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for

Materials Recovery Enterprises

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PROPOSED REMEDIAL ACTION DOCUMENT

MATERIALS RECOVERY ENTERPRISES STATE SUPERFUND SITE OVALO, TAYLOR COUNTY, TEXAS

August 2001

PREPARED BY: JEFFREY E. PATTERSON
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

SUPERFUND CLEANUP SECTION
REMEDIATION DIVISION

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I. INTRODUCTION

The Materials Recovery Enterprises State Superfund Site (MRE site), as shown in Figure 1-1, is located approximately 1/4 mile north of FM 604 and ½ mile east of US 83 approximately 4 miles southwest of Ovalo, Taylor County, Texas. The site is located within the central rolling red plains area of North Central Texas which is characterized by smooth plains and rolling hills. The area receives an average of 24.4 inches of rainfall per year, and has an average annual temperature of approximately 64E F, ranging from 43E F in January to 81E F in July.

As shown on Figure 1-1, the site is located in a remote area. No commercial or industrial facilities are located in the immediate vicinity of the site. Although a single residence has recently been constructed just east of the site, surrounding land use primarily consists of range and agricultural land.

II. STATEMENT OF BASIS AND PURPOSE

This *Proposed Remedial Action Document (PRAD)* presents the proposed *Remedial Action,* which is designed to ensure the protection of public health and safety and the environment at the MRE site. The selection of the proposed Remedial Action was made in accordance with the *Texas Solid Waste Disposal Act,* codified as the Texas Health and Safety Code, Chapter 361, the Texas Risk Reduction Program (TRRP) rules found in 30 Texas Administrative Code Title 30, Chapter 350 and all other applicable State and Federal environmental regulations. The Remedial Action will be conducted under the TRRP rules. Under the TRRP rules the *Remedial Action* is termed the *Response Action*. Words appearing in italics in this document are defined in Section IX, Glossary.

A. The purposes of this document are:

1. to describe the actions taken by the *Texas Natural Resource Conservation Commission (TNRCC)* and the participating Potential Responsible Parties (PRPs) to investigate and mitigate the contamination;

2. to solicit public review and comment on the actions taken and decisions made by the TNRCC with regard to the Proposed Remedial Action; and

3. to provide information on how the public can comment on the Proposed Remedial Action.

B. This PRAD summarizes information that can be found in greater detail in various studies and reports located in the site files. Relevant documents summarized in this PRAD include:

1. the *Hazard Ranking System* report which consists of the preliminary evaluation (ranking) that qualified the site for listing on the State Registry and acceptance into the State Superfund Program;

2. the *Remedial Investigation Report* prepared by consultants to the participating PRPs, which contains the sampling and analyses data collected during the *Remedial Investigation*;

3. the *Protective Concentration Levels (PCLs)* Document, which determines the concentrations which will be protective of human health considering the designated land use; and

4. the *Response Action Plan (RAP)* Document which describes the steps which will be needed during the Remedial Action.

The TNRCC encourages the public to review these documents to gain a better understanding of the MRE site, the State Superfund process, and the actions taken by the TNRCC and participating PRPs. Copies of the documents summarized in this PRAD, as well as other relevant information, can be viewed at the following location:

Tuscola City Hall
418 Graham Street
Tuscola, Texas 79562
(915) 554-7766

or

Abilene Public Library
202 Cedar Street
Abilene, Texas 79601
(915) 677-2474

or in Austin at the TNRCC Records Management Center:

TNRCC
Building D, Room 190
12100 Park 35 Circle
Austin, Texas 78753

III. SITE HISTORY

The United States Air Force, through command at Dyess Air Force Base in Abilene, Texas, operated the site as an F-Class Intercontinental Ballistic Missile (ICBM) Site in the 1960s. The site consisted of a missile silo (174 feet in depth and 52 feet in diameter) lined with concrete, an underground launch control center connected to the silo by a tunnel, and supporting equipment. The site layout is depicted in Figure 1-2. Figure 1-3 shows a cross section of the missile silo.

On February 14, 1968, the U.S. Government sold the 11.47-acre property to Mr. James Smith. Mr. Smith then sold the property to Materials Recovery Enterprises, Inc. (MRE company) on December 7, 1977.

MRE company was issued a permit by the Texas Water Commission (predecessor agency of the TNRCC) to operate the facility as a Class I industrial solid waste management facility. Beginning in 1979 the MRE company operated the site primarily to accept waste waters from the metal finishing and electroplating industries. Wastes were accepted at the site from approximately 1979 to 1984. The MRE company unloaded trucks at the truck loading dock and transferred liquid wastes (consisting primarily of waste water) into the silo. Periodically the volume of water was reduced by pumping the waste waters to the evaporation pond located on the property. The reduced liquids would then be returned to the silo.

Sometime during the MRE company's ownership of the site, the plastic liner used in the evaporation pond was replaced and the old one was buried on site.

The MRE company was unable to operate the facility in accordance with the issued permit and eventually abandoned the property in approximately 1987. A more detailed description of the site operations history is presented in the RI Report. Figure 1-4 shows the site features at the time of the RI.

According to design and construction drawings, the concrete walls of the silo are 9 feet thick from the ground surface to a depth of 29 feet, 2.5 to 9 feet thick from a depth of 29 feet to 55 feet, and 2.5 feet thick from a depth of 55 feet to the base of the silo at 174 feet. Concrete at the base of the silo is also 2.5 feet thick. All concrete is steel-reinforced. A sump, approximately eight feet deep, was installed with a pump at the base of the silo. According to available information, the sump has since been plugged. There are penetrations into the side of the silo at an approximate depth of 40 feet below ground surface. These penetrations include the access way from the launch control center as well as utility conduits.

The silo has a concrete cover that currently covers greater than 99% of the surface area of the silo. The only openings are corings in the concrete (that were apparently performed to provide an access point for the disposal of wastes during the MRE company operations) and passageways which have been welded shut.

In 1997 the TNRCC identified Potentially Responsible Parties (PRPs) and offered them the opportunity to fund or conduct, the Remedial Investigation. PRPs are those entities that, due to their generation of wastes disposed at the site, operation of the site, or transportation of wastes to the site, may be liable under state laws for the investigation and remediation of the site. Of the approximately seventy-five entities named as PRPs, approximately thirty-five agreed to conduct the Remedial Investigation and in 1998 entered into an Agreed Administrative Order (the Order) to do so. This group of PRPs is called "the participating PRPs" in this document. The Order was amended in 1999 (the Amended Order) to incorporate the requirements of the newly established TRRP rules.

In accordance with the Order and the Amended Order, the MRE participating PRPs have completed the RI, the RI Report, the Development of Protective Concentration Limits document, the Tier 1

Ecological Exclusion Criteria Checklist and the Response Action Plan. The participating PRPs retained Environmental Resources Management (ERM) to perform the investigation and complete these reports. The TNRCC provided oversight and comment during the investigation and preparation of the reports.

IV. SUMMARY OF REPORTS

A. HAZARD RANKING SYSTEM ASSESSMENT

The Hazard Ranking System (HRS) Assessment is a scoring or ranking system used to qualify a site for the State or Federal Superfund Program based on how it compares to certain criteria. Sites scoring greater than 28.5 may qualify for the Federal Superfund Program, while sites scoring less than 28.5, but greater than 5 qualify for the State Superfund Program. The HRS for the MRE site was prepared by the TNRCC in 1995 and resulted in a score of 16.5, based on the perceived threat to groundwater. This score qualified the MRE site for the State Superfund Program.

B. REMEDIAL INVESTIGATION REPORT

The Remedial Investigation (RI) included: a water well search of the area surrounding the site; characterization of the water, soil or solid waste in the silo, buried liner and evaporation pond; completion of 19 soil borings and collection and analysis of 18 surface soil samples, 18 subsurface soil samples, 7 waste samples and associated quality control samples; and a search for the existence of a significant groundwater zone to 200 feet below ground surface.

The RI showed the following:

1. There are no registered water wells located within a one-mile radius of the site.

2. Subsurface soils at the site consist of clay and shale from the ground surface to a depth of at least 200 feet, and no continuous ground water-bearing zone was encountered within this interval.

3. Based on laboratory testing, the vertical hydraulic conductivity of subsurface soils ranges from approximately 2.7×10^{-9} to 4.3×10^{-9} cm/sec. Reported moisture contents for surface and subsurface soil samples range from 3 to 22 percent. Based on these findings, the clay and shale units beneath the site exhibit aquitard characteristics and occur under unsaturated conditions, meaning that water and other fluids would travel extremely slowly, if at all, through the subsurface soils at the site and confirming that a significant groundwater bearing zone is not present at the site.

4. Surface and subsurface soil samples showed that nine metal contaminants were present at concentrations in excess of the preliminary soil concentration goals.

5. The highest concentrations of inorganic and organic contaminants were reported in the silo and loading dock sludge samples.

The RI Report was approved by the TNRCC on September 2, 1999.

C. PROTECTIVE CONCENTRATION LEVELS DOCUMENT

The MRE site is being addressed primarily under the Texas Risk Reduction Program (TRRP) rules which are codified as state law in 30 Texas Administrative Code, Chapter 350. As their name implies, the TRRP rules goal is to reduce or manage the risks posed by contamination of the environment, not to eliminate them. The state must take this position in order to conserve funds for the many sites around the state which need investigation and remediation. Therefore it is the goal of the TRRP rules to reduce the risk to acceptable levels in terms of the concentration of contaminants that are allowed to remain in the soil and water on a site. Under the TRRP rules these "acceptable" concentration levels are calculated to protect human health and the environment through imaginary future scenarios called "risk assessment models" and are called Protective Concentration Levels or PCLs.

As previously stated a "risk assessment model" consists of a group of assumptions which comprise an imaginary future scenario at a site. The initial assumption is a choice between "residential" or "industrial" land use. In 1999, after discussion at a public meeting in Ovalo, Texas, the TNRCC determined that an "industrial" land use assumption was appropriate for the site. This land use assumption is made purely to establish "conservative" PCLs which would be protective of onsite workers if the fictitious assumption of industrial land use became reality. There is no expectation or plan to establish any industrial activities at the MRE site. A "conservative" PCL or concentration level is one that is calculated with numerous assumptions which are designed to be conservative and therefore ere on the side of cleaning contamination up, rather than on the side of leaving more contamination in place. For example, in the "risk assessment model" if one assumes that an industrial worker is exposed to a contaminant for eight hours a day, for a number of years, it is more "conservative" than an assumption that the fictitious worker is exposed to the contaminant for two hours a day, over the same number of years. The eight hour assumption would result in a lower "acceptable" concentration or PCL, than the two hour assumption.

The TRRP rules have three tiers of assumptions which are available to the TNRCC, or as in the MRE case, to the participating PRPs to use to calculate PCLs. Tier 1 is the most "conservative" group of assumptions, but none of the assumptions are site specific; meaning that the PCLs are established with many overly conservative assumptions. Tier 2 and 3 allow the PCLs to be calculated for a specific site. By using Tier 2 or 3 assumptions, the risk assessment model can establish PCLs for the soils and water at a specific site.

In the Protective Concentration Levels Document (PCL Document) the participating PRPs established acceptable PCLs specific to the MRE site under the Tier 2 group of risk assessment assumptions. Tier 1 assumptions were also used in some instances. The TNRCC carefully reviewed and commented on all aspects of the PCL Document and on November 13, 2000, the TNRCC approved the PCL Document.

As allowed in the TRRP Rules, the participating PRPs, through their consultant ERM, established site specific soil PCLs which are protective of the groundwater conditions at the site. The consultant utilized the Soil Attenuation Model to calculate acceptable concentrations that could remain at the site and still be protective of groundwater. Since no

continuous ground water-bearing zone was encountered at the site, to a depth of 200 feet, and no ground water resources appear to be utilized in the vicinity of the site the calculations were based on deeper regional groundwater, reportedly present at approximately 1200 feet below ground surface. Conservative assumptions were utilized in the Soil Attenuation Model in order to be overly protective. No soil contaminants exceeded the acceptable soil concentrations established to protect groundwater using the Soil Attenuation Model.

A separate ecological Tier 1 Exclusion Criteria Checklist was completed and submitted to the TNRCC on October 26, 2000. The Tier 1 Checklist presented information documenting that no further evaluation of ecological risk or calculation of ecological PCLs was necessary.

D. RESPONSE ACTION PLAN

The Remedial Action (or Response Action as it is termed in the TRRP rules) is the combination of actions that will be taken to reduce the risk associated with the site to acceptable levels. The Remedial Action is described in the Response Action Plan (RAP) which was prepared by the participating PRPs consultant and reviewed and approved by the TNRCC on April 17, 2001.

A Remedial Action may consist of any combination of removal or decontamination of contaminated media, physical controls such as landfills and caps, and institutional controls such as deed restrictions on the future use of the property. In accordance with 30 TAC 335.348(l) and the requirements of Section 361.193 of the Texas Solid Waste Disposal Act "the remedial action for a particular facility shall be selected based on the remedial alternative that the executive director (of the TNRCC) determines to be the lowest cost alternative which is technologically feasible and reliable, effectively mitigates and minimizes damage to the environment, and provides adequate protection of the public health and safety and the environment".

The RAP includes: cost information for the recommended Response Action; comparative cost analyses for the several response actions considered; and a demonstration that the recommended response action meets the requirements of state environmental laws.

The objectives of the RAP were to: identify areas of the site where PCLs are exceeded and Response Actions are necessary; establish the Response Action objectives for the site; present a cost evaluation for several alternatives which achieve the Response Action objectives; present the Proposed Response Action selected, including physical and institutional controls; and outline the inspection and monitoring protocols, schedule and reporting.

V. EVALUATION AND SELECTION OF PROPOSED RESPONSE ACTION

For discussion purposes the site has been divided into the following categories or areas:

A. Evaporation Pond Water;
B. Evaporation Pond Sludge/Soil;
C. Loading Dock Sump;

D. Silo;
E. Surface Soils; and
F. Buried Plastic Liner

The general description, PCL exceedence zones, Remedial Action objectives and Remedial Action Alternatives are discussed in this section for each category or area. TNRCC's proposed Remedial Actions for each area are discussed in Section VI.

The PCL Exceedence Zones are areas where concentrations of contaminants in soil, water or waste are greater than the PCLs. Only two of the areas or categories exceeded PCLs: the evaporation pond water and the loading dock sump.

In general, the objectives of the Remedial Action are to reduce the potential for infiltration of water that contains contaminants at concentrations above the PCL; to implement physical controls (concrete cap) such that the areas do not become an attractive nuisance; to use deed restrictions to control the future use of the property and record the fact that wastes are stored in the silo; and to reduce the long-term care requirements for the site.

In addition to the six areas (or categories) mentioned above the remaining trash and waste associated with the RI (which is termed: investigation derived waste) and the MRE company's laboratory samples that are currently staged at the site will be placed into the silo. The two storage sheds that are present on site will be razed and disposed of offsite at a solid waste landfill.

A. EVAPORATION POND WATER

1. GENERAL DESCRIPTION

The evaporation pond is approximately 75 by 185 feet. The pond is lined with a plastic liner supported by clay soils and was reportedly used to evaporate liquids that were removed from the silo during the MRE company's operation of the facility. The pond is located approximately 75 feet east-southeast of the silo.

The quantity of water in the evaporation pond is dependent upon weather conditions. During the RI, approximately 12 to 18 inches of water were present in the evaporation pond. It is estimated that this depth of water amounts to approximately 100,000 to 150,000 gallons of water. However, the impoundment was essentially dry late in the summer of 2000. In order to estimate costs, it was assumed that the impoundment will contain approximately 100,000 gallons of water and that the characteristics will be similar to those detected during the RI.

2. PCL EXCEEDENCE ZONES

The final PCL for lead (for groundwater protection) was exceeded in the evaporation pond water sample collected during the RI.

3. REMEDIAL ACTION OBJECTIVES

The Remedial Action objectives for addressing the water in the evaporation pond, are to eliminate the potential for infiltration of water from the evaporation pond to the soils and to reduce the long-term care requirements.

4. REMEDIAL ACTION ALTERNATIVES

Potential remedies that were evaluated for the evaporation pond water include:

Water Alternative 1: Pumping, treating and discharge of the impoundment water to onsite ditches;

Water Alternative 2: Pumping the impoundment water into tanker trucks and transporting offsite for disposal; and

Water Alternative 3: Pumping the accumulated water into the silo.

Each of these alternatives would meet the objectives of the Remedial Action discussed above.

Water Alternative 1 would require that TNRCC establish discharge water quality criteria and issue an authorization to discharge onsite. The final treatment requirements would be based upon the discharge criteria defined by the TNRCC. However, based on the RI data, it is anticipated that water treatment would likely consist of flocculation and settling to remove metals, air stripping to remove volatile organic constituents, and carbon adsorption to remove other organic constituents before discharging the water.

Water Alternative 2 would require the loading and transporting of approximately 100,000 gallons of water to a commercial wastewater treatment and disposal facility.

Water Alternative 3 would consist of the rental of pumping equipment and contract labor to pump the contents of the evaporation pond to the silo. The concentration of lead (the only detected constituent in the evaporation pond water that exceed the PCL) is less than the final PCL for the water in the silo; therefore, this alternative would be protective of human health and would meet the Remedial Action objectives for the evaporation pond.

Water Alternative 3 is less practical since a portion of the silo water would need to be treated and released to the onsite ditch to maintain adequate freeboard in the silo.

B. EVAPORATION POND SLUDGE/SOIL

1. GENERAL DESCRIPTION

The sludge in the impoundment has been estimated to be between 6 and 12 inches thick. This amounts to approximately 600 cubic yards of sludge in the evaporation pond and loading dock sump (a combined estimate was provided for the sludge in these two areas).

In addition, it is assumed that some soil beneath the impoundment may have concentrations of contaminants above the soil PCLs. Because the soils would become intermingled with the sludge and water during the sampling process, it was not possible to sample the underlying soils separately from the sludge and water in the evaporation pond during the RI. Soils will be sampled after the removal of the water, sludge and liner.

For the purposes of this evaluation, it is assumed that six inches of soil, amounting to 300 cubic yards, will be removed from the evaporation pond. The actual volume of soil removed will depend on the depths at which the PCLs for soil are exceeded. It is possible that concentrations of contaminants in existing soils beneath the evaporation pond are already less than the PCLs for soil. In this case no soil would need to be removed from below the evaporation pond.

2. PCL EXCEEDENCE ZONES

No contaminants were detected at concentrations above their final PCLs in the evaporation pond sludge during the RI. However, the evaporation pond sludge has the potential to become a potentially attractive nuisance and it may also serve as a continuing source of contaminants to the evaporation pond water if left in place.

3. REMEDIAL ACTION OBJECTIVES

The objectives of the Remedial Action for the sludge and soil in the evaporation pond are to reduce the potential for leaching of contaminants into the water and deeper soils, to eliminate the pond as an attractive nuisance, and to reduce the long-term care requirements.

4. REMEDIAL ACTION ALTERNATIVES

Remedial Action alternatives that were evaluated for the evaporation pond sludge and underlying soils include:

Sludge/Soil Alternative 1: Excavation, transportation and offsite disposal; and

Sludge/Soil Alternative 2: Excavation and placement of the material into the silo.

Each of these alternatives will achieve the Remedial Action objectives discussed above. It is assumed that under each of these alternatives the liner material that is currently in the evaporation pond will be handled with the sludge and that the impoundment area will be graded to drain stormwater.

Sludge/Soil Alternative 1 assumes that the material could be disposed as a Class I nonhazardous waste. This alternative would require the loading, transportation and offsite disposal of approximately 80 – 90 transport truckloads of material.

Sludge/Soil Alternative 2 would require the transport of the sludge and soil and placement into the silo. The concentration of each of the COCs in the evaporation pond sludge is less than the final PCLs for sludge in the silo, therefore this alternative would be protective of human health and would meet the response action objectives for the evaporation pond.

Prior to placement of the sludge/soil in the silo, a portion of the silo water would need to be treated and released to the onsite ditch in accordance with Water Alternative 1 to maintain adequate freeboard in the silo. A total of approximately 200,000 gallons of water from the silo would be treated and discharged using the same water treatment system discussed under Water Alternative 1.

C. LOADING DOCK SUMP

1. GENERAL DESCRIPTION

The loading dock sump is an approximately 10 square foot concrete sump at the west end of the truck unloading dock approximately 50 feet southwest of the silo. At the time of the RI, there was approximately 18 to 24 inches of sludge and a few feet of water present in the sump. The quantity of sludge in the loading dock has been estimated to be less than 10 cubic yards. Because of the small volume of sludge, this medium has been evaluated with the evaporation pond sludge.

2. PCL EXCEEDENCE ZONES

The Final PCL for the pesticide delta BHC (for groundwater protection) was exceeded in the loading dock sludge sample collected during the RI. In addition, this sump has the potential to become an attractive nuisance.

3. REMEDIAL ACTION OBJECTIVES

The Remedial Action objectives for the sludge in the Loading Dock Sump are: to reduce the potential for leaching of contaminants from the sump into the subsurface; to control the sump as an attractive nuisance; and to reduce the long-term care requirements of the sump.

4. REMEDIAL ACTION ALTERNATIVES

Remedial Action alternatives that were evaluated for the evaporation pond sludge and underlying soils also apply to the small volume of material in the loading dock sump.

Loading Dock Sump Alternative 1: Excavation, transportation and offsite disposal; and

Loading Dock Sump Alternative 2: Excavation and placement of the material into the silo.

The concentration of each of the contaminants in the loading dock sump is less than the final PCLs for sludge in the silo, therefore each of these alternatives would meet the response action objectives for this area.

Under Loading Dock Sump Alternative 2, a portion of the silo water would need to be treated and released to the onsite ditch in accordance with Water Alternative 1 to maintain adequate freeboard in the silo. A total of approximately 200,000 gallons of water from the silo would be treated and discharged.

D. SILO

1. GENERAL DESCRIPTION

The silo is described in detail in Section III. Site History.

2. PCL EXCEEDENCE ZONES

None of the water or solid samples collected from the silo exceeded the final PCLs developed for the site. Therefore there were no PCL exceedence zones in the silo.

3. REMEDIAL ACTION OBJECTIVES

Although no final PCLs were exceeded in the silo samples, wastes were known to have been deposited in the silo. Therefore the long-term conditions within the silo will continue to be a focus of the TNRCC. With this in mind, TNRCC will continue to require certain precautions intended to guard the public health and safety as well as the environment. It is for this reason that Remedial Action objectives for the silo related to the long-term care and potential for physical injury associated with potential trespass at the silo have been developed and the Remedial Action for the site will include substantial actions involving the silo.

The Remedial Action objectives for the silo are: to implement physical controls (concrete cap) such that the silo and/or the launch control center do not become attractive nuisances; to reduce the potential for infiltration of run-off water into the silo; and to reduce the long-term care requirements for this area of the site.

Other actions which have been or will be taken to insure that the continued storage of dilute waste materials in the silo will not cause any problems in the future include:

> Creation of conservative mathematical models used to predict the migration potential of silo water and sludge. These models demonstrate that no adverse impact to groundwater from the silo is likely, even after the additional disposal of materials from the evaporation pond and loading dock sump.

Continued requirements for monitoring the water levels in the silo and inspecting the concrete cap (discussed in Section VII A).

Contingency plans based on the potential increase or decrease in the water levels in the silo (discussed in Section VII A).

Requirements for periodic reports to the TNRCC on the status of the concrete cap, security measures and water levels in the silo (discussed in Section VII B).

Deed recordation of the entire site to indicate that it is restricted to industrial uses and give notice that wastes are disposed in the silo (discussed in Section VII C).

Ongoing requirements for the maintenance of site security fences, warning signs and the concrete cap.

Financial assurance requirements such that money will be available in the future for monitoring water levels and maintaining site security.

4. REMEDIAL ACTION ALTERNATIVES

Because no final PCLs were exceeded in the silo, a concrete cap over the silo was the only alternative considered. The proposed concrete cap would cover the entire silo surface area (including all air vents and openings) and all entrances to the silo.

E. SURFACE SOILS

1. GENERAL DESCRIPTION

Surface and subsurface soils at the site consist of clay and shale from the ground surface to a depth of at least 200 feet. These low permeability soils are not conducive to large amounts of surface water infiltration and contaminant migration.

A total of nineteen surface soil samples were collected and analyzed during the RI.

2. PCL EXCEEDENCE ZONES

None of the surface soil samples collected during the RI exceeded the final PCLs developed for the site. Therefore there were no PCL exceedence zones in the surface soil.

F. BURIED PLASTIC LINER

1. GENERAL DESCRIPTION

Sometime during the MRE company's ownership of the site, the plastic liner used in the evaporation pond was replaced and the old one was buried on site, just south of the loading dock at approximately 10 feet deep.

During the RI a total of four soil borings were completed in the vicinity of the buried plastic liner to depths of approximately ten feet. An additional three borings were complete adjacent to the buried plastic liner to depths of approximately fifteen feet. These borings were completed to assess the possibility of contamination in the vicinity of the buried plastic liner.

2. PCL EXCEEDENCE ZONES

None of the soil samples collected in the vicinity of the buried plastic liner during the RI exceeded the final PCLs developed for the site. Therefore there were no PCL exceedence zones in this area.

VI. TNRCC'S PROPOSED REMEDIAL ACTION

Several Remedial Action alternatives (options) were reviewed in the RAP and considered by the TNRCC and discussed with the participating PRPs. TNRCC's proposed Remedial Action alternative are briefly discussed in the sections that follow.

The proposed Remedial Action alternatives were selected in accordance with State law which stipulates that "the remedial action for a particular facility shall be selected based on the remedial alternative that the executive director (of the TNRCC) determines to be the lowest cost alternative which is technologically feasible and reliable, effectively mitigates and minimizes damage to the environment, and provides adequate protection of the public health and safety and the environment" [30 TAC 335.348(l) and Section 361.193 of the Texas Solid Waste Disposal Act].

The proposed Remedial Action alternatives are also in compliance with the TRRP rules and may be considered a Remedy Standard B Response Action for an industrial land use in accordance with 30 Texas Administrative Code, Chapter 350.

A. EVAPORATION POND WATER

The TNRCC proposes that Water Alternative 1 be used to address the evaporation pond water. This alternative will meet the Remedial Action objectives for the evaporation pond water.

Under Water Alternative 1, the water within the evaporation pond will be pumped out and treated onsite to TNRCC-established discharge criteria and then discharged to the site drainage ditch leading to the south.

The Water Alternative 1 treatment system would consist of: flocculation and settling to remove metals; pH adjustment; filtration to remove solids; and carbon adsorption to remove organics. The treatment system would include approximately three tanks with capacities of 10,000 to 20,000 gallons each, transfer pumps and chemical feed systems/metering pumps. The final treatment components will be determined based upon the discharge criteria determined by TNRCC. The treatment system will be provided with secondary containment utilizing the truck loading area as well as constructed containment (e.g. berms or dikes will be constructed).

B. EVAPORATION POND SLUDGE/SOIL

The TNRCC proposes that Sludge/Soil Alternative 2 be utilized as a safe and economical method for disposal of the sludge and soil from the evaporation pond. Under this alternative, the sludge within the pond would be pumped and/or excavated and transferred to the silo. The method of transfer will depend on the physical characteristics of the sludge at the time of the Remedial Action. If the water levels are low and the sludge is fairly dry, it may be possible to excavate and haul the sludge to the silo. If the water content in the sludges is higher, it may be more feasible to pump it to the silo. The transfer of material to the silo will be performed in such a way that contaminants from the evaporation pond are not transferred to any other areas, on or off the site except the silo.

Under Sludge/Soil Alternative 2 the plastic liner will also be removed and placed in the silo. Confirmatory soil sampling will be performed by collecting surface soil samples from ten locations on the bottom of the evaporation pond. The soil beneath the evaporation pond will then be excavated as necessary until the soil PCLs are met. Then the pond will be graded to properly drain.

C. LOADING DOCK SUMP

The TNRCC proposes that the loading dock sump sludge and water be remediated in conjunction with materials in the evaporation pond. Thus the TNRCC proposes that Loading Dock Sump Alternative 2 be utilized as a safe and economical method for disposal of the sludge and soil in the sump.

Under this alternative, the contents of the loading dock sump would be removed by pumping or excavation and placed into the silo. The transfer of material to the silo will be performed in such a way that constituents from the sump are not transferred to un-impacted soil between the two areas. After removal of the sump contents, it will be steam cleaned until visible contamination is removed and filled with concrete.

D. SILO

The existing partial concrete cover over the silo will be supplemented with a six-inch layer of reinforced concrete over the entire silo (including all openings and air vents). This will prevent potential contact with the materials in the silo and will further reduce the potential for infiltration of water from the silo to the subsurface soil around the silo. The cover will include a sealed portal for yearly measurements of water levels within the silo and at least one air vent so that dilute organic vapors, if present, could gradually release.

E. SURFACE SOILS

Because there are no PCL exceedence zones in the surface soils, Remedial Action objectives and Remedial Action alternatives were not developed for surface soils. TNRCC proposes that no further action is necessary in regards to the surface soils at the site.

F. BURIED PLASTIC LINER

Because there are no PCL exceedence zones associated with the buried plastic liner, Remedial Action objectives and Remedial Action alternatives were not developed. TNRCC proposes that no further action is necessary concerning the buried plastic liner and nearby subsurface soils.

VII. MISCELLANEOUS REQUIRED ACTIVITIES

A. INSPECTIONS AND REPAIRS

It is proposed that the routine inspection and maintenance of the concrete cover, inspection of site security systems (fences, gates and signs) and measurement of water levels within the silo be performed during periodic inspections of the site. These inspections will be conducted annually.

The condition of the concrete cap will be visually inspected to assess its general condition and any signs of structural damage, if present, will be noted. The integrity of site security measures will be evaluated during the inspections. The depth to water in the silo will be measured and recorded.

The results of the inspections will be included in Response Action Effectiveness Reports from the participating PRPs to the TNRCC. If any repairs are warranted to maintain the effectiveness of the concrete cap as an exposure barrier, the maintenance activities will be performed and summarized in these reports. Repairs to fences and signs that are noted in the site inspections will be performed as expeditiously as possible.

The water levels within the silo will be measured according to an established schedule and will be compared to the previous water level measurements to determine whether additional action should be undertaken (discussed in Section VII D).

B. REPORTS TO TNRCC

Response Action Effectiveness Reports will be prepared and submitted to the TNRCC following inspections.

A Response Action Completion Report will be prepared when there is demonstration that there is no threat to human health or the environment from the remediated PCL exceedence zones.

C. DEED RESTRICTIONS

Institutional controls in the form of deed restrictions will be required for the site. Since the TNRCC has designated a commercial/industrial land use for the site, and this designation was used in the development of PCLs, deed restrictions will restrict the land use to commercial/industrial activities. Development of the site for residential purposes would constitute a change of conditions and would require a reevaluation of the existing data under

the residential scenario. The deed recordation will include a legal description of the property as well as details and locations of materials that have been left in place (the silo, buried liner) and a statement that wastes have been left in place.

Any change in use of the property (any use of the property for other than the current disposal of wastes associated with the former MRE company) would require TNRCC approval. There are no plans for approval of any use of the site other than the current disposal of wastes. The land designation of commercial/industrial was made for regulatory purposes only.

D. SILO CONTINGENCY PLAN

The water level in the silo appears to have been relatively stable since the time period that the MRE company operated. However, if the annual measurements of the silo water level indicate significant changes in the water level (either a decrease or an increase) certain additional actions will be required of the participating PRPs.

There is the potential for the water level in the silo to increase due to water infiltration from surface soils into the silo through openings created during silo construction. As long as sufficient freeboard is maintained, rises in water levels within the silo are not a significant problem. Therefore, rises in the water level will not be deemed to be occurrences that require action or additional evaluation unless the freeboard between the water level and the openings at 40 feet below ground surface is less than 5 feet. That is, unless the water levels in the silo reach 45 feet below the ground surface.

If the depth to the water is measured to be less than 45 feet below the top of the silo, the situation will be evaluated and the need to remove water to maintain a sufficient freeboard below the openings will be considered.

Two situations that could potentially contribute to a drop in water levels were also considered. The water levels in the silo may reduce due to evaporation or the water in the silo could leak into the surrounding soils.

The first possibility is expected to occur at relatively minor rates (less than 0.1 feet per year based on water loss calculations) and would cause no adverse affects. Although it is not expected to occur, contingency plans for the second possibility (release of silo water to the subsurface soils) have been developed.

The silo will contain materials up to a maximum of 40 to 45 feet below ground surface. The surrounding formation has been documented to be primarily shale and clayey shale from a depth of 40 feet below ground surface near the silo to greater than 1000 feet below ground surface (according to regional geologic literature). Using this information along with the volume of water in the silo and other considerations, a simplified mass balance model was developed by the consultants to the participating PRPs to estimate the potential of the water in the silo to migrate into and within the subsurface soils

A summary of these calculations is presented in Appendix F of the Response Action Plan. The calculations were made for various possible drops in water levels in the silo. These calculations were made with the conservative assumption that all water that migrates from the silo is transported radially outward from the silo in a short period of time. Based on these calculations, a drop of one foot in the water level would theoretically result in a lateral migration of approximately 25 feet from the silo. A drop of four feet in the water level in the silo would theoretically result in a lateral migration of approximately 80 feet from the silo. Therefore even relatively large releases of water from the silo (resulting in a four foot drop in water level throughout the 52 foot diameter silo) would result in very little migration of the potentially contaminated water.

Again, to reiterate: based on the cement walls of the silo, the low permeability of the geologic formation at the site, the results of the groundwater flow models; and the fact that there is no appreciable groundwater within 200 foot of the ground surface at the site, there is no reason to suspect that these releases of water from the silo will occur. If they do occur, it is proposed that these two hypothesized water level fluctuations be used as levels at which further evaluation is made. Therefore, at any time when the yearly water level measurements drop by more than one foot from the initial level, the frequency of measurement will be increased to quarterly for a period of one year. If the total drop in water level is greater than four feet, three monitor wells (approximately 200 feet deep) will be installed and a monitoring program will be implemented.

VIII. COMMUNITY PARTICIPATION IN THE SUPERFUND PROCESS

The public is invited to comment on the proposed Remedial Action for the MRE site. Those wanting to make oral comments may do so at the Public Meeting scheduled for November 8, 2001 at at the Jim Ned High School Cafetorium, 830 Garza Avenue inTuscola, Texas. The Public Comment Period begins October 5, 2001, and ends on November 8, 2001, at the close of the public meeting. During this time period, the public may comment on any aspect of the site, the proposed Remedial Action, the investigation of the site or other TNRCC actions concerning the site. Written comments concerning the proposed Remedial Action must be received by the close of the public meeting on November 8, 2001. Comments should be submitted to:

Jeffrey E. Patterson, Project Manager
Superfund Cleanup Section (MC 143)
Remediation Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087

The TNRCC will respond to all comments received during the public comment period in the *Responsiveness Summary*. The Responsiveness Summary will be made available to the public upon request and in the site files.

IX. GLOSSARY

Hazard Ranking System (HRS) — The scoring system used by the TNRCC to evaluate a site for the State or Federal Superfund Program. The scoring system was developed by the U.S. Environmental Protection Agency (EPA) as described in 40 Code of Federal Regulations Part 300, Appendix A, as amended. The EPA HRS has been adopted by the TNRCC.

Proposed Remedial Action Document (PRAD) — the document which describes the TNRCC's proposed Remedial Action.

Protective concentration level - the concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

Remedial Action — An action, including remedial design and post- closure care, consistent with a remedy taken instead of or in addition to a removal action in the event of a release or threatened release of hazardous substances into the environment to prevent or minimize the release of a hazardous substance so that the hazardous substance does not cause an imminent and substantial endangerment to present or future public health and safety or the environment.

Remedial Investigation — An investigative study which may include removals, feasibility study, baseline risk assessment, or similar study, designed to adequately determine the nature and extent of release or threatened release of hazardous substances and, as appropriate, its impact on airs, soils, groundwater and surface water, both within and beyond the boundaries of the facility.

Responsiveness Summary — A document in which the TNRCC summarizes its response to all comments received on the PRAD during the public comment period.

Response Action — Any activity taken to comply with the Texas Risk Reduction Program rules (TRRP) to remove, decontaminate and/or control (i.e., physical controls and institutional controls) contaminants in excess of critical Protective Concentration Levels (PCLs) in environmental media, including actions taken in response to releases to environmental media from a waste management unit before, during, or after closure.

Texas Natural Resource Conservation Commission (TNRCC) — The State agency given primary responsibility for implementing the constitution and laws of this State relating to the conservation of natural resources and protection of the environment.

Texas Solid Waste Disposal Act (SWDA) — The 71st Legislature in 1990 codified Chapter 361 of the Texas Health and Safety Code, and took control of hazardous waste storage, processing and disposal, requiring that only permitted hazardous industrial solid waste facilities be allowed to accept and process hazardous waste. The state assesses a registration fee of $25-500 per disposal site, plus an average of 50 cents a ton for hazardous waste hauled to the permitted facilities. These collected fees are added to the Hazardous & Solid Waste Remediation Fee Account for use by the TNRCC and other state agencies that deal with hazardous waste.