

# **ENGINEERING PLAN AND OPERATION MANUAL**

**DELINEATION AND VERIFICATION FOR  
FRANK ROAD CLASS III-IV DEMOLITION  
LANDFILL  
SHELBY COUNTY, TENNESSEE**

**HBA Project Number  
97- 09167**

**Prepared for:**

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## NARRATIVE DESCRIPTION OF THE OPERATIONAL FACILITIES

### 1. Individual Responsible for Operations and Maintenance

The operator is Mr. Norman Brown, III. He resides at 2726 Fairway Glen Cove in Collierville, TN. The telephone number at his home is 901/854-4444. His office is located at 1941 Germantown Rd. South in Germantown, TN, and the telephone number at the office is 901/754-6300. Mr. Brown also maintains an office at 10636 Shelton Road in Collierville, TN, and the telephone number at this location is 901/853-0953. In addition, Mr. Brown carries a beeper at all times. To reach him via beeper, the telephone number is 901/532-7700.

### 2. Site Location

The facility is located in the southwest quadrant of the intersection of Frank Road and Bray Station Road in Collierville, Shelby County, Tennessee. Access is from Frank Road and Bray Station Road, and from an extension of Shelton Road. Figure 1 shows the location.

### 3. Buffer Zone

The location of the fill area and the approximate property boundaries are shown on the enclosed Existing Contour Map. See Figure 17. Specifically, there is a buffer zone along the west side which varies in width from approximately 800 feet at the furthest point to a minimum width of 100 feet for a part of the middle section. In general, the buffer is in excess of 300 feet along the west side. At the north, the nearest property line ( buffer zone) is 320 feet from the proposed fill, and is in general about 700 feet from the property

line. On the south side, the distance to the boundary (buffer zone) is in excess of 700 feet. On the east the minimum distance is 105 feet.

Sanders Creek flows along the western boundary. At the west side there is a lake made by removing borrow to raise the surface area of what is called Halle Plantation. The lake lies at a distance of approximately 400 feet from the nearest point of the proposed fill area. At the north, the Wolf River exists at a distance of approximately 2000 feet from the nearest point. The distance from the closest residence from all boundaries is more than 500 feet. See enclosed Figure 13. The flood way and the 100 year flood plain of Sanders Creek is shown on Figure 15. The eastern boundary of the creek with respect to the landfill can be found on Figure 24.

According to the records of the Shelby County Health Department Division of Pollution Control, and a reconnaissance on foot, there are no production wells used for drinking water for humans or animals, or used for any other purpose within 500 feet down gradient from the site. In fact, there are no production wells of any kind downgrade between the Landfill and the Wolf River, more than 2000 feet north of the site.

#### 4. Access Control

The facility is attended at all hours on all days - 365 days per year - by personnel who are employed by the Owner. There are gates at the entrances, natural barriers, ditches, etc. The facility has emergency access in the event the roads are blocked. Signs are clearly posted indicating the acceptable (legal) and unacceptable (illegal) materials. Signs are posted surrounding the property. Users sign a "User Agreement" specifying that they are bringing only acceptable materials into the facility. Closed circuit video surveillance cameras monitor each load as it arrives. Facility personnel visually inspect the load at

"check in" and again when the load is dumped and moved into position for compaction. This procedure will be maintained until the site is closed.

#### 5. Liner

Surface drainage at the site is generally north. To develop proper surface drainage based entirely on gravity, the elevation of the bottom of the demolition landfill has been set to meet the State regulations. Along the western part off the site the bottom elevation at the south end is above the naturally occurring fine-grained material which can be used as a liner. This occurs south of the approximate location of boring number BC-6. That is, proceeding north to south, there is a fine-grained material which may be employed as liner to a point near boring number BC-6. Proceeding southward beyond BC-6, the drainage requires that the bottom elevation rise above the fine-grained material.

It is proposed to cut the northern area to grade where the silty clay can be used as liner. This area will be compacted and tested to assure that the liner meets the requirements of the State. Proceeding south, where the elevation of the bottom will be in the material which may not have a coefficient of permeability of  $10^{-7}$  cm/sec, a liner will be constructed. This location will be determined in the field. The liner will be constructed of material processed in such a way that it meet the requirements of the State of Tennessee. The dimensions, etc., are shown on the construction plans identified as Figures 21 and 22. The elevation will be established in accordance with the permanent bench mark found on the concrete wall located on the north side of the landfill office building. The location is shown on the plan identified as Figure 12.

It will be necessary to cut into the existing materials to reach final floor elevation. The face of the cut will have a slope of 2(h) to 1(v). This slope has been chosen to maximize the volume of space for placing fill. However, a 2:1 slope must be carefully managed. To prevent "bank failure", only small areas of cut will be "opened" at a time. This allows the slope to be "buttressed" with fill material before inclement weather weakens the slope to the point that sloughing begins.

#### 6. Operations, Methods and Sequence

Mixed construction debris is compacted in-place. Yard waste is incinerated and wood waste is incinerated when possible. Land clearing debris is recycled into marketable timber and wood mulch, and soil delivered to the site is used for cover. This process will continue until the site is closed. The fill materials are being placed from south to north on the eastern side of Area C. When the eastern part (on-going) is filled to the intermediate level, filling will begin on the west side, proceeding from north to south to the same intermediate elevation as the eastern side. The entire site will then be raised to the final grade (Elevation 368 feet). Each procession will maintain a manageable working face, based upon weather conditions, number of machines working, and volume of material being handled at the time.

#### 7. Type and Volume of Fill

The facility will receive approximately 300,000 cubic yards (yd<sup>3</sup>) of mixed construction debris, 100,000 yd<sup>3</sup> of land clearing debris, 100,000 yd<sup>3</sup> of yard debris, and 100,000 yd<sup>3</sup> of wood debris annually. The sources of the debris are local and state government agencies, various school systems, area churches, general contractors, landscape companies and private citizens.

The service area for the facility includes eastern Shelby County and some west Fayette County. The cities involved are Memphis, Collierville, Germantown, Bartlett, Arlington, Pipertown, Fisherville and Cordova.

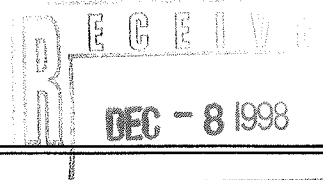
8. Area To Be Filled

The area to be filled will be approximately 118.4 acres.

9. Waste Handling and Covering Program

Materials arrive at the facility in dumpsters and various other types of trucks. The material is spread with bulldozers and compactors. Each machine is specifically designed to handle construction and demolition materials. The material is placed in such a manner that drainage will always be away from the working face. The slope of the working face will be maintained in such a way as to maximize efficiency. Changes in slope may be necessary due to factors such as weather and materials. In general, the slope of the working face will be 5(h) to 1(v).

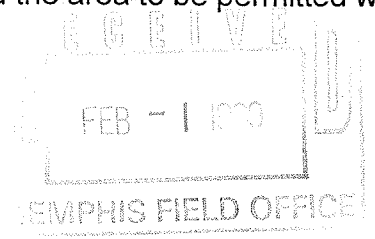
Cover is applied dependent upon the volume of material received daily. Initial cover is 6 inches in depth. Intermediate cover is 12 inches and final cover is 30 inches in depth. Very seldom does one day go by that one of the three covers is not applied. Clay which is located on site is utilized for cover. The initial cover will be placed not more than 14 days from fill placement. An intermediate cover will be placed within 90 days, and final cover will be placed within 180 days. The material for cover will be obtained from approximately 150 acres immediately south of the landfill footprint. **Revision 3, 12/7/98**, total estimated soil volume required for cover is 732,000 cubic yards. Breakdown included on page 10.



The service area for the facility includes eastern Shelby County and some west Fayette County. The cities involved are Memphis, Collierville, Germantown, Bartlett, Arlington, Pipertown, Fisherville and Cordova.

8. Area To Be Filled

The area to be filled will be approximately 82.8 acres and the area to be permitted will be approximately 118.4 acres. **Revision 4, 1/28/99.**



9. Waste Handling and Covering Program

Materials arrive at the facility in dumpsters and various other types of trucks. The material is spread with bulldozers and compactors. Each machine is specifically designed to handle construction and demolition materials. The material is placed in such a manner that drainage will always be away from the working face. The slope of the working face will be maintained in such a way as to maximize efficiency. Changes in slope may be necessary due to factors such as weather and materials. In general, the slope of the working face will be 5(h) to 1(v).

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The service area for the facility includes eastern Shelby County and some west Fayette County. The cities involved are Memphis, Collierville, Germantown, Bartlett, Arlington, Pipertown, Fisherville and Cordova.

8. Area To Be Filled

The area to be filled will be approximately 118.4 acres.

9. Waste Handling and Covering Program

Materials arrive at the facility in dumpsters and various other types of trucks. The material is spread with bulldozers and compactors. Each machine is specifically designed to handle construction and demolition materials. The material is placed in such a manner that drainage will always be away from the working face. The slope of the working face will be maintained in such a way as to maximize efficiency. Changes in slope may be necessary due to factors such as weather and materials. In general, the slope of the working face will be 5(h) to 1(v).

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## 10. Operating Equipment

The onsite operating equipment is as follows:

- Caterpillar - 816 F compactors
- Caterpillar - D 5 bulldozers
- Caterpillar - 963 track loader
- Caterpillar - 950 F loaders
- Caterpillar - IT-18 F loaders
- Caterpillar - 563 CP dirt packer
- United water trailer with pump
- Dump trucks
- Vemeer Tub Grinder
- Pactherm Air Curtain Destructors

Additional equipment is available from the local Caterpillar dealer upon demand. Local contractors are available on short notice if the need arises.

## 11. Structures and Procedures for Controlling and Collecting Litter

Each morning personnel patrol approximately 3 miles of public roads in the event any items have fallen off a truck in route to or from the facility. On site, silt fencing and litter fencing is used when needed. The entire facility is patrolled at least once a day to remove any litter.

## 12. Surface Water

Surface water will be collected in ditches which lie along the toe of the fill. This water will be channeled into sediment basins, at the locations shown on the site plan (Figure 13). Three sediment basins will be developed. The southern most basin will have a capacity of approximately 153,329 ft<sup>3</sup>, the northwest basin will have a capacity of approximately 90,868 ft<sup>3</sup>, and the northeast basin will have a capacity of approximately 282,108 ft<sup>3</sup>. The dimensions are shown on the engineering plans. This meets the requirement for runoff from a storm with a 25 year return frequency.

Water falling on the top of the landfill after closure will be channeled to a total of 6 armored "flumes" which will transport the water from the upper surface to the collection ditches outside the toe. The location and a typical section for the flume are shown on the engineering plans identified as Figures 20 and 23.

13. Leachate Collection

The decomposition of the material placed on the site produces virtually no leachate, nor is there a significant amount of water in the material when it is dumped at the site. The only significant water which enters the material is through the small section being worked when rain occurs. By developing a proficient runoff collector, virtually no leachate will exist within the material.

14. Dust Control Measures

The facility is equipped with automatic sprinklers used for wetting down the access roads. In addition, there is a 4000 gallon water trailer with a high pressure pump used to spray the working face or other areas on the site that may cause dust.

15. Fire Safety Precautions and Procedures

A total of seven fire hydrants, provided by the city of Collierville, are located on site and tapped into a 12 inch water main. There are fire hoses with nozzles, flame retardant additives, supplemental 4 inch water pumps to assist the city water system, and a 4000 gallon water trailer with a high pressure pump located at the site. The local fire department can be on site within 5 minutes of notice by telephone.

16. Services Available to Facility Personnel

The office has a full bathroom and kitchen. Water is supplied by the City of Collierville. A variety of soaps and hand cleaners are provided. The family residing on the premises has shower and bathtub facilities available. A Coke machine, candy machine, coffee and accessories are available on site. Lunch is provided for all employees on a daily basis due to their continued responsibilities throughout the lunch hour.

All employees are equipped with a Motorola two way radio provided them to be in constant communication with the clerk at the check-in station, and each other, at all times.

17. Construction Plan

The plans and specifications for construction are shown on Figures 19 through 23. Also, see Section 3 entitled Closure/Post Closure Plan and Section 4 entitled Quality Control/Quality Assurance Plan.

18. Control of Explosive Gases

This type of fill material generates an extremely low volume of gas. The only explosive gas anticipated will be traces of methane. There is an on-going monitoring program which will be continued until Area C is closed. Based upon the existing data, no gas collection system will be needed.

19. Ground Water Monitoring

At the present time, there is a groundwater monitoring program in effect. The program is included in Section 5 of this report entitled Ground Water Protection/Monitoring Plan.

20. Flood Protection

This project lies outside the 100 year flood plain as determined by the Federal Emergency Management Association (FEMA.).

21. Endangered Species

No endangered species, either plant or animal, were identified at the facility. A list of the commonly found flora and fauna in the area is enclosed in Appendix D.

22. Inspection Program

Landfill personnel retest approximately 5 percent of the daily volume and record, in greater detail, the types of materials being brought to the facility. The video surveillance system is used to monitor each incoming truck. A "waste haulers agreement" is signed by each hauler verifying that the material is meets the requirements for placement in the site. Presently, a computerized waste management system is being installed which will allow tracking in greater detail to determine the types of material and quantities received on a daily basis.

**Revision 3, 12/7/98** - Addendum to page 5 Item 9.

Estimated soil volume for initial cover - 300,000 cubic yards

Estimated soil volume for intermediate cover - 198,400 cubic yards

Estimated soil volume for final cover - 233,800 cubic yards

Total = 732,200 cubic yards

Available soil volume composed of approximately 150 acres with average depth of over 5 yards. Cover will require excavation to a depth of approximately 1.5 yards over the 150 acre area to meet the estimated requirement.

