PROPOSED REMEDIAL ACTION DOCUMENT

SAN ANGELO ELECTRIC SERVICE COMPANY (SESCO)
PROPOSED STATE SUPERFUND SITE SAN ANGELO, TOM GREEN COUNTY, TEXAS

April 2013

PREPARED BY: PHILLIP WINSOR, P.E., PROJECT MANAGER
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
SUPERFUND SECTION
REMEDIATION DIVISION

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

I. INTRODUCTION

The San Angelo Electric Service Company (SESCO) Proposed State Superfund Site (the site) is located on six acres in a mixed residential and commercial/industrial area of northeastern San Angelo, Tom Green County, at 926 Pulliam Street (see Figure 1, Site Location Map, and Figure 2, Site Map). SESCO was founded in 1932 as a motor magneto and starter repair company. Around 1946, the company transitioned its operations to building, repairing, and servicing electrical transformers. During its operations, polychlorinated biphenyls (PCBs), a component in certain transformer oils, were discovered in the soil and groundwater both on and off the SESCO property. Volatile and semivolatile organic compounds and inorganic metals, spilled during routine operations over the life of the active facility, are also chemicals of concern (COCs) at the site. SESCO ended its operations in August 2003.

Currently, the site is bordered by residential properties on the west and north. Light commercial/small businesses make up the east and northeast borders. On the south side, Pulliam Street separates the site from the San Jacinto Elementary School property.

The Texas Commission on Environmental Quality (TCEQ) is an agency in the State of Texas that implements many of the state laws relating to the conservation of natural resources and the protection of public health and safety and the environment. The TCEQ addresses certain sites that may constitute an imminent and substantial endangerment to public health and safety or the environment through the state Superfund program.

II. PURPOSE

This *Proposed Remedial Action Document* (PRAD) presents the proposed *Remedial Action* (also known as the remedy) for the site, which is designed to address the contamination and provide protection of public health and safety and the environment. Words appearing in ***bold italics*** in this document are defined in Section XI, "Glossary," of this PRAD.

The purpose of this document is:

- to describe the actions taken by the TCEQ, the participating ***Potentially Responsible Parties*** (PRPs), and the U.S. Environmental Protection Agency (EPA) to investigate the contamination, including any mitigating actions;
- to describe the proposed ***Remedial Action***;
- to solicit public review and comment on the proposed ***Remedial Action***; and
- to provide information on how the public can comment on the proposed ***Remedial Action***.

This PRAD summarizes information that can be found in greater detail in various reports located in the site files. Relevant documents are identified and summarized in Part V, "Summary of Reports," of this PRAD.

The TCEQ encourages the public to review these documents to gain a better understanding of the site; the state Superfund process; the actions taken by the TCEQ, the participating PRPs, and the EPA; and the actions proposed by the TCEQ to address the threats presented by the site.

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

Tom Green County Public Library
33 West Beauregard Avenue
San Angelo, Texas 76903
(325) 655-7321

or in Austin at the TCEQ Central File Room:

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

III. LEGAL AUTHORITY

The investigation of the nature and extent of contamination at the site and the selection of the proposed ***Remedial Action*** is in accordance with the ***Solid Waste Disposal Act*** (codified as Chapter 361 of the Texas Health and Safety Code); Subchapter K: Hazardous Substance Facilities Assessment and Remediation rules found in Chapter 335 of 30 Texas Administrative Code (T.A.C.) (Subchapter K); the ***Texas Risk Reduction Program*** (TRRP) rules found in Chapter 350 of 30 T.A.C.

While the Subchapter K rules are specific to the state Superfund process, the TRRP rules are a comprehensive program for addressing chemical contamination and apply to many different types of corrective action administered by the TCEQ. The TRRP rules establish procedures for determining the concentration of COCs to which a person or other environmental receptor can be exposed without unacceptable risk of harm. These acceptable concentration levels are called ***Protective Concentration Levels*** (PCLs). A PCL can be thought of as the "cleanup level" for contamination.

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 where site-specific information is factored into the process. Tier 1 uses conservative, generic equations and input factors 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 PCLs for arsenic and barium were developed under Tier 2. All other PCLs for the site were developed under Tier 1.

The land use classification is critical under all three of the tiers. Under the TRRP rules, land can be classified as either residential or commercial/industrial. Remediation to

residential standards assumes that a site may be occupied by children and therefore is applicable not only to strictly residential land, but also to playgrounds, schools, daycare centers, and similar land uses. Remediation to commercial/industrial standards assumes that a site will not be regularly occupied by children and is protective of persons who may occupy the site as workers. Sites remediated to commercial/industrial standards cannot be used for residential-type activities unless further controls are implemented to make the site safe for that use. The TCEQ has determined that a commercial/industrial land use classification is appropriate for the site.

The TRRP rules allow risks posed by the presence of contamination above a PCL to be managed by any combination of the following: 1) removal or decontamination of contaminated media; 2) physical controls, such as containment cells and caps, which limit exposure to the contaminated media; or *3)* ***institutional controls***, such as restrictive covenants or deed notices, to inform future owners and the public of contamination on the property in an effort to limit exposure to the contaminated media. These remedy standards under the TRRP rules are divided into two main categories: Remedy Standard A and Remedy Standard B. To meet Remedy Standard A requirements, 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 relied on to protect human and ecological receptors from levels of contamination exceeding PCLs. These standards are described in detail in 30 T.A.C. Sections 350.32 and 350.33. The proposed remedy at the site meets the criteria established for Remedy Standard B.

IV. SITE HISTORY

SESCO operated as a motor magneto and starter repair company from approximately 1932 to 1946. Around 1946, it transitioned to building, repairing, and servicing electrical transformers. It ceased operation in 2003. During its operations, polychlorinated biphenyls (PCBs), a component in certain transformer oils, were discovered in the soil and groundwater both on and off the SESCO property. Volatile and semivolatile organic compounds and inorganic metals, spilled during routine operations over the life of the active facility, are also COCs at the site.

Prior to filing bankruptcy and ceasing operations in 2003, SESCO performed limited investigation and remediation activities at the site. These activities were conducted pursuant to a 1994 Agreed Administrative Order with the Texas Natural Resource Conservation Commission (predecessor to the TCEQ) and a 2002 district court injunction.

Additional discharges from the facility in 2003 necessitated the involvement of both the TCEQ Emergency Response Team and the TCEQ Remediation Division. Between March 2003 and January 2004, the TCEQ conducted a number of actions to protect human health and the environment, including:

- excavation and removal of 2,000 cubic yards of contaminated soil from the SESCO facility;

- excavation and removal of contaminated soil from two residences, an alleyway, and an elementary school soccer field;
- construction of a three-foot high berm around portions of the perimeter of SESCO East to prevent migration of contamination through rainwater running off the property; and
- continued operation of the groundwater recovery system to prevent the spread of contaminated groundwater.

In 2003, the EPA investigated areas adjacent or near (off-property) the SESCO property and tested stored transformers for PCBs.

In late 2004, a group of PRPs known as the SESCO Site Working Group (SSWG) took over interim management of the site, including site security, operation of the groundwater recovery system, and implementation of a groundwater monitoring program. An Agreed Administrative Order governing the conduct of a ***Remedial Investigation*** (RI) and ***Feasibility Study*** (FS), removal actions, and operations and maintenance (O&M) activities at the site was issued on September 22, 2006. The RI was completed when TCEQ approved the final phase RI report on April 15, 2011. The FS was completed when TCEQ approved the final Feasibility Study/Presumptive Remedy Document on September 17, 2012.

V. SUMMARY OF REPORTS

A. HAZARD RANKING SYSTEM REPORT

The ***Hazard Ranking System*** (HRS) is a numerically-based 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. The HRS scoring for the site was prepared by the TCEQ in December 2005 and is presented in the report titled "HRS Documentation Record for San Angelo Electric Service Company (SESCO) San Angelo, Texas." The site earned a score of 12.64. The TCEQ proposed to list the site on the State Registry of Superfund Sites and published notice of its intent in the *Texas Register* on December 2, 2005.

B. REMEDIAL INVESTIGATION REPORTS

The ***Remedial Investigation*** (RI) includes sample collection, laboratory analysis, and interpretation of collected data for the purpose of determining the nature and extent of contamination associated with the site. The Phase I RI Technical Memorandum, dated October 2008, and Addendum, dated May 2009, includes a summary of the initial RI activities conducted at the site. The Phase II RI Technical Memorandum, dated February 28, 2011, includes the Phase II RI Report, the Protective Concentration Levels (PCL) Document, and the Tier 2 Site Screening Level Ecological Risk Assessment (SLERA). The following provides a summary of the RI activities completed at the site.

Soil:

The RI activities included the collection of soil samples. The purpose of the soil sampling activities was to determine the horizontal and vertical extent of soil contamination exceeding the PCLs. Soil investigation activities were performed during multiple separate field sampling events.

Soil boring locations on the SESCO property (on-property) were chosen based on a need to determine the boundaries of the impacted soils exceeding commercial/industrial PCLs for PCBs and volatile organic compounds (VOCs) [tetrachloroethylene (PCE) and trichloroethylene (TCE)]. Off-property soil boring locations were chosen based on a need to determine the boundaries of the impacted soils exceeding residential PCLs for PCBs, VOCs, and semivolatile organic compounds (SVOCs).

COCs in on-property soils that were detected in excess of the applicable PCLs are present in localized, laterally discontinuous areas. The distribution of COCs in surface soils appears to represent relatively small surface spills or releases as opposed to releases that would result in widespread soil impacts. The critical PCL is defined as the lowest protective concentration level for a COC within a source medium such as soil or groundwater. A discussion of critical PCLs is presented below in Subsection C. Protective Concentration Levels (PCL) Document.

There are six on-property areas where PCBs have been delineated over the critical PCL of 7.7 milligrams per kilogram (mg/kg) for industrial/commercial properties (see Figure 3, Remedial Action Areas Based on Soil PCLE Zones and Buried Debris). Three of these areas are located on SESCO West and three are located on SESCO East. Typically, the PCB concentrations decrease with depth. Except for one sample location on SESCO West, there are no on-property sample locations with PCBs detected above the critical PCL at a depth below 2.5 feet.

PCE and TCE were detected above their critical PCLs in areas sampled beneath the former Untanking Building on SESCO West. Soil intervals representing the highest VOC concentrations were resampled and analyzed using the Synthetic Precipitation Leaching Procedure (SPLP) to assess the chemical concentrations expected to leach from the soil to groundwater. The results from the SPLP were below the groundwater critical PCLs for PCE and TCE, indicating the concentrations of these chemicals in the soil are not expected to contaminate groundwater.

The RI activities identified several areas adjacent to the SESCO property where soils containing PCBs in excess of the critical PCL were present. The soils exceeding the critical PCL from those off-property areas were removed during the removal activities that are summarized below.

Groundwater:

There are three Groundwater Bearing Units (GWBU) that exist beneath the site: the alluvium, the Leona Formation, and the Choza Formation. The alluvium ranges in depths between 3 to 23 feet below ground surface and includes the surface soils and

subsurface soils made up of sands, silty clays, and gravel. The underlying Leona Formation ranges in depths between 5 and 30 feet below the alluvium and includes consolidated sands, clays, and gravels. The Choza Formation lies below the Leona and is approximately 30 to 35 feet below ground surface with depths up to 75 feet below ground surface. The depth to the base of the Choza is unknown at this time.

Sampling of groundwater during the RI indicated that there were no COCs present above PCLs in the Choza Formation. Mixed-phase ***Non-aqueous phase liquid*** (NAPL) was present in both alluvium and Leona Formation wells, as discussed below under NAPL Assessment. COCs detected above PCLs in the Leona Formation, as reported in the Phase I RI Technical Memorandum, include arsenic, barium, benzene, vinyl chloride, and PCBs (see Figure 4, Remedial Action Areas Based on Groundwater PCLE Zones and NAPL Presence). The Phase II RI included the assessment of groundwater in the Leona Formation beneath SESCO West and East and adjacent off-property areas. The Leona Formation groundwater was characterized to determine the nature and extent of COC-impacted groundwater above PCLs detected during the Phase I RI.

The Phase II RI groundwater assessment of the alluvium and Leona Formation included the following activities:

- quarterly (first year) and semi-annual (second year) groundwater monitoring;
- the installation of three additional monitoring wells in the Leona Formation to delineate COCs;
- the installation of three additional monitoring wells to assess NAPL southwest of SESCO West;
- the installation of an additional monitoring well in the alluvium on SESCO West to further delineate NAPL; and
- assessment of groundwater and NAPL levels in the alluvium and Leona Formation.

The groundwater monitoring results indicate that arsenic, barium, vinyl chloride, and PCBs currently exceed their respective critical PCLs for groundwater (Figure 4). Only arsenic and vinyl chloride have PCL exceedances that extend beyond the SESCO property. The off-property PCL exceedance of arsenic occurs south of SESCO West at MW-10 and MW-21. Vinyl chloride exceeds the critical PCL for groundwater in one area located on SESCO West. The off-property PCL exceedance zone for vinyl chloride is just north of the former Untanking Building on SESCO West and extends north to the southern side of Upton Street just a few feet north of the SESCO property boundary. MW-56, which is located on the north side of Upton Street, bounds the upgradient side of the vinyl chloride exceedance zone.

NAPL Assessment:

The presence of mixed-phase NAPL (PCBs, VOCs, SVOCs, and metals) in groundwater beneath the site appears to correlate with the areas where the handling of transformer oils occurred at the site. These areas include the Oil Plant and the Untanking Building.

Oil was drained from transformers and placed in drums or tanks near the Untanking Building. The oil was then pumped from the drums or tanks to the Oil Plant.

NAPL is present in Leona Formation monitoring wells at several locations across SESCO West. Figure 4 shows the approximate boundaries of areas currently containing NAPL. This figure indicates that NAPL is not continuous across the site. Discontinuous areas of NAPL in the Leona Formation are present in the central and southern areas of SESCO West. NAPL has not been detected beneath SESCO East. Measured thickness of NAPL in Leona Formation wells typically vary from a few tenths of a foot to a foot or more.

Generally, NAPL thickness measurements in the Leona Formation wells appear to be decreasing compared to historical data, in particular in the wells equipped with skimmer pumps such as MW-8 and MW-14. NAPL thicknesses in the alluvium wells generally appear stable as these shallow wells do not contain recovery pumps and NAPL is removed by quarterly hand-bailing. These wells generally do not produce sufficient water to support skimmer pump technologies.

NAPL at the SESCO site falls under two response triggers in accordance with *TCEQ Regulatory Guidance RG-366/TRRP-32: Risk-Based NAPL Management*.

- Mobile NAPL Zone: Variable NAPL thickness is measured in the groundwater wells.
- NAPL in contact with groundwater: NAPL is in contact with Class 2 groundwater of the Leona Formation and perched groundwater within the alluvium.

Tier 2 Screening-Level Ecological Risk Assessment (SLERA):

Based on the findings of the Phase I RI Technical Memorandum, a Tier 2 SLERA was performed for the site. The Tier 2 SLERA included the following sampling activities: sediment sampling in the Concho River and soil and invertebrate sampling in the lower portion of the East Angelo Draw to assess the potential impact of PCBs in these areas. The 27 sediment sampling locations resulted in the analysis of 60 samples for PCBs. Invertebrate and related surface soil samples were collected at six locations in the lower East Angelo Draw and analyzed for PCBs.

The Tier 2 SLERA was performed according to TCEQ Ecological Risk Assessment (ERA) guidance. The Tier 2 SLERA used several lines of evidence to determine whether PCBs (specifically Aroclor 1260) will adversely affect receptors utilizing the habitats. The results of the Tier 2 SLERA indicate that ecological receptors will not be adversely affected by PCBs in soil and sediment in these habitats.

The potential for sediment in the Concho River to adversely impact human health was also evaluated. The results of this evaluation indicate that human contact with Concho River water or sediment or ingestion of fish from the river does not pose adverse risk to human health.

C. PROTECTIVE CONCENTRATION LEVELS (PCL) DOCUMENT

A PCL Document was prepared in February 2011 and submitted as Appendix 1 of the Phase II RI Report. The objective of the PCL Document was to demonstrate how PCLs and critical PCLs were selected for each site-specific COC for complete and reasonably anticipated to be complete exposure pathways. A critical PCL is the lowest PCL for a COC within a source medium determined from all of the applicable human health exposure pathways as described in 30 T.A.C. Section 350.71 and, when necessary, PCLs for applicable ecological exposure pathways as required in 30 T.A.C. Section 350.77.

Site-specific data including land use, source size area, and groundwater and soil classification were used for the selection of appropriate assessment levels and critical PCLs. Also, a Tier 2 SLERA and a Technical Memorandum for the development of a sediment PCL for PCBs were completed as part of the Phase II RI. Land use for the SESCO property was selected as commercial/industrial following the public meeting held in January 2006 in San Angelo, Texas. Surrounding non-SESCO properties were classified as residential.

The source area size for soils is 0.5 acre because COCs in surface and subsurface soils above their respective PCLs are present only in localized and laterally discontinuous areas.

Analytical data collected during the Phase I and II RIs and groundwater monitoring events were compared to TRRP Tier 1 PCLs applicable for the source area size and land use. Based on this evaluation, concentrations of COCs found in surface and subsurface soil samples from the SESCO property and both on-property and off-property shallow groundwater exceed applicable PCLs.

D. REMOVAL ACTION WORK PLANS

During the time that the Phase II RI was in progress at the site, several removal actions were completed. These removal actions were addressed in the following Removal Action Work Plans (RAWPs):

- Removal Action Work Plan No. 1: Off-Site Soils - Debris Areas and Isolated Areas Removal, dated November 9, 2009 (RAWP-1);
- Removal Action Work Plan No. 1, Addendum 1: Off-Site Soils - Debris Areas and Isolated Areas Removal, dated December 24, 2009 (RAWP-1 Addendum 1);
- Removal Action Work Plan No. 2: Removal of Off-Site Soils - TxDOT/Railroad Right-of-way (ROW), dated June 23, 2010 (RAWP-2);
- Removal Action Work Plan No. 3: Untanking Building Demolition, dated June 22, 2010 (RAWP 3);
- Removal Action Work Plan No. 3, Addendum 1: Untanking Building Demolition, Underground Storage Tank (UST) Removal, dated October 1, 2010 (RAWP-3 Addendum 1); and

- Removal Action Work Plan No. 4: Removal of Off-Site Soils - Pope Tarver Ravine, dated July 22, 2011, as updated in a response to TCEQ comments letter dated September 21, 2011.

The removal actions conducted under RAWP-1, RAWP-1 Addendum 1, RAWP-2, and RAWP-4 were performed to protect human health or the environment. These removal actions were conducted in order to remove and properly dispose of contaminated off-property soils and debris located in areas that were accessible to the public.

The removal actions conducted under RAWP-3 and RAWP-3 Addendum 1 were conducted to facilitate the RI, as the Untanking Building and slab were located above a suspected source area that needed additional delineation. It was suspected that there might be a tank under the concrete slab of the Untanking Building which could be serving as a source of the NAPL.

E. FEASIBILITY STUDY/PRESUMPTIVE REMEDY DOCUMENT (FS/PRD)

The FS/PRD for the SESCO site, dated July 31, 2012, presented an evaluation of potential remedial alternatives to address the COCs in the site soils and groundwater. That evaluation is summarized in the following section of this PRAD.

VI. DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES

In accordance with 30 T.A.C. Section 335.348(l) and the requirements of Section 361.193 of the ***Solid Waste Disposal Act***, the TCEQ selects 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."

In the FS/PRD, several remedial alternatives and their estimated costs for cleaning up the soil and groundwater at the site were evaluated and are listed below:

A. Soils with Chlorinated VOCs above PCLs

Alternative 1 - In-situ Soil Vapor Extraction/Bioventing; no costs provided because infeasible

Alternative 2 - Containment using Slurry Wall; $109,000 1st year/$25,000 each additional year

Alternative 3 - Excavation of Soils with Thermal Treatment; $1,066,000

Alternative 4 - Excavation with Off-Site Disposal; $105,000

B. Soils with PCBs above PCLs

Alternative 1 - Excavation of Soils with Off-Site Disposal; $618,000

Alternative 2 - Containment Using Slurry Wall; $432,000 1st year/$50,000 each additional year

Alternative 3 - Excavation of Soils with Thermal Treatment; $1,276,000

C. Buried Debris with Underlying Soils Potentially Containing Metals, Chlorinated VOCs and PCBs

Alternative 1 - Excavation with Off-Site Disposal; $32,456

Alternative 2 - Containment Using Slurry Wall; $38,000 1st year/$2,000 each additional year

Alternative 3 - Excavation with Thermal Treatment; $115,000

D. Groundwater with Metals Above PCLs

Alternative 1 - Control and Attenuation within a Plume Management Zone (PMZ); $71,000 1st year/$31,100 each additional year

Alternative 2 - Extraction and Treatment; No costs provided because infeasible

Alternative 3 - In-situ Chemical Precipitation; No costs provided because infeasible

E. Groundwater with Chlorinated VOCs above PCLs

Alternative 1 - Control and Attenuation within a Plume Management Zone (PMZ); $45,500 1st year/$21,450 each additional year

Alternative 2 - In-situ Bioremediation; No costs provided because infeasible

Alternative 3 - Extraction and Treatment; No costs provided because infeasible

Alternative 4 - In-Situ Chemical Oxidation; - $410,000

F. Mobile NAPL in Contact with Groundwater

Alternative 1 - Floating NAPL Extraction to Extent Practical with Control and Attenuation within a PMZ; $72,000 1st year/$72,000 each additional year

Alternative 2 - Shallow Liquid-Only Extraction with Carbon Treatment; $126,000 1st year, $126,000 each additional year

Alternative 3 - Dual Pump Liquid Extraction; No costs provided because infeasible

G. SESCO Buildings Containing PCBs

Alternative 1 - No Action; $0.00

Alternative 2 - Decontamination/Encapsulation of PCB-Impacted Areas; No costs provided because infeasible

Alternative 3 - Demolition of the Buildings with Off-Site disposal; $722,250

H. Tank Farm Containment Area Facilities

When the Groundwater Treatment System is permanently taken out of service, appropriate characterization of the tank farm containment area will be performed. Characterization will include collection of soil samples from below the containment area slab and wipe sampling and analysis of the walls and ceilings of the steel storage shed buildings and the inside walls of the tanks that were used to hold liquids associated with the Groundwater Treatment System operation. All samples will be analyzed for PCBs.

Alternative 1 - After characterization, demolish the treatment system components and dispose of at an appropriate landfill; clean out tanks and wipe test them for PCBs; if the underlying soils have PCB concentrations ≤ 7.7 mg/kg return the tank farm facilities to the control of the site's Trustee for the Bankrupt Debtor; $67,000

Alternative 2 - After characterization, demolish the treatment system components and dispose of at an appropriate landfill; clean out tanks and wipe test them for PCBs; if the underlying soils have PCB concentrations > 7.7 mg/kg demolish concrete slab, remove soils > 7.7 mg/kg, and dispose of the materials in an appropriate landfill; $101,000

I. Underground Piping

Alternative 1 - No Action; $0.00

Alternative 2 - Uncover and Remove Piping and any Soils Exceeding PCLs and Properly Dispose; $50,000

VII. EVALUATION OF REMEDIAL ACTION ALTERNATIVES

The evaluation of the remedial alternatives, included in the FS Report, is based on overall protection of human health and the environment; compliance with applicable

regulations; long-term effectiveness and permanence; short-term effectiveness; implementability; and cost.

A. Soils with Chlorinated VOCs above PCLs

Overall Protection of Human Health and the Environment - Alternative 1 is not considered to be feasible due to low soil permeability. Alternatives 2 and 3 are feasible, but are more expensive. Alternative 4 is preferred as it is the least expensive and all soil at the site containing COCs in excess of their critical PCLs will be excavated for off-site disposal.

Compliance with Applicable Regulations - Alternative 1 is not compliant with all applicable regulations as soil would be left in-place that could continue to leach COCs into the shallow groundwater above health-based levels. Alternative 2 and 3 are compliant with all site-specific applicable regulations, but are more expensive than Alternative 4, which is compliant with applicable regulations and would include the excavation and off-site disposal of site soils containing COCs in excess of their critical PCLs.

Long-Term Effectiveness and Permanence - Alternatives 1 and 2 are least preferred as soil contaminated above health-based levels would be left at the site. Alternative 3 permanently removes soil containing COCs in excess of their critical PCLs, but uses a more expensive treatment method. Alternative 4 is the preferred alternative because it is the least expensive and permanently removes soil containing COCs in excess of their critical PCLs.

Short-Term Effectiveness - Alternatives 1 and 2 would be the least preferred as soil containing COCs in excess of the critical PCLs would be left in place. Alternative 3 would be protective but more expensive. Alternative 4 is the preferred alternative because it removes all soils containing COCs and could be completed quickly.

Implementability - All alternatives are easily implemented.

Cost - Costs were not provided for alternative 1 because it was considered to be infeasible. Alternative 4 is the least costly compared with alternatives 2 and 3, provides adequate overall protection of human health and the environment, and provides long-term effectiveness.

B. Soils with PCBs Above PCLs

Overall Protection of Human Health and the Environment - Alternative 2 is the least protective as soil containing COCs in excess of the critical PCLs would be left in place. Although alternative 3 would be equally effective, alternative 1 is preferred since it is the least expensive and protective of human and the environment.

Compliance with Applicable Regulations - All of the alternatives would be compliant, although alternative 2 is the least preferred because contaminated soil would be left in-place, which could continue to leach COCs into the shallow groundwater.

Alternative 3 would be compliant with all site-specific applicable regulations, but is more expensive than alternative 1, which is compliant with applicable regulations and includes the excavation and off-site disposal of soils that contain COCs in excess of their respective critical PCLs.

Long-Term Effectiveness and Permanence - Alternative 2 is least effective because soil contaminated above critical PCLs would be left at the site. Alternative 3 permanently removes soil containing COCs in excess of their critical PCLs but uses a more expensive treatment method. Alternative 1 is the preferred alternative because it is the least expensive and permanently removes soil containing COCs in excess of critical PCLs.

Short-Term Effectiveness - Alternative 2 would be the least effective as soil containing COCs in excess of the critical PCLs would be left in place. Alternative 3 would be protective, but more expensive. Alternative 1 is the preferred alternative because it removes all soils containing COCs and could be completed quickly.

Implementability - All alternatives are easily implemented.

Cost - Alternative 1 is the least costly of all the alternatives, provides adequate overall protection of human health and the environment, and provides short and long-term effectiveness.

C. Buried Debris with Underlying Soils Containing Metals, Chlorinated VOCs and PCBs

Overall Protection of Human Health and the Environment - Alternative 2 is the least protective as soil containing COCs in excess of the critical PCLs would be left in place. Although alternatives 1 and 3 would be equally effective, alternative 1 is preferred since it is the least expensive.

Compliance with Applicable Regulations - All of the alternatives would be compliant, but alternative 2 is least preferred as soil would be left in place that could continue to leach COCs into the shallow groundwater. Alternative 3 would be compliant with all site-specific applicable regulations, but is more expensive than alternative 1, which is compliant with applicable regulations and includes the excavation and off-site disposal of soils that contain COCs in excess of their respective critical PCLs.

Long-Term Effectiveness and Permanence - Alternative 2 is least effective as soil contaminated above critical PCLs would be left at the site. Alternative 3 permanently removes soil containing COCs in excess of critical PCLs but uses a more expensive treatment method. Alternative 1 is the preferred alternative because it is effective and the least expensive alternative.

Short-Term Effectiveness - Alternative 2 would be the least effective as soil containing COCs in excess of the critical PCLs would be left in place. Alternative 3 would be protective, but more expensive. Alternative 1 is the preferred alternative because it removes all soils containing COCs and could be completed quickly.

Implementability - All alternatives are easily implemented.

Cost –Alternative 1 is the least costly of all the alternatives, provides adequate overall protection of human health and the environment, and provides short and long-term effectiveness.

D. Groundwater with Metals above PCLs

Overall Protection of Human Health and the Environment - Alternative 1, Control and Attenuation within Plume Management Zone, is considered to be the only practical alternative because the presence of the NAPL in contact with the soils creates a reducing environment. As long as the NAPL is present, metals will continue to remain in solution. Once the NAPL is removed, the reducing environment will become more oxidized, allowing sorption or precipitation of the metals out of solution.

Compliance with Applicable Regulations - All of the alternatives would be compliant.

Long-Term Effectiveness and Permanence - All of the alternatives would be effective in the long-term.

Short-Term Effectiveness - Alternative 1 would have the greatest short-term effectiveness.

Implementability - Alternative 1 is the easiest alternative to implement.

Cost - Alternative 1 was the only alternative with cost estimates provided because it is considered to be the only practical alternative.

E. Groundwater with Chlorinated VOCs above PCLs

Overall Protection of Human Health and the Environment - Alternative 1, Control and Attenuation with Plume Management Zone, is considered to be the only practical alternative because the presence of NAPL.

Compliance with Applicable Regulations - All of the alternatives would be compliant.

Long-Term Effectiveness and Permanence - All of the alternatives would be effective in the long-term.

Short-Term Effectiveness - Alternative 1 provides the shortest-term solution.

Implementability - All of the alternatives are implementable.

Cost - Alternative 1 is the least costly alternative over time.

F. Mobile NAPL in Contact with Groundwater

Overall Protection of Human Health and the Environment - Alternative 1 is considered to be the only practical alternative. Alternative 2 would include contaminated groundwater along with NAPL, requiring additional treatment, and would not recover as much NAPL.

Compliance with Applicable Regulations - All alternatives would be compliant; however, alternative 1 results in more NAPL recovered and less contaminated groundwater needing treatment.

Long-Term Effectiveness and Permanence - All alternatives would be effective in the long-term.

Short-Term Effectiveness - Alternative 1 provides the best short-term effectiveness.

Implementability - All alternatives are implementable.

Cost - Alternative 1 is the least expensive.

Based on the evaluations of the groundwater alternatives above, the TCEQ proposes to establish a site-wide PMZ. Figure 5 shows a conceptual PMZ for the site. A PMZ modifies the standard groundwater cleanup objectives by monitoring groundwater COC concentrations and controlling and preventing the use of and exposure to the groundwater within the PMZ. The boundaries of the PMZ will be determined in accordance with TRRP, and prior to implementation of the Remedial Action. Determination of the PMZ boundaries may necessitate the installation of additional groundwater monitoring wells. ICs will be filed in the real property records for the purpose of preventing the use of and exposure to groundwater within the PMZ. An IC will be filed for each property which overlies groundwater contaminated above the PCLs and will describe the specific area of the PMZ on the affected property. The ICs will be secured and implemented in accordance with TRRP and will remain in place unless it is demonstrated that concentrations of COCs in groundwater no longer exceed the applicable PCLs.

G. SESCO Buildings Containing PCBs

Overall Protection of Human Health and the Environment - Alternative 1 would not be protective. Although alternative 2 is protective, it leaves COCs in excess of the critical PCLs in place and would require long-term maintenance. Alternative 3 removes all COCs and does not require long-term maintenance.

Compliance with Applicable Regulations - Alternative 1 would not be compliant. Alternatives 2 and 3 would be compliant, but alternative 2 is the least preferred because COCs would be left in place and long-term maintenance would be required. Alternative 3 would be compliant and would result in no buildings with COCs in excess of PCLs.

Long-Term Effectiveness and Permanence - Alternative 1 would not be effective.

Alternative 2 is less effective than Alternative 3 because encapsulated COCs would remain on-property and require long-term maintenance. Alternative 3 is preferred since all buildings with COCs in excess of PCLs would be removed with no long-term maintenance required.

Short-Term Effectiveness - Alternative 1 would not be effective. Alternatives 2 and 3 would both be effective in the short term, but alternative 3 would be preferred since no COCs above PCLs would remain.

Implementability - All alternatives are easily implemented.

Cost - Alternative 3 is preferred as no long term costs are required and it provides for the overall protection of human health and the environment.

H. Tank Farm Containment Area Facilities

If underlying soils have PCB concentrations ≤ 7.7 mg/kg:

Overall Protection of Human Health and the Environment - Both alternatives would be protective of human health and the environment.

Compliance with Applicable Regulations - Both alternatives would be in compliance with all applicable regulations.

Long-Term Effectiveness and Permanence - Both alternatives are effective and permanent for the long term.

Short-Term Effectiveness – Both alternatives would be effective and permanent in the short term.

Implementability – Both alternatives are easily implementable.

Cost – Both alternatives meet all requirements, but alternative 1 is the preferred alternative, if soil PCB concentrations are ≤ 7.7 mg/kg, because it is less expensive.

If underlying soils have PCB concentrations > 7.7 mg/kg:

Overall Protection of Human Health and the Environment - Alternative 1 would not be protective. Alternative 2 is protective and is the preferred alternative since no COCs above PCLs would remain.

Compliance with Applicable Regulations - Alternative 1 would not be compliant. Alternative 2 would be in compliance with all applicable regulations.

Long-Term Effectiveness and Permanence - Alternative 1 would not be effective. Alternative 2 is effective and permanent for the long term.

Short-Term Effectiveness - Alternative 1 would not be effective. Alternative 2 is effective and permanent in the short term.

Implementability - Alternative 2 is easily implementable.

Cost - Alternative 2 is the only alternative that meets all requirements and is affordable.

I. Underground Piping

Overall Protection of Human Health and the Environment - Alternative 1 would not be protective. Alternative 2 is protective and is the preferred alternative since no COCs above PCLs would remain.

Compliance with Applicable Regulations - Alternative 1 would not be compliant. Alternative 2 would be compliant with applicable regulations.

Long-Term Effectiveness and Permanence - Alternative 1 would not be effective. Alternative 2 is effective and permanent.

Short-Term Effectiveness - Alternative 1 would not be effective. Alternative 2 is effective in the short-term.

Implementability - Alternative 2 is easily implementable.

Cost - Alternative 2 is cost-effective and is the only alternative that meets all requirements.

VIII. THE PROPOSED REMEDIAL ACTION

Table 1 below provides the Cleanup Goals for Surface and Subsurface Soils, and Table 2 below provides the Cleanup Goals for Groundwater.

Table 1: Cleanup Goals for Surface and Subsurface Soil

CHEMICALS OF CONCERN (COCS)	ACTION LEVEL (Critical PCL)	REMEDIAL ACTION OBJECTIVES
Polychlorinated Biphenyls (PCBs)	≤7.7 mg/kg (surface soils) ≤ 11 mg/kg (subsurface soils)	Excavate and dispose of all soils above critical PCL
Tetrachloroethylene	≤0.05 mg/kg	Excavate and dispose of all soils above critical PCL
Trichloroethylene	≤0.034 mg/kg	Excavate and dispose of all soils above critical PCL
Arsenic	≤6.6 mg/kg*	Excavate and dispose of all soils above critical PCL
Barium	≤2,900 mg/kg*	Excavate and dispose of all soils above critical PCL

* These are site-specific Tier 2 PCLs

Table 2: Cleanup Goals for Groundwater

CHEMICALS OF CONCERN (COCS)	ACTION LEVEL (Critical PCL)	REMEDIAL ACTION OBJECTIVES
Arsenic	≤0.01 mg/L	Control and prevent use of, and exposure to, the groundwater within the PMZ, including the use of ICs
Barium	≤2.0 mg/L	Control and prevent use of, and exposure to, the groundwater within the PMZ, including the use of ICs
Vinyl Chloride	≤0.002 mg/L	Control and prevent use of, and exposure to, the groundwater within the PMZ, including the use of ICs
PCBs	≤0.0005 mg/L	Control and prevent use of, and exposure to, the groundwater within the PMZ, including the use of ICs
Mixed-Phase NAPL	NA	Remove to the extent practicable, and control and prevent use of, and exposure to, the groundwater within the PMZ, including the use of ICs

The TCEQ proposes the following ***Remedial Action*** for the site:

- excavation and off-site disposal of VOC-contaminated soils from the areas exceeding commercial/industrial PCLs (Alternative No. 4);
- excavation and off-site disposal of PCB-contaminated soils from the areas exceeding commercial/industrial PCLs (Alternative No. 1);
- excavation and off-site disposal of the buried debris and any underlying soils containing metals, VOCs, or PCBs exceeding commercial/industrial PCLs (Alternative 1);
- control and attenuation within a Plume Management Zone (PMZ) and ICs for groundwater with metals exceeding commercial/industrial PCLs (Alternative 1);
- control and attenuation within a Plume Management Zone (PMZ) for groundwater with chlorinated VOCs exceeding commercial/industrial PCLs and institutional controls (ICs) (Alternative 1);
- NAPL extraction to the extent practical with control and attenuation within a PMZ (Alternative 1);
- demolition of PCB-contaminated SESCO buildings with off-site disposal (Alternative 3);
- characterization and remediation of the Tank Farm Containment Area once this area is no longer needed (Alternative 1 or 2 depending on PCB concentrations in underlying soils); and
- excavation and off-site disposal of the Underground Piping and contaminated underlying soils (Alternative 2).

IX. COMMUNITY PARTICIPATION IN THE SUPERFUND PROCESS

The public is invited to comment on the proposed *Remedial Action* for the site. Those wanting to make oral comments may do so at the public meeting scheduled for Thursday June 20, 2013**,** at 7:00 p.m. in the Central High School Cafeteria, 655 Caddo, San Angelo, Tom Green County, Texas. The public meeting is legislative in nature and is not a contested case hearing under Chapter 2001 of the Texas Government Code. The public comment period begins May 20, 2013, and ends on June 20, 2013, at the close of the public meeting. During this time period, the public may comment on the proposed ***Remedial Action*** or give additional information regarding the site or the identification of PRPs. Written comments concerning the proposed ***Remedial Action*** submitted prior to the public meeting must be received by 5:00 p.m. on June 19, 2013. Comments should be submitted to:

MC 136
Phillip Winsor, P.E.
Superfund Project Manager
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

or

Facsimile: (512) 239-4814
E-mail: Phillip.Winsor@tceq.texas.gov

Any questions not addressed at the public meeting will be addressed in writing by the TCEQ after the meeting and will be placed in the site files.

X. REMAINING STEPS IN THE SUPERFUND PROCESS

After the end of the public comment period described above, and after considering all comments received relating to the proposed ***Remedial Action***, the TCEQ will select the *Remedial Action* to implement at the site.

Any PRPs are then allowed a period of 60 days to make an offer to fund or perform the selected remedy. If any PRPs make an offer, they will be allowed an additional 60 days to negotiate the terms of an order to fund or perform the selected remedy. Whether or not PRPs come forward to fund or perform the remedy, the TCEQ will issue a final administrative order as provided by Section 361.188 of **the *Solid Waste Disposal Act*** (188 Order). At that time, the site will no longer be considered a "proposed" state Superfund site, but will then be "listed" on the State Registry of Superfund Sites. The State Registry is a list of sites that may pose an imminent and substantial endangerment to public health and safety or the environment.

Following issuance of the 188 Order, either the PRPs or the TCEQ will complete the detailed design of the selected remedy and cause that remedy to be implemented in its entirety. At any time in this process, the TCEQ may determine that a ***minor change, significant change,*** or ***fundamental change*** should be made to the ***Remedial Action***. If a minor change is implemented, the TCEQ will document the change in the site files without the necessity for another public meeting. If a significant change is made, a notice describing the changes will be posted in the *Texas Register* and in a newspaper of general circulation in the county where the site is located. If a fundamental change is considered, another public comment period and public meeting will be held to discuss the fundamentally changed proposed remedy.

Upon completion of the ***Remedial Action***, 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 State Registry.

XI. GLOSSARY

Feasibility Study (FS) - A description, screening, and analysis of the potential *Remedial Action* alternatives for a site.

Fundamental change - A change to the Remedial Action which uses a different approach to achieve the remedial action goals or one that uses the same approach, but results in a remedial action that is less protective than the originally proposed Remedial Action.

Hazard Ranking System (HRS) - The scoring system used by the TCEQ to evaluate a site for the state or federal Superfund program. The scoring system was developed by the U.S. Environmental Protection Agency (EPA) as described in 40 Code of Federal Regulations Part 300, Appendix A.

Institutional Control (IC) - A legal instrument placed in the property records in the form of a deed notice, restrictive covenant, or other form established in the TRRP rules which indicates the limitations on or conditions governing the use of the property which ensures protection of human health and the environment.

Minor change - A change to the Remedial Action which does not significantly affect the scope, performance, or cost of the originally proposed Remedial Action.

Non-Aqueous Phase Liquid (NAPL) - An organic or inorganic liquid that is not miscible in water. When NAPL is released to the environment it can be a direct source of long-term release of COCs to environmental media or for direct exposure. NAPL may be a pure phase NAPL (comprised of a single chemical component, e.g., benzene) or a mixed phase NAPL (comprised of multiple components, e.g., gasoline).

Potentially Responsible Parties (PRPs) - Persons or entities that the TCEQ considers potentially responsible for the contamination of the site pursuant to Section 361.271 of the Texas Health and Safety Code.

Proposed Remedial Action Document (PRAD) - The document which describes the TCEQ's proposed *Remedial Action*.

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

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

Remedial Investigation (RI) - An investigative study which may include removals, and/or a *feasibility study*, in addition to the development of *protective concentration levels*, designed to adequately determine the nature and extent of release or threatened release of hazardous substances and, as appropriate, its impact on airs, soils, groundwater and surface water, both within and beyond the boundaries of the site.

Significant change - A change to the Remedial Action which materially affects the scope, performance, or cost of the Remedial Action, but which uses the same approach and results in a Remedial Action at least as protective as the originally proposed Remedial Action.

Solid Waste Disposal Act - Chapter 361 of the Texas Health and Safety Code. The purpose of the *Solid Waste Disposal Act* is to safeguard the health, welfare, and physical property of the people and to protect the environment by controlling the management of solid waste, including any hazardous waste that is generated. Subchapter F of Chapter 361 relates to the state Superfund process. The Texas Health and Safety Code is available online at:
http://www.statutes.legis.state.tx.us/Docs/HS/htm/HS.361.htm .

Texas Risk Reduction Program (TRRP) - A program of the TCEQ that provides a consistent corrective action process directed toward protection of human health and the environment balanced with the economic welfare of the citizens of the state. The rules for this program are located in Chapter 350 of 30 Texas Administrative Code. The Texas Administrative Code is available online at: http://www.sos.state.tx.us/tac/.

Figure 1: Site Location Map

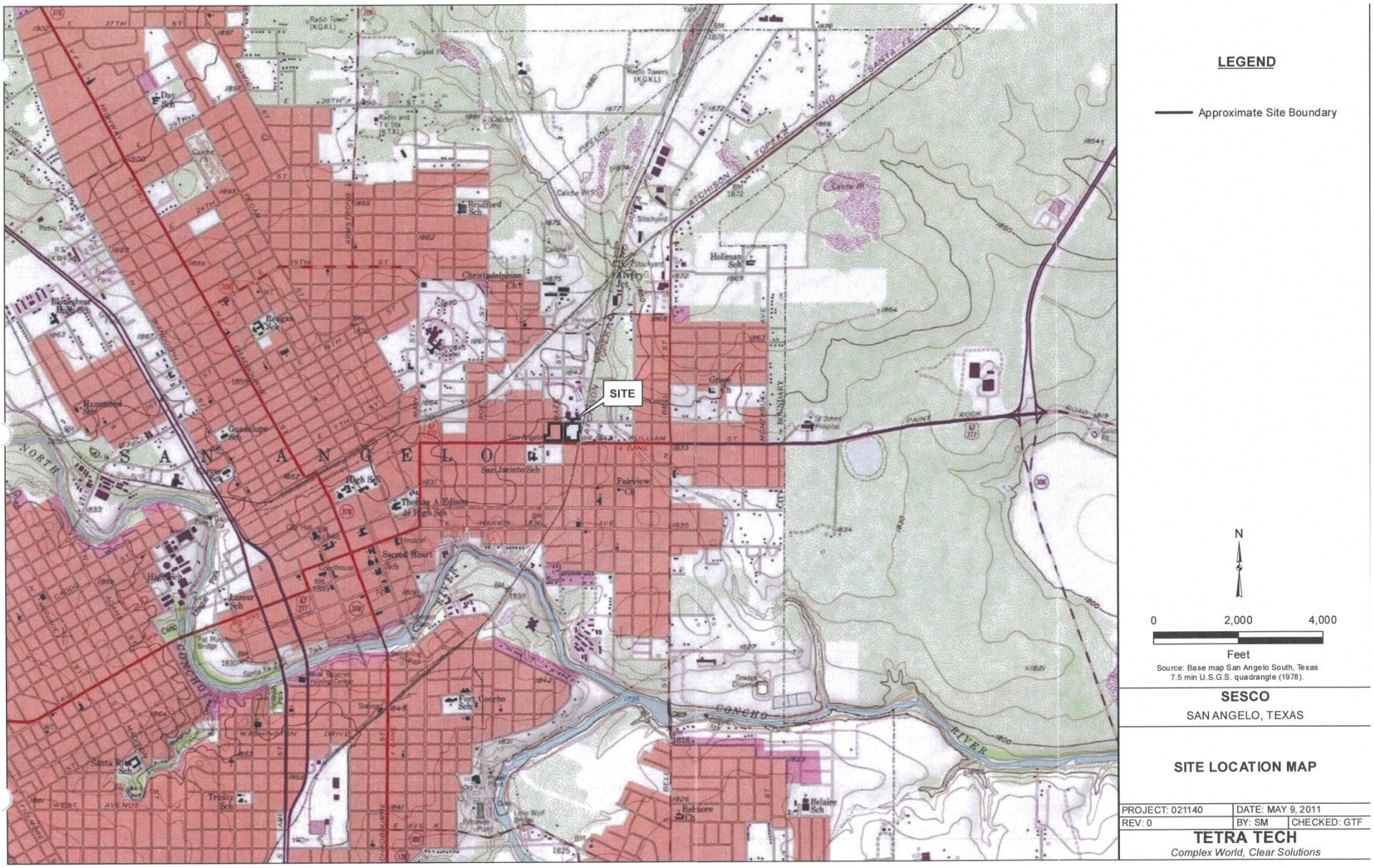
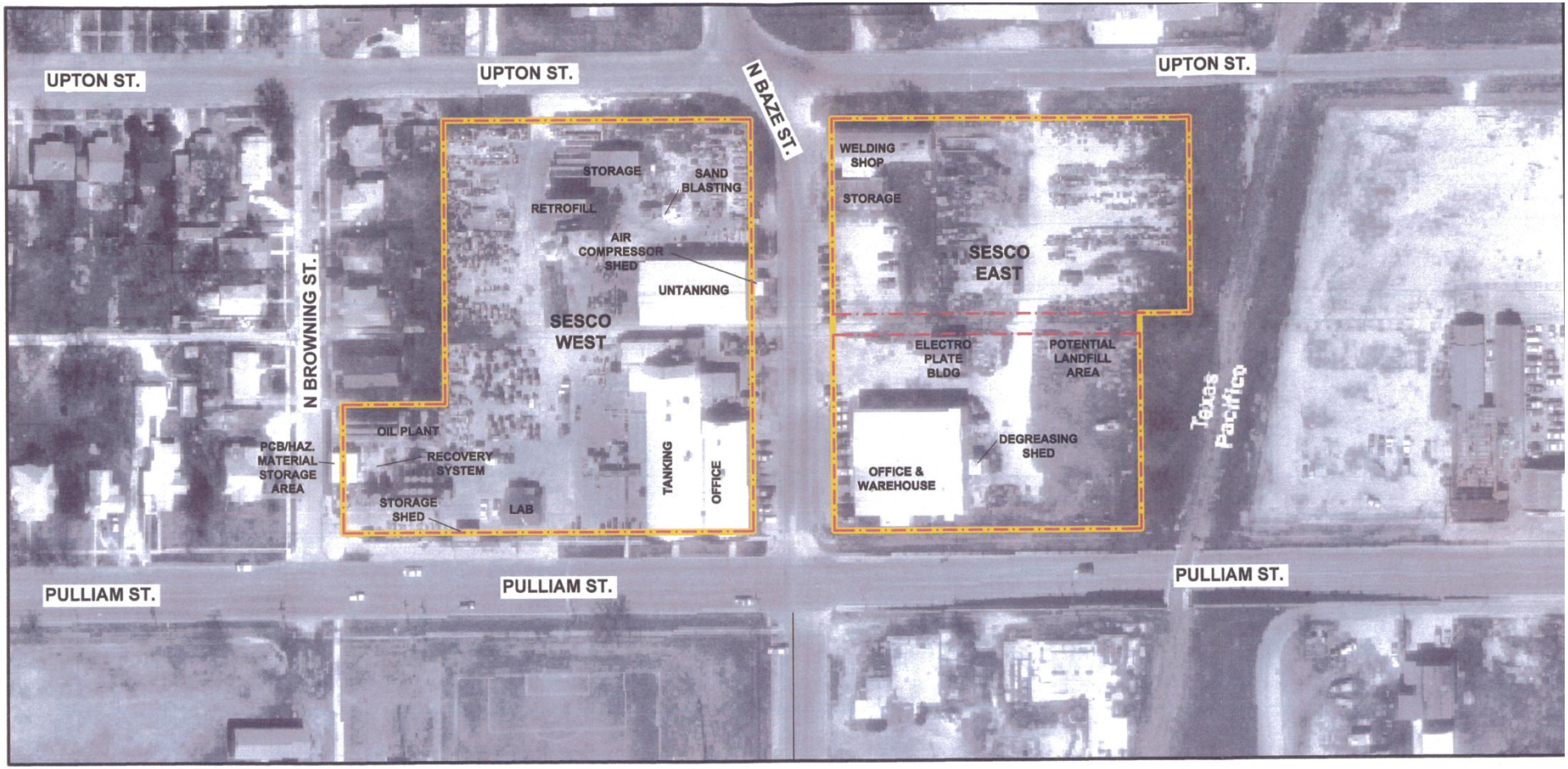


Figure 2: Site Map



EXPLANATION

Property Boundary

Site Boundary

NOTE:
- Wells surveyed by SAM, Inc. April 12, 2006.
- Property boundary surveyed by SKG Engineering on July 11, 2006.

N

Apprx. Scale in Feet

0 50 100

SOURCE:
Aerial photo from the City of San Angelo, Texas flown by Intera in 1995.

SESCO SAN ANGELO, TX		
FIGURE 2		
SITE MAP		
PROJECT: SESCO	BY: CAS	REVISIONS
DATE: AUG. 2006	CHECKED: DSR	

MFG, INC.
CONSULTING SCIENTISTS AND ENGINEERS

Figure 3: Proposed Soil Remedial Action Areas

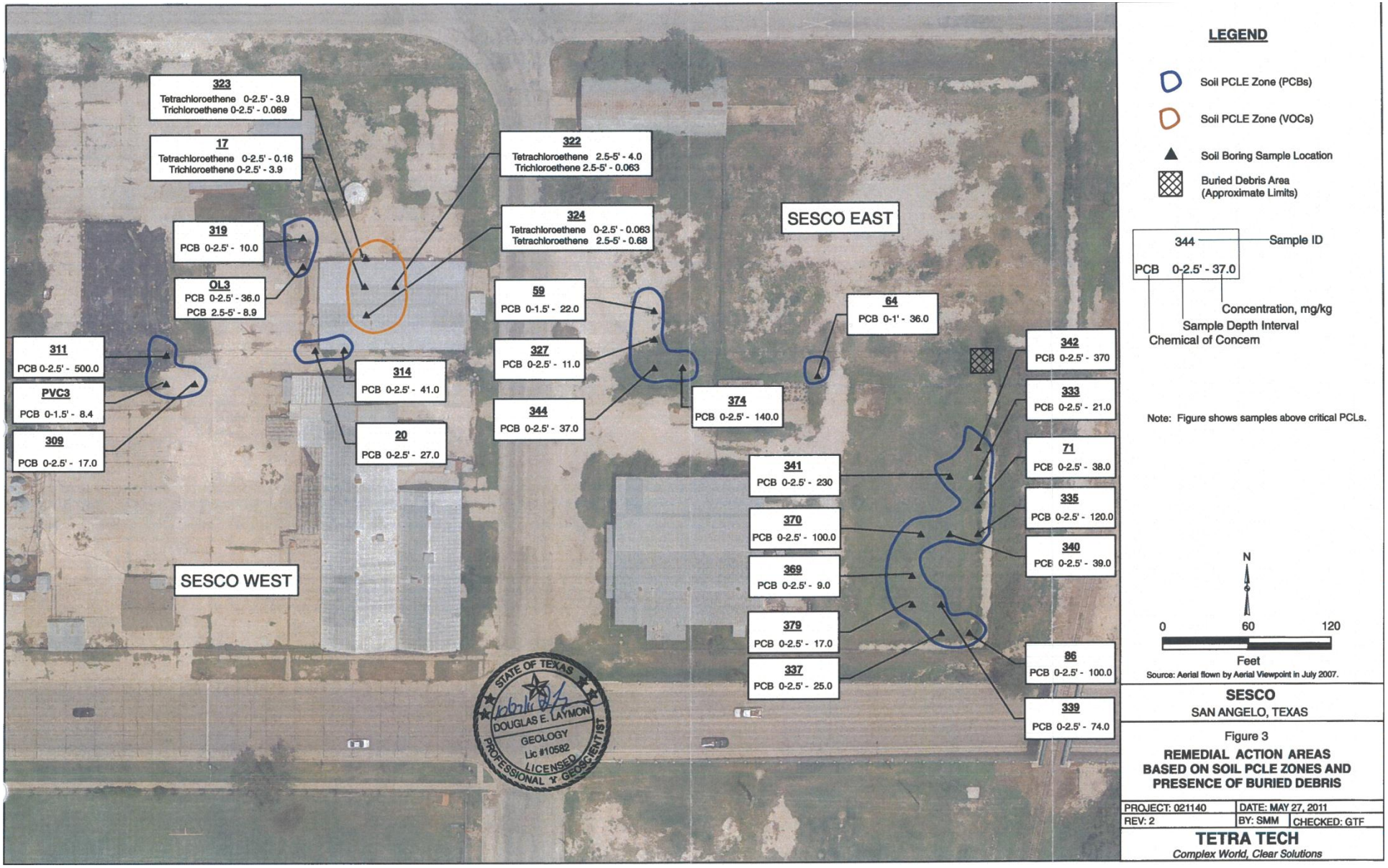


Figure 4: Proposed Groundwater Remedial Action Areas

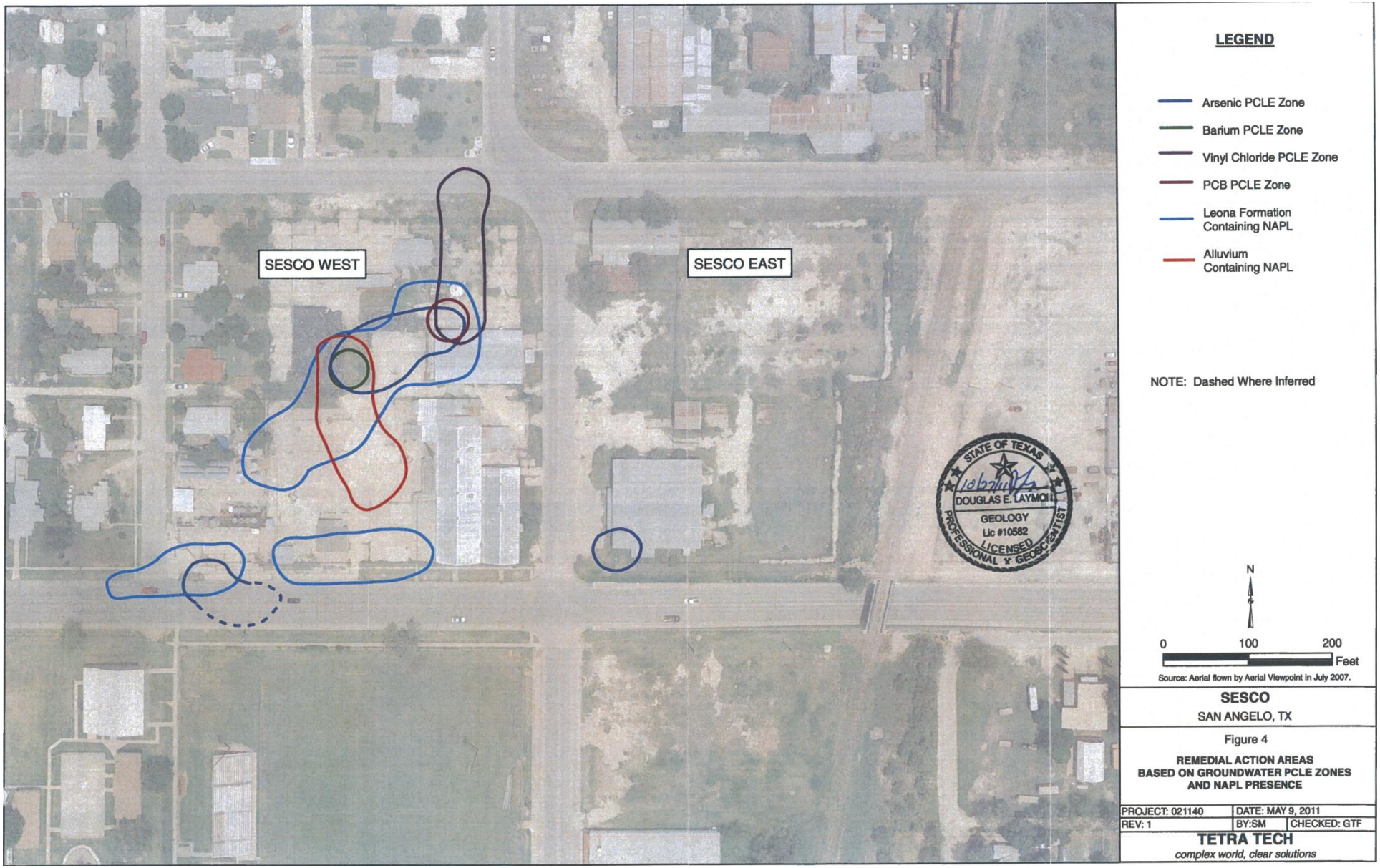


Figure 5: Proposed Site-Wide Plume Management Zone