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Proposed Remedial Action Document

for

JCS Company

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May 15, 1997

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PROPOSED REMEDIAL ACTION DOCUMENT

JCS COMPANY
STATE SUPERFUND SITE
VAN ZANDT COUNTY, TEXAS

MAY, 1997

PREPARED BY:
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
SUPERFUND INVESTIGATION SECTION
POLLUTION CLEANUP DIVISION

SITE NAME AND LOCATION

The JCS Company State Superfund site is located on a 5.98 acre tract of land approximately one and three-fourths of a mile north of the community of Phalba, in Van Zandt County, Texas.

STATEMENT OF BASIS AND PURPOSE

This document presents the recommended remedial action which is designed to ensure the protection of human health and the environment at the JCS Company State Superfund site. The remedial alternative selection was made in accordance with the Texas Solid Waste Disposal Act, codified as the Texas Health and Safety Code, Chapter 361, and all applicable State and Federal environmental regulations.

The Texas Natural Resource Conservation Commission (TNRCC) is providing a description of the recommended remedial action with reasons for the recommendation. The purpose of this document is to: 1) describe the other remedial alternatives considered in detail in the Presumptive Remedy Document, 2) solicit public review and comment on the recommended alternative, and 3) provide information on how the public can be involved in the remedy selection process.

This document summarizes information that can be found in greater detail in several documents located in the JCS Company site files. The results of sampling activities and an evaluation of site risks are presented in the Remedial Investigation Report and the Baseline Risk Assessment (BRA) report. The evaluations of site remedial alternatives are presented in the Presumptive Remedy Document.

The TNRCC encourages the public to review these documents in order to gain a more comprehensive understanding of the site, the State Superfund activities that have been conducted, and the various alternatives that have been developed and evaluated to address contamination at the site. The TNRCC also encourages the public to participate in the decision making process for the site. The JCS Company site files are available at the following location: TNRCC, Building D, Room 190, 12118 North IH-35, Austin, Texas 78753. Copies of the final Remedial Investigation report, Baseline Risk Assessment, and Presumptive Remedy Document are available at: the Van Zandt County Library.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action as proposed, do present an imminent and substantial endangerment to public health, welfare, and the environment.

DESCRIPTION OF THE PROPOSED REMEDY

The proposed remedial action will address the risk attributable to metals in the site soil and sediments. This will be accomplished through the excavation of soil and sediments with contaminants of concern (COCs) above the action levels and consolidation (or staging) of the excavated material in one area on-site. Surface water from the on-site ponds will be pumped out, treated (if necessary) and discharged on-site. The sediments from the ponds, with concentrations of the COCs above the action levels will be excavated and placed in the staging area. After the on-site soils and sediments are excavated and placed in one area, a low permeability clay cap will be placed over the staged soils. Excavation, staging and containment by placing a low permeability cap over he consolidated soils will minimize infiltration and reduce exposure to contaminants via the air and direct contact pathways. This action will reduce the risk posed by the site to an acceptable level and it will also provide adequate protection of the groundwater.

JCS Company site proposed remedy was selected in accordance with the TNRCC=s *Presumptive Remedies Guidance Document for Soils at Texas State Superfund Sites*. Presumptive remedies are remedial technologies which have been identified based upon historical patterns of remedy selection and scientific and engineering evaluation of a technology=s performance, as the preferred remedy for a particular type of contamination.

The Apredominant@ chemical group (i.e., the group that would have the greatest influence on the remediation based on toxicity, availability, and/or abundance) is determined to be metals due to the contaminant levels of lead, arsenic and antimony. In general, the vertical extent of contamination is no greater than two feet. The approximate volume of affected soils was determined using the action levels identified in the Presumptive Remedy Document. The action level for lead is 500 mg/kg based on the TNRCC Risk Reduction media specific concentration (MSC) for total lead in residential soils (30 TAC ' 335.558 Appendix II). The action levels for arsenic and antimony are 20 mg/kg and 110 mg/kg, respectively. The estimated volume of contaminated soil with concentrations of COCs above the action levels is 9,401 cubic yards.

Based on the data obtained during the Remedial Investigation for the site, the uppermost and the next shallow water bearing zones are not contaminated. The shallow water-bearing zones are not currently used at the site and are not expected to be a potential source for a future water supply based on low recovery rates documented during the groundwater investigation confirmed by estimated low values (<150 gpd) for sustainable yield.

Based on estimated volume of contaminated soil the conclusion that groundwater does not require protection, on-site containment without stabilization is recommended as the most reasonable and appropriate remedy because it is the most cost effective and efficient manner to address the site.

The recommended remedy includes: security fence construction; removal of battery cases and drums

(containing investigative derived waste); and installing of additional perimeter monitoring wells, if needed.

Even though total metal concentrations in ground water samples from all the wells at the site are below (for lead, cadmium, arsenic, and antimony) their respective health-based regulatory levels, groundwater monitoring is recommended semiannually for a period of time sufficient to assure the success of the remedy. This monitoring is necessary to ensure that contaminants do not migrate off-site to useable portion of the aquifer and impact adjacent property owners who may utilize these shallow zones. In addition, deed recordation will be required since waste will be left on-site beneath a cap.

I. LOCATION AND DESCRIPTION

The JCS Company site consists of 5.98 acres and is located approximately one and three-fourths of a mile north of the community of Phalba, in Van Zandt County, Texas. The site was used for automotive battery reclamation operations beginning in 1970.

A currently occupied mobile home and several structures exist at the site. These structures include the foundation of a former residence (currently utilized by a mobile home), a concrete slab foundation for a former truck scale, a maintenance building, a concrete loading ramp, the chipper areas and concrete storage bins, adjacent to a battery processing building. Access to these structures is obtained from County Road 2410 to a crushed caliche road located along the south side of the site. Other site features of interest include the existing evaporating pond, a trailer containing battery cases, and three concrete sumps located inside the former battery process building.

The site is abutted by a heavily wooded area on the east, and surrounded by fields and rangeland on the west, north, and south. County Road 2410 borders the western edge of the property.

II. SITE HISTORY

Beginning in 1970 the site was used for an automotive battery reclamation operation. Between 1978 and 1981, the JCS Company purchased used batteries and stored them in the battery processing building. The tops of the batteries were cut off with a saw. Anhydrous ammonia was used to wash sulfuric acid from the battery cells, creating a neutralized or basic wash that was collected in stainless steel troughs.

The stainless steel troughs were located inside the process building as identified in state agency inspections. Waste created during the neutralization process consisted of a liquid waste (wash) and precipitant, both high in heavy metal content. The liquid waste was gravity drained to the two unlined surface impoundments, where the liquid was evaporated. A third impoundment was used to collect overflow from the two surface impoundments. The third impoundment is still present on-site. The precipitant waste was removed from the stainless steel troughs, placed in 55-gallons drums, stored in the battery process building or adjacent to the concrete ramp, and then shipped off-site with solid lead pieces removed from the cut batteries. The cut battery tops were taken from the storage bins to the battery case
chipping area where the solid lead pieces were removed. The solid lead pieces were placed in 55-gallon drums and shipped off-site for reclamation. Plastic chips were gathered and placed back into the concrete storage bins where they were stored until shipment for off-site reclamation. Salvage, smelting and refining operations did not take place at the JCS Company Site.

On November 19, 1980 the JCS Company filed a Part A Permit Application as an interim status hazardous waste management facility. In October of 1981, the facility became inactive. In March 1984, the Texas Department of Health (TDH) inspected the site and collected soil samples and found total lead concentrations ranging from 978 mg/kg to 329,000 mg/kg. On April 5, 1984, the TDH sent a Notice of Violation letter to the JCS Company. No response was received. On August 20, 1984, a letter was sent to the JCS Company terminating interim status.

Between 1984 and 1987, the TNRCC=s District 5 Regional office inspected the site, found several violations, and filed several enforcement actions against the operators of the site. During this time, the TNRCC collected surface soil, pond and liquid waste samples and based on the collected information a Site Inspection Report was completed. The following investigations were conducted at the site from 1987 to 1990: Comprehensive Groundwater Monitoring Evaluation(1987), Solid Waste Compliance Monitoring Inspection (1987 and 1988), RCRA Facility Assessment PR/VSI Report (1988), Solid Waste Inspection (1989).

The site was referred to the Texas State Superfund Program and proposed for listing on the State Superfund Registry of hazardous waste sites in Texas on September 25, 1990. From 1993 to 1994, the TNRCC performed a Remedial Investigation and Baseline Risk Assessment. In May of

1997, the TNRCC completed the Presumptive Remedy Document.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Local community involvement in the State Superfund process began on October 26, 1990 with a public meeting held in Canton, Van Zandt County, Texas. The purpose of this meeting was to seek comments on the proposed listing of the JCS Company site and to obtain any information related to the site.

The public is invited to comment on the proposed remedial action at this time. The public comment period begins April 1, 1997, and ends May 20, 1997, at the close of the public meeting. During the public comment period, written comments may be submitted to:

Luda Voskov, Project Manager
Superfund Investigation Section (MC 143)
Pollution Cleanup Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087

Additionally, oral comments will be accepted at a public meeting to be held on Tuesday, May 20, 1997, at 7:00 p.m. at the Queen City Hall, Council Chambers, 210 Houston, in Queen City, Texas. The TNRCC will respond to all comments received during the public comment period in a document called a Responsiveness Summary. The Responsiveness Summary will be made available to the public in the repository listed on page one.

IV. SUMMARY OF SITE CHARACTERISTICS

Site characterization has been accomplished through a Remedial Investigation (RI), the purpose of which has been to determine the nature and extent of site related contamination and define general site characteristics.

The JCS site is located in the West Gulf Coastal Plain of eastern Texas and the blackland prairie area of Van Zandt county. The general surface topography ranges from generally flat along major streams to gently rolling hills away from the floodplains. The site topography is generally flat with a gentle slope (one percent grade) towards the east. The climate in Van Zandt County is classified as subtropical with long, hot summers and short, mild winters.

The JCS site is located on an outcrop of the Wilcox Group which is of early Eocene age. The surface soils are sandy loams near the surface, and clay or sandy clay below the surface. The Wilcox Group, which underlies the entire site, is dominated by sand. Interfingering with the sand are lenses of silty shale and clay. Lignite in stringers ranging in thickness from less than one foot to ten feet is common. The groundwater in the uppermost shallow water-bearing zone is located at a depth of approximately 15 feet below the ground surface. Locally, the shallow water-bearing zones are not currently used. Domestic water supplies are obtained from the deep sand formation between 200 and 300 feet deep.

The RI provided substantial field and laboratory data to attempt to define the nature and extent of contamination at the site. Metals were found to be the predominant chemical group of concern. No organics were detected in the surface and subsurface soil, sediments, groundwater, and the sludge pile samples. Results of the RI indicate that the most contaminated media at the site are surface and shallow subsurface soils, surface water and sediments. Groundwater is not impacted based on the samples taken from the monitoring wells during the RI.

V. SUMMARY OF SITE RISKS

A. RISK EVALUATION

Texas Natural Resource Conservation Commission regulations 30 TAC '335.8(a) (2) and '335.563 (e) require that for sites subject to 30 TAC '335.341-335.352 (Subchapter K, Superfund) media cleanup levels be based on a future residential land use unless a person demonstrates, to the satisfaction of the Executive Director, that another land use scenario is appropriate. Another scenario has not been demonstrated to be appropriate, and thus, future land use for this site is assumed to be residential.

The site risks have been evaluated through the preparation of a human health risk assessment. This is a specific procedure which uses facts and assumptions to estimate potential adverse effects on human health from exposure to the existing contamination at the site before any remedial action.

A site-specific risk assessment evaluates the potential threat to human health posed by the presence of contaminants and activities at a site. The assessment describes chemical concentrations, toxicology of chemicals of concern, potential exposure routes, and potential risks associated with current site conditions. Risks associated with exposure are calculated using both a risk-based approach and a comparison with regulatory action levels.

Information on the potential levels of exposure to contaminants is combined with information on the toxicity of the contaminants in order to determine the potential health risks to individuals living near the site under current conditions. For non-carcinogenic (systemic) effects, USEPA and TNRCC assume there is a level below which no effects will occur (a threshold or no effect concentration). For carcinogens, however, it is assumed that any exposure has some probability of causing cancer and it is therefore assumed that there is no threshold level. Because of these different assumptions, potential non-carcinogenic and carcinogenic health effects are evaluated separately. The cancer risk is obtained by multiplying the chronic daily intake of the contaminant under consideration (from the exposure assessment) by its cancer potency factor or slope factor (from the toxicity section). USEPA typically expresses cancer risk in terms of an upper-bound excess lifetime cancer risk level. USEPA and the TNRCC use an upper-bound excess lifetime risk level of one in one million (10^{-6}) as a risk level goal for carcinogens and USEPA generally sets regulatory criteria within a risk range of between one in ten thousand and one in one million (10^{-4} and 10^{-6}). This policy is consistent with the National Contingency Plan (NCP) developed by USEPA to provide guidance on cleaning up Superfund sites.

For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response. The 10^{-6} risk level shall be used

as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure; (40 CFR 300.430).

To evaluate possible risk from exposure to non-carcinogenic contaminants, the chronic daily intake is divided by the health criterion value [the reference dose (RfD)]. If the ratio is less than one (i.e., if the daily intake is below the health criterion) the contaminant is considered unlikely to pose a health hazard to individuals exposed under the given scenario. As suggested in the USEPA (1986) guidelines for Health Risk Assessment of Chemical Mixtures, the ratios are summed to determine if combined exposure may pose a health concern. It should be noted that the summed CDI/RfD ratio (termed the hazard index or HI) is used only as an indication of a possible hazard, this summation is only valid if there are no synergistic or antagonistic interactions among the summed compounds and if they have the same mechanism and site of action.

A number of assumptions were used in deriving the RfD and slope factor, therefore, there is some uncertainty in interpreting the implications that the cancer risk levels and non-carcinogen hazard quotients have for risk. However, in the estimation of these factors, conservative (health protective) assumptions were made so that it is improbable that the cancer risks would be higher or the hazard quotients ratio would be less than one if there were any actual hazards at the site.

Contaminants of concern (COCs) were identified for the JCS site based on the results of the RI and these COCs were considered in the Baseline Risk Assessment (BRA). Based on a screening process conducted to evaluate contaminants actually posing risk, all but four (lead, arsenic, and antimony) of the potential COCs were eliminated from further consideration.

The Baseline Risk Assessment identified the estimated risks to current and future receptors if no action is taken to remediate the site. The risk assessment identified the following exposure pathways are of current and future significance to the site:
dermal contact with soils and sediment;

- ingestion of surface water, sediment and soils;
- potential dietary intake of contaminated foods such as ingestion of vegetables and fruit grown in contaminated soil and ingestion of beef from cattle grazing on the site.

Additionally, five receptors have been identified, specific to the site as follows:
current on-site worker (adult);

- current on-site visitors (adults and children);
- current off-site resident (adults and children);
- future on-site resident (adults and children);
- future on-site worker (adult).

The cumulative cancer risk and hazard index attributable to exposure to both surface and subsurface soils at the site assuming daily exposure under the current and future land use scenario are as follows:

Future Land Use Scenario 1- Residential

Future most exposed individual-child

C Cumulative hazard index (child)- 8.6

Cumulative cancer risk (child) - 1.5×10^{-2}

Current Land Use Scenario - Commercial/Industrial

Current most exposed individual - adult

C Cumulative hazard index (adult) - 2.1

C Cumulative cancer risk (adult) - 7.3×10^{-3}

The results presented above indicate that existing levels of carcinogenic and non-carcinogenic metals in surface and subsurface soils at the site have the potential for being a source of exposure which would result in unacceptable risk from the site.

B. REMEDIAL ACTION OBJECTIVES AND REMEDIATION GOALS

The remedial action objectives are developed based on contaminant characterization, the results of the Baseline Risk Assessment and the evaluation of the expected future exposure at the site. The following contaminants of concern were identified as exceeding a cancer risk level of 1×10^{-6} for carcinogens or a hazard index of 1.0 for non carcinogens:

Carcinogenic [i]	Non Carcinogenic
arsenic, A_1 (known human carcinogen)	antimony, lead
C cadmium, B_1 (probable human carcinogen, limited human data available)	
lead, B_2 (probable human carcinogen, sufficient evidence in animals and inadequate evidence in human)	

i From EPAs A Weight of Evidence Classification for Carcinogenicity@

If the environmental impact and potential future health risks from the site contamination are to be minimized, then the following remedial action objectives must be addressed:

Minimize the leachate generated from the contaminated soils to the groundwater;

C Eliminate exposure pathways to contaminated soils, surface water, waste, and dusts; and

C Eliminate contaminated surface water runoff from exiting the site.

In compliance with the TNRCC Risk Reduction Rules - Standards 2, Maximum Concentration in

Residential Soil Considering Cross-media Contamination of Air and the Human Ingestion and Inhalation Pathways, the action levels of 500 mg/kg, 137 mg/kg and
110 mg/kg for lead, cadmium and antimony, respectively, were selected for the site soils and sediments. The action level of 20 mg\kg for arsenic was selected based on TNRCC policy (May, 1995) regarding arsenic cleanup levels in soils in residential areas, based on exposure only. The TNRCC Maximum Concentrations in Soils (MCS), as the cleanup levels, along with the maximum concentrations reported for the site soils, are provided below:

Constituents	**Site soil - Maximum Concentration (mg/kg)**	**MCS (mg/kg)**
Lead	825,000	**500**
Arsenic	21	**20**[i]
Antimony	343	**110**

i - The cleanup level for arsenic was selected based on TNRCC policy

VI.REMEDY EVALUATION

The proposed remedy of on-site containment without stabilization meets the requirements of TAC 335.348(g). These requirements and a discussion of how the proposed remedy meets them are described below.

Mitigates Long-term Exposure

Long-term exposure to contaminants will be substantially reduced by the implementation of this remedial action alternative since the on-site contaminated soils will be contained beneath a low permeability clay cap. Maintenance and monitoring activities will be conducted for a period of time sufficient to ensure the long-term effectiveness of the remedial action.

Long-term management of the site will consist primarily of inspections, cover system maintenance, and ground water monitoring. The cover system will be the only technical component that could potentially need replacing under this alternative. However, routine inspections and maintenance will minimize the need for a replacement of the cap in the future. Hence, the potential for future problems resulting from the release of contaminants from the site will be controlled under this remedial alternative.

Achieves Remediation Standards and Complies with Applicable Federal, State and Local Regulations

The only identified applicable regulation that would pertain to the implementation of this remedial action alternative is the Occupational Safety and Health Act (29 CFR ' 1910 and

' 1926). OSHA requirements would be applicable since the construction activities would expose workers to hazardous substances such as lead.

The identified regulations that are not applicable but would be relevant and appropriate include the following:

Landfill cover maintenance (40 CFR ' 264.310)

- Groundwater monitoring (40 CFR ' 264 Subpart F)
- Post-closure care (40 CFR ' 264.117)

These regulations are relevant and appropriate under this remedial action alternative since contaminated soils will be left in place. The requirements of these regulations will be met through routine inspections, maintenance activities, and long-term groundwater monitoring.

Reduction of Toxicity, Mobility, and Volume

The mobility of lead and other metals contained within the on-site soils will be effectively reduced under this remedial action alternative by the placement of a low permeability cap over the staged material.

Cost of Implementation and Operation/Maintenance

A total present worth cost of $764,678 has been estimated for the implementation of this remedial action alternative. The itemized costs that would be incurred can be summarized as follows:

Direct Capital Cost - Material, labor, and equipment costs for the excavation and staging of contaminated on-site soils and sediments and construction of the low permeability cap, building demolition, installation of three additional monitoring wells, surface water disposal, decontamination and disposal costs

Annual Operating and Maintenance (O&M) Cost - Periodic site inspection, grass mowing, sampling and analytical expenses incurred during groundwater monitoring activities, cover system and fence repairs

Extent Local Community Concerns are Addressed/Other Adverse Effects

The short-term risks to the community and workers would be minimal under the implementation of this remedial action alternative and would be limited to the following:

Exposures to hazardous substances during soil excavation, staging, and cover construction; and

C Increased vehicular traffic during the remedial activities.

Barriers and signs will be erected on-site and along public roadways warning of both hazardous waste remediation activities and the potential for increased vehicular traffic at the site.

Impact on Human Health and the Environment Resulting From Implementation of Alternative

Substantial protection of human health and the environment would be afforded under this remedial action alternative. The on-site consolidation in one area of contaminated soils and the containment provided by a low permeability cap would minimize the potential for leaching of metal contaminants into groundwater and surface water. The potential for human contact with and/or ingestion of contaminated soils, sediments, ponded surface water, runoff, and groundwater would be significantly reduced by the long-term containment of contaminated soils provided by this alternative.

Remedy Implementability - Technical Merits

The on-site buildings and structures may be demolished and disposed off-site, if necessary. The only future remedial actions that are anticipated under this remedial action alternative are periodic repair of erosional effects on the cover system and groundwater sampling and analysis. These additional actions will require a minimum of effort to implement. The proposed groundwater monitoring program will serve to adequately monitor the only exposure pathway that will potentially exist as a result of the implementation of this option.

The cover system construction technology is generally available, sufficiently demonstrated, and will not require further development prior to full-scale implementation.

VII.SUMMARY OF PROPOSED REMEDIAL ACTION

For the JCS Company site, the affected soils contaminated with lead, antimony, and arsenic (approximately 9,401 cubic yards) will be remediated. The remedy proposed by the TNRCC is on-site containment. The on-site containment alternative ranked higher than the other presumptive remedy options. For the volume of soil present at the JCS Company site, on-site containment offers significant cost savings compared to off-site disposal. The proposed remedy for the JCS Company site is protective of human health and the environment and meets the evaluation criteria.