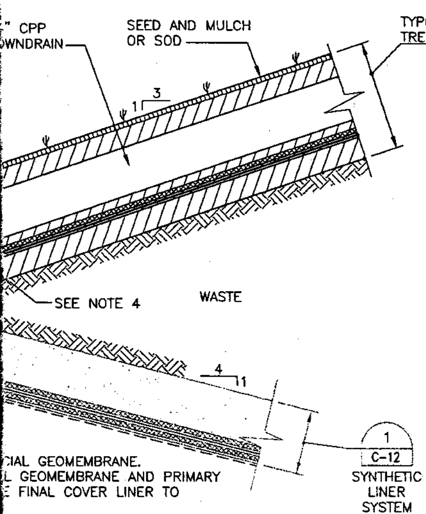

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BE INSTALLED PER

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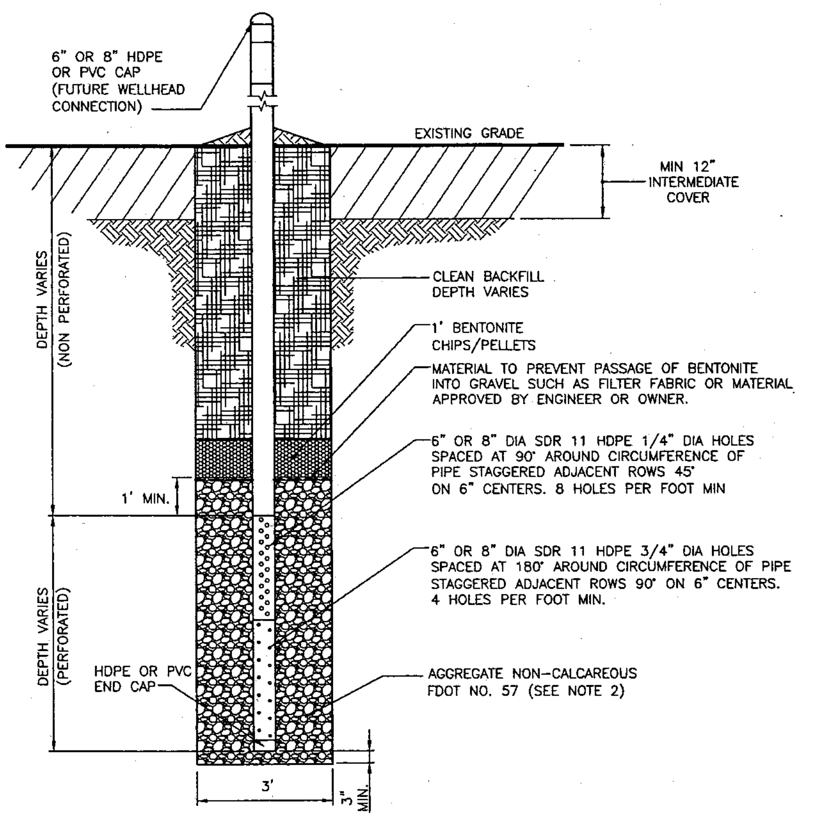
2
C-04



NOTES:

1. END CAP TO HAVE A 3/4" DIA HOLE DRILLED INTO CENTER OF CAP TO ELIMINATE LIQUID BUILD-UP.
2. TIRE CHIPS MAY BE SUBSTITUED FOR NON-CALCAREOUS NO. 57 STONE.
3. DETAIL IS SHOWN PRIOR TO THE INSTALLATION OF FINAL COVER.

VERTICAL GAS WELL DETAIL

NOT TO SCALE

3
C-06

D | C | B | A

FOR PERMITTING

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL EXPANSION PERMIT DRAWINGS

SARASOTA COUNTY FLORIDA

CLOSURE DETAILS

0 1" 2"

FILENAME	00C-24.dwg	SHEET	
SCALE	AS SHOWN		C-21

Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex Closure and Long Term Care Plan

June 2007

Prepared by
HDR Engineering, Inc.
2202 N. West Shore Blvd, Suite 250
Tampa, Florida 33607-5755
(813) 282-2300

HDR Project No. 001916-43485-018

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Closure and Long-Term Care Plan (Plan) is to provide general guidelines and procedures for the closure requirements, closure construction, inspection, maintenance, repairs, monitoring, and record keeping of the existing Phase 1 and proposed Phase II expansion of the Class I Landfill located at the Central County Solid Waste Disposal Complex (CCSWDC). The Plan will be updated when a closure permit application is submitted for the CCSWDC.

This plan provides a combination of recommendations and Florida Department of Environmental Protection (FDEP) requirements. Only those permit items pertinent to the closure and routine maintenance and/or operation of the closed landfill and the stormwater system have been identified and discussed.

The Plan contains a general discussion of the following: (1) closure requirements specified in 62-701.600, F.A.C., and (2) long-term care requirements specified in 62-701.620(2), F.A.C., which include a description of the procedures for erosion control, filling areas of subsidence or other depressions, maintenance of stormwater management system, leachate collection and management, groundwater monitoring and monitor well maintenance, maintenance of vegetative cover, and general maintenance of the facility, and provisions and anticipated source of cover material and vegetation for long term care, consistent with the information provided in support of the financial assurance long-term care estimates required by Rule 62-701.630, F.A.C.

An overall site plan is provided on Sheet G-03, Overall Site Plan and Phasing Plan, of the Phase II Class I Landfill Expansion permit drawings. The site plan shows the locations of the various components of the CCSWDC.

2.0 CLOSURE REQUIREMENTS

In accordance with the requirements of 62-701.600, F.A.C., the following describes the procedures that will be followed and the information that will be provided at the time of closure of Phase I and II of the Class I Landfill at the CCSWDC.

2.1 Schedule Requirements

The following requirements for closure notification and schedules are in accordance with 62-701.600(2), F.A.C.

2.1.1 Notification and Schedule

A closure notification and closure schedule will be submitted to the FDEP at least one year before, or as soon as possible thereafter, the date that wastes will no longer be accepted or when all solid waste units are expected to reach design capacity. The closure schedule will include milestones and completion dates for the closure construction.

2.1.2 Notice to Users

In accordance with 62-701.600(2)(b), F.A.C., the Sarasota County Solid Waste Department will advise users of the Facility of the intent to close the landfill at least 120 days before the date when wastes will no longer be accepted. The notice will include posted signs at the entrance of the site giving the date of closure, the location of alternative disposal facilities, and the name of the party responsible for closing the landfill.

2.1.3 Notice to the Public

The Sarasota County Solid Waste Department will advise the public of the intent to close the landfill at least 10 days before the last day waste will be received. A notice of the landfill closing will be published in the legal advertising section of the local newspaper and proof of publication will be provided to the FDEP. Upon partial closure of any phase of the landfill, Sarasota County will post signs notifying the users of any changes to the routing and access to the disposal area of the landfill.

2.2 Permit General Requirements

A closure permit application will be submitted to the FDEP at least 90 days before final receipt of waste. The Plan submitted at that time will be revised in accordance with current solid waste regulations and will address only the areas for which closure is requested. The conceptual closure drawings submitted as part of the plan set prepared for the Phase II Class I Landfill Expansion permit application will be updated to reflect actual site conditions at the time of full or partial closure. These plans will include sufficient detail to construct the closure.

The closure and long term care plan submitted as part of the closure permit application will include the following items.

- Closure report.
- Closure design plan.
- Closure operation plan.
- Closure procedures.
- Plan for long-term care.
- Demonstration of financial responsibility.

2.3 Report Requirements

The closure report submitted as part of the closure permit application will address all areas to be closed and will be prepared in accordance with 62-701.600(4), F.A.C.

2.3.1 General Information

Information to be included in this report includes general information regarding the identification of the landfill; location, description and a vicinity map; total acreage of the disposal area and landfill property; a legal description of the property on which the landfill is located; and an identification of wastes disposed of at the landfill.

2.3.2 Geotechnical Investigation

A geotechnical investigation report will be prepared as needed. A geotechnical study was conducted for the Class I Landfill design and is included in Part I of the Permit Application. A water quality-monitoring plan will be prepared based on current site data and regulations at the time of preparation of the closure permit application.

2.3.3 Land Use

Land use information will be submitted as part of the closure permit application and will include identification of adjacent landowners; zoning; present land uses; and roads, highway right-of-way, or easements at the time of the closure.

2.3.4 Landfill Gas Migration

The potential for gas to migrate off the site will be evaluated. Landfill gas migration probes near the property boundary will be monitored through the post-closure care period.

2.3.5 Landfill Design

The landfill design and operation will be evaluated for effectiveness. This evaluation will include any geotechnical investigations; surface water runoff, drainage patterns and storm water management; landfill gas migration and associated concentrations; condition of existing cover; and nature of wastes disposed of at the landfill.

2.4 Closure Design

As part of the closure report submitted with the closure permit application, a design plan will detail existing conditions and the proposed closure construction and will include the items described below.

2.4.1 Closure Phasing

A plan sheet illustrating the detailed closure phasing of the site will be submitted as part of the closure design. It is anticipated that the north and east sideslopes of Phase I will be the first areas to be closed. Final closure of the south and west sideslopes of Phase I will not occur at the same time since current plans call for the construction of adjacent phases in these areas. The final closure of the top of Phase I will be delayed pending a decision by the County as to whether to pursue a vertical expansion.

The proposed partial closure of Phase II is not anticipated to occur until 2020 as shown on Sheets C-07 through C-09, Landfill Staging Plans, submitted with the Phase II permit application. Final closure of the south sideslope of Phase II will not occur due to the anticipated future construction of Phase II on this side. Closure of the top of Phase II may also be delayed pending a decision by the County as to whether to pursue a vertical expansion.

The actual closure schedule may vary depending on operational needs and waste intake rates. Closure of each cell will be performed in such a manner as to match as closely as possible the final grades, with drainage enhancements shown on the Phase I and Phase II closure plan drawings that have been submitted to FDEP with the Phase II permit application.

2.4.2 Topographic Maps

Topographic maps of the Phase I and Phase II areas dated June 16, 2006 are provide in Attachment F.5 of the Phase II permit application. Updated topographic maps will be provided with the submittal of future closure plan applications.

2.4.3 Approved Design Dimensions

Solid waste disposal units will be finally closed upon reaching approved design dimensions and elevations in accordance with the requirements of Rule 62-701.600, F.A.C.

2.4.4 Final Elevations

Final elevations of the final cover for Phase I and Phase II are shown before settlement on the closure plan drawings submitted to FDEP with the Phase II permit application. The maximum elevation of the final cover is 121 feet NGVD.

2.4.5 Side Slope Design

The side slopes of the final cover design are designed to be no steeper than 3:1. Tack-on berms are included to control runoff from the surface. A discussion of precipitation effects will be provided as part of the closure report at the time of closure permit application. Also as part of the closure report, in accordance with Rule 62-701.600(5)(g)5, F.A.C., the veneer slope stability analysis of the proposed cover system will be performed to estimate the factor of safety against veneer slope failure for the cover system components. The analysis will be based on the typical values of the interface friction angles of the cover system components and will be verified by laboratory measurement prior to construction. A preliminary analysis was performed and is provided in Attachment P.1 of the Phase II permit application.

2.4.6 Final Cover Design

The conceptual final cover profile is provided on Sheet C-22, Closure Details, of the Phase II permit application drawings. The final cover includes a soil cover, a geocomposite drainage layer, a geomembrane cap, and a final soil cover able to support vegetation. Other details of the final cover design are provided on Sheets C-22 through C-24 of the Phase II permit application drawings.

2.4.7 Final Cover Installation

Final cover installation plans will be submitted at the time of closure permit application, including a schedule for installing closure components, a description of the materials to be used for the vegetative cover, the slope and top grade design to minimize erosion and runoff, and provisions for cover material and maintenance of the cover during long-term care. Final Cover will be installed in accordance with the specifications and Construction Quality Assurance (CQA) Plan for landfill cover construction that will be submitted with the closure permit application.

2.4.8 Stormwater Control

The constructed stormwater management and control system for the CCSWDC is shown on Sheet G-03, Overall Site Plan and Phasing Plan, of the Phase II permit application drawings. The design consists of perimeter drainage ditches bordering each phase that drain to one of several stormwater ponds located on site. This stormwater system will be maintained throughout active operations at the landfill and will serve as the stormwater management system after closure. Details of the stormwater controls that will be installed during final cover construction are provided on Sheets C-22 through C-24, Closure Details, of the Phase II permit application drawings. The final cover stormwater system shown on these drawings is conceptual, and a detailed design will be provided as part of the closure permit application.

2.4.9 Access Control

Access to the Class I Landfill is controlled at the Knights Trail Road entrance with the use of gates. The entire facility is fenced, and control will be maintained after closure. A detailed description of the access control will be provided in the closure plan that will be submitted as part of the closure permit application.

2.4.10 Proposed Final Use

Currently, there are no planned final uses identified for the CCSWDC Class I Landfill except for the potential possibility of landfill gas to energy facility. Any final uses will be permitted through FDEP prior to their implementation.

2.4.11 Gas Management System

The proposed gas management system will include the use of active gas vents to control landfill gas generated within the Class I waste. This system will consist of gas wells designed to reduce gas pressure in the interior of the landfill by collecting gases and preventing gases from moving laterally. The gas will either be flared or used for beneficial purposes. A typical gas well detail is provided on Sheet C-24, Closure Details, of the Phase II permit application drawings. A conceptual layout of the Phase I and Phase II gas wells and headers is provided on Sheet C-06, Conceptual Gas Management Plan, of the Phase II permit application drawings. Detailed design will be provided to FDEP with the submittal of the gas system permit application.

2.5 Operation Plan

A closure operation plan will be provided as part of the closure permit application. The closure operation plan will include a detailed description of the steps that will be taken to close the landfill, a schedule of the closure construction and completion, a schedule for long-term care, a description of the financial assurance mechanisms for financial responsibility, and description of the additional equipment or personnel that will be required to complete the closure construction. The closure operation plan will include a description of the water-quality-monitoring plan and gas-management plan, including a discussion of the implementation procedures.

2.6 Temporary Closure

Areas that have reached final permitted elevation but may receive additional waste when future phases are constructed will be temporarily closed. A request for temporary closure will be submitted with the closure permit application. Temporarily closed areas will receive a minimum of 12 inches of soil cover that is seeded and mulched or sodded to control erosion. Alternately, a geosynthetic rain cover may be placed in these areas. Structures will be provided to control runoff generated in these areas.

3.0 CLOSURE PROCEDURES

The following section describes the procedures that will be followed in accordance with 62-701.610, F.A.C., for closure of the CCSWDC Class I Landfill.

3.1 Survey Monuments

Upon closure of the landfill, a description of permanent bench marks outside the landfill cells, survey monuments, and the marker posts that identify the waste filling limits, will be provided. The description will also include details of any new monuments that may be necessary for closure construction.

3.2 Final Survey Report

A final survey report of the constructed closure will be conducted in compliance with 62-701.610(3), F.A.C. The final survey report will be prepared by a registered land surveyor and will be submitted to the FDEP to verify that the final contours and elevations are in accordance with the plans and approved in the closure permit. The contours in the final survey will be shown at no greater than 5-foot intervals.

3.3 Closure Construction Certifications

In accordance with 62-701.610(4), F.A.C., a signed, dated, and sealed certificate of closure construction by the engineer of record will be submitted to the FDEP upon completion of closure construction. This certificate will indicate any deviations from the permitted closure plans.

3.4 Declaration to the public

After closing operations are inspected and approved by the FDEP, the Sarasota County Solid Waste Department will file a declaration to the public in the deed records of Sarasota County. The declaration will include a legal description of the property and a site plan specifying the area actually filled with solid waste.

3.5 Official date of closing

The requirements identified in Sections 3.2, 3.3, and 3.4 (above) will be submitted to the FDEP. Upon receipt, the FDEP will notify the Sarasota County Solid Waste Department in writing that the notice of termination of operations and closure of the facility has been received. The official date of the landfill closing will be the date of the FDEP letter.

3.6 Closed Landfill use

No use has been designated for the closed landfill area. In accordance with 62-701.610(7), F.A.C., Sarasota County will consult with the FDEP before conducting activities at the closed landfill. Sarasota County acknowledges that the FDEP retains regulatory control over any activities that may affect the integrity of the environmental protection measures of the landfill.

3.7 Relocation of Wastes

If at any time after closure the Sarasota County Solid Waste Department intends to relocate waste within the footprint of the landfill, a permit modification application will be submitted to the FDEP for approval.

4.0 LONG-TERM CARE REQUIREMENTS

The Sarasota County Solid Waste Department will be responsible for monitoring and maintaining the facility in accordance with the FDEP-approved closure plan for a minimum of 30 years from the date of closing. The long-term-care period may be extended by FDEP to be consistent with 62-701.620(1), F.A.C.

If the landfill site is sold or leased to another authority, Sarasota County will ensure that the long-term care requirements of the permit are adhered to by contractual agreement or by retention of access rights. Any lease or transfer of property will include specific conditions to delineate the following responsibilities:

- Sarasota County is responsible for closure and shall maintain any required proof of financial responsibility until the person acquiring ownership, possession, or operation of the landfill establishes the required proof of financial responsibility with FDEP.
- Responsibility for the continuance of monitoring, maintenance, and correction of deficiencies or problems.
- Mineral rights attached to the property and the rights to any recoverable materials that may be buried on the property or landfill gases that may be produced. An FDEP permit shall be required if any onsite operations subsequent to closing of a landfill involve disturbing the landfill.

Sarasota County is obligated to retain the right of entry and to make provisions for access to the landfill property and the closed area of the landfill for the long-term-care period for inspection, monitoring, and maintenance of the site. Supervising the closed landfill is the responsibility of a person experienced in the closure requirements of a solid waste management facility.

Closed landfill areas, if disturbed, are a potential hazard to public health, groundwater, and the environment. Therefore, FDEP retains regulatory control over any activities that may affect the integrity of the environmental protection measures, such as the landfill cover, drainage, monitoring system, or stormwater controls. Consultation with the FDEP is required before conducting activities at the closed landfill.

The closure permit will be renewed every 10 years until the groundwater monitoring well analyses have stabilized and the FDEP notifies the applicant in writing that renewal is not required. Sarasota County, in accordance with 62-701.620(3)(a) through (d), F.A.C., will demonstrate the required stabilization criteria.

An inspection checklist that Sarasota County proposes to use monthly is included as Table 1. The checklist is used to ensure compliance with the long-term-care requirements and provide a log of landfill inspection activities. The checklist form is completed and signed by the individual conducting the monthly inspection. Items requiring attention are noted on the form and brought to the attention of the Sarasota County landfill manager.

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Table 1 CCSWDC Inspection Log

Central County Solid Waste Disposal Complex
Sarasota County, Florida
Post-Closure Inspection Checklist
Page 1 of 2

Landfill Inspected:____________________ Date of Inspection:________________

Field Personnel:____

Conditions:____

Section A: Fencing and Security	Yes	No	N/A
1. Damage to fences, gates, or locks	___	___	___
2. Gates unlocked/locks missing	___	___	___
3. Signs of forced entry detected	___	___	___

Section B: Access Roads	Yes	No	N/A
1. Access and site roads in poor condition	___	___	___
2. Signs need repair	___	___	___

Section C: Final Cover System	Yes	No	N/A
1. Settlement of cover	___	___	___
2. Evidence of erosion, cracks, gullies	___	___	___
3. Inadequate growth of grass cover	___	___	___
4. Excessive grass height (greater than 18 inches)	___	___	___
5. Holes or damage to cover	___	___	___
6. Growth of damaging weeds or saplings	___	___	___
7. Evidence of leachate seeps	___	___	___
8. Landfill marker damage	___	___	___
9. Impacts due to settlement	___	___	___
10. Ponding of water	___	___	___

Section D: Gas Extraction System	Yes	No	N/A
1. Visible damage to system components	___	___	___
2. Blockage in pipes	___	___	___
3. Excessive release of odors	___	___	___
4. Proper operation of flares, blowers and other equipment	___	___	___

Section E: Monitoring Devices	Yes	No	N/A
1. Damage to groundwater monitoring wells	___	___	___
2. Damage to gas monitoring wells	___	___	___
3. Locks missing	___	___	___
4. Damage to gas monitor probe	___	___	___

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Section F: Stormwater Management System	Yes	No	N/A
1. Ponding of water	___	___	___
2. Areas of silting	___	___	___
3. Insufficient slope to promote positive drainage	___	___	___
4. Areas of erosion in ditches or areas leading to ditches	___	___	___
5. Inlets repair required	___	___	___
6. Piping repair required	___	___	___
7. Retention pond damage	___	___	___
8. Berm repair required	___	___	___
9. Letdown pipe repair required	___	___	___
10. Grout filled fabric repair required	___	___	___
11. Litter or garbage problem	___	___	___
12. Pollutants in drainage areas	___	___	___
13. Water other than stormwater entering system	___	___	___
14. Ditches/Culverts obstructed by vegetation or other	___	___	___
15. Debris or weeds in perimeter ditch	___	___	___

Section G: site and surrounding area	Yes	No	N/A
1. Surface depressions	___	___	___

Signature of Field Personnel:________________________Date:____________________________

Explanation of items marked Yes above:

____
____
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4.1 Maintenance and Wear

The Sarasota County Solid Waste Department will inspect and maintain the landfill to minimize impacts to the function and/or integrity of the final cover system. The County will provide for site access control, erosion control, grass cover maintenance, and prevention of ponding. Primary focus during the inspection will be the condition of the surface vegetation, landfill cap, gas collection and monitoring system, stormwater system, and monitoring devices. Monitoring of groundwater and landfill gas is addressed in Part M and Part O, respectively, of the Phase II permit application.

Table 2 is a schedule for notification if corrective actions are required. Records of discovery will also be kept on the Inspection Checklist (Table 1).

Table 2 Schedule for Notification and Corrective Actions

Activity	Initial Notification	Written Notification/Corrective Action Plan	Corrective Action
Sinkhole within 500 ft	Within 24 hours of discovery	Within 7 days of discovery, including description, location, size shown on plan sheet, corrective action plan	Based on proposed schedule
Fire/Explosion	Within 24 hours of discovery	Within 7 days of discovery, including remedial measures and schedule of activities	Based on proposed schedule
Damage to Facilities/Failure of Systems	Within 24 hours of discovery with explanation	Within 7 days of discovery, including details of damage/failure, remedial measures, schedule of repairs	Based on proposed schedule
Damage to Groundwater Monitoring System	Within 24 hours of discovery with explanation	Within 7 days of discovery, including details of damage/failure, remedial measures, schedule of repairs	Based on proposed schedule
Damage to Stormwater system	Within 24 hours of discovery with explanation	Within 7 days of discovery, including details of damage/failure, remedial measures, schedule of repairs	Within 30 days of written notification
Erosion of Final Cover System> 6-inches in depth	N/A	Description on Inspection Log	Within 72 hours of discovery
Leachate not accepted by Disposal Facility	Same as Written Notification	Within 3 days of cessation of leachate acceptance, including explanation of contingency measures and schedule of disposal	Within 7 days of cessation of acceptance

4.2 Grass

Grass cover maintenance will include mowing, fertilizing, seeding, mulching, and filling areas of subsidence. Mowing, fertilizing, seeding, mulching, and filling will continue to be performed as needed. The following is a general schedule and description of grass maintenance activities.

4.2.1 Mowing

The height of the grass will also be observed during monthly inspections. If the grass is found to be approximately 18 inches high, mowing will be scheduled before the next inspection. Caution will be exercised while mowing to keep heavy equipment away from the gas vents and monitoring devices.

4.2.2 Fertilizing

The general recommendations for commercial fertilizer are 12-8-2 formulation (nitrogen-potassium-phosphorus), of which 60% of the nitrogen is to be in the urea-formaldehyde form and in conformance with state laws. It should be applied in the early spring (March) and mid-summer (July) on an as-needed basis. The spread rate should be 8 to10 pounds per 1,000 square feet, or as instructed on the package. The local USDA extension office should be called to verify these recommendations.

4.2.3 Seed and Sod

Damaged areas or other areas where grass cover is sparse must be reseeded or sodded. Sod is generally recommended for use in all areas such as on steep slopes and in highly eroded or bare spots. Sod should be staked in place with sod pegs where necessary.

Seeding, if done on relatively flat areas, should be performed in the early spring and late fall as needed in the following manner:

<u>Early spring</u>

- Scarified bahia with 20% bermuda seed.
- Minimum percent pure seed - 95
- Minimum percent germination and hard seed - 80
- Bahia seed will not germinate until overnight temperatures stay above 70° Fahrenheit.

<u>Late fall - Italian rye</u>

- Minimum percent pure—95
- Minimum percent germination and hard seed—90
- Seed will not germinate until overnight temperatures stay below 70° Fahrenheit and above 40° Fahrenheit.
- Bahia Sod—16-inch-by-24-inch slabs with 1-1/2-inch root bed

4.2.4 Seed Rates

The following are general recommendations for maintenance and replacement growth. High erosion areas and bare patches should be seeded more heavily. Spread rates may vary for different grass seeds from different suppliers. The instructions on the seed bags should be followed. Maintenance seeding should be used where the grass is healthy and full. Replacement seed rates should be used on bare or thin grass growth areas.

Maintenance Seed Rates

- Spring ½ pound per 1,000 square feet
- Fall ½ pound per 1,000 square feet

Replacement Seed Rates

- Spring 3-5 pounds per 1,000 square feet
- Fall 3-5 pounds per 1,000 square feet

4.2.5 Watering

Sarasota County should water newly established grass as required to maintain the health of the grass until it matures; daily watering should never be necessary. If the blades of the grass begin to wilt and loose resiliency when walked on, water needs to be applied. The water that is applied should be clean.

4.3 Erosion Control

Avoiding erosion is probably the most cost-effective means of protecting the closure cap. A relatively minor eroded area combined with a severe storm event can cause degradation of the final cover. The best way to avoid erosion is to maintain a healthy stand of grass and keep drainage swales free of silt and sediment. Cleaning the drainage swales will prevent overflow and backflow and reduce the risk of erosion from these causes. Large amounts of silt or sediment removed from the drainage swales may indicate damage to the closure cap.

4.4 Stormwater Structures

All stormwater structures should be clean of all silt or soil deposits. All soil settlement surrounding these items should be brought to the attention of the Solid Waste Operations Manager and then repaired in a manner consistent with the surrounding area. Grass should be maintained, replaced, reseeded, and mowed as indicated in the section on grassing. The drainage swales will be cleaned annually as needed.

4.5 Landfill Cap

Post-closure maintenance of the cover system is to include inspecting the system in those landfill areas that have a differential settlement of 5 feet or more in a horizontal distance of 100 feet. The system shall be repaired in those areas as necessary. Any differential settlement at the landfill is to be corrected to allow drainage paths to remain intact. Differential settlement is defined as one area of the closure subsiding or settling faster than the surrounding area. Differential level checks will be performed if evidence of settlement is detected during routine site inspections. Differential level check information will be kept on file and will be made available for FDEP review.

If the final cover requires replacement, repair will follow the original design specifications. Repairs to the final cover will be under the supervision of a professional engineer. Accounts of all repairs to the final cover system and test results will be documented in Daily Observation Reports and maintained by the Sarasota County Solid Waste Department. Repairs to any layer of the final cap system shall be in accordance with the specifications and Construction Quality Assurance (CQA) Plan for landfill cover construction that will be provided with the closure permit application.

4.6 Landfill Access and Landfill Signs

The boundary of the landfill property is fenced. Access to the site is to be restricted to prevent unauthorized entry and dumping. As part of the routine check-list procedure, all of the fencing and signage is inspected for damage and repaired, repainted, and replaced if necessary to maintain the integrity of these items.

If any of the landfill monuments are severely damaged or destroyed, corrective actions will be taken.

The site roadways are also inspected as part of the routine checklist procedure. If any of the access roads are severely damaged, corrective actions will be taken to maintain passable and safe roads on the site.

4.7 Management of Monitoring Devices

This section includes descriptions of procedures for maintaining and repairing groundwater and gas monitoring devices. The locations of the monitoring devices are shown on Figure 1 of the Water Quality Monitoring Plan provided in Appendix C of the Phase II permit application. Groundwater monitoring is to continue at the Facility with the potential for periodic revisions following evaluation of the laboratory reports.

4.7.1 Groundwater Monitoring Wells

If a monitoring well becomes inoperable, Sarasota County will notify the FDEP within 24 hours and follow this up with a written notice within 7 days, as shown in Table 2. The written notice will provide a detailed description of what problem has occurred and what remedial actions will be taken. If deemed necessary, the damaged monitor well will be properly abandoned and a new well will be constructed close to the abandoned well. Copies of the well abandonment permit and site inspection prepared by the Southwest Florida Water Management District (SWFWMD) will be provided to FDEP for abandoned wells. Monitoring well design and replacement will be approved by the FDEP before abandonment and installation. Upon completion of the construction of the monitoring well, the following information will be provided to the FDEP.

- Well Identification.

- Driller's Lithologic Log.
- Latitude/Longitude.
- Total Well Depth.
- Aquifer Monitored.
- Casing Diameter.
- Screen Type and Slot Size.
- Casing Type and Length.
- Elevation at Top of Pipe.
- SWFWMD Well Construction Permit Number.
- Elevation at Land Surface.

The newly constructed monitor well will be developed and included in the routine monitoring.

The long-term-care permit shall be renewed every 10 years until the monitoring well analyses have stabilized and the FDEP notifies the County in writing that the permit renewal will not be required.

Groundwater monitoring will only be conducted by an individual trained in groundwater monitoring and reported to the FDEP as required by the closure permit. Care should be taken when equipment is near any monitor well so that no damage is done.

4.7.2 Gas Monitoring

Gas monitoring is to continue at the Class I landfill in accordance with Section L.9 of the Operations Plan in Appendix A of the Permit Application. Soil monitoring probes will be replaced and repaired in accordance with 62-701.530, F.A.C. FDEP will be notified of maintenance repair activities.

4.8 Record-Keeping Requirements

Records of information used to develop or support the permit applications and any supplemental information submitted to the FDEP shall be kept for the design life of the landfill. Records of monitoring information, including calibration and maintenance records, all original chart recordings for continuous monitoring instrumentation, and copies of all reports required by permit, will be kept for at least 10 years. Background water quality records will be kept for the design life of the landfill. Annual estimates of the remaining life and capacity and site life will be maintained. Annual estimates will be based on a summary of the heights, lengths, and widths of the solid waste disposal units and will be submitted annually to the FDEP. Records more than 5 years old, which are required to be retained, may be archived provided they can be retrieved within 7 days.

4.8.1 Records of Monitoring

Records of water quality monitoring information are to include the following:

- Facility name and identification number, and identification number of the surface water and groundwater monitoring points.
- The date, exact place, and time of sampling or measurements.
- The person responsible for performing the sampling or measurements.
- Water levels before sampling.
- The dates analyses were performed.
- The person responsible for performing the analyses.
- The analytical techniques or methods used and method detection limits and applicable water quality standards.
- STORET code numbers for parameters analyzed.
- The results of such analyses.

Water quality monitoring reporting and evaluations, including routine sampling events, will be consistent with the pertinent requirements of 62-701.510(9), F.A.C.

Biennial reporting will be performed by a professional engineer or hydrogeologist experienced in hydrogeologic investigations. The biennial report will be updated at the time of permit renewals. The biennial report will meet requirements of 62-701.510(a), F.A.C., and will include the following:

- Tabular displays of data.
- Trend analyses.
- Comparisons of shallow-, middle-, and deep-zone wells.
- Correlation of parameters and discussions of data correlations.
- Interpretations of groundwater contour maps and flow rates.
- Evaluation of the adequacy of water quality monitoring frequency and sampling locations.

4.8.2 Inspection Forms

Inspections of the final cover and stormwater system will be documented and kept on file at the Sarasota County Solid Waste Operations Office.

Deficiencies observed in the fencing and security, access roads, monitoring devices, stormwater system, or final cover system will be documented by Sarasota County during inspections of the landfill. The extent of damaged areas, the extent of the areas repaired, and a detailed description of the repair work will be recorded.