

**Stormwater and Leachate Management Plan
Citrus County Central Landfill
Phase 1A Expansion
Citrus County, Florida**

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SMITH
TECHNOLOGY CORPORATION

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**STORMWATER AND LEACHATE MANAGEMENT PLAN
CITRUS COUNTY CENTRAL LANDFILL
PHASE 1A EXPANSION
BID NO. 96-89
CITRUS COUNTY, FLORIDA**

1.0 INTRODUCTION

Smith Technology Corporation (Smith Technology) has prepared this Stormwater and Leachate Management Plan (SLMP) for the Citrus County Central Landfill Phase 1A Expansion located in Lecanto, Florida.

The SLMP has been prepared for Florida Department of Environmental Protection (FDEP) in accordance with the requirements established in the Contract Documents for Citrus County Bid No. 96-89 and has been reviewed by Citrus County and CH2M Hill personnel familiar with the project. It is our understanding that this plan is required by the FDEP as a condition of Construction Permit Number SC09-282375, and its submittal and subsequent approval by FDEP is required prior to initiating intrusive activities.

1.1 Scope of Document

The purpose of this plan is two-fold: 1) outline the temporary methods by which Smith Technology will control stormwater affecting the work area and surrounding locations during the construction of the Phase 1A Expansion; and 2) outline the methods which will be employed to handle the leachate originating from the Phase 1 Landfill prior to the permanent construction of the Phase 1A Expansion leachate collection sump. These methods are in accordance with the Contract Documents, as well as the information contained in the Southwest Florida Water Management District General Management of Surface Water Permit No. 402023.02 and FDEP Construction Permit Number SC09-282375.

1.2 General Principles of Stormwater Management

Stormwater management is characterized by the control of stormwater entering or exiting a defined area. Stormwater management is complicated by the addition of sedimentation and erosion encountered during a stormwater event. The primary agents of erosion include both water and wind. These agents can scour and remove soil particles as a result of flowing past, impacting upon, or exiting from the surface of soil thus altering the existing topography of the area creating additional stormwater management problems. Erosion and sedimentation typically increase dramatically when land is disturbed, e.g., a construction site. Therefore, the physical characteristics of the site, including topography, soils, and drainage need to be assessed to minimize environmental damage to the surrounding area and to protect the existing landfill cell which is currently in operation.

The following general principles will be used by Smith Technology at the Citrus County Central Landfill Phase 1A Expansion to provide for stormwater management and to reduce the likelihood of uncontrolled erosion and sedimentation:

1. Consider the existing terrain and soil in the development of the site to utilize existing topography and drainage patterns to minimize runoff or run-on.
2. Retain existing vegetation wherever possible. If existing vegetation must be cleared, retain and protect it until the area must be disturbed.
3. Minimize the extent and duration that bare soil is exposed to erosion by water and wind. Use staged clearing and controlled grading to reduce the amount of disturbed area or to control the flow of surface sheet flow.
4. Divert off-site runoff away from disturbed areas. Install diversions and waterways before clearing and grading.

5. Stabilize disturbed areas as soon as possible. Use stabilizing measures such as seeding, vegetation, erosion control matting, or placement of the secondary liner system on side slopes.
6. Keep velocity of runoff leaving or entering the work area low. Reduce runoff or run-on by maintaining vegetative cover and installing perimeter controls such as silt fences, hay bales, and check dams.
7. Inspect and maintain erosion control measures at least weekly. Repair, if needed, all measures after each rainfall.
8. Remove stormwater runoff and run-on by using temporary piping systems.

These principles provide the foundation for the SLMP. Implementation of stormwater management, as well as erosion and sedimentation control measures addressed in this document, coupled with the above-mentioned general principles, will control stormwater flow within the work area and will ultimately insure the stability of the existing slopes as well as reduce sedimentation and erosion at the site.

1.3 General Principles of Leachate Management

Leachate Management is required for the Citrus County Central Landfill Phase 1A Expansion to address the interruption of leachate removal from the existing lift station subsequent to its demolition and removal. It is a requirement of the contract that Smith Technology continue the removal of leachate from the Phase 1 Landfill so that Citrus County can continue to operate in accordance with current permits.

Smith Technology will initiate revised leachate management procedures prior to the interruption of current management procedures by utilizing a temporary pumping station and temporary leachate discharge hose. A temporary pumping station will be installed adjacent to the existing Phase 1 Leachate Collection pipe system. This pumping station will consist of a collection pump housing, a submersible pump with level controls, and polyethylene primary hose with secondary containment.

The temporary pump station will be placed at a location adjacent to where the existing Phase 1 Leachate Collection pipes exit the liner system and at an elevation lower than where the leachate collection pipes exit Phase 1. A leachate collection pump will be placed within the temporary pump station and the pump station end will be sealed. The temporary discharge hose will be connected to the pump; and the hose, along with its secondary containment, will be placed along the edge of Phase 1 landfill and run along the surface up to the top of the landfill. A temporary 2-inch HDPE pipe will be connected to the temporary hose (refer to Sketch "B" attached) and run under the road for connection to the permanent forcemain as shown on Sheet 6 of the Construction Drawings.

2.0 STORMWATER MANAGEMENT MEASURES

Smith Technology plans to manage stormwater and control erosion and sedimentation at the Citrus County Central Landfill through the implementation of proven control procedures. These procedures include the following:

- Effective site management for implementation of stormwater control measures during construction activities;
- Installing silt fences;
- Installing check dams;
- Grading and diverting runoff from off-site and upslope areas away from disturbed areas and directing flow to specific areas.
- Installation of temporary drainage piping to divert stormwater to specific areas;
- Installation of temporary pumping system to remove water from areas under construction;

Other possible measures of stormwater control may be implemented on an as-needed basis. These measures include, but are not limited to, straw bales and silt fence to reduce the velocity or to redirect stormwater to specific locations within the work area.

2.1 Site Management

Smith Technology construction personnel will be experienced in the daily operations and current construction and management techniques involved with this type of project. Site management for effective implementation of stormwater control will involve the following:

1. Designate responsibility for implementing the SLMP to the Construction Manager.
2. Clear only areas necessary to complete contract work.
3. Physically mark off limits of land disturbance prior to clearing activity with tape, signs, or other methods, so that workers can see areas to be protected and will not clear areas in excess of those required for construction. Supervise clearing activities.
4. Divert off-site runoff from highly erodible soils and sloped areas to stable areas, and subsequently to existing drainage swales.
5. Make sure that all workers understand the major provisions of the SLMP.
6. Implement an inspection program to determine the integrity of stormwater control measures. Particular attention will be paid following rainfall events.
7. Re-stabilize disturbed areas as soon as possible after construction is completed.
8. Provide adequate pumping capacity to remove stormwater from designated construction areas without significantly delaying construction progress.

Additionally, Smith Technology will work with the Engineer (CH2M Hill) and the Owner to determine if these procedures need to be upgraded or modified to further limit stormwater flow and resulting erosion or sedimentation based upon actual conditions encountered during and after a significant stormwater event.

2.2 Silt Fences

Smith Technology will construct silt fence barriers to be located within disturbed areas and at regular intervals across large disturbed areas. Refer to Sheet 7 of the drawing

package enclosed to determine the initial spacing of silt fencing and placement of hay bales. All silt fence to be utilized for this project will be delivered to the site prefabricated with center-to-center post spacings of 6 feet. Additional posts may be installed intermittently along critical drainage areas. Smith Technology will install the silt fence with a minimum post embedment of 12 inches and a minimum filter cloth embedment of 6 inches.

Smith Technology will check sediment build-up in front of all silt fence on a weekly basis. Sediments will be removed on an as-needed basis. Silt removal from the upgradient side of the silt fence will be performed either by hand or with excavation machinery. The equipment utilized will depend on the quantity of sediment build-up encountered. Sediments collected will be used to supplement existing grading activities. Following removal, all silt fence will be disposed of as municipal waste.

2.3 Check Dams

Check Dam Numbers 1 and 2 shall be constructed in the southeast and southwest corners of the work area as shown on Sheet 7 attached. These swales presently divert stormwater away from the Phase 1 cell area and into the Phase 1 Expansion Area. The stormwater generated during a storm event will be channeled to a specific location determined during each individual phase of construction, or will be collected at a location on the boundary of the work area for pumping and distribution into the existing drainage ditches located at the top outside of the edge of the landfill.

Accumulated sediment will be removed from check dams during construction and consolidated into areas under construction. No intrusive excavation/grading will be initiated in areas where trash is present. Upon completion of the construction activities, the check dams will be removed.

2.4 Grading

Smith Technology will perform all grading, clearing, and grubbing at the site in a controlled manner which will minimize the potential for erosion. This includes the removal of existing water collected within the defined work area by either distributing the water on existing solid roadway surfaces or pumping the water to the existing stormwater pump station. Smith Technology will utilize the existing site contours on the north side of Phase 1 to facilitate the control of drainage to the fullest extent possible. A temporary 24-inch corrugated plastic pipe (CPP1) will be installed from the existing drainage ditch located on the east side of the work area to the existing low area in the Phase 1 expansion. Check Dam Number 1 will be constructed downstream of CPP1 to divert stormwater runoff into the temporary pipe (CPP1) and away from the northeast portion of the work area while the stormwater inlet, outlet, wetwell, and connecting pipe systems are being placed. Check Dam Number 2 will then be constructed on the west side of the Phase 1 portion of the landfill to channel stormwater from the west side of the work area. See attached Sheet 7 for the location of CPP1 and Check Dams 1 and 2.

The existing stormwater pump station will remain in operation until Smith Technology has completed the grading and placement of the permanent stormwater structures (refer to Sheet 20 of the construction drawings). Temporary pumping equipment with capacity of approximately 600 gpm is available on site and will be utilized for stormwater removal. If additional pumping capacity is necessary, it will be mobilized to the site.

Following the installation of the permanent stormwater structures, Smith Technology will install a temporary 24-inch corrugated plastic pipe (CPP2) from the location of the existing collection sump to the existing drainage ditch located on the eastern portion of the site. The existing collection sump will be filled with sand and CPP2 will be connected to the existing lined drainage ditch. The existing drainage ditch will be channeled into CPP2 by connecting the existing liner to the temporary pipeline. A temporary 24-inch corrugated plastic pipe (CPP3) will then be placed across the Phase 1A expansion to channel water from Check Dam No. 1 to the permanent

stormwater inlet structure. Following the installation of CPP2, and CPP3, Smith Technology will remove CPP1 and the existing CMP pipes (CMP1 and CMP2). This effectively channels all stormwater originating from the Phase 1 landfill to the newly installed stormwater structures on the east side. See Sheet 7 attached for the locations of CPP2, CPP3, CMP1, and CMP2.

2.5 Other Stormwater Control Measures

If required, additional stormwater control measures will be implemented subject to approval by Citrus County and DEP. Straw bales may be used in tandem with the silt fencing to slow down the runoff velocity and prevent "washing out" of the silt fence. Additional pumping capacity may be obtained if construction activities are delayed due to the presence of stormwater within the work areas.

These additional measures will only be used if Smith Technology or CH2M Hill determines that the proposed measures are not providing adequate control.

3.0 LEACHATE MANAGEMENT MEASURES

Smith Technology will initiate revised leachate management by first completing the installation of the permanent 6-inch Leachate Transfer Force Main from the approximate location of the new leachate transfer pump station to the existing leachate storage tanks (refer to Sheets 20 and 21 of the construction drawings). To temporarily transition from the existing leachate collection system to the permanent system, Smith Technology must first expose the two individual Phase 1 leachate collection pipes where they exit the Phase 1 liner system. Smith Technology will then establish a suitable location adjacent to the existing pipe system, at an elevation lower than the leachate collection pipes, to place a temporary HDPE leachate collection pump housing. This pump housing will be used to collect and store leachate generated from the Phase 1 Landfill. A leachate collection pump will be placed in the leachate collection pump housing and the end will be sealed. The temporary discharge hose will be connected to the pump; and the hose, along with its secondary containment, will be placed along the edge of the Phase 1 landfill and run to the top edge of the landfill.

The following is the procedure for installing the plug ends on the 24-inch HDPE temporary pump housing sump for leachate and the temporary valves on the existing Phase 1 containment pipes (refer to Sketch A attached).

- A 24-inch plug will be fusion welded to the bottom of the HDPE sump pipe.
- A 24-inch by 4-inch reducer will be fusion welded to the top of the 24-inch pump housing.
- Fusion welding will be completed using industry standards and procedures for HDPE pipe.
- After the 8-inch containment pipes and 6-inch carrier pipes are cut, a plug will be placed inside the carrier pipe to prevent leachate from leaking onto the ground.

- A flange connection will be placed on the carrier pipes to allow for easy installation of valves, couplings, and temporary flexible hose.
- The 6-inch valves will be installed on the carrier pipes.
- The temporary plugs will be removed from the valves and the valves will be closed immediately. The remaining activities to complete the connection of the temporary hose to the leachate pump housing will be completed.
- The pump housing and riser pipe will be suitably located so there will be minimal relocation during the project.
- A submersible leachate pump with similar technical characteristics to the specified side slope pumps along with the discharge hose will be inserted into the pipe system as shown on Sketch "A".
- A discharge hose will be connected to the leachate transfer forcemain after it exits the top of the riser pipe as shown on Sketch "B".
- After completion of all connections, the valves will be opened to allow leachate to fill the pump housing. Pumping activities will commence.

This operation will remain in effect until the primary leachate collection sump is constructed and the permanent lift station is completed and accepted.

There is a likelihood that during the cutting of the existing leachate pipes, their reconnection, and prior to temporarily plugging them, leachate will be spilled or leaked. Smith Technology will place plastic sheeting covered by sand or oil dry to assure that no leachate contacts the existing ground. Spilled leachate, as well as the

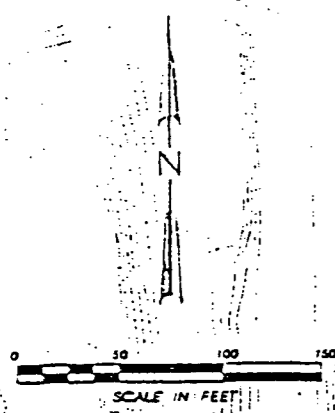
adsorbent material which becomes saturated during this work activity, will be collected and transported to the Phase 1 landfill. The cutting and temporary reconnection of the leachate pipe system, the installation of pumps, and the reconnection of the electrical controls will be accomplished with a minimum interruption of the existing system.

4.0 INSPECTIONS AND MAINTENANCE

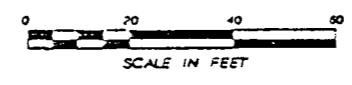
Maintenance of all erosion and sediment control measures is imperative. Smith Technology will conduct inspections of all control measures after each storm event or on a weekly basis, whichever is more frequent. Maintenance will include cleanout, repair, replacement, and regrading.

Erosion and sediment control measures will be the responsibility of the Construction Manager. He or his designee will inspect each measure and direct needed repairs.

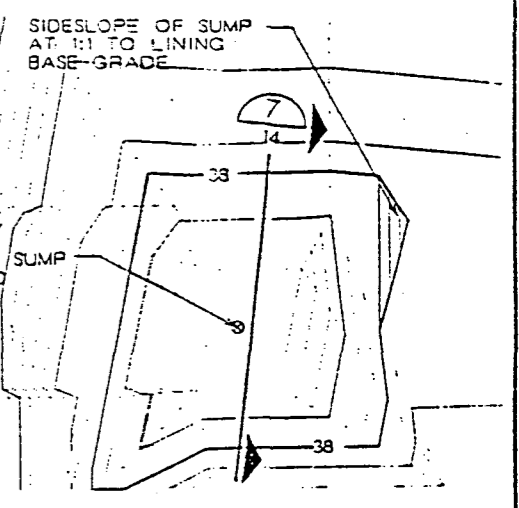
Inspection of the temporary leachate pump station and leachate piping will be the responsibility of the Construction Manager. Smith Technology will conduct inspections of this system on a daily basis. If conditions warrant maintenance, the repair of this system will take priority over continuing construction activities.



CONTOUR LEGEND
 --- LINING BASE GRADES.
 --- TOP OF GRAVEL SUMP.



TOP OF SUMP GRADING PLAN (3)



INSTALL REINFORCED CONCRETE BOX CULVERTS AND ENDWALLS. SEE SHEET 8

SEE SUMP LAYOUT ON SHEET 19 AND DETAILS ON SHEET 22

SEE SHEET 6 FOR LINING BASE GRADES. PLACEMENT OF PROTECTIVE SOIL IN THIS AREA IS N/C

SEE SHEET 6 FOR LINING BASE GRADES. PLACEMENT OF PROTECTIVE SOIL IN THIS AREA IS N/C

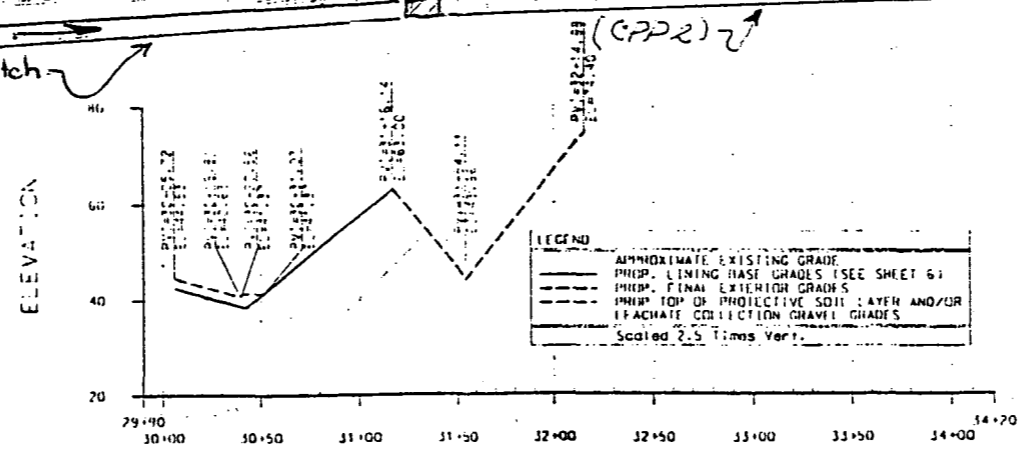
TOP OF SUMP EL. 38.00 FOR TOP SUMP GRADING BELOW PROTECTIVE SOIL SEE DETAIL (3)

SEE NOTE 3 FOR GEOTEXTILE PLACEMENT IN THIS AREA

- NOTES:
1. SEE SHEET 6 FOR LINING BASE GRADES
 2. SEE SHEET 8 FOR FINAL SURFACE TREATMENTS AND EROSION CONTROL
 3. PLACE A NONWOVEN GEOTEXTILE TWO FEET ABOVE LINING BASE GRADE ELEVATIONS IN ALL AREAS WHERE REQUIRED PROTECTIVE SOIL MATERIAL IS GREATER THAN 2 FEET THICK.

GRADING PLAN CONTOUR LEGEND

—	PROPOSED FINAL EXTERIOR GRADES
- - -	PROPOSED TOP OF PROTECTIVE SOIL AND/OR LEACHATE COLLECTION GRAVEL GRADES
...	APPROXIMATE EXISTING GRADES



BASLINE PROFILE

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NO.	DATE	REVISION	BY	APVD

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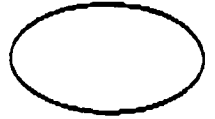
VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CITRUS COUNTY
 CENTRAL LANDFILL
 PHASE 1A EXPANSION
 CITRUS COUNTY, FLORIDA

FINAL EXTERIOR AND
 TOP OF
 PROTECTIVE SOIL GRADING PLAN

SHEET	7
DWG NO.	C-5
DATE	6-28-95
PROJ NO.	100795.2A.01

SKETCH "A"



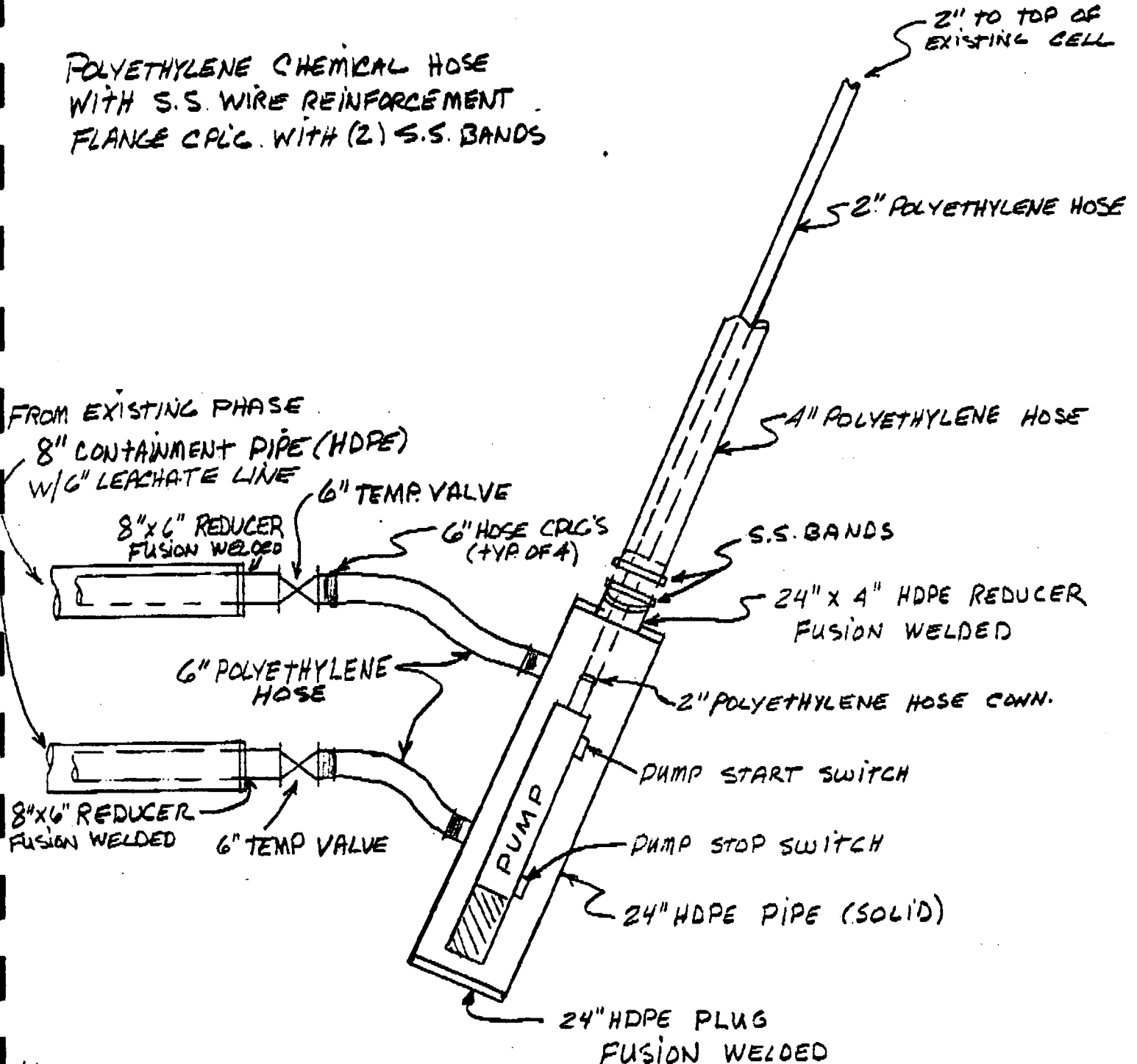
By _____ Date _____ Subject TEMPORARY LEACHATE Sheet _____ of _____

Checked By _____ Date _____ TRANSFER SYSTEM Project No. 97002

1/4" x 1/4"

CITRUS COUNTY LANDFILL

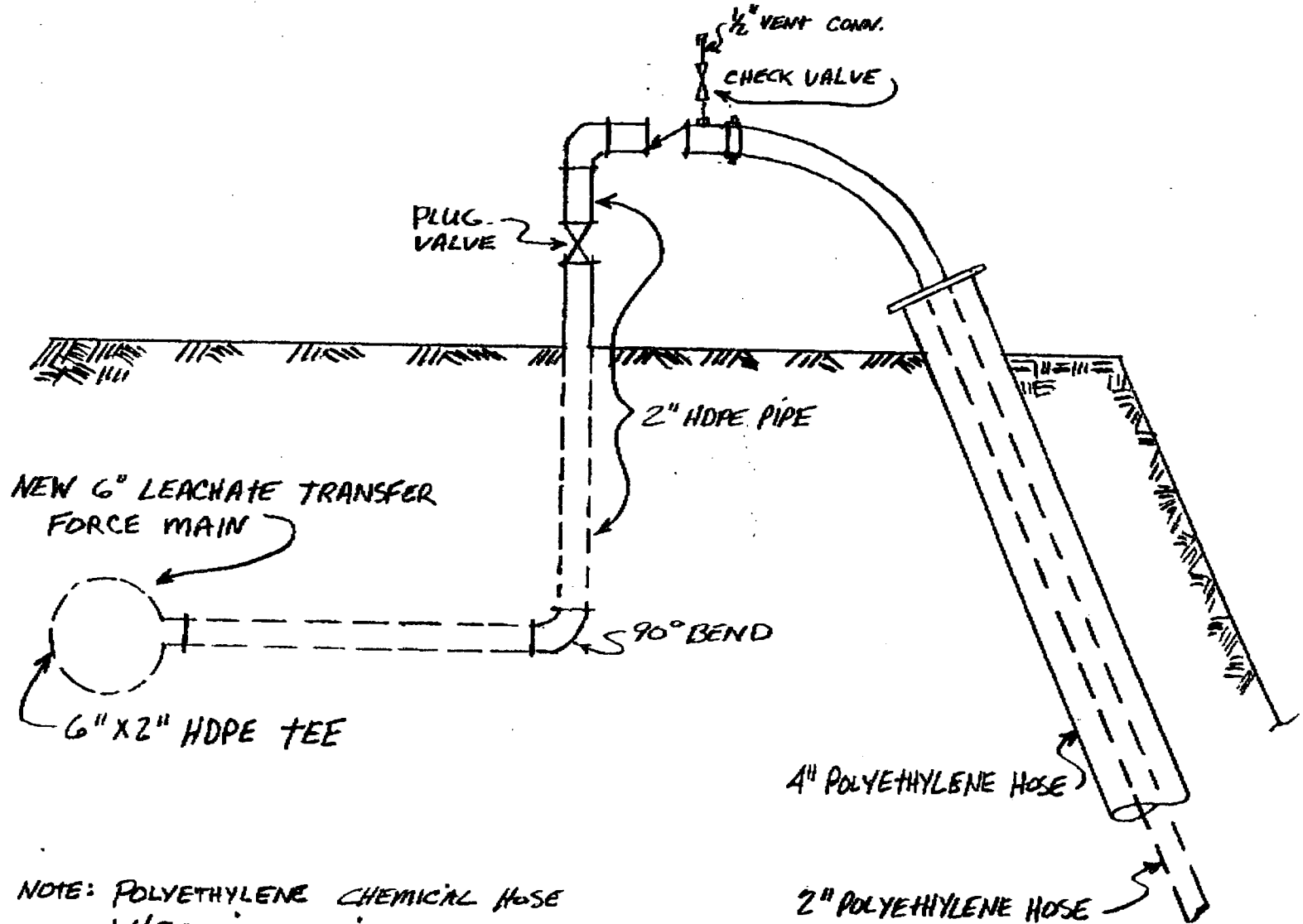
POLYETHYLENE CHEMICAL HOSE
WITH S.S. WIRE REINFORCEMENT
FLANGE C/P.G. WITH (2) S.S. BANDS



Note:

- 1) S.S. Bands to be adequately tightened to prevent leakage of leachate. Daily inspection to verify integrity of the system

SKETCH "B"



NOTE: POLYETHYLENE CHEMICAL HOSE
W/SS WIRE REINFORCEMENT
FLANGE COUPLING WITH 2-S.S. BANDS.