

TCEQ Interoffice Memorandum

To: Commissioners

Thru: *TB* Toby Baker
Executive Director

BW Brent Wade, Director
Office of Waste

From: Beth Seaton, Deputy Director
Remediation Division

Date: November 30, 2021

Subject: Docket No. 2021-1514-SPF
Consideration of an Administrative Order
Ballard Pits State Superfund Site
Nueces County, RN105166821
(Scott Settemeyer, P.G., Cullen McMorrow)

I. Overview

The Ballard Pits State Superfund Site (the site) occupies approximately 296 acres at the end of Ballard Road (also known as Ballard Lane), west of its intersection with County Road 73 northwest of Robstown, Nueces County, Texas. The site is located in a rural area, surrounded by residential development to the north, south, and southeast of the site, and agricultural and grazing land and undeveloped land to the east and west. The nearest residence is located approximately 50 feet east of the eastern site boundary. A portion of the site is enclosed with chain link fencing in the southeast quadrant, between the site and the adjacent residential subdivision.

II. Site History

The site is located on properties owned by Mary Lenn Masson, as Trustee of the C.F. Ballard Residuary Trust, Mary Lenn Masson as Trustee of the Mary Lenn Masson Trust, and Darrel Michael Ballard as Trustee of the Darrel Michael Ballard Trust. The site is currently vacant, undeveloped land, but historically, the Ballard Sand and Gravel Company operated at the site. The site contains pits excavated from the primarily sandy soil that were created as a result of the mining of sand. As early as the 1960s, Brine Service Company, Inc. (and possibly other companies) transported oil-field drilling mud and refinery waste from facilities in the Corpus Christi area to the site for disposal in three of the unlined pits, designated by the TCEQ as the East, West, and North Pits. TCEQ's evidence of this is a July 1968 Texas Water Quality Board order which required that Brine Service Company, Inc. cease all waste disposal activities at the site.

In September 2002, the Nueces River overflowed its banks and inundated the pits. The Railroad Commission of Texas responded to citizen complaints of contamination and initiated site investigations by collecting samples from the pits, adjacent residential yards, and from nearby residential water wells in October 2002. Subsequent investigations by the Railroad Commission of Texas, U.S. Environmental Protection Agency (EPA), and TCEQ included the collection of soil, groundwater, and surface water samples from the site.

In December 2004, the TCEQ evaluated the site using the EPA Hazard Ranking System. The resulting Hazard Ranking System score of 13.31 did not qualify the site for federal Superfund, but it was sufficient to qualify the site for the state Superfund registry. The TCEQ published a notice of a public meeting, which included notice of intent to list the site on the state registry of Superfund sites, and which proposed a commercial/industrial land use designation, in the January 13, 2006, issue of the Texas Register (31 TexReg 316). The TCEQ held a public meeting on February 23, 2006 to receive comment on the proposal to the state registry and the land use designation. The TCEQ also held numerous public meetings from 2007 to 2010 to provide the community with routine updates of the TCEQ's progress in identifying and addressing the waste in the pits.

Beginning in July 2006, the TCEQ Superfund program performed site investigation activities with the purpose of determining the nature and extent of contamination at the site and to identify remedial alternatives for site. These investigations included the collection and analysis of surface soil, subsurface soil, groundwater, surface water, and sediment samples on and off the site and within and around the East, West, and North Pits. The contents of the waste pits were determined to be comprised of waste hydrocarbon sludge. Chemicals of concern (COCs) detected above health-based levels in the pits included barium, benzene, and total petroleum hydrocarbons (TPH).

In 2008 and 2009, the TCEQ conducted removal actions at the West and East Pits, respectively. These removal actions consisted of the excavation of all waste material and impacted soils from the pits from the surface to the water table. The excavations were then backfilled with clean soil. Impacted environmental media below the water table containing non-aqueous phase liquids (NAPL) could not be excavated and was left in place. During the 2008 removal action, approximately 6,784 tons of hazardous waste was removed and approximately 9,256 tons of non-hazardous solid waste was removed from the West Pit. During the 2009 removal action, approximately 75,888 tons of non-hazardous solid waste was removed from the East Pit. All waste and impacted soils were transported and disposed of at an authorized off-site disposal facility.

In 2010, the TCEQ investigated the North Pit. This investigation consisted of sampling surface water and sediments from various ponds on the site and other areas likely to accumulate flood waters, sampling soil and slurry material from the vicinity of the North Pit, and sampling residential water wells along various streets adjacent to the site.

In 2011, the TCEQ excavated a series of 160 exploratory trenches across the site to evaluate the potential for the presence of backfilled former pits. The trenches measured approximately 10 to 15 feet long and 10 feet deep and were excavated in grid squares measuring 150 square feet across the site. No additional pits were discovered.

In 2014, the TCEQ conducted a removal action of the North Pit due to its proximity to the Nueces River and location in a wetlands area with unstable soil and within the two-year floodplain. All waste material was removed. During the North Pit removal action, approximately 7,927 tons of non-hazardous waste was removed and transported to an authorized off-site disposal facility.

From 2016 to 2019, the TCEQ conducted additional testing to further examine the nature and extent of hydrocarbon impacts within and around the East and West Pits. The results of this testing indicated that groundwater beneath the former West Pit is contaminated with total petroleum hydrocarbons exceeding the protective concentration levels (PCLs), or clean-up

standards, for groundwater ingestion. Additionally, during these investigations, the TCEQ observed NAPL in monitoring wells and pilot test wells both on-site and on off-site properties.

III. Characterization of the Nature and Extent of Contamination

In 2019, an Affected Property Assessment Report (APAR) was completed to summarize the findings of the Remedial Investigation. These findings are summarized below.

Soil

Following the removal actions conducted by the TCEQ in 2008, 2009, and 2014, no remaining COCs in on-site or off-site soils were found to exceed applicable PCLs, including those protective of dermal contact, ingestion, inhalation of volatiles and particulates, and ingestion of above-ground and below-ground vegetables.

Surface Water and Sediment

The results of historical investigations indicated that COCs were not detected in on-site or off-site surface water or sediment at concentrations above applicable PCLs.

Groundwater

The uppermost Ground Water Bearing Unit (GWBU) beneath the West Pit is impacted with TPH at concentrations that exceed the PCL for groundwater ingestion and is associated with the NAPL plume remaining in the former West Pit. By comparing contaminant levels over time, the TCEQ determined that the groundwater plume is stable.

TCEQ site investigations did not identify exceedances of applicable PCLs in groundwater underlying the East Pit, North Pit, and off-site properties. Additionally, the groundwater in the deeper GWBU, both on-site and off-site, does not contain COCs at concentrations that exceed applicable PCLs and does not require remediation.

NAPL

NAPL has been observed in monitoring wells and pilot test wells located in the West Pit area. A NAPL investigation examined the hydrocarbon impacts within the East and West Pits and indicated that NAPL was potentially present within the footprints of the two pits. NAPL has also been observed in an off-site monitoring well at a thickness of up to 0.083 feet. Additionally, saturated soil samples collected from on and off-site properties at a depth of 10 to 12 feet below ground surface contained TPH at concentrations above the theoretical residual soil saturation limit PCL of 10,000 mg/kg, suggesting the presence of NAPL.

TRRP requires NAPL to be removed to the maximum extent practicable; therefore, in August 2017, TCEQ performed a mobile dual phase extraction (MDPE) Pilot Scale Treatability Study to determine the effectiveness of recovering the NAPL. The results of this pilot test showed that the NAPL was not readily recoverable and was likely not mobile.

The total area of property impacted by NAPL is approximately 159,000 square feet (sf), of which approximately 4,500 sf is located on off-site properties.

Ecological Risk

A Screening-Level Ecological Risk Assessment (SLERA), completed in 2016, evaluated the potential ecological risk from exposure to ecological surface soils, surface water, sediment, and groundwater. The SLERA concluded that there is minimal ecological risk associated with the site, and determined that as such, no ecologically-based PCLs were necessary for the site.

IV. Evaluation of Remedial Action Alternatives

Following the completion of the site investigation activities, TCEQ concluded that no response actions were required for sediments, surface water, or soils. However, on-site shallow groundwater at the former West Pit and associated NAPL in the former West and East Pit areas requires a response action. Additionally, portions of residential off-site properties to the east of the site are impacted with NAPL at a depth of approximately 10-12 feet below ground surface and require a response action.

The TCEQ completed a Focused Feasibility Study in February 2020, which evaluated potential remedial action alternatives for the site. Evaluation of remedial alternatives was based on the following criteria: cost; feasibility; reliability (including long-term effectiveness and permanence); overall protection of human health and the environment; and compliance with applicable regulations. The evaluation and scoring of the remedial alternatives is documented in Table 2 of the Remedy Selection Document (Exhibit D to the proposed Administrative Order (Order))

V. Selected Remedy

Remedial Action Alternative GW-1: Plume Management Zone (PMZ) was selected for the remedy based upon the evaluation criteria listed in Section IV above and the evaluation criteria established in Title 30 Texas Administrative Code (30 TAC) Section 335.348(l), which states that “the remedial action for a particular facility shall be selected based on the remedial alternative that the executive director 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 Remedy Selection Document for the site is attached as Exhibit D to the Order, and describes the remedy selected for remediating groundwater and NAPL at the site in accordance with 30 TAC Section 335.348(l) and the requirements of Texas Health & Safety Code Section 361.193.

The selected remedy for on-site groundwater and NAPL is a Plume Management Zone (PMZ) to control and prevent the use of and exposure to the groundwater and NAPL. The selected remedy for off-site NAPL is a PMZ. The PMZ will encompass the West and East Pits and extend off site to the east of the East Pit. Potential exposure to contamination will be controlled through institutional controls, such as legal restrictions on the use of and exposure to the groundwater and the NAPL within the PMZ. The groundwater will be sampled periodically to monitor the stability of the groundwater contamination and NAPL and ensure that the contamination remains within the PMZ

Institutional controls will be filed in accordance with the Texas Risk Reduction Program to limit the site to commercial/industrial land use and to establish the PMZ. The institutional control(s) for the PMZ will remain in place until it is demonstrated that COCs in groundwater no longer exceed the applicable PCLs and that NAPL no longer poses an unacceptable risk to human

exposure. If institutional controls are not placed on the off-site properties, the off-site area impacted by NAPL may be excavated, a clay layer would be constructed at the bottom and around the excavation walls, and then the excavation would be backfilled with clean soil. The cost to implement Groundwater Remedial Action Alternative GW-1 is \$1,390,000.

On September 25, 2020, notice was published in the *Texas Register* and the *Corpus Christi Caller Times* informing the public of the proposed remedy and requesting public comment. In addition, a public meeting was conducted on November 5, 2020 to present the proposed remedy to the public. No comments opposing the proposed remedy were received during the comment period.

VI. Efforts to Identify Potentially Responsible Parties (PRPs)

Based upon the review of available site records, the TCEQ has identified persons who are responsible for the solid waste and/or hazardous substances at the site, as defined in Texas Health & Safety Code Section 361.271. In accordance with Texas Health & Safety Code Section 361.187 and by letters dated September 21, 2020, the PRPs were given an opportunity to fund or perform the remedial action for the site. The TCEQ did not receive any good faith offers from the PRPs.

VII. Staff Recommendation

The Remediation Division recommends that the Commission issue this Order to require responsible parties to implement the selected remedial action, which is cost effective and protective of public health and safety and the environment, and to reimburse the TCEQ for remedial investigation/feasibility study and remediation costs, as authorized by Texas Health & Safety Code Section 361.188. This Order will also make a determination as to responsible parties.

If there are any questions, please contact Scott Settemeyer, P.G., Project Manager, Remediation Division, at 512-239-3429 or Cullen McMorrow, Staff Attorney, Litigation Division, at 512-239-0607.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



TCEQ DOCKET NO. 2021-1514-SPF

**IN THE MATTER OF THE
BALLARD PITS
STATE SUPERFUND SITE;
RN105166821**

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**BEFORE THE
TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY**

FINAL ADMINISTRATIVE ORDER

INTRODUCTION

1. On January 26, 2022, the Texas Commission on Environmental Quality ("Commission" or "TCEQ")¹ considered the allegations of its Executive Director ("ED") regarding the existence of a release or threat of release of solid wastes and hazardous substances into the environment on, at, or from the Ballard Pits state Superfund site (the "Facility") that poses an imminent and substantial endangerment to the public health and safety or the environment pursuant to TEX. HEALTH & SAFETY CODE ch. 361.
2. The ED's requested relief includes issuance of a Commission order, pursuant to TEX. HEALTH & SAFETY CODE ch. 361, Subchapter F, with additional authorities from Subchapters I, K, and L, requiring persons responsible for such solid wastes or hazardous substances to perform or undertake the activities as required by and in accordance with this Order (the "Work").
3. Respondents to this Order are those persons identified as potentially responsible parties ("PRPs") in Finding of Fact No. 4 and persons that fund or perform the Work after the issuance of this Order ("Performing Parties").

After proper notice, the Commission makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. The Facility occupies approximately 296 acres at the end of Ballard Road (also known as Ballard Lane), west of its intersection with County Road 73 northwest of Robstown, Nueces County, Texas. The Facility is legally described in the Exhibit B attached hereto and incorporated herein by reference. In accordance with TEX. HEALTH AND SAFETY CODE § 361.181(c)(1), the Facility also includes any

¹ For greater ease in reference, select terms, abbreviations, and acronyms defined and used in this Order are listed in the Glossary of Terms, Abbreviations, and Acronyms attached hereto as Exhibit A. In the event the definition of any term, abbreviation, or acronym in this Order conflicts with that listed in Exhibit A, the definitions in this Order shall control.

additional areas where solid waste or hazardous substances have been deposited, stored, disposed of, or placed or have otherwise come to be located as a direct or indirect result of a release of solid waste or hazardous substances from the area described in Exhibit B.

2. In 2004, the Facility was evaluated for ranking on the State Registry of Superfund Sites and received a Hazard Ranking System ("HRS") score of 13.31.²
3. The Facility was proposed for listing on the State Registry of Superfund Sites in Volume 31, Page 316 of the *Texas Register* on January 13, 2006.
4. The following persons are PRPs [referred to herein as Responsible Parties ("RPs")] following Conclusion of Law No. 1] for the solid wastes and/or hazardous substances at the Facility:

Brine Service Company, Inc.

Mary Lenn Masson, as Trustee, Cecil Frank Ballard Residuary Trust

Mary Lenn Masson, as Trustee, Mary Lenn Masson Residuary Trust

Darrel Michael Ballard, as Trustee, Darrel Michael Ballard Residuary Trust

and these persons:

- A. Are owners or operators of the Facility;
 - B. Owned or operated the Facility at the time of processing, storage, or disposal of any solid waste;
 - C. By contract, agreement, or otherwise, arranged to process, store, or dispose of, or arranged with a transporter for transport to process, store, or dispose of solid waste owned or possessed by the person or by any other person or entity at the Facility; or
 - D. Accepted solid waste for transport to the Facility, as selected by the person.
5. There are no *de minimis* PRPs to this Order.
 6. None of the PRPs have agreed to fund or perform the Work nor have any of the PRPs consented to the provisions of this Order as of the date of its issuance.
 7. Chemicals of Concern, defined by 30 TEX. ADMIN. CODE § 350.4(11) to mean a chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity, are located at the Facility and include those substances ("the COCs") listed on the Exhibit C attached hereto and incorporated herein by reference. The COCs are:
 - A. Substances designated under Section 311(b)(2)(A) of the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1321);

² The Hazard Ranking System is the method used by the U.S. Environmental Protection Agency ("EPA") and the TCEQ to evaluate the relative potential of hazardous substance releases to cause health or safety problems, ecological or environmental damage. 30 TEX. ADMIN. CODE § 335.342(6).

- B. Elements, compounds, mixtures, solutions, or substances designated under Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") (42 U.S.C. § 9601 *et seq.*, as amended);
 - C. Hazardous wastes having the characteristics identified under or listed under Section 3001 of the Federal Solid Waste Disposal Act, as amended (42 U.S.C. § 6921), excluding wastes, the regulation of which has been suspended by Act of Congress;
 - D. Toxic pollutants listed under Section 307(a) of the Federal Water Pollution Control Act (33 U.S.C. § 1317);
 - E. Hazardous air pollutants listed under Section 112 of the Federal Clean Air Act, as amended (42 U.S.C. § 7412); or
 - F. Any imminently hazardous chemical substances or mixtures with respect to which the administrator of the EPA has taken action under Section 7 of the Toxic Substances Control Act (15 U.S.C. § 2606).
8. The COCs have been processed, deposited, stored, disposed of, or placed or have otherwise come to be located on and in groundwater under the Facility.
 9. The COCs include: garbage; rubbish; refuse; sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, municipal, commercial, mining, and agricultural operations and from community and institutional activities, or hazardous substances, for the purposes of TEX. HEALTH & SAFETY CODE §§ 361.271 through 361.277 and 361.343 through 361.345.
 10. The COCs are solid wastes or hazardous substances.
 11. The COCs are, or potentially are, spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment at the Facility.
 12. Potential pathways for human exposure to the COCs at the Facility include ingestion of, inhalation of, and dermal contact via exposure to contaminated groundwater and non-aqueous phase liquid (NAPL).
 13. Human exposure to levels of total petroleum hydrocarbons (TPH) and NAPL currently found at the Facility poses an unacceptable carcinogenic risk or an unacceptable toxicity risk.
 14. On January 10, 2006, the Commission³ provided written notice of the listing of the Facility on the State Registry to each PRP identified as of that date at the PRP's last known address.
 15. In 2008, 2009, and 2014, TCEQ conducted removal actions at the Facility, which included excavation and proper disposal of contaminated waste material.

³ The Texas Natural Resource Conservation Commission, a predecessor agency of the TCEQ.

16. No voluntary remedial activities have been undertaken at the Facility by any PRPs.
17. In August 2016, the TCEQ completed a remedial investigation and documented the results in the Affected Property Assessment Report ("APAR"). The APAR was amended in 2017 to include updated groundwater sampling data.
18. In August 2017, the TCEQ performed a pilot test to determine the effectiveness of recovering the NAPL. The results of this pilot test indicated that only a limited volume of NAPL was recovered. As such, it was determined that the NAPL at the Facility is not readily recoverable.
19. In February 2020, the TCEQ completed a Focused Feasibility Study for the Facility.
20. The remedy selected in the Remedy Selection Document ("RSD") for the Facility ("Remedy"), attached hereto as Exhibit D and incorporated herein by reference, is selected as the remedy to be implemented in accordance with this Order.
21. The COCs are not capable of being managed separately at the Facility under the remedial action plan (*i.e.*, the Remedy).
22. On September 21, 2020, the Commission provided written notice of a public meeting to discuss the proposed remedial action, and to obtain additional information regarding the Facility and the identification of additional potentially responsible parties. The public meeting was held on November 5, 2020.
23. Beginning on September 21, 2020, all identified PRPs were provided an opportunity to fund or perform the proposed remedial action, and no voluntary actions have been undertaken at the Facility since that date by any of the PRPs.

CONCLUSIONS OF LAW

1. The PRPs listed in Finding of Fact No. 4 are RPs, *i.e.*, persons responsible for solid waste, as defined by TEX. HEALTH & SAFETY CODE § 361.271.
2. The COCs are hazardous substances, as defined by TEX. HEALTH & SAFETY CODE § 361.003(11).
3. The COCs are solid wastes, as defined in TEX. HEALTH & SAFETY CODE § 361.003(34).
4. The COCs were deposited, stored, processed, disposed of, discarded, or placed or otherwise came to be located at the Facility.
5. The Facility is a facility, as defined by TEX. HEALTH & SAFETY CODE § 361.181(c).
6. The Facility is a solid waste facility, as defined by TEX. HEALTH & SAFETY CODE § 361.003(36).
7. A danger is imminent if, given the entire circumstances surrounding each case, exposure of persons or the environment to hazardous substances is more likely than not to occur in the absence of preventive action. A danger is substantial if, given the current state of scientific knowledge, the harm to public health and

safety or the environment which would result from exposure could cause adverse environmental or health effects. 30 TEX. ADMIN. CODE § 335.342(9).

8. There has been a release, as defined in TEX. HEALTH & SAFETY CODE § 361.003(28), or a threatened release of the COCs into the environment at the Facility that poses an imminent and substantial endangerment, as defined in 30 TEX. ADMIN. CODE § 335.342(9), to the public health and safety or the environment; therefore, the Facility should be listed on the State Registry of Superfund sites.
9. The release or threatened release of the COCs into the environment at or from the Facility has not been proven to be divisible pursuant to TEX. HEALTH & SAFETY CODE § 361.276.
10. The actions required by this Order are reasonable and necessary to protect the public health and safety or the environment.
11. The Facility is ineligible for listing on the National Priorities List (NPL) because the HRS score was below 28.5.
12. Funds from the federal government are unavailable for Remedial Activities because it is ineligible for the NPL.

ORDERING PROVISIONS

NOW, THEREFORE, THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ORDERS that:

1. The Facility shall be listed on the State Registry of Superfund Sites.
2. Respondents shall reimburse the Hazardous and Solid Waste Remediation Fee Account for (i) all costs of remedial investigations and feasibility studies at the Facility, Affected Property Assessment Report, and Focused Feasibility Study, including the oversight costs of these activities; (ii) all costs of removal actions at the Facility, including the oversight costs of these activities; and (iii) all uncompensated pre-remedial investigation costs at the Facility, including oversight costs of these activities.

Additionally, the RPs, and any Performing Party who fails to comply with the provisions of this Order ("Defaulting Performing Party") shall reimburse the Hazardous and Solid Waste Remediation Fee Account for all costs incurred by the ED in implementing and in overseeing the Work and for any costs incurred by the ED for activities other than the remedial investigation and feasibility studies to the extent that such costs have not been paid.

Reimbursement shall be paid by cashier's check or money order within 45 days after the ED provides a demand letter stating the amount owed. All payments and any accompanying letters or documentation shall be made out to TCEQ and shall be sent with the notation "Re: Ballard Pits State Superfund Site; Cost Recovery Funds for the Hazardous and Solid Waste Remediation Fee Account (Fund 550) of the State of Texas; Docket Number 2021-1514-SPF; TCEQ Project Manager, Scott Settemeyer" to:

Financial Administration Division, Revenue Operations Section
Texas Commission on Environmental Quality
Attention: Cashier's Office, MC 214
P.O. Box 13088
Austin, Texas 78711-3088

This Ordering Provision shall survive the termination of this Order.

3. This Order applies to and is binding upon Respondents and upon Respondents' agents, successors, and assigns. Respondents are jointly and severally responsible for performing the Work, and performance of any or all of the Work by any Respondent shall not excuse any other Respondent from such performance. Upon performance by any Respondent of the Remedial Design, Remedial Action, and Operations and Maintenance ("O&M") phases of the Remedial Activities, and any other actions required to implement and maintain the Remedy pursuant to the RSD and 30 TEX. ADMIN. CODE ch. 335, subch. K, and ch. 350 (collectively, the "Remedial Activities"), either alone or in conjunction with other RPs and/or Performing Parties, such Respondent shall, from such performance forward, be considered a Performing Party. Performance by a Respondent of some of the Remedial Activities does not excuse the Respondent from performance of those Remedial Activities that took place prior to the Respondent becoming a Performing Party or any other preexisting requirement of this Order. No change in the ownership or corporate status nor acquisition of a Respondent will alter its respective responsibilities under this Order.
4. Each Respondent that owns real property at the Facility shall comply with the following notice requirements:
 - A. Immediately provide a copy of this Order to any person that leases any part of the Facility from Respondent;
 - B. Within 45 days after the effective date of this Order, record a copy of this Order, including all exhibits, in the county real property records where land ownership and transfer records are filed or recorded and ensure that the recording of this Order is properly indexed in the county real property records to each and every property comprising any part of the Facility so as to provide notice to third parties of the issuance and terms of this Order with respect to those properties;
 - C. Within 60 days after the effective date of this Order, submit to the ED notice of recording and indexing described in Ordering Provision No. 4.B. The obligations and restrictions of this Order run with the land and are binding upon any and all persons who acquire any interest in any real property comprising all or any part of the Facility;
 - D. Not later than 90 days before any transfer of Respondent's interest in real property comprising all or any part of the Facility, submit to the ED notice of each instrument effecting the transfer of interest and a copy of each instrument upon execution; and

- E. Before any transfer of all or substantially all property rights, stock, or assets, provide a copy of this Order to any prospective owner of or successor to Respondent's interest in the Facility.
5. Each Respondent that leases real property at the Facility shall comply with the following notice requirements:
 - A. Immediately provide a copy of this Order to any person that subleases any part of the Facility from Respondent;
 - B. Not later than 90 days before any transfer of Respondent's interest in real property comprising all or any part of the Facility, submit to the ED a notice of each instrument effecting the transfer of interest and a copy of each instrument upon execution; and
 - C. Before any transfer of all or substantially all property rights, stock, or assets, provide a copy of this Order to any prospective owner of or successor to Respondent's interest in the Facility.
6. Each Respondent shall provide a copy of this Order to all persons retained by Respondent to perform any or all of the Work, including contractors, subcontractors, laboratories, and consultants, either within 30 days after the effective date of this Order or on the date such services are retained, whichever occurs later. Notwithstanding the terms of any contract or arrangement for performance of the Work, Respondents remain responsible for compliance with this Order and for ensuring that their contractors, subcontractors, laboratories, consultants, and agents comply with this Order.
7. The ED has selected commercial/industrial land use as appropriate for the Facility for purposes of selecting a proposed remedial action, in accordance with TEX. HEALTH & SAFETY CODE § 361.1855(g). Any substantial change in the manner in which any part of the Facility is used shall require written approval of the ED, in accordance with TEX. HEALTH & SAFETY CODE § 361.190.
8. Within 10 days after the effective date of this Order, each Respondent shall submit to the ED written notice of intent to perform the Work.
9. Within 10 days after the effective date of this Order, Respondents shall submit to the ED in writing the name, title, qualifications, relevant licenses, and permits of a Remedial Activities Contractor proposed to be retained to complete the Remedial Activities. Respondents shall demonstrate that each proposed Remedial Activities Contractor has all licenses necessary to do business in the State of Texas and any permits necessary to perform any or all of the Remedial Activities. If at any time Respondents propose to use a different Remedial Activities Contractor, Respondents shall notify the ED before the new Remedial Activities Contractor performs any of the Remedial Activities. A qualified Remedial Activities Contractor shall direct and supervise all aspects of the Remedial Activities.
10. Within 10 days after the effective date of this Order, Respondents shall submit to the ED in writing the name, title, qualifications, relevant licenses, and permits of a Site Coordinator and the Site Coordinator's physical address, phone number, and/or e-mail address at which he or she may be contacted at any time in case

of emergency. The Site Coordinator shall be the point of contact between the ED and Respondents. Notices, submissions, and other documents and communications provided or submitted to the Site Coordinator shall be deemed provided or submitted to Respondents.

11. The Remedy may be modified as specified in 30 TEX. ADMIN. CODE § 335.349(b).
12. Respondents shall provide all necessary information and assistance requested by the ED to implement the Community Relations Plan.
13. Upon approval by the ED, all submittals, documents, plans, and reports required to be developed and approved by the ED pursuant to this Order shall be incorporated in and enforceable under this Order. Upon approval by the ED, any amendments or revisions to any of such submittals, documents, plans, and reports shall control.
14. In performing the Work, Respondents shall at all times comply with the requirements of TEX. HEALTH & SAFETY CODE ch. 361 and 30 TEX. ADMIN. CODE ch. 335, Subchapter K, and ch. 350, as applicable.
15. Respondents shall undertake and complete the Remedial Activities in the following phases: Remedial Design; Remedial Action; and O&M.
16. The ED may, in his sole discretion, waive in writing a requirement to submit any report, submittal, document, or plan otherwise required to be submitted by this Order.
17. Respondents shall ensure that the following requirements are met in regard to any laboratories retained to carry out the Work and any laboratory analysis conducted in furtherance of the Work:
 - A. All contracts with laboratories for analysis of samples shall provide the ED and the ED's authorized representatives with access to those laboratories to assure the accuracy of laboratory results related to the Facility.
 - B. Each laboratory shall be qualified to conduct the proposed work, including use of methods and analytical protocols for the COCs in the media of interest employing method detection and quantitation limits consistent with quality assurance and quality control procedures that meet the project measurement quality objectives.
 - C. All laboratories used for analysis of samples shall be acceptable to the ED. A laboratory may be deemed unacceptable for reasons including:
 - i. repeated or numerous deficiencies in the laboratory's quality assurance program identified in inspections by the ED or the EPA;
 - ii. repeated or numerous deficiencies in laboratory performance;
 - iii. debarment by EPA; or
 - iv. failure to comply with any requirement or criteria of the TCEQ Remediation Division Quality Assurance Project Plan for the Superfund Programs ("Superfund QAPP") current at the time of the relevant

phase of the Remedial Activities or this Order. The current Superfund QAPP may be obtained by contacting the TCEQ Project Manager.

- D. All data submitted to the ED shall be produced by laboratories accredited by TCEQ in accordance with 30 TEX. ADMIN. CODE ch. 25.
18. Respondents shall undertake and complete the following Remedial Design requirements:
- A. Within 90 days after the effective date of this Order, submit a Conceptual Design to the ED for review, comment, and approval that includes:
- i. Identification and description of key elements of the Remedy;
 - ii. Descriptions of key performance and design criteria necessary to meet the requirements of the RSD;
 - iii. Identification of all significant design options that may be considered by the design professional to meet the required performance and design criteria and the proposed option(s) to meet those criteria;
 - iv. Identification of potential obstacles and unresolved issues which may affect the timely completion of the Remedial Activities, along with proposed solutions and resolutions; and
 - v. Drawings showing location and scale of the Remedy with a general view of key components.
- B. Within 90 days after the ED provides comments on the Conceptual Design to Respondents, submit Draft Design documents to the ED for review, comment, and approval. The Draft Design documents shall address all comments of the ED on the Conceptual Design and include:
- i. A summary note which clearly and explicitly indicates how each comment by the ED on the Conceptual Design has been satisfactorily addressed;
 - ii. Identification of all other revisions or changes from the Conceptual Design.
 - iii. Proof of written landowner consent for any institutional control to be placed in the land records for the entire Facility or any portion of the Facility as required by this Order or under TCEQ rules;
 - iv. A clear description of all design components and associated design calculations for the Remedy, including the site plan, and as appropriate, drainage, grading, structural, electrical, plumbing and architectural components;
 - v. Drawings to scale that illustrate the project as it would look when constructed; and
 - vi. a list of specifications and drawings.
- C. Within 90 days after the ED provides comments on the Draft Design documents to Respondent, submit to the ED for review, comment, and approval a Pre-Final Design document, which includes all construction plans

and specifications necessary to describe sequences and procedures, to obtain required building permits, and to otherwise conduct Remedial Activities in a manner protective of human health and the environment.

- D. Within 30 days after the ED provides comments on the Pre-Final Design to Respondents, address the comments in writing and resubmit the Pre-Final Design documents for ED approval.
- E. Within 30 days after the ED provides approval of the Pre-Final Design to Respondents, submit to the ED, in both hard copy and electronic formats, the approved Final Design documents that have been signed and sealed by the design professional.
- F. Within 90 days after the ED provides approval of the Final Design document to Respondents, submit to the ED for review, comment, and approval, the Preconstruction Plan for the Remedial Activities. The Preconstruction Plan shall include:
 - i. A schedule for the Remedial Action describing the sequence of activities, dependency on other activities, and duration of each activity to be conducted during the Remedial Action, including the specific mobilization date for the commencement of the Remedial Action and project milestones;
 - ii. A Remedial Action Sampling and Analysis Plan describing the means of assuring quality during the Remedial Action. The Remedial Action Sampling and Analysis Plan shall include:
 - a. A designation of a Respondent Quality Assurance Official, independent of the Remedial Activities Contractor, to conduct a quality assurance program during the Remedial Action;
 - b. The unaltered text of the current Superfund QAPP; and
 - c. A Remedial Action Field Sampling Plan ("RA FSP"), which shall include all data required by the current Superfund QAPP and the contents outlined in the Remedial Action Field Sampling Plan Table of Contents, attached hereto as Exhibit E and incorporated herein by reference. Alterations to the requirements of the Superfund QAPP required due to project-specific circumstances shall be effected by appropriate notation in Section 6.0 of the RA FSP;
 - iii. A Construction Quality Assurance/Quality Control Plan ("C-QA/QC Plan") describing the activities necessary to ensure that the Remedy is constructed to meet or exceed all design criteria, plans, specifications, and applicable cleanup standards or other measures of achievement of the goals of the Remedy, consistent with TEX. HEALTH & SAFETY CODE ch. 361 and 30 TEX. ADMIN. CODE ch. 335, subch. K, and ch. 350, determined by the ED to be necessary at the Facility to achieve and to maintain the Remedy (the "Remediation Goals"). The C-QA/QC Plan shall address sampling and analysis relating to physical

properties of constructed engineered controls which must meet specified criteria to ensure the long-term performance of these features (*e.g.*, physical soil properties of soil backfill or constructed clay caps, physical properties of geotextiles and liner materials, leak testing of piping systems and containment vessels, etc.). The C-QA/QC Plan shall include:

- a. The responsibility and authority of organizations and key personnel involved in designing and constructing the Remedy;
 - b. The qualifications of the Respondent Quality Assurance Official and supporting inspection personnel;
 - c. The observations and tests that will be used to ensure that the construction meets or exceeds all design criteria, plans and specifications, and all applicable Remediation Goals;
 - d. The quality control sampling activities, sample size, methods for determining locations, frequency of sampling, acceptance and rejection criteria, and methods for ensuring that corrective measures are implemented; and
 - e. Detailed requirements for reporting to the ED;
- iv. A Remedial Action Health and Safety Plan ("RA HASP") specifying the procedures that are sufficient to protect on-site personnel and the public from physical, chemical, and biological hazards of the Facility. The RA HASP shall address all requirements of all applicable safety regulations, ordinances, and statutes pertaining to the safety of on-site personnel and the public, including but not limited to 29 C.F.R. §§ 1910.120, 29 C.F.R. 1926, 40 C.F.R. § 35.6015(a)(21) "Health and Safety Plan," TEX. GOV'T CODE § 2166.303, and all applicable safety regulations, ordinances, and statutes pertaining to the safety of on-site personnel and the public. The RA HASP and any revisions or addenda must be reviewed and signed by a Board Certified Industrial Hygienist.

The TCEQ relies on the Respondent to prepare an adequate RA HASP. However, TCEQ reserves the right to review and provide comments on the RA HASP. Any TCEQ comments constitute only general safety guidelines which are not intended to cause the Respondent to reduce the level of protection. Any language in the comments or in this Order which appears to give the TCEQ the right to direct or control the Respondent's means, methods and details of the Work shall be deemed to mean that the Respondent will follow TCEQ's desires only as to the results of the Work. The Respondent is solely responsible for preparing an adequate RA HASP, for complying with the Remedial Design and the applicable safety laws and regulations, for performing the Work in a safe manner, and for protecting the health and safety of on-site personnel and the public. The Respondent shall address the TCEQ's comments and concerns and, if necessary, submit a revised RA HASP. Any notation by the ED of "approval," "acceptance," or

similar language in response to a RA HASP submittal for review shall not alter the responsibilities of the parties as described in this Ordering Provision. In the event that the ED notes that a RA HASP is "approved" or "accepted" or uses similar language to indicate that there are no further comments, such notation shall be deemed to mean only:

We have reviewed your RA HASP under the Order provision reserving the right for TCEQ to review and provide comments constituting general safety guidelines (not intended to cause the Respondent to reduce the level of protection). The reviewer may not be a Board Certified Industrial Hygienist or any other type of safety professional. We have no comments (or further comments) at this time on your RA HASP. We recognize this RA HASP as your final RA HASP. If you change this RA HASP you must submit a revision or addendum for review and potential comment in accordance with this Order.

Do not rely on TCEQ review of or comments (or lack thereof) on your RA HASP for any purposes.

By telling you we have no comments (or further comments), we do not assume responsibility for your means, methods, details or sequences, nor do we assume any duty of protection to you, your employees, your subcontractors or suppliers, or their employees, or to any third party. Any language in the comments or in this Order which appears to give the TCEQ the right to direct or control your means, methods and details of the Work shall be deemed to mean that you will follow TCEQ's desires only as to the results of the Work. You are solely responsible for preparing and implementing an adequate RA HASP, for complying with the RD and the applicable safety regulations, ordinances and statutes, for performing the Work in a safe manner, and for protecting the health and safety of on-site personnel and the public; and

- v. An O&M Plan describing all sequences, procedures, and requirements for implementing the O&M. The O&M Plan shall include:
 - a. The name, title, qualifications, relevant licenses and permits of those persons proposed to be retained to complete the O&M;
 - b. The unaltered text of the current Superfund QAPP;
 - c. An O&M Field Sampling Plan that will address all sampling to be conducted during the O&M and which shall include all data required by the current Superfund QAPP and the contents outlined in the Remedial Action Field Sampling Plan Table of Contents, attached hereto as Exhibit E and incorporated herein by reference. Alterations to the requirements of the current Superfund QAPP required due to project-specific circumstances shall be effected by appropriate notation in Section 6.0 of the RA FSP;

- d. An O&M Schedule describing the sequence, dependency on other activities, and duration of each activity to be conducted during the O&M, including project milestones and the specific mobilization date to begin the O&M;
 - e. An O&M Cost Estimate providing an estimate for a qualified third party to perform all of the tasks necessary for O&M for as long as O&M is needed, in accordance with the O&M Schedule and the basis and backup as to why the estimate is reasonable and reliable; and
 - f. An O&M HASP which meets all of the requirements specified above for the RA HASP but which is appropriate to protect on-site personnel and the public from any physical, chemical and/or biological hazards of the Facility relating to the O&M phase and activities.
- G. Within 30 days after the ED provides written comments to Respondents on the Preconstruction Plan, submit the revised Preconstruction Plan to the ED for review, comment, and approval. The revised Preconstruction Plan must address the ED's comments on the first submittal and contain a summary note clearly and explicitly indicating how each comment by the ED has been satisfactorily addressed. The summary note must also identify all other revisions or changes from the initial submittal of the Preconstruction Plan.
- H. Within 20 days after the ED provides written comments on the revised Preconstruction Plan to Respondents, submit to the ED the final Preconstruction Plan, prepared and sealed by a Professional Engineer licensed in the State of Texas. The Professional Engineer shall include a certification that the design was prepared to attain the Remediation Goals, upon implementation. Respondents shall address the ED's comments on the revised Preconstruction Plan and submit a summary note clearly and explicitly indicating how each of the ED's comments on the revised Preconstruction Plan has been satisfactorily addressed and which will also identify all other revisions or changes from the revised Preconstruction Plan.
- I. The ED will provide Respondents with approval or disapproval with written comments of the sealed final Preconstruction Plan and any subsequent resubmittals of the sealed final Preconstruction Plan. Within 15 days after the ED provides written comments to Respondents, Respondents shall resubmit the final Preconstruction Plan, in both clean and redline, strikeout format, with a summary note which clearly and explicitly indicates how each of the ED's comments on the previous draft of the final Preconstruction Plan has been satisfactorily addressed and which will also discuss all other revisions or changes from the previous draft of the final Preconstruction Plan.
19. Respondents shall undertake and complete the following Remedial Action requirements:

- A. Respondents shall not mobilize to the Facility until the Preconstruction Plan is approved by the ED.
- B. Within 60 days after the award of any contract to ship solid waste from the Facility, and before any such actual shipment, Respondents shall submit to the ED a written certification containing all relevant information regarding such shipments, including:
 - i. The name and location of any facility to which solid waste from the Facility is to be shipped;
 - ii. The type and quantity of each of the solid wastes to be shipped;
 - iii. The expected schedule for the shipment of the solid wastes;
 - iv. The method of transportation and the name, address, and phone number of the transporter;
 - v. Statements that:
 - a. No enforcement order is currently imposed on any selected receiving facility or transporter by any regulating authority;
 - b. The selected receiving facility and transporter are authorized to accept the specific solid wastes from the Facility by all appropriate regulating authorities; and
 - c. After an appropriate inquiry, Respondents have no knowledge that either the selected receiving facility or transporter is non-compliant with any federal, state, or local requirement.
- C. No later than 10 days before the expected date of achieving Substantial Completion of the Remedial Action, the Respondents shall:
 - i. Conduct an inspection of the Facility and submit to the ED in writing an itemized list identifying any instances of noncompliance with the requirements of the Preconstruction Plan; and
 - ii. Schedule an inspection of the Facility by the ED for which the Site Coordinator shall accompany the ED.

For purposes of this Order, "Substantial Completion" shall mean the point, as determined by the ED in his sole discretion, at which the Work (or a specified part thereof) has been substantially completed in accordance with any work plans or documents required to be developed pursuant to this Order

- D. Within 10 Days after the ED's inspection of the Facility required under Ordering Provision No. 19.C.ii., the Respondents shall submit to the ED in writing a revised itemized list incorporating any instances of noncompliance with the requirements of the Preconstruction Plan identified by the ED during the inspection. This revised list shall indicate which deficiencies have been completely addressed and shall provide a proposed schedule and list of activities necessary to complete the Remedial Action. The ED will provide

- the Respondents with written approval or disapproval with comments of the revised list.
- E. Within 10 days after the ED provides any disapproval with written comments in accordance with Ordering Provision No. 19.D., Respondents shall submit a final list, in both clean and redline formats, including a summary note that clearly and explicitly indicates how each of the ED's comments on the revised list has been satisfactorily addressed. The ED will provide Respondents with written approval or disapproval with comments of the final list. Within 15 days after the ED provides any written disapproval with comments, Respondents shall resubmit a revised, final list. The ED will provide the Respondents with either written approval or disapproval with comments of each resubmittal of the final list.
 - F. When Respondents, in good faith, believe that they have completed the Remedial Action, Respondents shall submit to the ED written certification that the Remedial Action is complete. If the ED identifies outstanding Remedial Action requirements to be corrected or completed, the ED will notify Respondents in writing. The work necessary to correct or complete issues identified by the ED must be completed no later than 30 days after the ED provides written notice.
 - G. Within 60 days after Respondents submit written certification pursuant to Ordering Provision No. 19.F., Respondents shall submit to the ED a draft report on the Remedial Action ("Remedial Action Report"). The Remedial Action Report shall include:
 - i. Certification from a Professional Engineer licensed in the State of Texas that the Remedial Action has been completed in accordance with the Construction Plans and Specifications, Preconstruction Plan, and this Order;
 - ii. All data collected during the Remedial Action and documentation of compliance with the terms of the current Superfund QAPP and the C-QA/QC Plan;
 - iii. Copies of waste manifests for all Class 1, Class 2, and hazardous wastes and hazardous substances disposed of off-site;
 - iv. A complete set of final construction documents signed and sealed by the design professionals;
 - v. Photographs of progress at the Facility;
 - vi. Proposed areas for soil and groundwater that will require land use restrictions and/or other institutional controls; and
 - vii. Proposed drafts for any institutional controls, in accordance with and as required by this Order and 30 TEX. ADMIN. CODE § 350.111.
 - H. The ED will provide Respondents either written approval or written disapproval with comments of the draft Remedial Action Report.

- I. No later than 15 days after the ED provides written comments on the draft Remedial Action Report, Respondents shall submit a final Remedial Action Report, in both clean and redline, strikeout format, with a summary note which clearly and explicitly indicates how each of the ED's comments on the draft Remedial Action Report has been addressed and which also explains any other revisions to the draft Remedial Action Report.
 - J. The ED will provide Respondents either written approval or written disapproval with comments of the final Remedial Action Report and any subsequent resubmittals of the final Remedial Action Report.
 - K. Within 15 days after the ED provides any written disapproval with comments, Respondents shall resubmit to the ED a revised, final Remedial Action Report, in both clean and redline, strikeout format, with a summary note which clearly and explicitly indicates how each of the ED's comments on the previous submittal of the final Remedial Action Report has been addressed and which also explains any other revisions to the previous submittal.
 - L. Within 30 days after the ED provides approval of the final Remedial Action Report, and after obtaining any required written landowner consent, Respondents shall:
 - i. Record any required institutional controls, in accordance with 30 TEX. ADMIN. CODE § 350.111, in the appropriate local or county office where land ownership and transfer records are filed or recorded;
 - ii. Ensure that the documents effecting the institutional controls are properly indexed and recorded to each property at the Facility in the appropriate office where land ownership and transfer records are filed so as to provide notice to third parties concerning those properties; and
 - iii. Submit to the ED evidence of recording, landowner consent, and indexing of any required institutional controls.
 - M. After the ED approves the final Remedial Action Report, receives evidence of the filing of all required institutional controls, and determines that the financial assurance requirements of this Order have been satisfied, the ED will issue an Approval of Remedial Action Completion to Respondents.
20. Respondents shall undertake and complete the following O&M Activities:
- A. No later than 10 days before the expected date of achieving Substantial Completion of the Remedial Action, and concurrent with the submittal of the itemized list required under Ordering Provision No. 19.C., Respondents shall submit:
 - i. A list of the names, titles, qualifications, relevant licenses, and permits of any Remedial Activities Contractor proposed to be retained by Respondents in carrying out any of the O&M; and
 - ii. A draft revised O&M Plan.

- B. The ED will provide written approval or disapproval with comments of the draft revised O&M Plan to Respondents.
- C. No later than 15 days after the ED provides approval or disapproval with comments, Respondents shall submit a final revised O&M Plan, in both clean and redline formats, with a summary note which clearly and explicitly indicates how each of the ED's comments on the revised O&M Plan has been satisfactorily addressed and which also discusses all other substantive revisions or changes from the revised O&M Plan.
- D. The ED will provide his approval or disapproval of the submittal and each resubmittal of the final revised O&M Plan to Respondents. Each resubmittal shall be submitted in both clean and redline formats, with a summary note which clearly and explicitly indicates how each of the ED's comments on the revised O&M Plan has been satisfactorily addressed and which also discusses all other revisions or changes from the previous submittal.
- E. Upon the ED's approval of the final revised O&M Plan, Respondents shall implement the O&M in accordance with the approved plan.
- F. Respondents shall submit a Post-Response Action Care Report (PRACR) to the ED for approval no later than 5 years after the date the ED issues Approval of Remedial Action Completion for the Facility or sooner if directed by the ED. The PRACR shall be prepared in accordance with 30 TEX. ADMIN CODE § 350.96. Respondents shall submit a PRACR for the Facility to the TCEQ five years from the due date of the previous report unless and until the ED notifies Respondents, in writing, that additional reports are no longer required.
- G. Respondents shall provide financial assurance in the minimum amount of the approved O&M Cost Estimate, maintain such financial assurance for the full duration of the O&M, and comply with the following process for ED approval of financial assurance:
 - i. Within 10 days after the ED approves the O&M Plan, Respondents shall submit to the ED for approval a written proposal for providing financial assurance required under this Ordering Provision.
 - ii. Subject to ED approval, financial assurance may be demonstrated by one or a combination of the following mechanisms: letter of credit, surety bond guaranteeing payment, or fully funded trust established and maintained in accordance with 30 TEX. ADMIN. CODE ch. 37, Subchapter C. In addition to, but not in combination with the mechanisms listed in the sentence prior, a Respondent may submit for ED approval a financial test or a corporate guarantee consistent with the requirements of 30 TEX. ADMIN. CODE ch. 37.
 - iii. Within 15 days after the ED provides written approval of the proposed financial assurance to Respondents, Respondents shall submit all documents effecting the approved financial assurance to the ED for approval.
 - iv. Within 15 days after the ED provides any written disapproval and

comments regarding the financial assurance to Respondents, Respondents shall resubmit the financial assurance documents, in both clean and redline formats, with a summary note clearly and explicitly indicating how each of the ED's comments on the previous draft of the financial assurance documents has been satisfactorily addressed and which also discusses all other revisions or changes from the previous draft of the financial assurance documents.

21. If, at any point in the performance of the Remedial Activities, the Performing Parties either conclude that the Remedial Activities, as implemented in accordance with this Order, will not accomplish the Remediation Goals, or find that conditions at the Facility differ from those that form the basis of the Remedy and significantly change the scope, performance, or costs of the Remedial Activities, then the Respondents shall:
 - A. Within 10 days after initially reaching the conclusions described in Ordering Provision No. 21, submit notification to the ED of that determination with a description of its basis; and
 - B. Within 60 days after the notification provided in Ordering Provision No. 21.A., submit a Failure Evaluation Report to the ED for approval. The Failure Evaluation Report shall substantiate the notification provided in Ordering Provision No. 21.A. by including and elaborating on:
 - i. The data and related conclusions forming the basis of the assertions made therein;
 - ii. Any known causes; and
 - iii. A recommendation for any necessary additional studies.

The ED will not consider the failure of a design element or remedial activity that is not required by this Order to be sufficient basis for a failure to accomplish the Remediation Goals. The ED will consider differences in the quantity or extent of contaminants to be the basis for a determination of a significant difference in scope, performance, or cost of the Remedial Activities only when such differences are so significant as to cause the Remedy not to be the lowest cost alternative that is technologically feasible and reliable and that effectively mitigates and minimizes damage to and provides adequate protection of the public health and safety or the environment.

22. The ED will provide the Performing Parties written approval or disapproval with comments of any Failure Evaluation Report submitted or resubmitted pursuant to Ordering Provision No. 21.B.
23. Unless the ED approves a draft Failure Evaluation Report submitted pursuant to Ordering Provision No. 21.B. or directs continuation of Remedial Activities, within 30 days after the ED provides written comments to the Site Coordinator, the Respondents shall resubmit the Failure Evaluation Report, in both clean and redline formats, with a summary note which clearly and explicitly indicates how each of the ED's comments on the previous draft of the Failure Evaluation Report has been satisfactorily addressed and which identifies all other revisions or changes from the previous submitted draft of the Failure Evaluation Report.

24. Within 90 days after the ED determines that the Remedial Activities, as implemented in accordance with this Order, will not accomplish the Remediation Goals, or finds that conditions at the Facility differ from those that form the basis of the Remedy and significantly change the scope, performance, or costs of the Remedial Activities, Respondents shall submit to the ED for approval a written report evaluating alternatives to the Remedial Activities and may submit a proposal for such alternative Remedial Activities as may be necessary to achieve the Remediation Goals. Any proposed alternative must meet the remedy selection criteria contained in 30 TEX. ADMIN. CODE ch. 335, subch. K and 30 TEX. ADMIN. CODE ch. 350. The Remedial Activities may be modified only as specified in 30 TEX. ADMIN. CODE § 335.349.
25. No later than the effective date of this Order, the ED will designate a Project Manager and an Alternate Project Manager to oversee implementation of the Work and to coordinate communication between the ED and Respondents. Respondents shall, at a minimum, direct all communications to the ED regarding the Remedial Activities, whether written or oral, to the attention of the Project Manager or to the Alternate Project Manager if the Project Manager is unavailable. The ED may assign persons other than the Project Manager and Alternate Project Manager, including TCEQ employees or contractors, to serve as his site representative and may temporarily delegate the responsibilities of the Project Manager and Alternate Project Manager to another site representative. The ED will notify Respondents orally or in writing of such delegation.
26. Respondents shall notify the ED in writing at least 7 days before the start date of any on-site activities associated with the Remedial Activities.
27. The ED may direct a suspension or cessation of the performance of all or any part of the Remedial Activities that, in the ED's opinion:
 - A. May present or contribute to an imminent and substantial endangerment to public health, welfare, or the environment because of an actual or threatened release of solid waste or hazardous substances from the Facility;
 - B. Does not meet the requirements of any work plan developed in accordance with this Order; or
 - C. Violates any work plan developed in accordance with this Order, HASP, or Superfund QAPP.

No later than 24 hours after the ED directs a suspension or cessation any of the Remedial Activities, if time permits, the ED will provide a brief explanation of the basis for the suspension or cessation. As soon as possible, but no later than 14 days after the initial direction to suspend or cease any or all of the Remedial Activities, the ED will provide a written explanation of the basis for the direction to Respondents. The Remedial Activities ceased or suspended may be resumed only after the basis for the direction to cease or suspend Remedial Activities has been corrected and the ED has instructed Respondents to proceed. Respondents shall be responsible for any costs associated with the cessation or suspension of Remedial Activities.

28. During the Remedial Design and Remedial Action phases of the Remedial Activities, the Site Coordinator shall meet at least once per month with the Project Manager to review the progress and details of the Remedial Activities and to review and resolve any discrepancies in data. At the ED's discretion, these meetings may be held by telephone or videoconference. No later than 7 days before each meeting, Respondents shall ensure that the Project Manager has received an agenda for the meeting and any documents to be discussed.
29. The ED and Respondents may change their respective designations of Project Manager, Alternate Project Manager, or Site Coordinator by written notice to the other of the name, physical address, email address, and telephone number of the new Project Manager, Alternate Project Manager, or Site Coordinator at least 7 days before the change, or, as soon as possible if 7 days' notice is not feasible.
30. In the event any action or occurrence during the performance of the Remedial Activities which causes or threatens to cause a release of a solid waste or hazardous substances which may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action to prevent, abate, or minimize such release or threat and shall immediately notify the Project Manager. Respondents shall also notify the State of Texas Spill-Reporting hotline at 1-800-832-8224. Respondents shall take such action in accordance with all applicable provisions of the HASP. If Respondents fail to meet the requirements of this Ordering Provision and the ED takes such action instead, Respondents shall reimburse the ED for all costs of the response action within 45 days after the ED submits a demand letter stating the amount owed. Nothing in this ordering provision shall be deemed to limit any authority of the State of Texas to take, direct, or order any appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of solid wastes or hazardous substances to the environment on, at, or from the Facility.
31. Upon ED approval of a submittal made pursuant to the terms of this Order, Respondents shall implement all actions required by the submittal according to the schedule approved by the ED.
32. Submittals which have received ED approval may be modified upon agreement of the ED and Respondents. The Respondents shall submit proposed modifications and obtain approval in accordance with the process for submittals specified in this Order generally. Upon approval of any modification, the modification is incorporated into the original submittal for all purposes.
33. ED approval of submittals or modifications to submittals is administrative in nature and allows the Respondents to proceed to the next steps in the Remedial Activities. The ED's approval does not imply any warranty of performance, does not imply that the Remedy, when constructed, will meet the Remediation Goals, nor does it imply that the Remedy will function properly and ultimately be accepted by the ED.
34. Respondents shall provide to the ED all data, information, documents, or records related to the Facility which are generated or obtained by any Respondent within 20 days after any written request from the ED. Respondents shall provide

written notice to the ED immediately upon generating or obtaining any such data, information, document, or record pursuant to the requirements of this Order.

35. Except as otherwise provided under TEX. GOV'T. CODE ch. 552, all data, information, documents, and records developed or submitted by Respondents to the ED pursuant to this Order shall be available to the public. Respondents may, in good faith, assert confidentiality of certain of such data, information, documents, and/or records upon submission and in accordance with 30 TEX. ADMIN. CODE § 1.5(d).
36. The ED may split or duplicate any samples obtained by any Respondent from the Facility at any time, including during the implementation of the Remedial Activities. Respondents shall assist as necessary for the ED to split or duplicate samples.
37. Within 30 days before any routine sampling is to occur at the Facility, Respondents shall provide the ED with a schedule of routine sampling and notify the ED no later than 7 days before any non-routine sampling is conducted at the Facility unless otherwise required or allowed in this Order. Respondents shall collect and analyze all samples in accordance with approved work plans developed pursuant to this Order and shall handle all samples in accordance with the current Superfund QAPP.
38. Respondents shall provide one hard copy and one electronic copy of draft submittals and one electronic copy of final submittals of all data, information, reports, schedules, and other documents required by this Order. Respondents shall also provide submittals in additional formats (*e.g.*, specified electronic formats), as requested by the ED.
39. Receipt by the Site Coordinator of any notice or communication from the ED relating to this Order will be deemed by the ED to be receipt by all Respondents. Unless otherwise expressly authorized or designated by the ED in writing to all other parties, all information required to be submitted to the ED under this Order, including notices, data, documents, plans, records, reports, approvals, and other correspondence, shall be addressed to:

For Mail or fax:

Project Manager, Ballard Pits State Superfund Site
Remediation Division, Superfund Section
Texas Commission on Environmental Quality
MC-136, P.O. Box 13087
Austin, Texas 78711-3087
Fax: 512-239-2450

For overnight express mail or courier or delivery service:

Project Manager, Ballard Pits State Superfund Site
Remediation Division, Superfund Section
Texas Commission on Environmental Quality
MC-136, Building D
12100 Park 35 Circle

Austin, Texas 78753

40. Respondents shall provide the following written progress reports to the ED on the Remedial Activities:

- A. By the 10th day of the month following the effective date of this Order, and of every additional month, Respondents shall submit written progress reports regarding the Remedial Design and Remedial Action phases of the Remedial Activities which shall include:
- i. A description of the actions taken pursuant to this Order during the previous month;
 - ii. A general description of activities and progress during the previous month, activities projected to be commenced or completed during the next month, and any problems encountered or anticipated by Respondents in commencing or completing the Remedial Activities;
 - iii. An updated schedule of progress;
 - iv. A summary of facility-related data collected pursuant to this Order and received during the previous month; and
 - v. Identification of any violations of this Order.

Within 30 days of a request by the ED, Respondents shall submit the actual data summarized in the progress report for any reporting period. The requirement to submit these monthly progress reports shall terminate upon ED approval of the O&M plan, or if no O&M plan is required, upon termination of the Order.

- B. By the 10th day of the month following the ED's approval of the final revised O&M Plan obtained in accordance with Ordering Provision No. 20.E., and of every additional month, Respondents shall submit written progress reports regarding the O&M which shall include:
- i. A description of the actions taken pursuant to this Order during the previous month;
 - ii. A general description of activities and progress during the previous month, activities projected to be commenced or completed during the next month, and any problems encountered or anticipated by Respondents in commencing or completing the O&M Activities;
 - iii. All data received during the previous month;
 - iv. An updated schedule of progress; and
 - v. Identification of any violations of this Order.

The requirement to submit these progress reports will be terminated when the ED determines that the conditions specified in Ordering Provision No. 42 have been met.

41. If a progress report submitted pursuant to Ordering Provision No. 40 is deficient, the ED will provide written notice to Respondents, including comments and a

description of the deficiencies. No later than 10 days after the ED provides such a notice of deficiency, Respondents shall resubmit a revised progress report addressing the deficiencies.

42. O&M shall not be required upon a demonstration by Respondents to the satisfaction of the ED that all Remediation Goals have been met. The Respondents shall satisfactorily perform O&M for the duration of time specified in the RSD, and the Remediation Goals shall not be deemed achieved before the time specified in the RSD.
43. The Executive Director may grant an extension of any deadline in this Order or in any plan, report, or other document submitted pursuant to this Order, upon a written and substantiated showing of good cause. All requests for extensions shall be submitted in writing. Extensions are not effective until Respondent receives written approval from the Executive Director. The determination of what constitutes good cause rests solely with the Executive Director.
44. Respondents shall preserve and retain, and shall instruct all accountants, attorneys, employees, agents, contractors, and subcontractors and anyone else acting on Respondents' behalf in regard to the Facility to preserve and retain, copies of all data, records, documents, and information of whatever kind, nature, or description relating in any way to the Facility, including data, records, documents or information relating to any person's potential responsibility for the Facility under TEX. HEALTH & SAFETY CODE § 361.271, which are now or which may come to be in his or her possession or control. All data, records, documents, and information required to be preserved and retained in accordance with this Ordering Provision shall be preserved and retained for a minimum of 10 years after the ED issues the Approval of Remedial Action Completion, after which Respondents shall notify the ED at least 90 days before any of such data, record, document, or information is destroyed. If the ED requests, Respondents shall, at no cost to TCEQ, provide the ED copies of such data, records, documents, or information.
45. Upon request by the ED, Respondents shall submit to the ED all data, information, records, and documents requested, including information and documents specified in TEX. HEALTH & SAFETY CODE § 361.182(b), for possible inclusion in the administrative record, in accordance with 30 TEX. ADMIN. CODE § 335.345. Additionally, at any time before the completion of the Work, the ED may contact the Respondents to determine the location and/or to obtain copies of any of the data, records, documents, or information developed in accordance with this Order. In such event, Respondents shall provide copies of any such data, records, documents, and information to the ED at no cost to TCEQ.
46. Any Respondent refusing to provide copies of any data, information, records, or documents based upon a claim of privilege shall identify the data, information, record, or document and explain the basis for the claim. Notwithstanding the immediately preceding sentence, any data, record, information, or document required to be developed or submitted pursuant to this Order will be available to the public. Respondents shall maintain an index of documents that Respondents claim contain privileged information. The index shall contain, for each document, the title, date, author, addressee, and subject of the document.

Respondents shall submit a copy of the index to the ED no later than 10 days after the ED submits a written request.

47. The ED may investigate the Remedial Activities and/or the Facility at any time to evaluate compliance with this Order.
48. Any Respondent that owns the Facility, property used to access the Facility, or other properties subject to or affected by the Remedial Activities or where documents generated in accordance with this Order are located shall provide access to such property to the ED, any federal, state or local authorities and their contractors approved by the ED, and any Performing Parties, including authorized representatives and contractors. Failure to provide access may result in the imposition of statutory penalties. Respondents shall indemnify TCEQ, and TCEQ shall not be liable, for any loss or claim arising out of Respondents' activities at the properties covered by any access agreement, the Facility, property used to access the Facility, or other properties subject to or affected by the Remedial Activities or where documents generated in accordance with this Order are located.
49. Where a person other than a Respondent owns the Facility, property used to access the Facility, or other properties subject to or affected by the Remedial Activities or where documents generated in accordance with this Order are located, Respondents shall use their best efforts to obtain access agreements from such persons no later than 90 days after the effective date of this Order. Respondents shall secure agreements to provide access to the ED; federal, state or local authorities and their contractors as approved by the ED; and any Performing Parties, including authorized representatives and contractors. Respondents shall ensure that access agreements specify that TCEQ is not liable for any loss or claim arising out of any activities at the properties covered by any access agreement, the Facility, property used to access the Facility, or other properties subject to or affected by the Remedial Activities or where documents generated in accordance with this Order are located. Respondents shall submit copies of all access agreements to the ED before any on-site activities are initiated. Respondents' best efforts shall include, if necessary, reasonable compensation to any property owner who is not a Respondent.

If access agreements required under this Order are not timely obtained, Respondents shall immediately notify the ED. If the ED determines, in his sole discretion, that the Respondents have used their best efforts to obtain such access, the ED will make appropriate efforts to obtain such access upon terms reasonable to the Respondents. Any revision to the deadlines specified in this Order necessitated by an inability to obtain access may be considered a reasonable ground for extending any affected deadline in this Order.

50. Subject to the Performing Parties' reasonable safety and internal security requirements, the ED may enter, freely move about, and exit the Facility, properties used to access the Facility, or other properties subject to or affected by the Remedial Activities or where documents generated in accordance with this Order are located. Nothing herein shall limit or affect the ED's right of entry or inspection authority under state or federal law. All persons with access to the Facility shall comply with the HASP.

51. No later than 48 hours after Respondents first know or should know that an event might cause a delay in the performance of the Work, Respondents shall notify the ED by telephone of any delay or anticipated delay in achieving compliance with any requirement of this Order. Such notification shall be made to the alternate Project Manager if the Project Manager is unavailable. Within 7 days after notifying the ED by telephone, Respondents shall submit for approval written notification to the ED fully describing the cause of the delay, the anticipated duration of the delay, the measures taken and to be taken by Respondents to prevent or minimize the delay, and the schedule by which these measures have been, are being, and will be implemented. Upon ED approval, Respondents shall implement the revised schedule.
52. Upon failure to comply with the provisions of this Order, any Defaulting Performing Parties shall cease to be Performing Parties; and any rights and privileges of the Performing Parties under this Order shall immediately terminate as to Defaulting Performing Parties. At that time, Defaulting Performing Parties that are RPs shall assume all responsibilities and obligations of RPs and of Performing Parties, including the requirement to pay TCEQ costs.

Performing Parties shall bear no costs for any fines, penalties, or increases in the ED's oversight of the Remedial Activities resulting from action or inaction of any Defaulting Performing Party. Defaulting Performing Parties and the RPs may be assessed the full costs of ED oversight of the Work. If actions required by this Order are delayed or are not timely completed because of acts or omissions of one or more Defaulting Performing Parties, the Performing Parties may request a time extension. Upon such request, the ED will approve or disapprove the time extension or approve such alternative time extension as the ED in his sole discretion deems appropriate. Thereafter, Respondents shall adhere to all remaining deadlines in this Order and in any documents developed in accordance with this Order and approved by the ED.
53. Respondents shall perform all actions pursuant to this Order in accordance with the requirements of all applicable or relevant and appropriate federal, state, and local laws. This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.
54. All materials removed from the Facility shall be disposed of or treated at a facility which is in compliance with all applicable or relevant and appropriate federal, state, and local laws and shall be disposed of or treated in accordance with all such requirements.
55. Respondents shall indemnify and hold harmless TCEQ and its officers, employees, agents, principals, and assigns from and against all fines, penalties, claims, damages, losses, demands, judgments, settlements, costs of suit, and attorney's fees that arise out of or result from:
 - A. Respondents' performance of an inherently dangerous activity or handling of a solid waste or hazardous substance at or from the Facility;
 - B. Respondents' negligent, reckless, or intentional acts or omissions or such acts or omissions of any of its agents or employees; and

- C. The negligent, reckless, or intentional acts or omissions of any of the Respondents' contractors or suppliers or their agents or employees.
56. The State of Texas, by issuing this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions of Respondents or representatives of Respondents, including directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any of the Work. Neither TCEQ nor the State of Texas shall be deemed a party to any contract entered into by any Respondent or representative of any Respondent, including or its directors, officers, employees, agents, successors, assigns, contractors, or consultants to perform any or all of the Work or any other activity at the Facility.
 57. The provisions of this Order are deemed severable, and, if a court of competent jurisdiction or other appropriate authority deems any provision of this Order unenforceable, the remaining provisions shall be valid and enforceable.
 58. Nothing in this Order will constitute or be construed as a covenant not to sue by TCEQ or the State of Texas or a release from any claim, cause of action, or demand in law or equity against any person, firm, partnership, or corporation. The ED reserves, and this Order is without prejudice to, all rights against Respondents with respect to all matters, including:
 - A. Claims based on Respondents' failure to fulfill the requirements of this Order;
 - B. Liability arising from the past, present, or future disposal, release, or threat of release of solid wastes or hazardous substances outside of or not related to the Facility;
 - C. Liability for future disposal of solid wastes or hazardous substances at the Facility, other than as provided in the RSD or in any work plan required to be developed in accordance with this Order;
 - D. Liability for violations of federal or state law which occur during or after implementation of the Remedial Activities;
 - E. Claims based on criminal liability; and
 - F. Claims for natural resource damages as defined by CERCLA (42 U.S.C. §§ 9601 *et seq.*), the Oil Pollution Act of 1990 (33 U.S.C. §§ 2701 *et seq.*), the Oil Spill Prevention and Response Act (Texas Natural Resources Code ch. 40), and the Federal Water Pollution Control Act (33 U.S.C. §§ 1251 *et seq.*).
 59. TCEQ specifically retains authority over Respondents for the duration of this Order for the purposes of issuing such further orders or directions as may be necessary or appropriate to construe, implement, modify, enforce, terminate, or reinstate the terms of this Order or for any further relief as the interest of the State of Texas may require.
 60. This Order in no way obligates the State of Texas to assist Respondents in defending contribution actions brought by other persons or entities.

61. The terms "submit" and "provide" as used in this Order shall refer to the date on which information, data, a document, or a record is to be received by the recipient. Submittals received on the deadline date will be deemed timely.
62. The Performing Parties may, within 20 days after the effective date of this Order, request a conference with the Project Manager. The request shall be submitted in writing to the Project Manager. Any such conference shall occur at the TCEQ's main campus in Austin or virtually, if necessary, using a videoconferencing platform designated by the ED. The purpose and scope of the conference shall be limited to issues involving the implementation of the Remedial Activities. The conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give the Performing Parties the right to seek review of this Order.
63. The following provisions govern termination of this Order:
 - A. The ED may terminate this Order when he determines that alternative or additional work is required at the Facility because the Remediation Goals, will not be attained by implementation of the Remedial Activities.
 - B. When the ED determines that the Work has been completed in accordance with this Order, the ED will provide written notice to Performing Parties that Performing Parties have fully satisfied the requirements of this Order. Such notice will be issued within 180 days after the ED determines that the Work has been completed in accordance with this Order. This notice shall not terminate Respondents' obligations to comply with those provisions specified herein that are intended to survive this Order.
 - C. In the event TCEQ determines that alternate or additional remedial actions are necessary because of the Remedy's failure, TCEQ may terminate this Order.
64. Nothing in this Order waives the State of Texas' sovereign immunity relating to suit, liability, and the payment of damages. Any claims, suits, or obligations arising under or relating to this Order are subject to and limited by the availability of funds appropriated by the Texas Legislature for that respective claim, suit, or obligation.
65. The Chief Clerk shall provide a copy of this fully executed Order to each of the parties. The effective date of this Order shall be the date 10 days after it is signed by the Commission.

S I G N A T U R E P A G E

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

For the Commission

Date Issued

EXHIBIT A
GLOSSARY OF TERMS, ABBREVIATIONS, AND ACRONYMS

EXHIBIT A

GLOSSARY OF TERMS, ABBREVIATIONS, AND ACRONYMS

C-QA/QC Plan: Construction Quality Assurance/Quality Control Plan

CERCLA: The Comprehensive Environmental Response, Compensation, and Liability Act

Chemicals of Concern (the COCs): Chemicals of concern, defined by 30 TEX. ADMIN. CODE § 350.4(11) to mean a chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity, which are located (at the Facility and are listed on Exhibit C

Commission: The Texas Commission on Environmental Quality

Defaulting Performing Party: A Performing Party who fails to comply with the provisions of the Order

Effective Date: the date 10 days after the Order is signed by the Commission

EPA: The U.S. Environmental Protection Agency

Executive Director (ED): The Executive Director of the Texas Commission on Environmental Quality and staff designated to act on his behalf, including the Project Manager

Facility: The Ballard Pits state Superfund site, located on approximately 296 acres at the end of Ballard Road (also known as Ballard Lane), west of its intersection with County Road 73 northwest of Robstown, Nueces County, Texas. The Facility is more particularly described on Exhibit B and also includes any additional areas where solid waste or hazardous substances have been deposited, stored, disposed of, or placed or have otherwise come to be located as a direct or indirect result of a release of solid waste or hazardous substances from the area described in Exhibit B

Hazard Ranking System: The method used by the EPA and TCEQ to evaluate the relative potential of hazardous substance releases to cause health or safety problems, ecological or environmental damage

HRS: Hazard Ranking System, or the method used by the U.S. Environmental Protection Agency ("EPA") and the TCEQ to evaluate the relative potential of hazardous substance releases to cause health or safety problems, ecological or environmental damage. 30 TEX. ADMIN. CODE § 335.342(6)

NPL: National Priorities List

Operations & Maintenance (O&M): The phase of Remedial Activities, primarily outlined in Ordering Provision No. 20, during which the Remedy is operated and maintained

Performing Party: A person who is not named in this Order but that funds or performs the Work. Additionally, upon performance by any Respondent of the Remedial Activities, either alone or in conjunction with other RPs and/or Performing

Parties, such Respondent shall, from such performance forward, be considered a Performing Party

Potentially Responsible Parties (PRPs): Those persons listed in Finding of Fact No. 4, also referred to after Conclusion of Law No. 1 as Responsible Parties

Project Manager: The individual designated by the ED to oversee implementation of the Work and to coordinate communications with Respondents

RA FSP: Remedial Action Field Sampling Plan

RA HASP: Remedial Action Health and Safety Plan

Remedial Action: For purposes of this Order, the phase of Remedial Activities, primarily outlined in Ordering Provision No. 19, during which the Remedy is implemented

Remedial Activities: The Remedial Design, Remedial Action, Operations and Maintenance, and any other actions required to implement and maintain the Remedy pursuant to the Remedy Selection Document and 30 TEX. ADMIN. CODE ch. 335, subch. K, and ch. 350

Remedial Activities Contractor: The Person or persons retained by Respondents to undertake, direct, and/or supervise all aspects of the Remedial Activities

Remedial Design: The phase of Remedial Activities, primarily outlined in Ordering Provision No. 18, during which engineering plans and technical specifications are developed for the Remedy

Remediation Goals: All design criteria, plans, specifications, and applicable cleanup standards or other measures of achievement of the goals of the Remedy, consistent with TEX. HEALTH & SAFETY CODE ch. 361 and 30 TEX. ADMIN. CODE ch. 335, subch. K, and ch. 350, determined by the ED to be necessary at the Facility to achieve and to maintain the Remedy

Remedy: The selected remedy specified in the Remedy Selection Document, Exhibit D, for the Facility

Remedy Selection Document (RSD): The document, attached as Exhibit D, which specifies the Remedy for the Facility

Respondents: Collectively, the PRPs/RPs and any Performing Parties

Responsible Parties (RPs): Those persons listed in Finding of Fact No. 4, also referred to before Conclusion of Law No. 1 as Potentially Responsible Parties

Site Coordinator: The individual designated by Respondents to serve as the point of contact between the ED and Respondents

Substantial Completion: The point, as determined by the ED in his sole discretion, at which the Work (or a specified part thereof) has been substantially completed in accordance with any work plans or documents required to be developed pursuant to this Order

Superfund QAPP: The TCEQ Remediation Division "Quality Assurance Project Plan for the Superfund Programs," which is updated annually and which may be obtained by contacting the Project Manager

Ballard Pits State Superfund Site
Docket No. 2021-1514-SPF

TCEQ: The Texas Commission on Environmental Quality

Work: The activities to be undertaken or performed in accordance with and as required by this Order

EXHIBIT B

LEGAL DESCRIPTION OF THE FACILITY

EXHIBIT B
LEGAL DESCRIPTION OF THE FACILITY

296.451 acres, more or less, out of Section Six (6) of the Wade Riverside Subdivision, as recorded in Volume "A", Page 48, Map Records, Nueces County, Texas, and being comprised of the following:

30 acres, more or less, being the East 30 acres of Lot 1, as described in Deed dated April 5, 1944, recorded in Volume 302, Pages 531-532, Deed Records, Nueces County, Texas;

30 acres, more or less, being the East 30 acres of Lot 2, as described in Deed dated April 5, 1944, recorded in Volume 302, Pages 531-532, Deed Records, Nueces County, Texas;

15 acres, more or less, being the East 15 acres of the South 112 of Lot 3 as described in Deed dated April 5, 1944, recorded in Volume 302, Pages 531-532, Deed Records, Nueces County, Texas; and

120 acres (also designated as 118.18 acres by the Nueces County Tax Assessor Collector) more or less, being the North 1/2 of Lot 3 and all of Lot 4 as described in Deed dated August 14, 1947, recorded in Volume 377, Pages 233-237, Deed Records, Nueces County, Texas; and

29.6 acres, more or less, being the East 29.6 acres of Lot 5 as described in Deed dated April 5, 1944, recorded in Volume 302, Pages 531-532, Deed Records, Nueces County, Texas;

50 acres, more or less, being the West 50 acres of Lot 5 as described in Deed dated August 14, 1947, recorded in Volume 377, Pages 233-237, Deed Records, Nueces County, Texas;

57.66 acres, more or less, being all but the West 9 acres of Lot 6 as described in Deed dated April 5, 1944, recorded in Volume 302, Pages 531-532, Deed Records, Nueces County, Texas; and

9 acres, more or less, being the West 9 acres of Lot 6 as described in Deed dated August 14, 1947, recorded in Volume 377, Pages 233-237, Deed Records, Nueces County, Texas;

SAVE AND EXCEPT, those portions of Lot 5 and 6 previously conveyed by Cecil Frank Ballard to third parties.

EXHIBIT C
CHEMICALS OF CONCERN LOCATED AT THE FACILITY

Chemicals of Concern in Groundwater

Total Petroleum Hydrocarbons
NAPL

Chemicals of Concern in Soils

Total Petroleum Hydrocarbons
NAPL

EXHIBIT D
REMEDY SELECTION DOCUMENT

REMEDY SELECTION DOCUMENT



BALLARD PITS STATE SUPERFUND SITE NUECES COUNTY, TEXAS

November 2021

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
REMEDATION DIVISION, SUPERFUND SECTION**

**Ballard Pits State Superfund Site
Nueces County, Texas
Remedy Selection Document**

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**Ballard Pits State Superfund Site
Nueces County, Texas
Remedy Selection Document**

1. Introduction

The Ballard Pits state Superfund site (the site) occupies approximately 296 acres at the end of Ballard Road (also known as Ballard Lane), west of its intersection with County Road 73 northwest of Robstown, Nueces County, Texas. The site is located in a rural area, surrounded by residential development to the north, south, and southeast of the site and agricultural and grazing land and undeveloped land to the east and west. The nearest residence is located in the Twin Lakes Subdivision approximately 50 feet east of the eastern site boundary. A portion of the southeast quadrant of the site is enclosed with chain link fencing between the site and the adjacent residential subdivision. (See Figure 1, Site Location Map).

The site is the location of a former sand and gravel quarry. As early as the 1960s, Brine Service Company, Inc. (and possibly other companies) transported oil-field drilling mud and refinery waste from facilities in the Corpus Christi, Texas area to the site for disposal in three unlined pits from the historical quarry operations. Releases of chemicals of concern (COCs) have occurred from these pits and have impacted the environment.

The Texas Commission on Environmental Quality (TCEQ) implements state laws relating to the protection of public health and safety and the environment. Through the state Superfund program, the TCEQ addresses certain properties, such as the site, that may constitute an imminent and substantial endangerment to public health and safety or the environment due to a release or threatened release of solid waste into the environment.

2. Purpose

This Remedy Selection Document (RSD) presents the selected Remedial Action (also known as the remedy) for the site. The Remedial Action is designed to address contamination at the site and provide protection of public health and safety and the environment.

This document describes:

- the actions taken by the TCEQ to investigate the contamination and any mitigating actions, and
- the Remedial Action selected to address the contamination at the site.

This document summarizes more detailed information that can be found in other documents pertinent to the site in the TCEQ's files. These other documents are listed in Table 1.

**Ballard Pits State Superfund Site
Nueces County, Texas
Remedy Selection Document**

Copies of the documents summarized in this RSD, as well as other relevant information, can be viewed at the local site records repository located at:

Owen R. Hopkins Public Library
3202 McKinzie Road
Corpus Christi, Texas 78410
Telephone: (361) 826-7055

or in Austin at the TCEQ Central File Room located at:

12100 Park 35 Circle
Building E, 1st Floor, Room 103
Austin, Texas 78753
Telephone: (512) 239-2900

3. Legal Authority

The TCEQ's investigation of the nature and extent of contamination at the site and the selection of the Remedial Action were completed in accordance with the Solid Waste Disposal Act [codified Texas Health and Safety Code (THSC) Chapter 361]; Hazardous Substance Facilities Assessment and Remediation rules found in 30 Texas Administrative Code (TAC) Chapter 335, Subchapter K; and the Texas Risk Reduction Program (TRRP) rules found in 30 TAC Chapter 350.

The TRRP rules are a comprehensive program for addressing contamination and apply to many different types of response actions administered by the TCEQ. The TRRP rules establish procedures for determining the concentrations of COCs to which a person or other environmental receptor can be exposed without unacceptable risk to public health and safety and the environment. These acceptable concentration levels are called Protective Concentration Levels (PCLs).

A three-tiered approach may be used under the TRRP rules to calculate the PCLs for a site. The tiers represent increasing levels of evaluation using site-specific information to develop a PCL. Tier 1 uses conservative, generic equations, and parameters that do not account for site-specific factors; Tier 2 allows for the use of site-specific information but requires the use of PCL equations provided by the TCEQ; and Tier 3 allows for more detailed and complex evaluations so that PCLs are appropriate for specific site conditions. The TCEQ has determined that Tier 1 PCLs are appropriate for this site.

Under the TRRP rules, land use is classified as either residential or commercial/industrial. This land use classification is a critical factor in determining PCLs. Remediation to more conservative residential PCLs is required not only for

**Ballard Pits State Superfund Site
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land occupied as a residence, but also for playgrounds, schools, daycare centers, and similar land uses involving regular occupation by children. Sites remediated to commercial/industrial PCLs are restricted to commercial and industrial land uses unless further controls are implemented to meet residential PCLs. For this site, the TCEQ has determined that a commercial/industrial land use classification is appropriate for on-site properties and a residential land use classification is appropriate for off-site properties.

The TRRP rules allow for the management of risk posed by the presence of contamination by any combination of the following response actions:

1. Removal or decontamination of contaminated media, such as soil removal or treatment of groundwater;
2. Construction and maintenance of physical controls, such as containment cells and caps, which limit exposure to the contaminated media; and/or
3. Institutional controls, such as restrictive covenants or deed notices, filed in the county real property records, to inform future owners and the public of and limit exposure to the contamination on the property.

Remedial Action must meet one of two standards under TRRP: Remedy Standard A or Remedy Standard B. To meet Remedy Standard A, the contaminated media must be removed and/or decontaminated such that physical controls and, in most cases, institutional controls are not necessary to protect human and ecological receptors. To meet the requirements of Remedy Standard B, however, physical controls and institutional controls may be used in addition to removal and/or decontamination. These standards are described in detail in 30 TAC Sections 350.32-33. The selected remedy at the site meets the criteria established for Remedy Standard B.

4. Site History

The site is located on properties owned by Mary Lenn Masson, as Trustee of the C.F. Ballard Residuary Trust, Mary Lenn Masson as Trustee of the Mary Lenn Masson Trust, and Darrel Michael Ballard as Trustee of the Darrel Michael Ballard Trust. The site consists of vacant, undeveloped land. Historically, the Ballard Sand and Gravel Company operated at the site, which contains pits excavated from primarily sandy soil from the quarry operations. As early as the 1960s, Brine Service Company, Inc. (and possibly other companies) transported oil-field drilling mud and refinery waste from facilities in the Corpus Christi area to the site for disposal in three of the unlined pits, designated by the TCEQ as the East, West, and North Pits (See Figure 1). The TCEQ's evidence of this is a July 1968 Texas

**Ballard Pits State Superfund Site
Nueces County, Texas
Remedy Selection Document**

Water Quality Board order which required Brine Service Company, Inc. to cease all waste disposal activities at the site.

In September 2002, the Nueces River overflowed its banks and inundated the pits. The Railroad Commission of Texas responded to citizen complaints of contamination and initiated site investigations by collecting samples from the pits, adjacent residential yards, and from nearby residential water wells in October 2002. Subsequent investigations by the Railroad Commission of Texas, U.S. Environmental Protection Agency, and the TCEQ included the collection of soil, groundwater, and surface water samples from the site.

The TCEQ published a notice of a public meeting, which included notice of intent to list the site on the state registry of Superfund sites and which proposed a commercial/industrial land use designation in the January 13, 2006, issue of the *Texas Register* (31 TexReg 316). The public meeting was held on February 23, 2006 to propose the site for listing on the state registry of Superfund sites and obtain public input and information regarding the appropriate use of land on which the site is located.

5. Site Geology

The site is located in the Gulf Coastal Plain on the outcrop of Quaternary alluvium and the Beaumont Formation. The alluvium is up to 40 feet thick in Nueces County and consists of interbedded clay, silt, sand, and gravel. Near the site, the alluvium is thin, likely less than 20 feet thick. The Beaumont Formation includes the fluvial Willow Creek, St. Mary, and San Patricio units, as well as the marine Ingleside Sand. These units interfinger and include some silty and clayey deltaic sediments. The Beaumont Formation crops out throughout Nueces County except in the immediate vicinity of the Nueces River and adjacent to the coast and in the northwest corner of the county.

The Beaumont Formation overlies the Lissie Formation, which consists of up to 600 feet of thick to thin beds of sand and gravel with interbedded sandy clay. The Lissie Formation crops out only in the most northwestern portion of Nueces County and overlies the Goliad Sand. The Goliad is comprised of thick layers of sand and sandstone. The Goliad is completely absent as an outcrop in the county. These formations crop out in beds roughly parallel to the coastline. The Beaumont, Lissie, and Goliad Formations comprise the Chicot Aquifer, which is one of the hydrostratigraphic units of the Gulf Coast Aquifer. The Chicot Aquifer supplies almost all the groundwater used in Nueces County.

The source of groundwater in Nueces and San Patricio Counties is precipitation on the outcrop of the aquifer within the two counties and in the counties to the

**Ballard Pits State Superfund Site
Nueces County, Texas
Remedy Selection Document**

northwest and west. Most of the precipitation runs off, evaporates, or is transpired by vegetation. A relatively small part of the precipitation infiltrates the land surface and reaches the zone of saturation, thereby becoming groundwater. Factors that affect the amount of precipitation that becomes groundwater, or recharge to the aquifer, include the amount and intensity of rainfall, the slope of the land surface, the type of soil, the permeability of the aquifer, the quantity of water in the aquifer, and the rate of evapotranspiration. In the vicinity of the site, groundwater samples have been obtained from two groundwater bearing units (GWBU), designated as the shallow GWBU and the deeper GWBU.

6. Summary of Site Activities and Reports

6.1 Hazard Ranking System Report

The Hazard Ranking System (HRS) is a numerical screening system that uses information from initial, limited investigations to assess whether a site qualifies for the state or federal Superfund program. Sites scoring 28.5 or greater may qualify for the federal Superfund program, while sites scoring 5 or greater may qualify for the state Superfund program. In December 2004, the TCEQ prepared a HRS score for the site. The site HRS score of 13.31 qualified the site for the state Superfund program.

6.2 Remedial Investigation

During the Remedial Investigation (RI), the TCEQ determined the nature and extent of the contamination at the site. RI field work began in July 2006 and included sample collection, laboratory analysis, and interpretation of collected data for the purpose of determining the nature and extent of contamination and determining an appropriate remedy for the site. In 2008, 2009, and 2014, the TCEQ conducted several large-scale removal actions in which waste material and impacted soils from the three former disposal pits at the site were excavated until the water table was reached. The waste material and impacted soils were transported to an approved off-site disposal facility and the excavations were backfilled with clean soil. At the North pit, all impacted environmental media was removed. However, impacted environmental media below the water table at the East and West pits containing non-aqueous phase liquids (NAPL) could not be excavated and was left in place. In July 2019, the TCEQ completed the RI and documented the results in the Affected Property Assessment Report (APAR). The APAR documented relevant information regarding the affected property, identified release sources and COCs, described the extent of COC contamination to the TRRP assessment levels, identified transport/exposure pathways, and determined whether a response action was necessary.

**Ballard Pits State Superfund Site
Nueces County, Texas
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6.2.1 Soil

The nature and extent of contamination in the soils at the site was characterized and delineated during the RI. Following removal actions conducted by the TCEQ in 2008, 2009, and 2014, no remaining COCs in on-site or off-site soils were found to exceed the PCLs protective of dermal contact, ingestion, inhalation of volatiles and particulates, and ingestion of above-ground and below-ground vegetables. Waste and/or impacted soils have been removed. Any contaminated material remaining in the pits is below the groundwater table, and its complete removal is not practicable, as discussed in Section 6.2.4 below.

6.2.2 Surface Water and Sediment

The results of historical investigations concluded that COCs were not detected in on-site or off-site surface water or sediment at concentrations above applicable PCLs; therefore, no response actions are required for surface water and sediment.

6.2.3 Groundwater

The RI included investigations of the groundwater at the site and nearby private and public groundwater resources. Private and public water wells in the area are not impacted by the site contamination.

The top of the uppermost GWBU at the site is initially encountered from approximately 5 to 10 feet below ground surface (bgs) and extends to a depth of at least 22 to 25 feet bgs. This GWBU is susceptible to large changes in static water level in response to precipitation. A total of 35 monitoring wells and 11 pilot test wells are completed in the uppermost GWBU. The deeper GWBU at the site is encountered between 31 and 38 feet bgs. Three double-cased monitor wells are completed in the deeper GWBU. Each of these GWBUs are Class 2 groundwater resources based on sustainable well yield tests. Class 2 groundwater resources are considered usable, or potentially usable, drinking water supplies.

The RI determined that the groundwater located on-site in the uppermost GWBU is impacted with total petroleum hydrocarbons (TPH) at concentrations that exceed the PCL for groundwater ingestion and is associated with the NAPL plume remaining in the former West Pit.

The TCEQ site investigations did not identify any groundwater impacts that exceed applicable PCLs at the East or North Pit or on any off-site properties. Additionally, the groundwater in the deeper GWBU does not contain COCs at concentrations that exceed applicable PCLs and does not require remediation.

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The estimated total area of on-site property overlying groundwater in the uppermost GWBU with TPH exceeding the on-site PCL for groundwater ingestion is approximately 56,000 square feet (sf).

6.2.4 NAPL

NAPL has been observed in monitoring wells and pilot test wells located in the West Pit area and remains in place beneath the water table in the East and West Pits. In 2016, a NAPL investigation further examined the nature and extent of hydrocarbon impacts within the East and West Pits. NAPL has also been observed in an off-site monitoring well at a thickness of up to 0.083 feet. Additionally, saturated soil samples collected on off-site properties at a depth of 10 to 12 feet bgs contained TPH at concentrations above the theoretical residual soil saturation limit PCL of 10,000 mg/kg, suggesting the presence of NAPL.

In August 2017, the TCEQ performed a mobile dual phase extraction (MDPE) Pilot Scale Treatability Study which showed that while MDPE could be utilized to recover small volumes of NAPL, the NAPL was not readily recoverable and was likely not mobile.

The total area of property impacted by NAPL is approximately 159,000 sf, of which approximately 4,500 sf is located on off-site properties.

6.3 Ecological Risk Analysis

The TCEQ completed a Screening Level Ecological Risk Assessment (SLERA) for the site and concluded that there is minimal risk to potential ecological receptors from metals or organics in soils, sediment, or surface water. The SLERA further concluded that additional assessment of ecological exposure of metals or any organics at the site is unnecessary based on the observed concentrations of source material-related COCs in the surface soil, sediment, surface water, and groundwater. As such, no ecologically-based PCLs were necessary for the site.

6.4 Focused Feasibility Study

TCEQ completed the FFS in February 2020, documenting the evaluation of remedial alternatives for the site to address the COCs that exceed applicable PCLs in groundwater and exposure to NAPL.

7. Evaluation of Remedial Action Alternatives

In the FFS, the TCEQ developed and evaluated three Remedial Action alternatives that address exposure to COCs in impacted groundwater and NAPL at the site. The

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three remedial alternatives are listed in Paragraph No. 7.1 below and further summarized in Table 2.

7.1 Groundwater Remedial Action Alternatives

Alternative GW-1: Plume Management Zone: On-site and off-site impacted groundwater and NAPL will be managed using a Plume Management Zone (PMZ). NAPL will be monitored to ensure it remains within the PMZ.

During post-closure care of the remedy, if performance monitoring measures indicate that the PMZ is not functioning properly, limited in-situ groundwater treatment will be implemented as a contingency. If institutional controls are not placed on the off-site properties, the off-site area impacted by NAPL may be excavated, a clay layer would be constructed at the bottom and around the excavation walls, and then the excavation would be backfilled with clean soil.

Alternative GW-2: PMZ with Source-Area In-Situ Bioremediation: On-site and off-site impacted groundwater and NAPL will be managed using a PMZ with source-area in-situ bioremediation to enhance degradation and reduction of TPH concentrations. NAPL will be monitored to ensure it remains within the PMZ. If institutional controls are not placed on the off-site properties, the off-site area impacted by NAPL may be excavated, a clay layer would be constructed at the bottom and around the excavation walls, and then the excavation would be backfilled with clean soil.

Alternative GW-3: PMZ with Source Area In-Situ Chemical Oxidation: On-site and off-site impacted groundwater and NAPL will be managed using a PMZ with source-area in-situ chemical oxidation (ISCO) to enhance degradation and reduction of TPH concentrations. NAPL will be monitored to ensure it remains within the PMZ. If institutional controls are not placed on the off-site properties, the off-site area impacted by NAPL may be excavated, a clay layer would be constructed at the bottom and around the excavation walls, and then the excavation would be backfilled with clean soil.

ISCO treats contaminants by introducing oxidants, such as permanganate, peroxide, or ozone into the groundwater. A bench-scale test would be required to determine a dosing of an oxidant to effectively oxidize contaminants. ISCO would be implemented through direct-push technology injection points.

A PMZ is defined as the area of the groundwater contamination, plus any additional area allowed in accordance with 30 TAC Section 350.33(f)(4). A PMZ modifies the standard groundwater cleanup objectives by controlling and preventing the use of and exposure to the groundwater and NAPL within the PMZ

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through institutional controls in the property records. The PMZ would require groundwater and NAPL monitoring throughout its existence.

8. Remedy Selection

A Remedial Action may consist of any combination of the following: (1) removal or decontamination of contaminated media, (2) physical controls such as landfills and caps, and (3) institutional controls, such as deed restrictions on the future use of the property. In accordance with THSC Section 361.193 and 30 TAC Section 335.348(l), the TCEQ must select the Remedial Action for a site by determining which remedial alternative is 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 TCEQ evaluated each alternative using these evaluation criteria: protection of human health and the environment (over both the short- and long-term); compliance with applicable regulations; reliability (including long-term effectiveness and permanence); feasibility; and cost. This evaluation is summarized in Table 2.

The remedy selected for this site is described below. On September 25, 2020, notice was published in the *Texas Register* and the *Corpus Christi Caller Times* informing the public of the proposed remedy and requesting public comment. In addition, a public meeting was held on November 5, 2020, to present the proposed remedy to the public. TCEQ received no comments opposing the proposed remedy were received during the comment period.

9. Description of the Selected Remedy

The selected remedy is Alternative GW-1: Plume Management Zone. Institutional controls will be filed in accordance with TRRP to limit the site to commercial/industrial land use and to establish the PMZ. The institutional controls for the PMZ will remain in place until it is demonstrated that COCs in groundwater no longer exceed the applicable PCLs and NAPL no longer presents a risk of exposure. The implementation of the PMZ will include the collection and analysis of groundwater samples to confirm that the groundwater plume and NAPL remain stable and do not expand beyond the boundaries of the PMZ. During post-closure care of the remedy, if performance monitoring measures indicate that the PMZ is not functioning properly, limited in-situ groundwater treatment will be implemented as a contingency. If institutional controls are not placed on the off-site properties, the off-site area impacted by NAPL may be excavated, a clay layer

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would be constructed at the bottom and around the excavation walls, and then the excavation would be backfilled with clean soil.

10. Remaining Steps in the Superfund Process

Following issuance of the Administrative Order, either the Responsible Parties or the TCEQ will complete the detailed design and implementation of the selected remedy. At any time in this process, the TCEQ may determine that the Remedial Action should be modified. Any modifications to the Remedial Action shall be handled in accordance with 30 TAC Section 335.349(b) and any other applicable authority.

Upon completion of the Remedial Action, and if certain other criteria are met, the TCEQ may propose to delete the site from the state registry of Superfund sites. A public meeting will be held before the site is deleted from the registry.

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Table 1 – List of Reports

1. Remedial Investigation Technical Memorandum (February 1, 2007)
2. Final Removal Action Report – West Pit (August 15, 2008)
3. Pre-Feasibility Study Memorandum (August 2008)
4. Site Characterization Report (January 2009)
5. Treatability Study Report – East Pit (August 2009)
6. Engineering Controls Technical Memorandum (October 30, 2009)
7. Removal Action Report – East Pit (March 4, 2010)
8. Site Activity Report – August 2010 Groundwater Monitoring Well Installation and Sampling Event (October 1, 2010)
9. Passive Air Study at the Ballard Pits State Superfund Site: North Pit (August 9, 2011)
10. June 2011 Groundwater Sampling Event Findings (August 22, 2011)
11. Findings of the Focused Remedial Investigation for the Identification of Waste Pit Sources (August 2011)
12. Letter report to document February 2012 Groundwater Sampling Event Findings (May 1, 2012)
13. Remedial Investigation Technical Memorandum: Monitor well installation, surface and groundwater arsenic background study, and groundwater monitoring event (April 2013)
14. Pre-Feasibility Study Memorandum (May 2014)

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15. Conceptual Site Model Report for the Ballard Pits Proposed State Superfund Site (August 2014)
16. Ambient Air Monitoring Report – Removal Action (December 2014)
17. Removal Action Report – North Pit (January 2015)
18. Drinking Water Survey Report (August 31, 2016)
19. Pilot Scale Treatability Study (January 2018)
20. Annual Groundwater Monitoring Report – January, April, and July 2018 Sample Events (August 23, 2018)
21. Affected Property Assessment Report (July 19, 2019)
22. Annual Groundwater Monitoring Report – January, April, June, July, and August 2019 Sampling Events (August 30, 2019)
23. Focused Feasibility Study (February 2020)
24. Proposed Remedial Action Document (March 2020)

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Table 2 – Remedial Action Alternatives Evaluation

Evaluation Criterion	GW-1	GW-2	GW-3
	PMZ	PMZ with Source-Area In-Situ Bioremediation	PMZ with Source-Area In-Situ Chemical Oxidation
Cost	\$1,390,000	\$1,704,000	\$2,499,000
Feasibility*	5	4	3
Reliability (including long-term effectiveness and permanence)*	3	4	4
Protection of human health and the environment (over both the short- and long-term)**	Yes	Yes	Yes
Compliance with applicable regulations**	Yes	Yes	Yes
Subtotal for Balancing Criteria (before Cost)	8	8	7

*For the evaluation of this criterion, a numerical rating was assigned ranging from 0 to 5, where a score of 0 represents the lowest rating and a score of 5 represents the highest rating.

** For the evaluation of this criterion, a response of “Yes” is favorable and indicates that the evaluated remedial action alternative will meet the criteria, while a response of “No” is unfavorable and indicates that the evaluated remedial action alternative will not meet the criteria.

Remedy Selection Document
 Ballard Pits State Superfund Site
 Figure 1: Site Location Map



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LEGEND

- FORMER PIT
- SUBJECT PROPERTY BOUNDARY

NOTES:
 - ALL FEATURES ARE APPROXIMATE

NAD 1983 STATE PLANE
 TEXAS SOUTH FEET

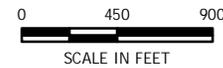
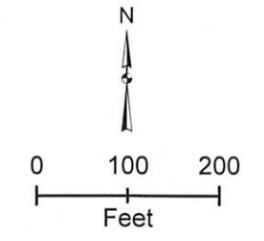
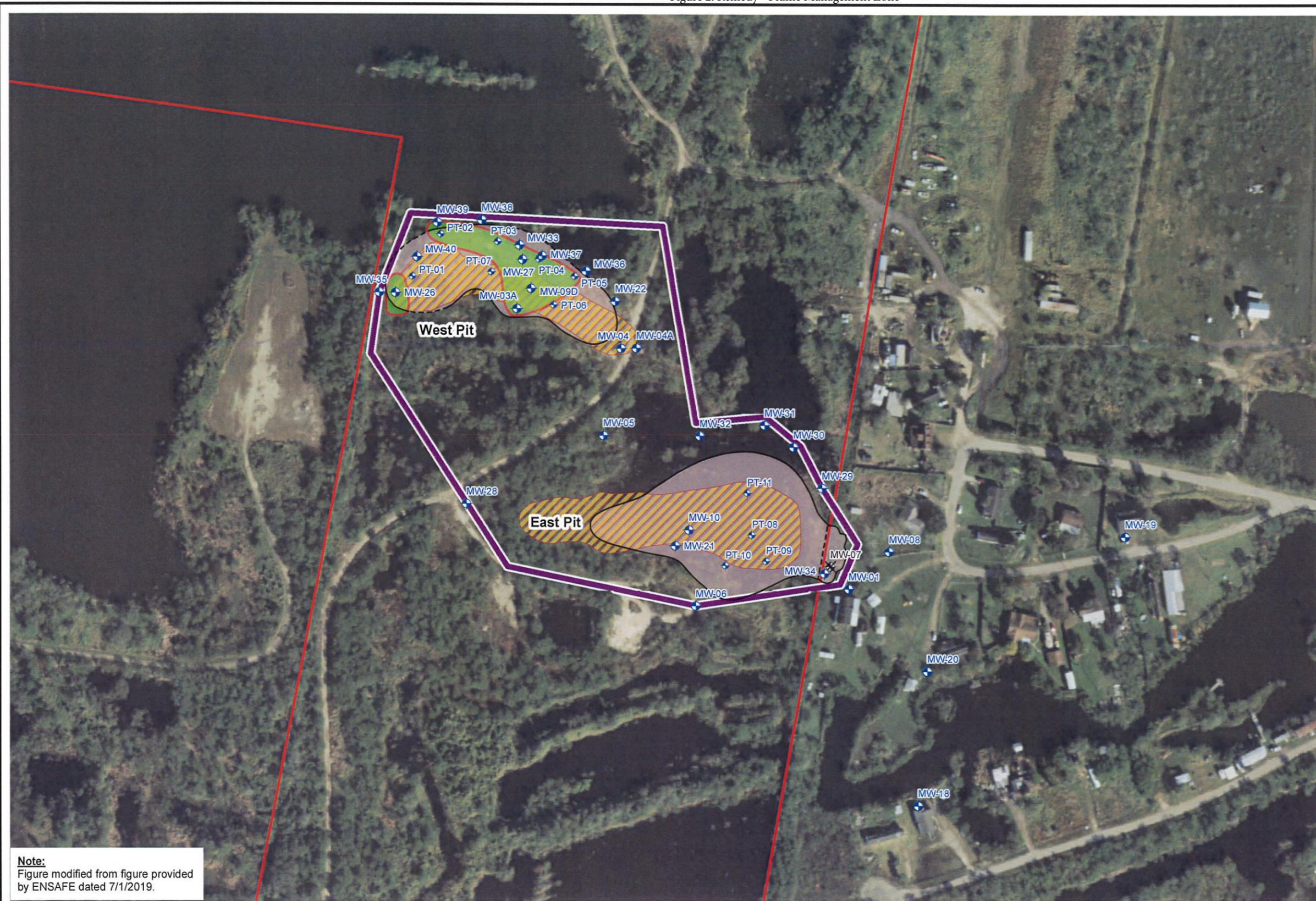


FIGURE 1
 SITE LOCATION MAP
 BALLARD PITS PROPOSED STATE SUPERFUND SITE
 ROBSTOWN, NUECES COUNTY, TEXAS

REQUESTED BY:	EB
DRAWN BY:	NR
DATE:	2/20/2020
PROJECT:	0888821724

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Note:
 Figure modified from figure provided
 by ENSAFE dated 7/1/2019.



Legend

- ◆ Monitoring Well Location
- ◆ Pilot Test Well Location
- ⊗ Plugged and Abandoned
- ▨ Former Pits
- Protective Concentration Level Exceedance Zone for total petroleum hydrocarbons
- Proposed Plume Management Zone (PMZ) for all alternatives
- Approximate Subject Property Boundary
- Non-Aqueous Phase Liquid Zone

Figure 2
 Proposed Groundwater PMZ Map
 Ballard Pits Proposed State Superfund Site
 Robstown, Nueces County, Texas

2020-02-27 M:\State\Ballard\Ballard202002.mxd EA-Dallas jschwartz

EXHIBIT E

REMEDIAL ACTION FIELD SAMPLING PLAN CONTENT REQUIREMENTS

1.0 PROJECT SUMMARY

Briefly state the specific purpose of the field sampling plan (FSP) relative to the activities conducted during the Remedial Action. Identify the key individuals and organizations participating in the project with their roles and responsibilities. Provide an organizational chart with lines of communication and authority indicated.

2.0 CONCEPTUAL SITE MODEL

Briefly describe important aspects of the site relevant to the sampling to occur during the Remedial Action, including: site location, description, relevant features, topography, drainage, history, process knowledge, release history, contaminant sources, regulatory land use selected, surrounding land use, understanding of geology and hydrogeology, previous sampling and analytical results, and ecological issues.

3.0 ANALYTICAL REQUIREMENTS

Summarize the target chemicals of concern, analytes, analytical methods, selected laboratories, action levels, detection and quantitation limits, sample shipment procedures, concentration units, sample holding times, data review and validation procedures, and analytical reporting requirements. (Refer to appropriate tables as needed).

4.0 SAMPLING PLAN DESIGN

Summarize the sampling plan for each media or material type to be sampled (e.g. source/waste, surface soil, subsurface soil, groundwater, air, surface water and sediment). Include a description of the study area (and any sub-areas it is divided into), sample collection, preservation, and container requirements. Describe the methodology and calculations to be used to determine background estimates. Discuss any geotechnical and engineering analyses to be completed. Provide boring and monitor well construction details. Indicate the number of samples for each media and material to be sampled. Describe any geophysical methods to be used. Describe any instrumentation to be used and measurements to be made. Describe procedures for sample collection, tracking, documentation, and handling, including chain-of-custody procedures. List and explain the frequency, purpose, and acceptance criteria of QC samples. Provide standard operating procedures (SOPs) for all activities associated with sampling and data collection.

5.0 ADDITIONAL ACTIVITIES

Describe other activities associated with, or in support of, field sampling and data collection, such as inspections, access agreements, aerial photographs, site clearing and access to sample locations, utility clearance, site restoration, decontamination, handling of investigation derived waste, marking and locating data collection points, GPS surveys, volume estimates, professional land surveys, and other relevant activities.

6.0 EXCEPTIONS, ADDITIONS, AND CHANGES TO THE FSP, SUPERFUND QAPP, OR SOPs

Describe project-specific additions to or changes from the requirements of the Superfund QAPP. Describe how planned and unplanned deviations from the Superfund QAPP, field SOPs, and this FSP will be addressed, documented, and assessed.

TABLES, FIGURES AND APPENDICES

Provide tables, figures and appendices as necessary to describe the work to be completed under this FSP. Include laboratory certifications, and a summary of QC requirements for non-standard analytical methods in the appendices.

Include a table presenting the laboratory method detection limits, quantitation limits and the preliminary remediation goal for each analyte.

Include a table presenting the laboratory control limits for quality control parameters, (i.e., surrogate recoveries, matrix spike/matrix spike duplicate samples recoveries and precision, and laboratory control samples recoveries.