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South Carolina Department of Health and Environmental Control

Bureau of Land & Waste Management

State Superfund Program

BARNWELL TOWN DUMP STATE SUPERFUND SITE

Barnwell, SC

Proposed Plan Fact Sheet

Announcements of Public Meeting and Comment Period

July 31, 2007

DHEC's Proposed Cleanup

The South Carolina Department of Health and Environmental Control (the "Department" or "DHEC") recently completed an evaluation of alternatives to address contamination at the Barnwell Town Dump Site (the "Site") in Barnwell, South Carolina. Based on this evaluation, the Department has identified a preferred alternative for the cleanup of the Site. Pages 4 through 6 of this Fact Sheet provide a more detailed summary of all of the cleanup alternatives that were considered. The major components of the preferred remedy include the following:

- Digging up the "Rouge Area" where industrial waste was disposed and where the highest concentrations of contaminants have been found. The excavated material would be disposed at a licensed offsite disposal facility.
- Creating a buffer zone between the disposal area and the river by excavating waste material and replacing with clean fill material.
- Installing fencing to help limit access.
- Installing surface water controls.
- Monitoring groundwater.

Announcement of Public Meeting

Thursday, August 23, 2007 at 7:00 pm at
Barnwell County Health Department's Conference Room
11015 Ellenton St., Barnwell, SC

At the public meeting, the Department will provide information regarding:

- the Site investigation results,
- the cleanup alternatives considered by the Department, and
- the Department's preferred alternative for the cleanup of the Site.

A period of 30 days will be available for the public to submit written comments on the Proposed Plan. The Department will make a final decision on the cleanup remedy for the Site only after review and consideration of any comments submitted to the Department during the public comment period. **The public is encouraged to provide written comments by September 24 2007 to**:

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The cleanup plan that is finally selected will be described in the Record of Decision (ROD), which will include comments received along with DHEC's response to all comments.

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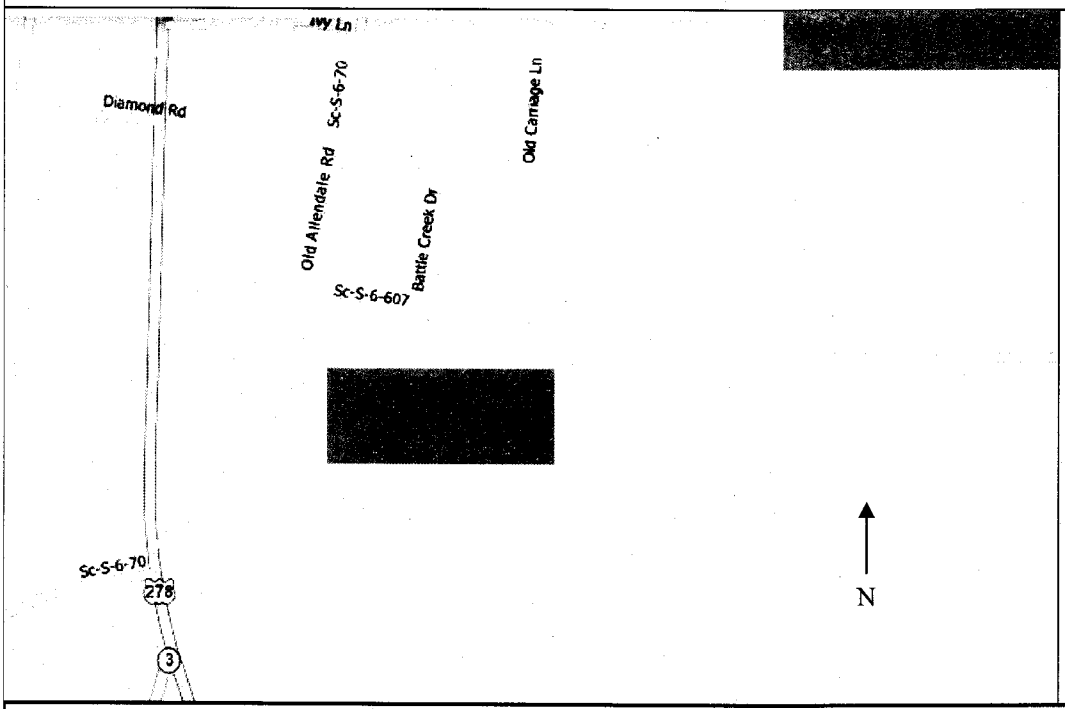
Site Background

- The Site is located on a 20-acre parcel of land 0.2 miles south of County Road 607 and approximately 0.5 miles east of County Road 70 (Figure 1). The Site consists of 12 acres along the Salkehatchie River.
- From approximately 1955 until 1972, the Town of Barnwell operated the Site as a dump which received mostly domestic waste but also some waste from nearby industries.
- The Site is bounded by undeveloped land to the east and west, agricultural fields to the North, and the Salkehatchie River to the South. (See map below)
- DHEC conducted several environmental assessments to determine whether the Site would qualify for the United States Environmental Protection Agency's (EPA) National Priorities List (NPL); including:
  - ♦ Preliminary Assessment (1985),
  - ♦ Site Screening Inspection (1990), and
  - ♦ Expanded Site Assessment (1995)
- Based on these assessments, it was determined that the Site qualified for inclusion on EPA's NPL.
- In August 1999, EPA officially "deferred" the Site to DHEC instead of placing the Site on the NPL. Under this deferral, the Department is responsible for managing the investigation and cleanup of the Site under State authority. However, the Department has provided EPA the opportunity to review and comment on all technical documents.
- The Department identified parties that may have contaminated the Site (Potentially Responsible Parties or PRPs) and requested that the PRPs conduct the Remedial Investigation and Feasibility Study (RI/FS).
- On June 12, 2000, Milliken and Company and Textron, Inc. entered into Consent Agreement #00-13-HW with DHEC to perform the RI/FS.



RI/FS:
A **Remedial Investigation (RI)** identifies the potential sources of contamination; and determines what contaminants are at the Site, and the extent of the contamination; and

A **Feasibility Study (FS)** considers various cleanup alternatives for the soil and groundwater.

ROD:
A **Record of Decision** document identifies the cleanup method selected.

Soil & Groundwater Evaluation Standards

The Department uses EPA's soil screening levels (SSL) to determine if contamination in soil poses a risk to groundwater quality. These soil screening criteria are listed in EPA's Region IX Preliminary Remediation Goals Tables (PRG). For groundwater, the maximum acceptable levels for hazardous substances, pollutants and/or contaminants in a drinking water source are called "Maximum Contaminant Levels" or "MCLs." At this Site, groundwater sampling results were compared to the MCL standards established by the South Carolina State Primary Drinking Water Regulations, R.61-58.

Remedial Investigations

- In November 2000, the Department approved a Phase 1 Remedial Investigation (RI) work plan.
- On December 5, 2000, the Department held a public meeting to inform the public of the upcoming investigation activities. Field work began in December 2000.
- The Phase 1 revealed locations of rouge (a waste byproduct of manufacturing eyeglass lenses containing high concentrations of metals) and other industrial waste. Soil samples were collected from these areas to determine the extent of the rouge contamination.
- Samples were collected from groundwater monitoring wells, surface water, and sediment. A geophysical survey was conducted to locate the areas of the property used as a landfill.
- The Phase 1 RI detected a volatile organic chemical, Trichloroethylene (TCE), at a level below the standards in the leachate location.
- In June 2001, the Department approved the Phase 2 Work Plan, that included, among other things, converting existing shallow wells to permanent wells and constructing additional permanent monitoring wells at deeper intervals.
- Soil samples were collected from the area where rouge and other industrial waste was disposed (Rouge Area). Hand auger borings were completed to determine the depth and extent of the contamination. Monitoring wells were sampled. During the Phase 2 RI, lead and arsenic were detected in the Rouge Area above the industrial and residential standards.
- Sampling results revealed that off-site private residents' drinking water wells were not impacted by the disposal activities at the Site and only minor groundwater contamination was present in the monitoring wells.
- The rouge and industrial waste disposal areas were defined. However, the depth of the landfill contents could not be measured using manual methods due to the presence of metal material in these disposal areas.

RI Investigation Results

Detections in Soil Above Health Based Screening Values

Rouge and other Industrial Waste Disposal Area (Rouge Area)**:** Detected lead, benzene, tetrachloroethene (PCE), trichloroethene (TCE), arsenic, barium, chromium, iron, lead and manganese above standards of EPA's Preliminary Remediation Goals (PRGs).

Detections in Water Above Drinking Water Standards (MCLs)

On-site Groundwater: Detected Arsenic, beryllium, and chromium in one well during the Phase 1 RI, but were not detected in Phase 2 sampling. Lead was detected above the EPA action level at two locations during the Phase 1 and in one well in Phase 2.

Wetland Surface Water: Toluene was detected in one location. A number of metals were detected at low concentrations including aluminum, barium, chromium, copper, iron, lead, magnesium, mercury, potassium, sodium, vanadium, and zinc. Chromium was detected above the MCL and lead was detected above the EPA action level at one location.

River Surface Water: All concentrations were below their respective MCLs.

Detailed results of the RI can be found in the Remedial Investigation Report (CDM, December 2002), that is available in the information repository at the local library on August 24, 2007.

Summary of Risk

A Baseline Human Health Risk Assessment was conducted to evaluate the potential risks to human health from the landfill. Several exposure pathways were identified that pose a potential risk to an onsite visitor or resident. These pathways are listed below:

- Inadvertent ingestion of wetland surface water, sediment, and landfill contents in the Rouge Area,
- Skin contact with wetland surface water, wetland sediment, and landfill contents in the Rouge Area, and
- Inhalation of dust released from landfill contents in the Rouge Area.

Objectives of Cleanup/Remedial Alternatives

The main objectives of the Remedial Action at any site are to ensure protection of human health and the environment, and compliance with government regulations. The Department uses eight criteria to evaluate alternatives:

1. Protection of Human Health and the Environment (also describes how risk posed through each pathway are eliminated);
2. Compliance with State and Federal Regulations;
3. Implementability (technically and administratively successful cleanup);
4. Short-Term Effectiveness (period of time needed to achieve protection and any adverse impacts to human health and the environment that may be posed during the cleanup);
5. Long-Term Effectiveness (expected residual risk and ability to maintain reliable protection of human health and the environment);
6. Reduction of Contaminant Toxicity, Mobility, and Volume (measures the performance of the treatment technologies in reducing the toxicity, mobility and volume of contaminants through treatment);
7. Cost (includes the estimated initial costs and estimated future costs of operating and maintaining any treatment or monitoring activities); and
8. Community Acceptance (summarizes the public's general response to the Proposed Plan based on public comments received.

Remedial Action Objectives

Based on the RI and Risk Assessment, the Department has established the following remedial goals:

1. Prevent human exposures to lead, chromium and arsenic in the Rouge Area.
2. Minimize potential migration of TCE to the groundwater and wetland surface water from infiltrating through landfill contents of the Rouge Area.
3. Limit exposures of ecological receptors to contaminants present in Rouge Area and at the intermittent leachate location.

Summary of Cleanup/Remedial Alternatives Considered

A more detailed account of the cleanup/remedies may be found in the Feasibility Study Report, a copy of which is in the Administrative Record at the Site's Information Repository, Barnwell County Public Library located at 617 Hagood Avenue in Barnwell.

Alternative 1. No Response Action **Estimated Present Worth Cost: $173,000**

Alternative 1 is the No Action Alternative, which is used as a baseline for comparison to other alternatives. There would be no preventive or remedial action implemented as a result of the no action response. Only groundwater and surface water monitoring would take place every five years to assess the need for other future actions.

⇒ Criteria Evaluation: This alternative is not protective of human health and the environment because it does not include any actions that prevent exposure. It does not comply with State and Federal Regulations. The alternative is easily implemented as only monitoring is performed, and is the least expensive. However, the remedy does not reduce the mobility, toxicity and volume of contamination and has no short or long-term effectiveness. This alternative does not meet the criteria.

Alternative 2. Institutional Controls **Estimated Present Worth Cost: $869,000**

This action would reduce the potential for human and ecological exposure to contaminants. Institutional controls may be physical, such as fences, barriers, or warning signs. Institutional controls may also include property deed restrictions or notices on the transfer of title to current or future prospective owners. Extended monitoring is also considered as an institutional control.

(Continued on page 5)

(continued from page 4)

Alternative 2.

Institutional controls would not reduce contaminant concentrations, however, they may be an effective means for controlling access and reducing the risk of exposure. Deed restrictions would be placed on the property to limit residential development and groundwater usage. A fence would be constructed around the landfill to prevent access. Trash would be removed, rip rap would be installed at the draining location to prevent exposure to the public, and surface water run off would be directed around the landfill area.

⇒ Criteria Evaluation: Alternative 2 would reduce public access and limit exposure by the use of fencing and deed restrictions on the property. The cleanup remedy would not meet the state and federal regulations and would not reduce the contaminants' mobility, toxicity or volume. This alternative produces minimal short-term risk, and is easily implemented. The long-term effectiveness would rely on deed restrictions and fencing to reduce access.

Alternative 3: Source Removal, Off-site Disposal, and Institutional Controls

Estimated Present Worth Cost: $2,500,000

This alternative is identical to Alternative 2 except Alternative 3 involves the removal of the Rouge Area where industrial waste was disposed and where the highest concentrations of metals are present in the soil. This remedy also involves creating a 20-foot buffer zone between the disposal area and the river. Waste material will be removed to create this buffer zone. This alternative also includes groundwater monitoring.

The Rouge Area would be excavated and the contaminated soil sent offsite for proper disposal. Trash would be removed from the surface and visible waste would be removed. A 20-foot buffer would be established between the existing disposal area and the river. A fence would be installed around the landfill to prevent access. Rip rap would be installed at the draining location to prevent exposure, and surface water run off controls would be directed around the landfill area.

⇒ Criteria Evaluation: This alternative would meet State and Federal regulations. Contaminated soil in the Rouge Area would be removed, which would eliminate the high concentrations of metals and the risk to soil and groundwater. This alternative would be long-term effective by removing the main area of industrial contamination and reducing the volume and mobility of contamination. Industrial waste and contaminated soil would be removed and a buffer created between the river and the dump, which would minimize the potential contamination of the surface water and sediments. The remedy can be easily implemented and would be short-term effective.

Alternative 4: Source Containment and Institutional Controls

Estimated Present Worth Cost: 1,400,000

This alternative includes covering (capping) approximately 14,000 square feet of the Rouge Area with a clay barrier layer, infiltration layer, and vegetative layer, which is consistent with South Carolina closure requirements for municipal solid waste landfills. Also, this alternative includes the removal of surface trash and visible waste within a 20-foot buffer area and groundwater monitoring. A fence would be installed around the landfill to prevent public access. Stones would be placed at the leachate draining location to prevent exposure, and surface water run off would be directed around the landfill area.

⇒ Criteria Evaluation. This alternative would comply with state and federal regulations and would be protective of human health. This alternative would be long-term effective provided that the cap is maintained. It would reduce the mobility of contaminants, however, the volume and toxicity of the contamination would not be reduced. Impacts associated with the short-term effectiveness would be minimal; however, some releases from dust emissions could impact the area. The construction of the cap would be a standard procedure.

Alternative 5: Solid Waste Cap and Institutional Controls Estimated Present Worth Cost: $3,600,000

This alternative also includes a clay barrier layer, infiltration layer, and vegetative layer over the landfill portion of the Site, and constructing surface water run on and runoff controls. Capping the landfill would reduce infiltration and future draining to groundwater, as well as limiting direct contact exposure to the contaminated area under the cap. The estimated area of the cap is approximately 6.2 acres. Deed restrictions would be placed on the Site property to restrict residential development and use of groundwater. A fence would be installed around the landfill to prevent public access. Surface trash would be removed, rip rap would be installed at the leachate draining location to prevent exposure, surface water run off controls would direct water around the landfill area, and groundwater monitoring would occur.

Alternative 5 (Continued)

⇒ Criteria Evaluation. This alternative does not reduce the volume or toxicity of the contaminants, but does reduce the mobility as the contaminants would stay in place under a solid waste cap. The long-term effectiveness would be dependent on the maintenance of the cap. The short-term effects would be minimal for Site workers, but this action would have a significant impact on the ecological habitat that would have to be destroyed to build the cap. The overall cleanup would be successful and would meet the evaluation criteria.

Alternative 6: Solid Waste/Soil Cover Cap and Institutional Controls

Estimated Present Worth Cost: $2,100,000

This alternative involves covering the Rouge Area with a clay barrier layer, infiltration layer, and vegetative layer, which is consistent with South Carolina closure requirements for municipal solid waste landfills. The remaining portion of the Site would be covered with a soil cover of 18 inches. A fence would be constructed around the landfill to prevent public access. Surface trash would be removed, rip rap would be installed at the draining location to prevent exposure, and surface water run off would be directed around the landfill area, and groundwater monitoring would occur.

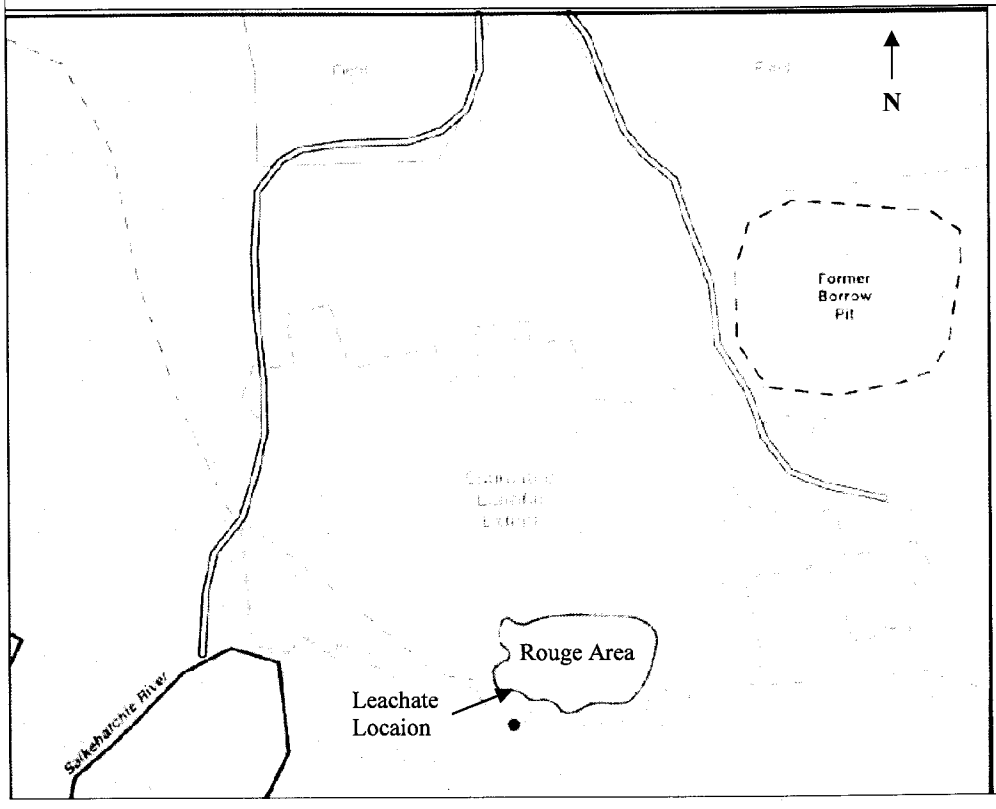
⇒ Criteria Evaluation. This alternative is dependent on the maintenance of the cap for long-term effectiveness and would comply with the State and Federal regulations. This alternative would not reduce the volume or toxicity of contaminants, but would limit the contaminant's mobility. The short-term effects would impact the ecological habitat. The alternative would be successful and would meet the criteria.

Alternative 7: Excavation and Offsite Disposal, and Institutional Controls

Estimated Present Worth Cost: $12,100,000

This alternative involves excavating the entire landfill (approximately 6.2 acres and 52,500 tons). This alternative includes backfilling with clean fill material and re-establishing the wetland areas. It also includes institutional controls that would prohibit groundwater usage for drinking use until MCLs are met.

⇒ Criteria Evaluation. This Alternative is the most effective in the long-term because it removes the volume, toxicity and mobility of the contaminants by removing all of the landfill material to an offsite disposal facility. It would have the most impact on the ecological environment by destroying a large amount of habitat in the short term. This alternative is implementable and would meet the evaluation criteria. However, it is more than three times more costly than any of the other alternatives evaluated.



Rouge:

Rouge is a byproduct of the polishing process in manufacturing eyeglasses. Rouge is red or white in color and contains high concentration.

Leachate:

Leachate is a contaminated solution that drained or emptied into an area of soil..