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**BOARD OF COUNTY COMMISSIONERS
CITRUS COUNTY**

NEW CITRUS COUNTY COURTHOUSE
110 North Apopka Avenue
Inverness, Florida 32650

D. E. R.
FEB 07 1989

(904) 726-8500

**SOUTH WEST DISTRICT
TAMPA**

Reply To:

Dept. Technical Services
Div. Solid Waste Management
P. O. Box 440
Lecanto, FL 32661-0440
(904) 746-2694

February 6, 1989

Mr. Kim Ford
c/o Dept. of Environmental Regulation
4520 Oakfair Blvd.
Tampa, FL 33610-7347

**RE: ADDITIONAL INFORMATION REQUEST FOR CITRUS COUNTY CENTRAL
LANDFILL APPLICATION FOR CLOSURE PERMIT**

Dear Mr. Ford:

In response to your additional information request letter dated January 18, 1989, please find attached the information to further clarify or modify the Closure Permit Application package submitted to your office on January 9, 1989.

- 1) The Groundwater Monitoring Plan prepared for the Citrus County Central Landfill by Seaburn & Robertson, Inc. states that the groundwater flow across the landfill site is generally to the west. Further information compiled by Post, Buckley, Schuh & Jernigan, Inc. and developed for the new 80 acre landfill site immediately adjacent to and east of the existing landfill also verifies that the groundwater flow is generally westward. All previously disposed solid waste contained within the boundaries of this landfill site has been placed well to the north and west of Well B, thus indicating that Monitor Well B is not subject to contamination from the 60 acre landfill site and is properly located for use as the background well for groundwater monitoring purposes.

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- 2) Attached is six (6) copies of the Stormwater Management Plan for the Citrus County 60 acre Sanitary Landfill as submitted to the Southwest Florida Water Management District. Enclosed in this plan is the stormwater calculations to support the dimensioning and placing of the drainage retention areas as shown on the Closure Plan.
- 3) Also attached is information as requested concerning quality control of the liner placement. This office proposes to place a 30 mil impervious polyvinyl chloride (PVC) membrane over the refuse as a "cap." The information provided is copied from the "Contract Documents and Specifications" package submitted with the Closure Plan package, pages 37-42, and indicates the extent of quality assurance during liner placement. This information covers liner fabrication, materials testing and inspection, certification and test reports, panel packaging and storage, qualification of suppliers, subgrade preparation, liner installation, seams, inspections, patching, and procedures for placement of final cover material.
- 4) This item, as well as items 5 and 6, refer to the attached copy of the revised Overall Site Grading Plan. The contours of the top of the east hill have been modified to meet a minimum 3:1 slope to alleviate the need for liner placement over this hill.
- 5) The revised plan shows the proposed locations for gas vent placement for both phases of closure. All vents will be constructed as shown on the typical drawing included in the Closure Plan.
- 6) The pistol range area will be graded to drain to the collection swale as indicated on the constructed drawings. Two additional gas vents have been placed along the north edge of the pistol range shelter to prevent any chance of gas buildup beneath the concrete slab. These gas vents will also be vented above the roof to prevent any buildup of gas under the shelter. The locations are indicated on the attached revised drawing.
- 7) The funding for closure and long-term care for the fiscal year 1988-1989 is provided for in the "Improvements Other Than Building" account (see Account # 6300 listed on the copy of the 1988-1989 landfill budget following Tab 10 in the Closure Permit Application package). A separate account to fund long

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-term care is being proposed to the Finance Department for the 1989-1990 fiscal year and each subsequent year thereafter.

- 8) The estimated cost of leachate disposal, listed as \$150,000, is the anticipated cost of installing a leachate storage tank with pumping system as well as the expense of trucking the leachate to a FDER approved disposal facility.

If further assistance or clarification is required, please do not hesitate to contact this office.

Sincerely,



James E. Barker, Jr.,
Chief, Permits & Compliance

JEB:RM:cmh

cc: James W. Pinkerton, Dir. Dept. Technical Services
Richard A. Berg, Dir. Div. of Engineering

2.04 FABRICATION; The individual widths of PVC liner shall be factory fabricated into large sheets custom designed for this project so as to minimize field seaming. All factory seams shall provide a bond between the sheets sufficiently strong to meet the test requirements of these specifications. The factory seaming shall be accomplished by use of dielectric fusion welding. The dielectric weld shall be a nominal one inch wide continuous bond. The PVC lining shall be as furnished by Palco Linings, Inc., Stanton, California and South Plainfield, New Jersey or Engineer approved equal.

2.05 TESTING OF ROLL GOODS PRIOR TO FABRICATION; The fabricator of PVC panels used in this work shall take samples from every 10,000 pounds of roll goods received from the PVC manufacturer. Samples shall be tested by a qualified laboratory for the following properties as specified in Section 2.02, TABLE A:

- 1) Thickness
- 2) Minimum Tensile Properties
- 3) Tear Resistance
- 4) Low Temperature Impact
- 5) Dimensional Stability

2.06 INSPECTION OF ROLL GOODS PRIOR TO FABRICATION: Prior to factory seaming, all roll goods shall be unwound and inspected on both sides for unmixed or poorly dispersed ingredients, the presence of contaminants or foreign particles, pin holes and any other defects. All defects and impurities will be removed or repaired before the membrane is fabricated into panels. Thickness shall be measured according to ASTM D882 at the center and each edge of the beginning and end of each roll of material used in this work. A log shall be maintained showing the material type, roll number, lot number, and three thickness measurements at the beginning and end of each roll. A copy of this log shall be furnished to the owner or Engineer.

2.07 INSPECTION AND TESTING OF FACTORY SEAMS: The fabricator shall perform 100% continuous visual inspection of each lineal foot of seam as it is produced. Upon discovery of any defective seam, the fabricator shall stop production of panels used in this work and shall repair the seam and determine and rectify the cause of the defect prior to continuation of the seaming process. As evidence that the fabricator has complied with the inspection requirement of this section. A mark which identifies the inspector by name or number shall be hand stamped with indelible ink no less frequently than five feet on center along each factory seam. A 48 inch (1.2 meter) sample shall be taken from each factory seam welding unit used in this work at the beginning of every work shift and every four hours of production thereafter. Samples shall be non-destructive, i.e., will not require patching of fabricated panels. Test specimens shall be cut at quarter points from each 48 inch (1.2 meter) seam sample (a total of three places) and tested for factory seam strength and peel adhesion as specified in Section 2.02, TABLE A, "MINIMUM FACTORY SEAM REQUIREMENTS". A log shall be maintained showing the date, time, panel number and test results. A copy of this log shall be furnished to the owner or Engineer.

2.08 CERTIFICATION AND TEST REPORTS: Prior to installation of the PVC panels, the fabricator shall provide the Engineer with the following certification and test reports specified in Sections 2.08.1 thru 2.08.4.

- 2.08.1 Written certification that the material meets all of the requirements of Section 2.02.
- 2.08.2 Written test results for the testing required by Section 2.05.
- 2.08.3 Written certification that inspection and thickness measurements have been performed according to Section 2.06.
- 2.08.4 Written certification that the factory seams were inspected and tested in accordance with Section 2.07.

2.08.5 The contractor is responsible to provide written certification from the manufacturer that installation was performed in accordance with the manufacturers specifications.

2.09 PANEL PACKAGING AND STORAGE: Factory fabricated PVC panels shall be accordion folded onto a sturdy wooden pallet designed to be moved by a forklift or similar equipment. Each factory fabricated panel shall be prominently and indelibly marked with the panel size. Panels shall be fully enclosed in heavy, water resistant cardboard and protected to prevent damage to the panel during shipment. The outside of each container shall also be prominently marked with the panel size.

Panels which have been delivered to the project site shall be stored in their original, unopened containers in a dry area and protected from the direct heat of the sun where possible, especially when stored for a long period of time. Pallets shall not be stacked.

2.10 QUALIFICATION OF SUPPLIERS: The fabricator of the PVC synthetic membrane liner shall provide the Engineer with a list of not less than ten projects and not less than 10 million square feet of successfully installed PVC synthetic lining. The project list shall show the name, address, and telephone number of an appropriate party to contact in each case.

The installer of the PVC lining shall be experienced in the installation of flexible membrane lining and shall provide the Engineer with a list of similar projects and not less than 1 million square feet of successfully installed PVC synthetic lining. The project list shall show the name, address, and telephone number of an appropriate party to contact in each case.

2.11 SUBGRADE PREPARATION: Lining installation shall not begin until a proper base has been prepared to accept the membrane lining. Base material shall be free from angular rocks, roots, grass and vegetation. Foreign materials and protrusions shall be removed and all cracks and voids shall be filled and the surface made level or uniformly sloping as indicated on the drawings. The prepared surface shall be free from loose earth, rocks, rubble and other foreign matter. The subbase shall be uniformly compacted to ensure against settlement and shall be steel wheel rolled prior to liner installation.

The surface on which the lining is to be placed shall be maintained in a firm, clean, dry and smooth condition during lining installation. If groundwater is present within 12 inches below the surface to be lined, the general contractor shall dewater the area prior to and during installation of the liner.

2.12

LINING INSTALLATION: The PVC lining shall be placed over the prepared surface in such a manner as to assure minimum handling. Anchor trench excavation and any structure seal preparation should be completed before lining installation begins. The sheets shall be of such lengths and widths and shall be placed in such a manner as to minimize field seaming. Horizontal field seams on the slopes shall be kept to a minimum. Only those sheets of lining material which can be anchored and/or sealed together in one day shall be unpackaged and placed in position.

In areas where wind is prevalent lining installation should be started at the upwind side of the project and proceed downwind. The leading edge of the liner shall be secured at all times with sand bags or other means sufficient to hold it down during high winds.

Sandbags or rubber tires may be used as required to hold the lining in position during installation. Tires shall not have exposed steel cords or other sharp edges which may snag or cut the lining. Materials, equipment or other items shall not be dragged across the surface of the liner or be allowed to slide down slopes on the lining. All parties walking or working upon the lining material shall wear soft-sole shoes. Lining sheets shall be closely fit and sealed around inlets, outlets and other projections through the lining. Lining to concrete seals shall be made with a mechanical anchor or as shown on the drawings. All piping, structures and other projections through the lining shall be sealed with approved sealing methods. The liner shall be installed in a relaxed condition and shall be free of tension or stress upon completion of the installation. Stretching of the liner to fit will not be allowed.

2.13

FIELD SEAMS: All seaming adhesives, caulking and mastics shall be of a type or types recommended and supplied by the manufacturer or fabricator of the PVC panels and shall be delivered in original one gallon containers each with an indelible label bearing the brand name and complete directions as to proper storage and use.

Field lap joints shall be formed by lapping the edges of panels a minimum of six (6) inches. The contact surfaces of panels to be seamed shall be wiped clean to remove all dirt, dust, moisture and other foreign materials. Sufficient liner to liner bonding adhesive shall be applied to the joint area so as to form a continuous solvent weld approximately 2 - 3 inches wide. In applying adhesive, care must be taken to tie-in to the end of the previously completed seamed area so that leak paths or weak points in the seam do not occur. The surfaces should be pressed together immediately and a roller or flat wooden paddle used to squeeze the adhesive toward the leading edge of the panel. Any wrinkles shall be smoothed out. A small amount of adhesive should extrude and appear at the edge of the seam to indicate that sufficient adhesive has been applied. Excess adhesive should be wiped off with a clean rag. Seams shall be inspected after the initial seal and any loose edges shall be resealed, using the same procedure, to eliminate all free edges.

Extreme care shall be taken to avoid fishmouths in the field seams. Where fishmouths do occur, they shall be slit out far enough from the seam to dissipate them, lapped, seamed together in the lapped area and patched. Any portion of the lining damaged during installation, by any cause, shall be removed or repaired by using an additional piece of PVC lining as specified hereinafter.

2.14

INSPECTION: Upon completion of the liner installation and prior to placement of the earth cover the liner contractor shall fully test all field seams with an air lance tester, hook or other Engineer approved method. Once the seams have been tested, the installation supervisor and the Engineer's field representative shall fully inspect every lineal foot of field seam and all seals to penetrations. Any doubtful areas shall be tested with a vacuum seam tester or other device as directed by the Engineer.

All joints, on completion of the work, shall be tightly bonded. Any lining surface showing injury due to scuffing, penetration by foreign objects, or distress from rough subgrade shall, as directed by the Engineer, be replaced or covered and sealed with an additional layer of PVC lining of the proper size in accordance with the patching procedures.

2.15 PATCHING: Any repairs to the PVC lining shall be patched with the lining material and liner to liner bonding adhesive. The patch material shall have rounded corners and shall extend a minimum of four (4) inches in each direction from the damaged area.

2.16 EARTH COVER: GENERAL REQUIREMENTS:

36" of earth cover shall be placed over the PVC lining unless otherwise shown on the drawings. Cover material shall be approved by the Engineer prior to placement. Soil containing sharp, jagged rock, roots, debris or any other material which may be abrasive to or may puncture the membrane shall not be used as cover material.

The contractor must satisfactorily demonstrate to the Engineer that the use of chosen cover material will not have any detrimental effects on the liner. Onsite materials approved by the Engineer shall be stockpiled as excavated for backfill over the liner.

The cover material shall be placed over the lining as soon after liner placement as possible. The cover soil shall be placed over the lining in such a manner and with such equipment as the contractor may choose, provided it is satisfactorily demonstrated to the Engineer that such manner and such equipment does not damage the lining. In general, low ground pressure (LGP) equipment shall be used to spread the earth cover.

2.17 PAYMENT: Payment for liner shall be made for the quantity installed and measured in place as determined by the Engineer to be necessary to complete the job. Payment shall be at the price bid per square yard for the Item "30 MIL PVC LINER" on the bid schedule. Said price and payment shall be full compensation for furnishing and installing all labor, materials, equipment and all else incidental therefor and necessary to complete the work.

OVERSIZED PAGES
HAVE BEEN INSERTED
IN TO OCULUS,
SEPERATELY.

DATE: 04/19/12

SCANNER: John B