Addendum No. 2 to the April 26, 2011 Field Sampling Plan for Operations and Maintenance Activities
Rockwool Industries, Inc.
Federal Superfund Site
1741 Taylors Valley Road
Belton, Bell County, TX

Prepared for **Texas Commission on Environmental Quality**

January 19, 2015 **Control Copy No. 1**

Contract No.
582-14-40670
Work Order No.
327-0040

Daniel B. Stephens & Associates, Inc.

4030 W. Braker Lane, Suite 325, Austin, Texas 78759

January 19, 2015

Ms. Marilyn Long, Project Manager
TCEQ Superfund Section
Remediation Division, MC-136
P.O. Box 13087
Austin, TX 78711-3087

Re: Addendum No. 2 to the April 26, 2011 Field Sampling Plan for Operations and Maintenance Activities, Rockwool Industries, Inc. Federal Superfund Site, Belton, Bell County, Texas, SUP033

Dear Ms. Long:

The updates to the April 26, 2011 *Field Sampling Plan (FSP) for Operations and Maintenance Activities* at the Rockwool Industries, Inc. Federal Superfund Site are presented in this FSP Addendum No. 2 and are summarized below consistent with the section headers as given in the original FSP dated April 26, 2011 and previously amended in June 2012 (FSP Addendum No. 1).

FSP Approval Page

Daniel B. Stephens & Associates, Inc. (DBS&A) has been authorized by the Texas Commission on Environmental Quality (TCEQ) to be designated as the current contractor for the referenced project site and will implement the April 26, 2011 FSP along with this addendum under the current Assessment, Investigation and Remediation Services (AIRS) Contract No. 582-14-40670. This addendum specifically addresses changes with regards to the project organization and the Superfund Program Quality Assurance Project Plan (QAPP).

An updated FSP addendum approval page is attached (see Attachment 1) and includes the required signatory approvals and distribution list to implement the FSP updates.

Distribution List

The FSP distribution list is revised to designate Mr. Ben Camacho as the DBS&A Project Manager and Mr. Doug Reaber as the DBS&A Project QA Officer (see Attachment 2).

Project Organizational Chart

The Project Organizational Chart has been updated and is included as Figure 1 (see Attachment 3).

Global Change

This FSP Addendum No. 2 documents that sampling and analytical work associated with current operations and maintenance (O&M) activities will be conducted under the *TCEQ Remediation Division Quality Assurance Project Plan for the Superfund Programs* (Revision 11.0, Q-TRAK# 14-453).

DBS&A will be responsible for distributing controlled copies of the TCEQ Superfund Program QAPP Revision 11.0 and this FSP addendum to all project team members, including all subcontracted parties.

Section 8.0 "Exceptions, Additions, and Changes to the TCEQ Superfund Program QAPP"

Exception to Table B.5.1.16-3 "Method SW6020A Calibration and QC Procedures Summary for ICP-Mass Spec Metals":

For assessing the results of the serial dilution test as noted in Table B.5.1.16-3 of the QAPP, DHL Analytical will use relative percent difference instead of percent difference from the original determination. The ±10% QC acceptance criteria specified in Table B.5.1.16-3 will be used as the control limits.

The following revisions to the TCEQ Superfund Program QAPP (Revision 11.0, Q-TRAK# 14-453) are documented to reconcile differences in the QAPP/FSP crosswalk between the current QAPP Revision 11.0 and the 8-section format of the original FSP dated April 26, 2011:

Global Revision – Any references in the QAPP to Section 6 of the FSP are replaced with a reference to Section 8 of the FSP.

Revision to QAPP Element A.5 (Problem Definition/Background) – The statement in the first bullet is revised to indicate that the description of the problem as currently understood, the importance of the project, the programmatic and regulatory context for the project, the identification of the principal data user or decision maker, and the project goals and objectives are addressed in Section 2 of the FSP.

Revision to QAPP Element A.6 (Project/Task Description) – This element is revised to indicate that Section 2 of the FSP contains the project schedule and a summary of the planned activities and the project tasks, including the descriptive information listed in this element.

Revision to QAPP Element A.8 (Special Training/Certification) – The first sentence of the second paragraph is revised to indicate any special or non-routine training/certification needed for the project is specified in Section 2 of the FSP.

Revision to QAPP Element A.9.3 (Laboratory Performance Criteria (Supporting Data)) – The last sentence in the last paragraph is revised to indicate that the turn-around time for the project is specified in Section 2 of the FSP.

Revision to QAPP Element B.2 (Sampling Methods) – This element is revised to indicate that the sampling method requirements are specified in Section 5 of the FSP.

Revision to QAPP Element B.2.2 (Sample Volumes, Container Types, and Preservation Requirements) – This element is revised to indicate that the required sample volumes, container types, and preservation requirements for analytical methods proposed for project work not listed in Table B.2.2-1 are included in Section 5 of the FSP.

Revision to QAPP Element B.3.1 (Field Sample Handling and Custody) – The first sentence of this element is revised to indicate that sample handling and custody requirements prior to samples being received at the analytical laboratory are contained in Section 5 of the FSP.

Revision to QAPP Element B.9 (Non-direct Measurements) – This element is revised to indicate that the acceptance criteria for use of non-direct measurement source data and the limitations on the use of the data will be clearly identified and specified in Section 2 of the FSP.

Revision to QAPP Element C1 (Assessment and Response Actions) – The last sentence in the seventh paragraph is revised to indicate that other project-specific assessment activities to be performed during the life of the project may be specified in Section 2 of the FSP.

Revision to QAPP Element D.2.3.2 (Contents/Scope/Description of the DUS) – The second sentence in the first paragraph of the "Data Usability Relative to Project Objectives" subsection is revised to indicate that specific project objectives, decisions that are anticipated to be required to meet the project objectives, and the criteria by which these decisions are anticipated to be made are defined in Section 3 of the FSP.

Revision to QAPP Element D.3 (Reconciliation with User Requirements) – The last sentence in the first paragraph is revised to indicate that specific project objectives, decisions that are anticipated to be required to meet the project objectives, and the criteria by which these decisions are anticipated to be made are specified in Section 3 of the FSP.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

Ben Camacho
Project Manager

Attachments:

1. Updated FSP Addendum Approval Page
2. Updated FSP Addendum Distribution List
3. Updated Figure 1 Project Organization Chart
4. April 26, 2011 *Field Sampling Plan for Operations and Maintenance Activities* Rockwool Industries, Inc. Federal Superfund Site
5. DHL Analytical NELAP Certification

Attachment 1. Updated FSP Addendum Approval Page

Daniel B. Stephens & Associates, Inc.

Rockwool Industries, Inc. Federal Superfund Site

Field Sampling Plan (FSP) Addendum No. 2 Approval Page

As indicated by my signature below, I have reviewed the *Addendum No. 2 to the April 26, 2011 Field Sampling Plan for Operations and Maintenance Activities* and the *TCEQ Quality Assurance Project Plan for the Superfund Programs* (Revision 11.0, Q-TRAK# 14-453). I affirm that I understand my responsibility and my authority for implementing the FSP addendum and the QAPP on this project.

Name (Printed)	Signature	Date
Project Manager *Daniel B. Stephens & Associates, Inc.* *Ben Camacho*		01/19/2015
Senior Project Manager *Daniel B. Stephens & Associates, Inc.* *Beronica Lee-Brand, P.G.*	Beronica Lee-Brand	01/19/2015
Project QA Officer *Daniel B. Stephens & Associates, Inc.* *Douglas W. Reaber, P.G.*		01/19/2015
Mid-Level Scientist *Daniel B. Stephens & Associates, Inc.* *Paul B. Kirby*		01/19/2015
Laboratory Manager *DHL Analytical Inc.* *John DuPont*		01/19/2015
Superfund Project QA Specialist *Texas Commission on Environmental Quality* *Steven Childress*	Steven R Childress	1/21/2015
Project Manager *Texas Commission on Environmental Quality* *Marilyn Czimer Long, P.G.*	Marilyn Czimer Long	1/21/2015

Attachment 2. Updated FSP Addendum Distribution List

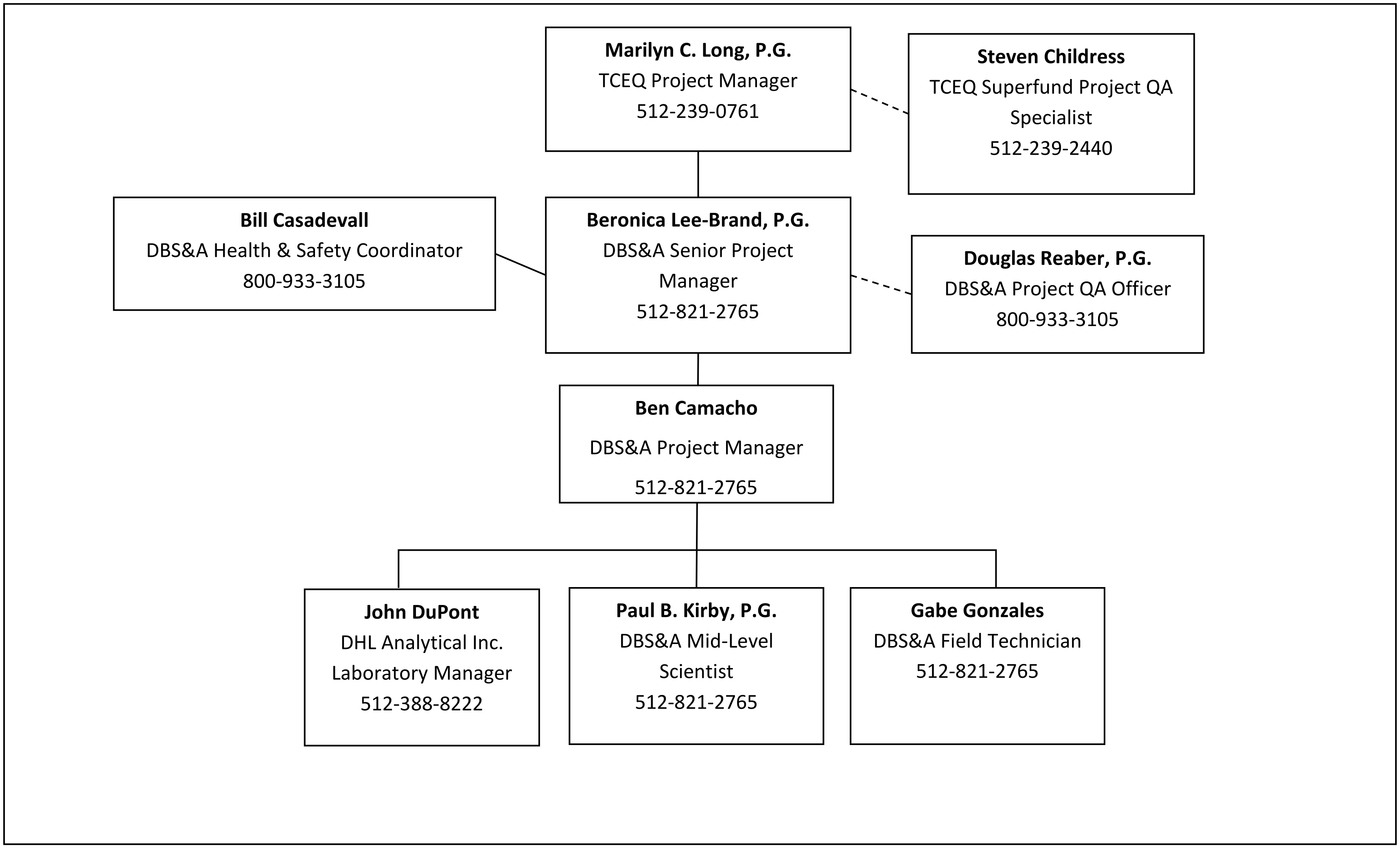
FSP Addendum Distribution List

The following is a list of each party receiving controlled copies of approved project documents.

Name	Title	Organization	Document
Marilyn Long	*Project Manager*	*TCEQ*	*FSP-1*
Steven Childress	*Superfund Project Quality Assurance Specialist*	*TCEQ*	*FSP-2*
Ben Camacho	*Project Manager*	*DBS&A*	*FSP-3*
Doug Reaber	*Project Quality Assurance Officer/ Contracting Officer*	*DBS&A*	*FSP-4*
Paul Kirby	*Mid-Level Scientist*	*DBS&A*	*FSP-5*
John DuPont	*Laboratory Manager*	*DHL Analytical Inc.*	*FSP-6*

Attachment 3. Updated Figure 1 Project Organization Chart

Figure 1. Project Organization Chart



Attachment 4. April 26, 2011 Field Sampling Plan for Operations and Maintenance Activities Rockwool Industries, Inc. Federal Superfund Site

Field Sampling Plan for Operations and Maintenance Activities
Rockwool Industries, Inc.
Federal Superfund Site
1741 Taylors Valley Road
Belton, Bell County, TX

Prepared for	**Texas Commission on Environmental Quality**

April 26, 2011

Contract No.
582-10-91051
Work Order No.
248-0019

Daniel B. Stephens & Associates, Inc.

4030 W. Braker Lane, Suite 325, Austin, Texas 78759

Rockwool Industries, Inc. Federal Superfund Site
Field Sampling Plan (FSP) Approval Page

As indicated by my signature below, I have reviewed the *Field Sampling Plan for Operations and Maintenance Activities* for this project and the TCEQ Superfund Program QAPP (Document No. 200919.7). I affirm that I understand my responsibility and my authority for implementing the FSP and the QAPP on this project.

Name (Printed)	Signature	Date
Project Manager *Daniel B. Stephens & Associates, Inc.* *William Gamblin*	, P.E.	04/26/11
Project QA Officer *Daniel B. Stephens & Associates, Inc.* *Douglas W. Reaber*		04/26/11
Senior Scientist *Daniel B. Stephens & Associates, Inc.* *Joel B. Stone*		04/26/11
Laboratory Manager *DHL Analytical Inc.* *John DuPont*		04/26/11
Superfund Project QA Specialist *Texas Commission on Environmental Quality* *Steven Childress*	Steven R. Childress	4/26/11
Project Manager *Texas Commission on Environmental Quality* *Alvie L. Nichols*	Alvie L. Nichols	4/26/11

FSP Distribution List

The following is a list of each party receiving controlled copies of approved project documents.

Name	Title	Organization	Document
Alvie Nichols	*Project Manager*	*TCEQ*	*FSP-1*
Steven Childress	*TCEQ Superfund Project Quality Assurance Specialist*	*TCEQ*	*FSP-2*
William Gamblin	*Project Manager*	*DBS&A*	*FSP-3*
Doug Reaber	*Project Quality Assurance Officer/ Contracting Officer*	*DBS&A*	*FSP-4*
Joel Stone	*Senior Scientist*	*DBS&A*	*FSP-5*
John DuPont	*Laboratory Manager*	*DHL Analytical Inc.*	*FSP-6*

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List of Acronyms

bgs	Below ground surface
BSA	Brownfields Site Assessment
COC	Chemical of concern
CPR	Cardiopulmonary resuscitation
CSP	Cemetery Shot Pile
DBS&A	Daniel B. Stephens & Associates, Inc.
DCS	Detectability check sample
DQA	Data quality assessment
DQO	Data quality objectives
DSP	Dangerfield Slag Pile
DUS	Data usability summary
EDD	Electronic data deliverable
EPA	U. S. Environmental Protection Agency
EVL	Evaporation lagoon
FB	Field blank
FD	Field duplicate
FEMA	Federal Emergency Management Agency
FSP	Field sampling plan
GPS	Global positioning system
HASP	Health and safety plan
HRS	Hazard ranking system
H&SO	Health and Safety Officer
IDW	Investigation derived waste
IRA	Immediate removal
LORP	Level of required performance
MCL	Maximum contaminant level
MDL	Method detection limit
MQL	Method quantitation limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MS/MSD	Matrix spike/matrix spike duplicate
NELAC	National Environmental Laboratory Accreditation Conference
NSP	North Shot Pile
O&M	Operation and maintenance

ORP	Oxidation-reduction potential
OU1	Operating Unit 1
OU2	Operating Unit 2
PEL	Permissible exposure limit
PID	Photoionization detector
PM	Project manager
ppb	Parts per billion
PPE	Personal protective equipment
ppm	Parts per million
PRG	Preliminary Remediation Goal
PRP	Potentially responsible party
PWS	Public water system
QAPP	*TCEQ Quality Assurance Project Plan for the Superfund Program* (200919.7)
QA	Quality assurance
QC	Quality control
RCI	Reactivity, corrosivity, and ignitability
RCRA	Resource Conservation and Recovery Act
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPD	Relative percent difference
RWI	Rockwool Industries, Inc.
SDL	Sample detection limit
SAP	Sampling and analysis plan
SOP	Standard operating procedure
SSP	South Shot Pile
SSO	Site Safety Officer
TCEQ	Texas Commission on Environmental Quality
TCLP	Toxicity Characteristic Leaching Procedure
WO	Work order

1. Introduction

1.1 Purpose

This site-specific Field Sampling Plan (FSP) describes procedures required to assure that the project-specific Data Quality Objectives (DQOs) are met, and that the quality of data is known and documented. The FSP presents the project description, project organization and responsibilities, and the project objectives associated with the sampling and analytical services to be provided in support of the U.S. EPA Superfund Record of Decision (ROD) and operations and maintenance (O&M) activities for the Rockwool Industries, Inc. (RWI) Federal Superfund Site, Belton, Bell County, Texas. This FSP, when used in conjunction and in accordance with the requirements set forth in the TCEQ Quality Assurance Project Plan for the Superfund Program (Document No. 200919.7) (TCEQ, 2010a), constitutes the Sampling and Analysis Plan (SAP) for the RWI site.

The overall objectives of the operations and maintenance phase of the project are to perform long-term monitoring and O&M activities, in the form of semi-annual groundwater monitoring and other maintenance tasks, as required in support of the ROD for the Rockwool Industries Inc. Federal Superfund Site in order to ensure the continued protectiveness of the selected remedy. In order to assess the continued protectiveness of the selected remedy at the RWI site, additional water quality data samples will be collected from the network of twenty-three (23) existing groundwater monitoring wells as part of the long-term monitoring and O&M activities.

1.2 Project Organization

Figure 1 of the FSP presents the project organization chart. Field activities will be performed under the direction of the Project Manager or the designated field supervisor/geologist. The project personnel and their responsibilities are presented below.

1.2.1 TCEQ Project Manager: Alvie Nichols

The TCEQ Project Manager (PM) is the agency point of contact and has oversight responsibility for all aspects of the project; including direction of subcontractor personnel, technical review of work products, issues affecting data quality, and all contractual aspects of the project. All communication between DBS&A and the TCEQ should be made through the TCEQ PM, except as directed otherwise by the TCEQ PM. Additionally, the TCEQ PM is responsible for communication and coordination with the public, other governmental entities, and interested parties, as necessary.

1.2.2 TCEQ Superfund Project Quality Assurance Specialist: Steven Childress

The TCEQ Superfund Project QA Specialist serves the TCEQ PM as a resource on analytical chemistry and quality assurance/quality control (QA/QC). The responsibilities of the TCEQ Superfund Project QA Specialist are addressed in the Superfund Program QAPP and in the TCEQ Quality Management Plan (QMP).

1.2.3 DBS&A Project Manager: William Gamblin

The DBS&A Project Manager (PM) will be the primary point of contact between DBS&A and the TCEQ. The PM will be responsible for work execution and overall project performance, cost tracking, coordination of invoicing, and other project management issues. In addition, the DBS&A PM will be responsible for the review and final preparation of plans and reports and for the submittal of documents to the TCEQ.

1.2.4 DBS&A Health and Safety Officer: Bill Casadevall

The Health and Safety Officer (HSO) will be responsible for adherence by DBS&A personnel to the Contractor’s site-specific Health and Safety Plan (HASP). The DBS&A HSO will verify project compliance with all applicable local, state, and federal laws and regulations regarding worker health and safety. The HSO will provide periodic health and safety monitoring and conduct on-site safety audits as requested.

1.2.5 DBS&A Project Quality Assurance Officer: Doug Reaber

The DBS&A Project Quality Assurance (QA) Officer will provide overall data management and QA for the project, including coordinating data quality objective (DQO) development, document review, document control, input of sample data into verification sampling reports, and other document quality control activities. The DBS&A Project QA Officer will directly support the DBS&A PM and will support preparation of the FSP. The DBS&A Project QA Officer will also verify compliance with requirements of the Superfund Program QAPP.

1.2.6 DBS&A Senior Scientist: Joel Stone

The DBS&A Senior Scientist provides technical support and project assistance to the DBS&A PM and other senior-level project personnel. The Senior Scientist will evaluate human health and ecological risk assessment data, as needed, in support of the project goals.

1.2.7 DHL Analytical Laboratory Manager: John DuPont

The Laboratory Manager is responsible for on-schedule completion of assigned laboratory work and for supervising all laboratory activities. Specific responsibilities of the Laboratory Manager include: 1) ensuring that all analyses are performed according to the methods and client's contractual requirements; 2) reviewing all analytical data; 3) ensuring laboratory data quality; 4) coordinating analytical work to ensure that all tasks are completed within established time frames; 5) overseeing preventative maintenance activities; 6) reviewing initiated corrective actions and recommending additional measures if necessary; 7) reviewing quality control data to determine whether test data are acceptable; 8) evaluating and implementing changes in methodology and quality control measures; 9) identifying quality control problems and taking measures to correct or eliminate the problem source; and 10) validating all data and assuring that data sets are accurate before reporting.

Figure 1. Project Organization Chart

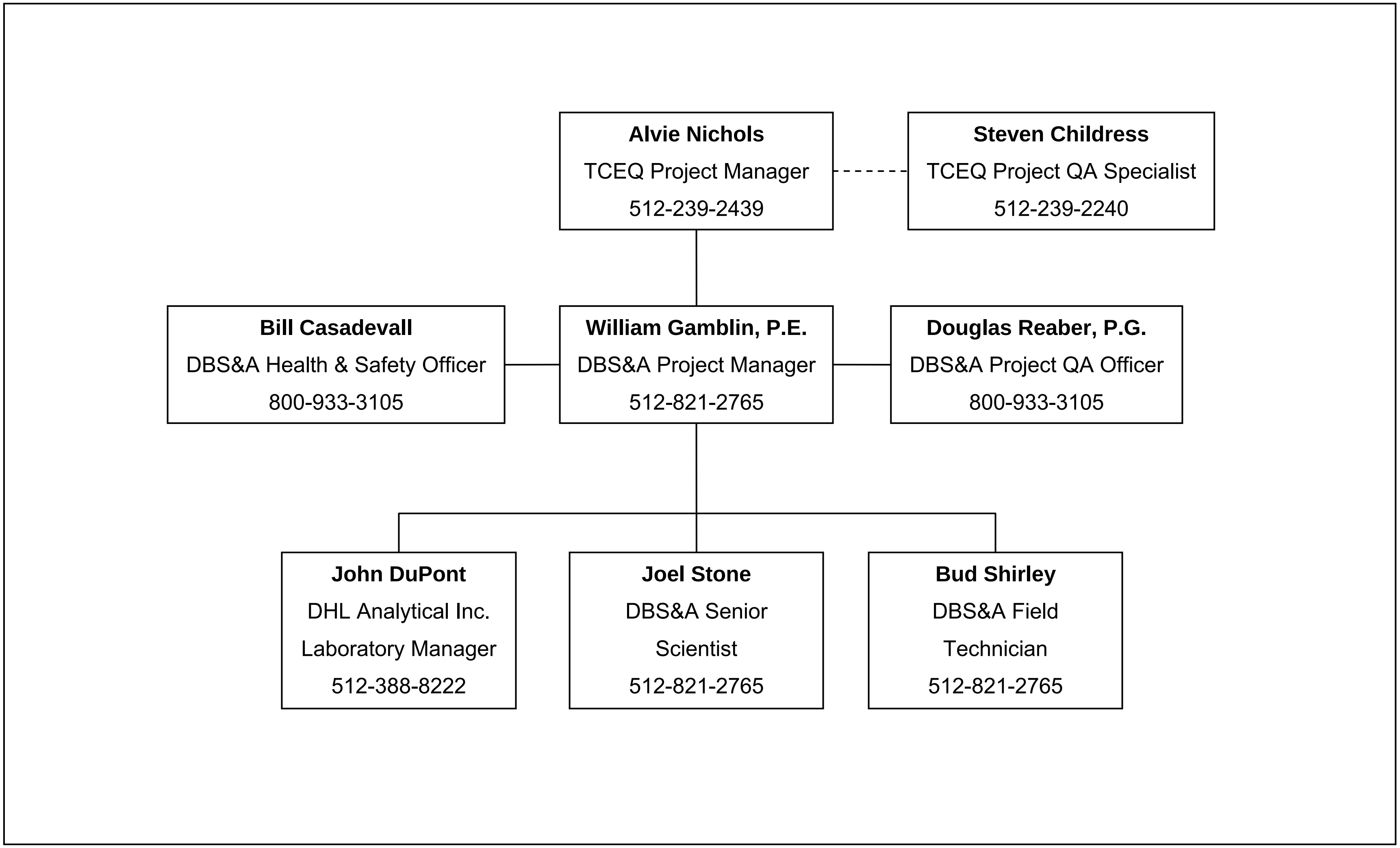


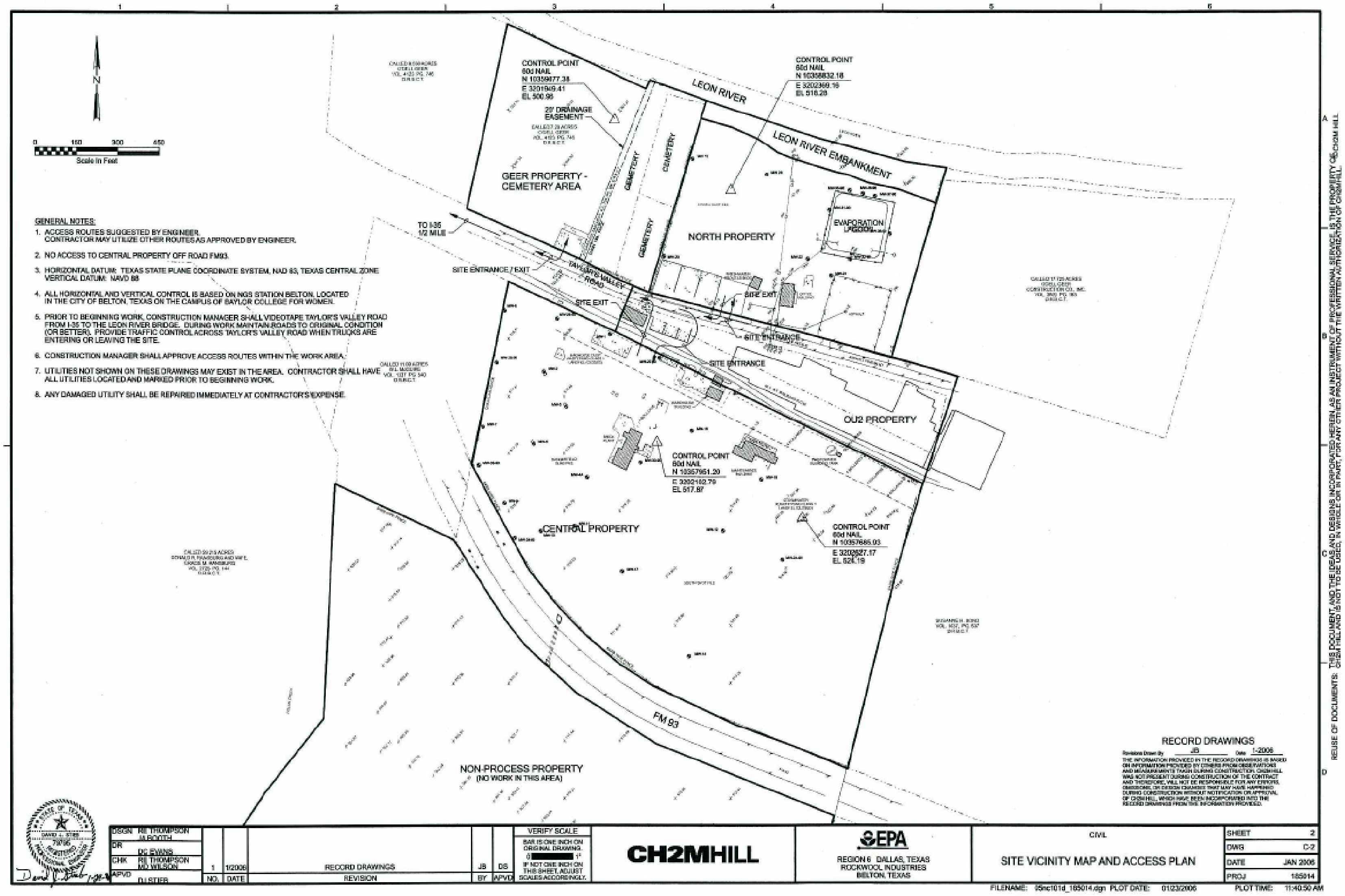
Figure 2. Site Location Map

2010 Color Aerial Imagery Courtesy Google Earth

R:\Client\TCEQ-AIRS\RockwoolMaps

Figure 2. Site Location Map
Showing 500' and 1/2 mile areas
Rockwool Industries, Inc.
1741 Taylor Valley Road
Belton, Bell County, Texas
EPA ID No. TXD066379645
Site ID No. 0605009

Figure 3. Site Map



GENERAL NOTES:

1. ACCESS ROUTES SUGGESTED BY ENGINEER. CONTRACTOR MAY UTILIZE OTHER ROUTES AS APPROVED BY ENGINEER.
2. NO ACCESS TO CENTRAL PROPERTY OFF ROAD FM93.
3. HORIZONTAL DATUM: TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, TEXAS CENTRAL ZONE VERTICAL DATUM: NAVD 88
4. ALL HORIZONTAL AND VERTICAL CONTROL IS BASED ON NGS STATION BELTON, LOCATED IN THE CITY OF BELTON, TEXAS ON THE CAMPUS OF BAYLOR COLLEGE FOR WOMEN.
5. PRIOR TO BEGINNING WORK, CONSTRUCTION MANAGER SHALL VIDEOTAPE TAYLOR'S VALLEY ROAD FROM I-35 TO THE LEON RIVER BRIDGE. DURING WORK MAINTAIN ROADS TO ORIGINAL CONDITION (OR BETTER). PROVIDE TRAFFIC CONTROL ACROSS TAYLOR'S VALLEY ROAD WHEN TRUCKS ARE ENTERING OR LEAVING THE SITE.
6. CONSTRUCTION MANAGER SHALL APPROVE ACCESS ROUTES WITHIN THE WORK AREA.
7. UTILITIES NOT SHOWN ON THESE DRAWINGS MAY EXIST IN THE AREA. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED AND MARKED PRIOR TO BEGINNING WORK.
8. ANY DAMAGED UTILITY SHALL BE REPAIRED IMMEDIATELY AT CONTRACTOR'S EXPENSE.

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

THE INFORMATION PROVIDED IN THE RECORD DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS FROM OBSERVATIONS AND MEASUREMENTS TAKEN DURING CONSTRUCTION. CH2M HILL WAS NOT PRESENT DURING CONSTRUCTION OF THE CONTRACT AND THEREFORE, WILL NOT BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DESIGN CHANGES THAT MAY HAVE HAPPENED DURING CONSTRUCTION WITHOUT NOTIFICATION OR APPROVAL OF CH2M HILL, WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS FROM THE INFORMATION PROVIDED.

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS					
CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAWINGS	JB	DS
APVD	DJ STIER	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

EPA

REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL

SITE VICINITY MAP AND ACCESS PLAN

SHEET	2
DWG	C-2
DATE	JAN 2006
PROJ	185014

FILENAME: 05nc101d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:40:50 AM

2. Site and Project Summary

2.1 Problem Definition and Site Background

2.1.1 Problem Definition

This site-specific FSP supports the O&M activities at the Rockwool Industries, Inc. (RWI) Federal Superfund Site, in the form of semi-annual groundwater monitoring and other maintenance tasks outlined below, to ensure the continued protectiveness of the selected remedy. These activities will be conducted by the TCEQ or its licensed contractor, as provided for and in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 United States Code (USC) §9601, et seq., and, to the extent practicable, the National Oil and Hazardous Substances Contingency Plan, 40 C.F.R. Part 300 (NCP).

The following sections are based on information contained within the ROD for the RWI site (EPA, 2004), as well as the Remedial Action Report prepared by a previous consultant (Tetra Tech, 2006).

2.1.2 Site Description

The Rockwool Industries, Inc. (RWI) Federal Superfund Site is located at 1741 Taylor's Valley Road in Belton, Texas, as shown in Figure 2 (Site Location Map). The RWI site includes an approximately 100-acre tract of land in a primarily industrial area located one quarter mile east of Interstate 35 in Bell County. The RWI site is bounded to the north by the Leon River and to the south and west by Nolan Creek. East Belton Cemetery and other commercial and undeveloped private properties lie to the west of the RWI site and light industrial properties lie to the east.

The RWI site is zoned for heavy industrial use and the reasonable future land use is industrial/commercial. The RWI site is located in an area with projected low growth and it is situated between two major roadways. Future residential use of the RWI site is unlikely, given current zoning. The City of Belton also plans to restore the RWI site to an industrial use. The U.S. EPA has awarded a Superfund Redevelopment grant to the City of Belton for this purpose.

After remediation, the City of Belton has planned a 900,000 square foot set of buildings, which include a light manufacturing facility, office show rooms, anchor stores, and inline store facilities.

The RWI site is broadly divided into three main areas; the North Property, the Central Property, and the Non-Process area as shown in Figure 3 (Site Map). The North Property and adjoining Geer-Cemetery constitute a 14-acre tract of land on the north side of Taylor's Valley Road. The Central Property includes Operable Unit 2 (OU2) and forms a 47-acre tract of land south of Taylor's Valley Road extending to FM-93. The Non-Process area is the 40-acre tract of land south of FM-93 extending southwest to Nolan Creek. During the remedial investigation, the Non-Process area was determined to be free of contaminant impacts.

The Leon River bounds the RWI site to the north; therefore, the RWI site is underlain by Quaternary alluvium and terrace deposits associated with this river. The terrace deposits consisting of limestone gravels, quartz, quartzite, chert and jasper with varying amounts of clay and sand exist primarily north of FM-93. The alluvial deposits lie south of FM-93 and consist of sand, gravel and calcareous silts and clays with high organic content. This alluvium formation is underlain by the Georgetown formation, Edwards formation (saline in the area), Walnut Comanche Peak formation, the Glen Rose formation, and the Travis Peak formation. The uppermost water bearing zone encountered underlying the area occurs at a depth of 20 to 35 feet within the Quaternary alluvium. This water bearing zone also occurs in the top 2-3 feet of the underlying Georgetown formation consisting of fractured limestone.

This uppermost water bearing zone within these alluvial deposits has a very low saturated thickness and yield; therefore, it is not uncommon for monitoring wells installed in this groundwater interval to be purged dry. During groundwater monitoring activities for the RI/FS in 2001, four out of the nine hydro punch samples failed to extract water from this saturated zone in the alluvium. Because of the low and unreliable yield, this interval in the alluvium can best be described as a perched water bearing zone. Therefore, it is unlikely that this perched zone will be the supply source of future drinking, irrigation or industrial use water. Nearby Lake Belton offers a fresh surface water supply to the surrounding area, including the adjacent commercial properties.

The local drinking water aquifer is in the Hosston member of the Travis Peak formation at approximately 600 feet below ground surface. From a review of about 15 shallow groundwater wells surrounding the RWI site within a mile radius, there is no evidence that the contaminated perched water bearing zone is hydraulically connected to any deeper water bearing units. Thus, it not likely that this perched aquifer will contaminate the drinking water aquifer below.

As stated in the EPA Record of Decision (ROD), groundwater north of Taylors Valley Road generally flows north-northeast discharging through seeps to the Leon River. On the south side of Taylors Valley Road, groundwater flows to the south and south east discharging through seeps to Nolan Creek. Groundwater in the area has been estimated to flow at a velocity of 0.9 feet per day. The groundwater seep results show that arsenic and antimony-contaminated groundwater seeps into the Leon River and Nolan Creek at concentrations greater than the surface water quality standards. However, these concentrations attain equilibrium river concentrations within 10 to 100 feet from the point of entry into the Leon River.

2.1.3 Site Background

The RWI facility manufactured mineral wool insulation from the mid-1950s until February 1987. Previous land use is not known. RWI manufactured two types of mineral wool insulation: blow wool and batt wool. Blow wool, which is generally spray blown into attics and other enclosed spaces for thermal insulation, is composed of bulk mineral wool fibers lightly coated with lubricating oil. Batt wool is typically used for wall insulation and consists of mineral wool that is bound with an organic resin (such as tar) and sandwiched into paper. Rockwool Insulation was produced by melting the raw material (copper and antimony smelting slag, coke, limestone trap rock and basalt) in a coke-fired blast furnace or cupola and then extruded by blowing air over spinning drums to form the insulation fibers.

The waste by-products of mineral wool production included spent iron shot material (residue left in the furnace from the heating of the raw copper and antimony slag material) and slag (a melted bead separated from the insulation fibers by a screening process). Two primary waste streams were generated by the RWI facility, including bag house dust generated from the facility emission control system and shot/slag resulting from the production of Rockwool Insulation. Secondary waste types included boiler blowdown water, stormwater runoff, recovered groundwater, and bricks.

The spent shot material is the principal waste hazard at the RWI Site. Contaminants from the spent shot material ran into the Leon River from the North Shot Pile (NSP) and contaminated the portion of the river adjacent to the RWI site (south bank). In addition to the shot and slag material, the RWI facility created other wastes, including bag house dust, boiler blowdown waste, spent ion exchange resin, salt brine (from regeneration of ion exchange resin), general plant refuse, waste oil, and product tank washout wastewater.

Products known to be utilized in the insulation manufacturing process include Reax (RWI trade name material), lube oil, resin, asphalt and Mulrex-90 (a proprietary ExxonMobil petroleum emulsion). Steam was generated at the facility using source water (presumably from the Leon River) softened via ion exchange units. During facility operations, several solid and liquid waste management areas were used to dispose of process wastes. These included a surface impoundment for bag house waste, a boiler blowdown wastewater pond, a stormwater runoff pond, waste oil storage tanks, an on-site landfill, container storage areas, a wastewater blending tank, and two waste piles utilized for the storage of spent shot material (North Shot Pile and South Shot Pile). A raw water make-up pond and a brine wastewater pond also were used to dispose of waste.

The NSP area began receiving spent shot material waste in the mid-1950s. By 1982, the NSP covered more than three acres. The northern edge of the NSP was on the southern bank of the Leon River and waste runoff had been detected migrating to the river. The NSP was reduced to about two acres after waste was removed and transported to an off-site disposal area. In 1983, a soil protective cover was placed over the NSP to reduce fugitive dust and to inhibit the infiltration of precipitation. A French drain system was installed along the northern edge of the shot pile to intercept and collect runoff leachate as it flowed horizontally toward the Leon River. This French drain carried the liquid to a concrete sump, which was then pumped to the lined Evaporation Lagoon (EVL).

It is not clear when the South Shot Pile (SSP) or the Cemetery Shot Pile (CSP) began receiving waste; however, beginning in 1984, some of the spent shot material was removed from the SSP and recycled as an ingredient in brick making. The shot was mixed with cement and bag house dust, shaped into bricks and then used as raw material feed for the furnace. An unknown amount of the shot was recycled in this way.

The RWI site is currently divided into three parcels of land. RWI formerly owned all three parcels and operated the facility responsible for creating the contamination at the RWI site. RWI is now a defunct entity and most of the RWI site is abandoned. The U.S. EPA defined the triangular 2.9-acre lot containing the process building and the warehouse as Operating Unit 2 (OU2). The remainder of the RWI site (the North area, the Geer-Cemetery area and the Central Property and Non-Process area) was defined as Operating Unit 1 (OU1).

The Rockwool Industries, Inc. preliminary assessment was completed in December of 1995 and the RWI site investigation was completed in October of 1996. The RWI site was proposed for inclusion on the National Priorities List (NPL) on March 6, 1998. The basis for proposing the RWI site to the NPL was the identification of surface water as the major pathway of concern. Chemical analysis of sediment samples in the Leon River and in Nolan Creek indicated the presence of inorganic compounds in concentrations above the release criteria. The Leon River was identified as a fishery and was therefore subject to Level II concentrations of selenium.

The RWI site was placed on the NPL on September 29, 1998. The EPA issued notice letters to potentially responsible parties (PRPs) to conduct the combined Remedial Investigation and Feasibility Studies (RI/FS). No response was received for identified parties as companies had become defunct or the notices were returned as undeliverable. No PRPs came forward to conduct the RI/FS. Thus EPA started the RI/FS as a Fund lead project. The RI/FS commenced on September 30, 1998. A new PRP search in May 2004 failed to find any additional viable PRPs other than those identified earlier. The final ROD addressing the RWI site, specifically Operable Unit 1 (OU1), was completed in September 2004.

Tetra Tech EM, Inc. executed the remedial action (RA) for the RWI site as defined in the ROD and in accordance with the accepted remedial design (RD). The RA consisted of activities utilized to eliminate human and ecological exposure to contaminated waste emanating from the RWI site. Such processes included drainage improvement activities, waste and soil excavation and removal and the placement of clay and topsoil caps over the contaminated areas. The clay/topsoil covered areas were marked and surveyed for institutional control and replanted with vegetative cover. The RA also consisted of the construction and capping of a containment cell designed to contain excavated waste from all areas of the RWI site.

Additionally, stabilization and protection of the Leon River bank was accomplished utilizing articulated concrete blocks and the evaporation lagoon infrastructure consisting primarily of PVC piping was demolished. In addition, several groundwater monitoring wells were plugged and abandoned during RA activities, including MW-1, MW-2, MW-3, MW-4A, MW-6, MW-8, MW-12, MW-23, MW-31-90, MW-32-90 and DW-1. Groundwater monitoring on a reduced number of wells commenced in mid-2006. The shallow perched aquifer is not a part of the remedial design or action and it is presumed that the perched aquifer will become dry once infiltration is restricted where the RWI site is covered with clay caps.

2.1.4 Summary of Conceptual Site Model

Arsenic, antimony, and lead have been identified as the primary contaminants of concern (COCs) in surface soil. Contaminated soil is the major human health and ecological risk hazard at the RWI site. Soil contamination presents a direct hazard to human contact at the soil surface and has the potential to leach into groundwater and surface water.

During previous studies, three primary contaminant source areas were identified at the RWI site: Source No. 1, in the middle portion of the RWI site, which included contaminated soil associated with the South Shot Pile (SSP); Source No. 2, in the northern portion of the RWI site, which included contaminated soils associated with the North Shot Pile (NSP); and Source No. 3, in the northwest portion of the RWI site, which included contaminated soils associated with the Cemetery Shot Pile (CSP). Another waste management unit located on the central property, the Dangerfield Slag Pile (DSP), was also identified in associated documentation as a contaminant source area.

RCRA hazardous characteristics were not discovered during toxicity characteristic leaching procedure (TCLP) and reactivity, corrosivity, and ignitability (RCI) analysis for metals on environmental samples collected from these source areas. Further synthetic precipitation leaching procedure analyses indicated that antimony exhibits higher leachate potential under normal conditions than arsenic and lead. Though the COCs have previously leached into groundwater from contaminated surface soils and they continue to have the potential to do so; given the hydraulic conditions of the shallow perched aquifer, groundwater ingestion is not considered a viable contaminant exposure pathway.

Groundwater at the RWI site discharges into surface waters of the Leon River and Nolan Creek, which have been identified as critical receptors due to populations of anglers and swimmers who utilized these resources. Contamination has also previously entered the Leon River via surface erosion at the RWI site, as evidenced by the detection of COCs in fish tissue samples collected from the river.

Therefore, the primary human pathways of contaminant exposure at the RWI site are those associated with future industrial worker's direct contact with surface soils and the health risks presented to anglers of the Leon River. Potential ecological risks exist for aquatic and benthic organism dwellers in the Leon River and Nolan Creek surface waters and sediments due to the presence of contaminants at the RWI site. Accumulations of COCs in aquatic organisms pose a direct human health risk to anglers consuming contaminated fish caught from these surface waters.

The previously summarized remedial activities conducted at the RWI site were designed to prevent direct human contact and exposure to the COCs in surface soils and waste, to prevent the leaching and migration of COCs and contaminated soil and waste into groundwater and surface water at the RWI site via surface runoff and erosion, and to address human health risks posed by contaminated sediment through the consumption of fish.

The groundwater monitoring network at the RWI site consists of 23 monitoring wells located throughout the North and Central Properties. Eight of the monitoring wells are located on the North property and 15 of the monitoring wells are located on the Central Property. Groundwater monitoring data indicates the presence of COCs in the screened intervals. Each of these monitoring wells will continue to be sampled for the COCs in order to determine the effectiveness of the RA with respect to the established remedial goals of preventing the leaching and migration of contaminants from the surface soils and waste and subsurface soils into groundwater.

Air quality at the RWI site has not historically been impacted and air quality monitoring conducted during remedial activities at the RWI site indicated that total concentrations of antimony, arsenic, and lead particulates were below the established OSHA preliminary exposure levels (PELs) for these compounds. Significant disturbances of soil and waste at the RWI site could potentially release these compounds into the surrounding atmosphere.

However, future RWI site development is not expected at this time; therefore, atmospheric contamination is not considered a viable pathway for human exposure to the COCs.

2.2 Description of Project Tasks and Schedule

2.2.1 Project Tasks

Long-term O&M activities at the RWI site will involve the following tasks:

Task 1: General site landscaping including mowing of grass, weed “eating” of drainage ditches, weed eradication, and security fence repair;

Task 2: Installation of additional warning signs at approximately 200-foot intervals on the perimeter security fence;

Task 3: Semi-annual groundwater monitoring of all 23 existing site monitoring wells; including groundwater level gauging and recording of all wells; evaluation of the condition and integrity of each well; and the collection of groundwater samples for laboratory analysis and field measurement of groundwater samples for pH, dissolved oxygen, conductivity, temperature, and oxidation-reduction potential;

Task 4: Sampling the content of the on-site 55-gallon steel drums, containing suspected non-hazardous purge water, for waste characterization, removal and proper disposal;

Task 5: Removal and proper disposal of empty drums, discarded trash and solid waste, and other scrap metal debris located on-site, especially within the drainage culverts;

Task 6: Additional site maintenance activities, as required, including the inspection and upkeep of the articulated blocks on the south bank of the Leon River and other erosion control barriers and the replacement of secure padlocks on all monitoring well plugs and hinged protective covers;

Task 7: The preparation of a site map depicting the current groundwater surface gradient and flow direction at the site as interpreted by a Professional Geoscientist from data collected during each semi-annual groundwater monitoring event. The groundwater gradient map will be submitted with the semi-annual O&M reports referenced below;

Task 8: Semi-annual O&M reports will be prepared and submitted to the TCEQ following the completion of each groundwater monitoring event in order to document the completed site activities. The report will present the field data collected, updated site maps and groundwater contour maps, the laboratory results of groundwater sample analysis, and provide recommendations for future or additional O&M activities.

This FSP addresses those O&M activities associated with environmental monitoring. The following tasks are related to the semi-annual collection of groundwater samples:

- Review the available historical information and analytical data for the RWI site;
- Prepare the site-specific health and safety plan (HASP) and mobilize to the RWI site in order to conduct the initial site visit, which includes locating all monitoring wells and assessing the overall physical conditions of the site, including the perimeter fence, site signage, and the condition of the on-site buildings and landscaping;
- Following TCEQ Superfund Program SOPs, measure groundwater levels, purge all groundwater monitoring wells, measure groundwater quality parameters (pH, dissolved oxygen, conductivity, temperature, and oxidation-reduction potential), collect groundwater samples for laboratory analysis, and ship the collected groundwater samples to the appointed laboratory for chemical analysis;
- Collect investigation-derived waste (IDW) samples of the purge water after the second semi-annual groundwater monitoring event and submit the samples to the appointed laboratory for chemical analysis and waste characterization;
- Coordinate the proper waste classification and acceptance criteria with a licensed waste disposal subcontractor and coordinate the removal, transportation and disposal/recycling of IDW after the completion of the second semi-annual groundwater monitoring event;
- Review laboratory analytical data from each semi-annual groundwater monitoring event and prepare the event findings and summary report for TCEQ submittal.

2.2.2 Project Schedule

Groundwater monitoring will be conducted by DBS&A on a semi-annual basis upon the approval and acceptance of this FSP. Other O&M activities, as detailed in the previous section of this FSP, will be scheduled to coincide with groundwater monitoring activities, if possible. If it is not possible to conduct other O&M activities to coincide with scheduled groundwater monitoring events, then such activities will be scheduled on an as-needed basis and will be contingent upon TCEQ approval and concurrence. If O&M activities are added by the TCEQ beyond this proposed scope, then those tasks will be incorporated into the O&M schedule at that time.

2.3 Special Training and Certification

2.3.1 Special Training

All field team members will be adequately trained in the field methods and sampling procedures outlined in this FSP. Specifically, all field team members will have training in the following activities including, but not limited to: drilling and well installation; well inspection; groundwater sampling; use of water level indicators and related field equipment; sampling handling, packaging and shipping; and handling of IDW.

2.3.2 Health and Safety Training

All site personnel must be properly trained in their assigned duties, including standard safety procedures. All site personnel and visitors entering the work zone will be familiar with the contents of the site-specific HASP and all personnel will sign the acceptance form included in the HASP.

2.3.3 Subcontractor Training

Contractors to DBS&A are obligated to conform to OSHA regulations and standard industry safety practices for their profession. DBS&A's contractors will certify, by name, that each of their employees who will perform field work at a hazardous waste project site has received the applicable health and safety training required to enter the site.

3. Analytical Requirements and Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements developed through the seven-step DQO process (EPA 2006). The DQOs clarify the study objective, define the most appropriate data to collect and the conditions under which to collect the data, and specify acceptance criteria that will be used to evaluate whether the quantity and quality of data collected are sufficient to support decision-making. The DQOs are used to develop a scientific and resource-effective design for data collection. The seven steps of the DQO process pertaining to the ongoing groundwater monitoring activities for this project are presented in Table 3.1 below.

Table 3.1 Project Data Quality Objectives

STEP 1: State the Problem
• Remedial actions at the Rockwool Industries, Inc. Superfund Site have been completed. Long-term monitoring and O&M activities, in the form of semi-annual groundwater monitoring and other maintenance tasks, are required to be conducted at the RWI site in order to ensure the continued protectiveness of the selected remedy.
STEP 2: Identify the Goals of the Study
• Collect additional water quality data to assess whether COCs in surface soil and waste and subsurface soil continue to impact groundwater. • Perform long-term groundwater monitoring and other required O&M activities in support of the U.S. EPA Superfund Record of Decision (ROD) for the Rockwool Industries Inc. Federal Superfund Site.
STEP 3: Identify Information Inputs
• The primary data input to be obtained during the study is laboratory chemical analysis of groundwater samples for inorganic metal constituents (antimony, arsenic, and lead) collected from the 23 existing monitoring wells located at the RWI site.
STEP 4: Define Study Boundaries
• The vertical boundary of the study investigation is defined as the screened interval of the deepest monitoring well. • The horizontal boundaries are defined by the lateral extent of the existing monitoring well network.

STEP 5: Develop the Analytical Approach
• Groundwater samples will be analyzed for inorganic metal constituents (antimony, arsenic, and lead) following EPA SW-846 Method 6020A. • Required laboratory method quantitation limits are below human health Preliminary Remediation Goals (PRGs) for the contaminants of concern in groundwater. • All groundwater results will be compared to the RPGs in order to ensure the continued protectiveness of the selected remedy and to determine the level of contamination.
STEP 6: Specify Performance or Acceptance Criteria
• A data usability review and data validation will be performed by the contractor independent of the laboratory generating the project data.
STEP 7: Develop the Detailed Plan for Obtaining Data
• Groundwater samples will be collected from the twenty-three (23) existing on-site monitoring wells and submitted to the appointed laboratory for chemical analysis of inorganic metal constituents in accordance with EPA SW-846 Method 6020A. • Following an independent data usability review and data validation, the analytical results will be compared with human health Preliminary Remediation Goals (PRGs).

3.1 Analytical Requirements

Table 3.2 lists the COCs, the laboratory method quantitation limits (MQLs) and the U.S. EPA human health Preliminary Remediation Goals (PRGs) for the contaminants of concern.

Table 3.2 Levels of Required Performance

Contaminant of Concern	CAS No.	Laboratory MQL (µg/L)	U.S. EPA PRGs (µg/L) from ROD	Is Lab MQL < LORP? (Y/N)
Antimony	7440-36-0	2.5	**6.0**	Y
Arsenic	7440-38-2	6.0	**10***	Y
Lead (inorganic)	7439-92-1	1.0	**5.0**	Y

**The EPA site-specific ROD specifies the EPA PRG of 50* µg/L *for arsenic; however, the MCL for arsenic was lowered by the EPA to 10* µg/L *in February, 2002.*

LORP = Level of Required Performance

3.1.1 Data Review and Data Validation

The laboratory will provide the contractor with an electronic data deliverable (EDD) as specified in the contract.

The laboratory will submit the data package as specified in QAPP Element A.9.2 and will review the data as specified in QAPP Element D.2.1.1. The independent data usability review will be completed by the contractor as specified in QAPP Element D.2.1.2. Additionally, data validation will be performed by the contractor as specified in QAPP Element D.2.1.3 on a minimum ten percent of the project analytical batches per sampling event (or at least one analytical batch per sampling event if there are fewer than 10 batches).

3.1.2 Data Review and Data Validation Memoranda

The data review and data validation memoranda will be prepared by the contractor pursuant to the contract requirements.

3.1.3 Data Usability Summary

One data usability summary report will be prepared by the contractor as specified in QAPP Element D.2.3.1 and submitted to the TCEQ PM at the end of the fiscal year or as otherwise authorized by the TCEQ PM in the RWI site work order.

3.2 Sampling Objectives

The sampling objectives for this study are to collect groundwater samples for laboratory chemical analysis from the monitoring well network at the RWI site in order to ensure the continued protectiveness of the selected remedy and to determine the concentration of contamination in groundwater.

3.3 Project Objectives

The primary objective of the project is to compare the analytical results from groundwater sample analysis to the human health Preliminary Remediation Goals (PRGs) for the contaminants of concern in order to ensure the continued protectiveness of the selected remedy and to determine the level of contamination in groundwater. The PRGs for the contaminants of concern in groundwater, as defined in the ROD (EPA, 2004), are 6 µg/L for antimony, 50 µg/L for arsenic, and 5 µg/L for lead (EPA, 2004). Please note that in February 2002, the EPA changed the MCL for arsenic from 50 µg/L to 10 µg/L. The sample measurement performance criteria for analytical data generation and acquisition are specified in Group B of the TCEQ Superfund Program QAPP.

4. Sampling Plan Design

4.1 Sampling Process Design

The sampling process design is based on the existing monitoring well network of 23 monitoring wells located at the RWI site. Monitoring well construction details are provided in Table 4.1 below. The COCs consist of inorganic metals (antimony, arsenic, and lead) that have previously been detected in groundwater samples collected from the monitoring well network.

Table 4.1 Monitoring Well Construction Details

Monitoring Well ID	Northing (ft)	Easting (ft)	TOC Elev. (MSL)	Well Dia. (in)	Total Well Depth (ft)	Screened Interval (ft bgs)		Installation Date
North Property						**Top**	**Bottom**	
MW-15	10358936	3202230	506.49	2	24.0	14.0	24.0	09/23/87
MW-20	10358596	3202127	519.70	2	38.9	Unk	Unk	Unk
MW-21	10358526	3202730	505.11	2	15.6	Unk	Unk	Unk
MW-22	10358587	3202647	505.18	2	14.5	Unk	Unk	Unk
MW-35-90	10358826	3202797	501.03	2	17.2	Unk	Unk	Unk
MW-36-90	10358815	3202844	501.96	2	23.8	Unk	Unk	Unk
MW-37-90	10358807	3202889	501.52	2	26.4	Unk	Unk	Unk
MW-38-90	10358675	3202942	504.05	2	12.1	Unk	Unk	Unk
Central Property								
MW-07	10358001	3201475	521.23	4	33.0	17.0	27.0	10/05/83
MW-09	10357733	3201553	518.86	2	35.0	21.0	31.0	10/85
MW-10	10357635	3201683	518.45	2	35.0	25.0	30.0	10/85
MW-11	10357653	3201805	519.37	2	35.0	24.5	29.5	10/85
MW-14	10357200	3202218	514.02	2	39.0	29.0	39.0	09/22/87
MW-16	10357986	3202228	519.22	2	36.0	26.0	36.0	09/23/87
MW-17	10357495	3201977	518.18	2	29.0	19.0	29.0	09/23/87
MW-19	10357816	3202478	520.31	2	35.5	25.0	35.0	09/24/87
MW-24-90	10357535	3202555	518.46	2	39.0	29.0	39.0	03/22/90
MW-27-90	10358240	3202111	519.76	2	33.1	28.0	33.0	07/10/90
MW-28-90	10358377	3201746	519.84	2	29.0	24.0	29.0	07/11/90
MW-29-90	10358224	3201524	517.56	2	27.4	22.0	27.0	07/11/90
MW-30-90	10357874	3202043	520.17	2	25.9	20.9	25.9	07/12/90
MW-33-90	10357865	3201459	520.25	2	20.0	25.0	30.0	07/16/90
MW-34-90	10357612	3201589	519.12	2	30.0	25.0	30.0	07/17/90

Unk = Unknown

4.1.1 Sampling Location and Rationale

The planned sampling locations based on the existing monitoring well network are identified in Figure 3 (Site Map) of this FSP. Additional maps showing the monitoring well locations are provided in Appendix C of this FSP. The rationale for each sampling location is presented in Table 4.2 below. Table 4.2 also identifies the chemical analysis to be performed on each groundwater sample collected for these O&M sampling events. A groundwater sample will be collected from each monitoring well on a semi-annual basis and submitted to the specified laboratory for inorganic metals analysis. Water samples will also be collected and submitted to the laboratory for chemical analysis for field QC and waste characterization purposes, as described below. Flexibility is allowed so that some monitoring wells can be removed from this sampling plan design as needed, depending on the field conditions and without requiring a revised FSP or an addendum to this FSP. Instead, the TCEQ PM will be notified via phone for approval. Telephone approval will be followed up by documentation of the deviation from the sampling plan design in the field logbook.

Table 4.2 Sample Rationale, Locations, and Analyses

Sample ID	Sample Location Description	Total Well Depth/ Screened Interval (feet bgs)	Sample Rationale (including associated field QC samples)	Laboratory Analysis
Groundwater Samples—North Property				
MW-15	Located in the NW portion of the North Property	24 (14 - 24)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-20	Located on the SW corner of the North Property	38.9 (Unk)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-21	Located in the SE portion of the North Property	15.6 (Unk)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A

Sample ID	Sample Location Description	Total Well Depth/ Screened Interval (feet bgs)	Sample Rationale (including associated field QC samples)	Laboratory Analysis
MW-22	Located in the central portion of the North Property	14.5 (Unk)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-35-90	Located in the NE portion of the North Property	17.2 (Unk)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-36-90	Located in the NE portion of the North Property	23.8 (Unk)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-37-90	Located in the NE portion of the North Property	26.4 (Unk)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-38-90	Located in the NE portion of the North Property	12.1 (Unk)	Determine concentrations of COCs in groundwater; sample designated for MS/MSD QC analysis	EPA SW-846 Method 6020A
Groundwater Samples—Central Property				
MW-7	Located in the SW portion of the Central Property	33 (17 - 27)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-9	Located in the SW portion of the Central Property	35 (21 - 31)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A

Sample ID	Sample Location Description	Total Well Depth/ Screened Interval (feet bgs)	Sample Rationale (including associated field QC samples)	Laboratory Analysis
MW-10	Located in the SW portion of the Central Property	35 (25 - 30)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-11	Located in the SW portion of the Central Property	35 (24.5 - 29.5)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-14	Located in the SE portion of the Central Property	39 (29 - 39)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-16	Located in the North central portion of the Central Property	36 (26 - 36)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-17	Located in the South central portion of the Central Property	29 (19 - 29)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-19	Located in the NE portion of the Central Property	35.5 (25 - 35)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-24-90	Located in the NE portion of the Central Property	39 (29 - 39)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-27-90	Located in the north central portion of the Central Property	33.1 (28 - 33)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A

Sample ID	Sample Location Description	Total Well Depth/ Screened Interval (feet bgs)	Sample Rationale (including associated field QC samples)	Laboratory Analysis
MW-28-90	Located in the NW portion of the Central Property	29 (24 - 29)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-29-90	Located in the NW portion of the Central Property	27.4 (22 - 27)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-30-90	Located in the central portion of the Central Property (adjacent to the brick plant)	25.9 (20.9 - 25.9)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
MW-33-90	Located in the SW corner of the Central Property	30 (25 - 30)	Determine concentrations of COCs in groundwater; sample designated for MS/MSD QC analysis	EPA SW-846 Method 6020A
MW-34-90	Located in the SW portion of the Central Property	30 (25 - 30)	Determine concentrations of COCs in groundwater	EPA SW-846 Method 6020A
Field QC Samples				
DUP-1	Field duplicate of MW-21	NA	Evaluate sampling and analytical precision	EPA SW-846 Method 6020A

Sample ID	Sample Location Description	Total Well Depth/ Screened Interval (feet bgs)	Sample Rationale (including associated field QC samples)	Laboratory Analysis
DUP-2	Field duplicate of MW-34-90	NA	Evaluate sampling and analytical precision	EPA SW-846 Method 6020A
ER-1	Equipment rinsate blank	NA	Evaluate the efficacy of decontamination procedures	EPA SW-846 Method 6020A
ER-2	Equipment rinsate blank	NA	Evaluate the efficacy of decontamination procedures	EPA SW-846 Method 6020A
ER-3	Equipment rinsate blank	NA	Evaluate the efficacy of decontamination procedures	EPA SW-846 Method 6020A
IDW Classification Samples				
IDW-1	Groundwater purge drum	NA	Waste disposal classification	EPA SW-846 Method 6020A
IDW-2	Groundwater purge drum	NA	Waste disposal classification	EPA SW-846 Method 6020A
IDW-3	Groundwater purge drum	NA	Waste disposal classification	EPA SW-846 Method 6020A

NA = Not Applicable; Unk = Unknown; screened interval for groundwater monitoring well not available

4.2 Analytical Methods Requirements

All collected groundwater samples, field QC samples and purged wastewater samples will be submitted to the appointed laboratory for inorganic metals analysis by EPA SW-846 Method 6020A. Laboratory preparation of the aqueous samples for inorganic metals analysis by EPA SW-846 Method 6020A will be performed following EPA SW-846 Method 3005A as referenced in the EPA publication *SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* Analysis by SW-846 Method 6020A involves inductively coupled plasma-mass spectrometry (ICP-MS) to determine the concentration of multiple chemical elements, including the subject COCs for this project, in aqueous samples. Sample preparation by SW-846 Method 3005A is a laboratory acid digestion procedure used to prepare water samples for analysis by ICP-MS.

4.3 Field Quality Control Samples

Field QC samples are collected in the field and analyzed in order to serve as a check on sampling and analytical precision, accuracy, and representativeness. The following sections discuss the types and purposes of field QC samples that will be collected for this project. Table 4.3 provides a summary of the types and frequency of collection requirements for field QC samples. Field QC samples will be collected in accordance with TCEQ Superfund Program SOP No. 6.5 (Collection of QA/QC Samples).

Table 4.3 Frequency of Collection of Field QC Samples

Type of Field QC Sample	Frequency of Sample Collection
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	• One (1) sample per twenty (20) primary environmental samples of each matrix type. • Collect the MS/MSD at a predetermined sample location suspected to be contaminated with low to medium levels of COCs. • Do not use highly contaminated samples for the MS/MSD samples.

Type of Field QC Sample	Frequency of Sample Collection
Field Duplicates (FD)	• One (1) sample per day per ten (10) primary environmental samples of each matrix type. • Collect the field duplicate at a predetermined sample location with known COC contamination or suspected contamination immediately following collection of the primary environmental sample.
Equipment Rinsate Blank (ER)	• One (1) blank per equipment type per environmental medium per day is required when non-dedicated sampling equipment is used.
Temperature Blank	• One (1) per cooler.

4.3.1 Field Duplicates

Field duplicate samples are collected at the same time and from the same source as the primary sample collection point. Field duplicates are recorded with unique identifiers and submitted as separate samples for confidentiality purposes to the laboratory for COC chemical analysis. The field duplicate will be collected at a predetermined sample location known to be contaminated or suspected to be contaminated with COCs immediately after the primary environmental sample is collected. Field duplicate samples will be collected at a frequency of one (1) field duplicate for every ten (10) primary environmental samples.

4.3.2 Equipment Rinsate Blank

Equipment rinsate blanks will be collected during sampling activities at a frequency of one (1) blank per equipment type per medium per day when non-dedicated sampling equipment is used. Equipment rinsate blanks are used to assess the effectiveness of equipment decontamination procedures. An equipment rinsate blank is a sample of ASTM Type II reagent grade water collected after a sampling device has been decontaminated according to TCEQ Superfund Program SOP No. 1.5 (Decontamination). The ASTM Type II reagent grade water will be poured over or through the sampling equipment into an appropriate sample container and sent to the laboratory for the sample chemical analyses being performed on the primary environmental samples.

4.3.3 Temperature Blank

A temperature blank demonstrates that the environmental samples have been properly preserved at the required temperature until receipt at the laboratory. For the purposes of this FSP, all samples should be preserved at temperatures within the acceptable criteria of ≤ 6°C from the time of collection until they are received by the laboratory. Temperature blanks are normally supplied by the laboratory as part of the sampling supplies and one (1) temperature blank is placed in each cooler with the samples prior to shipping the samples to the laboratory for analysis. Upon receipt at the laboratory, the lab technician will measure and record the temperature of the blank.

5. Sampling Methods and Sample Handling

5.1 Sampling Method Requirements

This section describes the procedures for environmental sample collection, including sampling methods and equipment, sample preservation requirements, and decontamination procedures. Various TCEQ Superfund Program SOPs will be implemented during this field program. Table 5.1 lists the TCEQ Superfund Program SOPs to be implemented during this field investigation. Copies of the TCEQ Superfund Program SOPs are provided in Appendix A of this FSP.

Table 5.1 TCEQ Standard Operating Procedures

TCEQ SOP Number	TCEQ SOP Description
1.1	Initial Site Reconnaissance
1.2	Site Preparation and Control
1.3	Site Restoration
1.4	Management of Investigation Derived Waste
1.5	Decontamination
6.1	Field Activity Documentation and Reporting
6.4	Sample Handling and Control
6.5	Collection of QA/QC Samples
7.1	Water Level/Sediment Measurement
7.4	Micro Purging a Monitoring Well
7.5	Measurement of Field Parameters
7.8	Groundwater Sampling Using a Low-flow Technique
17.1	GPS Data Collection and Submission

5.1.1 Groundwater Sample Collection

Prior to groundwater sample collection, each monitoring well will be visually inspected in order to verify the integrity of the protective casing and surface seal. In addition, the presence and condition of the security padlocks, hinged protective covers and monitoring well plugs will be field verified during each groundwater monitoring event. Groundwater levels and total depth of all monitoring wells will be measured and recorded preceding the sampling of each well.

A Horiba Model U-20XD Series Multi-Parameter Water Quality Monitoring System or equivalent will be utilized for collecting groundwater quality measurements, including pH, dissolved oxygen (DO), conductivity, temperature and oxidation-reduction potential (ORP) in the field. The water quality meter used will be calibrated each day according to the manufacturer specifications prior to the collection of groundwater quality measurements. Calibration details will be recorded and documented in the field log book. Water quality measurements will be collected in accordance with TCEQ Superfund Program SOP No. 7.5 (Measurement of Field Parameters).

In order to meet groundwater monitoring objectives, each monitoring well will be purged according to TCEQ Superfund Program SOP No. 7.4 (Micro Purging a Monitoring Well) prior to sampling and groundwater samples will be collected from each monitoring well in accordance with TCEQ Superfund Program SOP No. 7.8 (Groundwater Sampling Using a Low-flow Technique). Prior to purging and sampling, groundwater levels in each monitoring well will be properly measured using a water level meter according to TCEQ Superfund Program SOP No. 7.1 (Water Level/Sediment Measurement).

For the purposes of this FSP, unfiltered groundwater samples will be collected from each monitoring well utilizing the methodology described in the above-referenced TCEQ Superfund Program SOPs and submitted to the appointed laboratory for inorganic metals (arsenic, antimony, and lead) analysis using EPA SW-846 Method 6020A.

5.2 Sample Handling and Custody Requirements

5.2.1 Sample Containers

Sample container type, volume, preservative requirements and holding times for each laboratory analyte are provided in Table 5.2 below. Sample containers are pre-cleaned by the laboratory and the containers will not be rinsed prior to sample collection. If the required amount of chemical preservative is not added to the sample containers by the laboratory prior to shipping them to DBS&A, then the DBS&A field technician will add the preservative to the containers in the field.

Table 5.2 Sample Containers, Volume, Preservation and Holding Time Requirements

Contaminant of Concern	Analytical Method	Sample Container and Required Volume	Sample Preservative	Sample Holding Time
Antimony	EPA SW-846 Method 6020A	Plastic, 500 mL	HNO_3 to pH<2, ≤ 6°C	6 months
Arsenic	EPA SW-846 Method 6020A	Plastic, 500 mL	HNO_3 to pH<2, ≤ 6°C	6 months
Lead	EPA SW-846 Method 6020A	Plastic, 500 mL	HNO_3 to pH<2, ≤ 6°C	6 months

5.2.2 Sample Labels

Groundwater sample handling and control procedures will be implemented following TCEQ Superfund Program SOP No. 6.4 (Sample Handling and Control). A sample label will be affixed to each groundwater sample container and the label will be completed by field personnel with the following information written legibly in indelible ink:

- Project name and location;
- Unique sample identification number;

- Date and time of sample collection;
- Initials of field personnel collecting sample;
- Chemical analysis required;
- Sample preservation.

5.2.3 Sample Documentation

Field personnel will use permanently bound field logbooks with sequentially numbered pages to record and document field activities. The logbook will list the TCEQ contract name and number; the project name and number; and the names and contact information for any relevant subcontractors, service clients, and project managers. DBS&A personnel will adhere to the following procedures for maintaining field documentation and all field personnel will comply with the procedures given in TCEQ Superfund Program SOP No. 6.1 (Field Activity Documentation and Reporting):

- Documentation will be completed in permanent blue or black ink;
- All entries will be legible;
- Errors will be corrected by drawing a single line through the incorrect entry and then dating and initialing the lineout;
- Any serialized documents will be maintained by DBS&A and referenced in the field logbook;
- A line will be drawn through the unused portions of pages or blank pages and each page will be signed and dated by the field personnel member completing the logbook.

5.2.4 Chain-of-Custody Procedures

Field personnel will adhere to sample chain-of-custody procedures as outlined in TCEQ Superfund Program SOP No. 6.4 (Sample Handling and Control) in order to maintain and document sample integrity during collection, transportation, storage, and delivery to the appointed laboratory for chemical analysis. An example of a standard chain-of-custody record form is included in TCEQ Superfund Program SOP No. 6.4 (Sample Handling and Control) included in Appendix A of this FSP. An environmental sample will be considered to be in one's custody if one of the following statements applies:

- It is in a person's physical possession or view;
- It is in a secure area with restricted access;
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

5.2.5 Sample Shipment

Field and laboratory personnel will adhere to the procedures for the handling and shipment of collected environmental samples as given in TCEQ Superfund Program SOP No. 6.4 (Sample Handling and Control).

6. Field Survey and Measurements

6.1 Initial Site Reconnaissance

The initial RWI site reconnaissance will be performed by personnel from DBS&A and the TCEQ according to TCEQ Superfund Program SOP No. 1.1 (Initial Site Reconnaissance) prior to the implementation of this FSP and prior to conducting groundwater monitoring activities. The initial RWI site inspection will focus on identifying existing groundwater monitoring wells and documenting their condition, as well as determining the general condition of the RWI site. Initial site reconnaissance activities will include the inspection of general vegetative growth, drainage erosion, perimeter fence condition and signage, drainage culverts and other site characteristics that could be important to maintaining the integrity of the RWI site.

6.2 Property Access Agreements

If required, written access agreements between property owners and the TCEQ will be obtained prior to the initiation of field activities and recorded on Form TCEQ-10452. A copy of Form TCEQ-10452 is located in Appendix E of this FSP. In the event that the TCEQ or DBS&A is unable to secure a written access agreement from a property owner, verbal agreement of granted access will be documented in the project field logbook. If the property is abandoned or the owner cannot be reached, the TCEQ Legal Division will determine the appropriate course of action in order to document access. Copies of the access agreements will be placed in the RWI site project file.

6.3 Global Positioning System (GPS) Data

If required, DBS&A will record the GPS location of the RWI site, sampling locations and other pertinent site features, as requested by the TCEQ. All GPS information will be submitted to the TCEQ as specified in the work order. GPS data will be collected pursuant to TCEQ Superfund Program SOP No. 17.1 (GPS Data Collection and Submission).

7.0 Additional Field Activities

7.1 Sample Identification and Documentation of Sampling Activities

Information regarding environmental sample collection will be entered into the field logbook pursuant to TCEQ Superfund Program SOP No. 6.1 (Field Activity Documentation and Reporting). When appropriate, the following information will be recorded in the field logbook:

- Date and time of sample collection;
- Environmental matrix and sample type, e.g. soil composite, groundwater grab, etc.;
- Sample collection method;
- Sample preservation required;
- Name of personnel collecting the sample;
- Unique sample identification number;
- Field measurements made for the sample media during and at the time of collection, e.g. water quality measurements, PID readings, etc.;
- When low-flow technology is used, the groundwater flow rate as sample was collected (e.g. L/min);
- GPS file number and other pertinent GPS attribute data;
- Number, date and time of photographs with a description of the purpose of the photograph, e.g. “this photo documents the sample collected at location X of material released to soil from the corroded and leaking drums in the drum storage area observed and documented in photos 2 & 3.”;
- Name of personnel taking the photograph and cardinal direction the person was facing when the photograph was taken;
- Relevant environmental observations, such as soil color, obvious staining, and weather conditions; and

- Deviations, modifications or departures from the QAPP, FSP, or SOPs will be recorded, with a discussion of the justification or rationale for each, in the field logbook and will be reported in the subsequent O&M reports submitted to the TCEQ.

Samples will be adequately marked for identification from the time of collection and packaging through shipping and storage. The sample identification scheme will include:

- Unique sample ID;
- Project name and number;
- Sampling date and time;
- Name of personnel collecting the sample;
- Methods of sample preservation; and
- Laboratory chemical analyses required.

Sample identification will be reported as follows:

- Groundwater Samples: Groundwater samples will be identified using the established monitoring well designations. For this study, the sample designation will be the prefix “MW” followed by the monitoring well number, e.g. MW-1.
- Field Duplicate Samples: For quality assurance and confidentiality purposes, the identification of field duplicate samples will not include any information that may reveal to the analytical laboratory the identity of the primary environmental samples. Field duplicate samples will have a sample number randomly selected by the TCEQ or DBS&A PM. The primary samples and their associated field duplicate samples will be identified in the field logbook. The field duplicate sample collection time will be a random increment of time after the collection time of the primary environmental sample.
- Equipment Rinsate Blanks: Equipment rinsate blanks will be identified using the prefix “ER” followed by a sequential number.

At each groundwater sampling location, the collection of the sample will be documented by photographing the sample collection point and, if requested by the TCEQ, by recording the location with certified GPS equipment operated by GPS-certified TCEQ staff or DBS&A personnel. If certified GPS equipment or staff is not available, the sample locations will be identified and the method of identification and site sketch will be included in the field logbook. GPS data will be collected pursuant to TCEQ Superfund Program SOP No. 17.1 (GPS Data Collection and Submission).

7.2 Decontamination

Non-dedicated sampling equipment will be decontaminated prior to initial use and between each groundwater sampling location. An equipment rinsate blank will also be collected as specified in Table 4.2. The TCEQ PM may modify the decontamination schedule, if necessary. For the purposes of this FSP, decontamination of field equipment will be performed using the following guidelines and in accordance with TCEQ Superfund Program SOP No. 1.5 (Decontamination):

- Don appropriate PPE;
- Thoroughly wash or clean the equipment with a brush in a solution of potable water and laboratory grade detergent (Liquinox, Alconox, or equivalent);
- Rinse the equipment thoroughly with potable water;
- Rinse the equipment thoroughly with distilled or deionized water;
- Allow the equipment to completely dry, either elevated or on plastic sheeting, and then collect an equipment rinsate blank using ASTM Type II reagent grade water.
- Seal the rinsate sample container with a custody seal, and place the sample in the shipment cooler;
- If it is not to be used immediately, place small equipment in a plastic sealable bag or wrap the equipment in aluminum foil prior to reuse;
- Collect and/or transfer decontamination water to a chemically compatible 55-gallon drum at the end of the day or when significant quantities of wastewater have accumulated;

- Drums of IDW waste should be managed in accordance with TCEQ Superfund Program SOP No. 1.4 (Management of Investigative Derived Waste).

7.3 Site Preparation, Control and Restoration

The study work site will be adequately prepared prior to conducting field activities and proper site control will be maintained during field activities according to TCEQ Superfund Program SOP No. 1.2 (Site Preparation and Control). If disturbed during field activities, the work site and sampling locations will be restored to their original condition in accordance with TCEQ Superfund Program SOP No. 1.3 (Site Restoration). Efforts will be made to minimize impacts to work sites and sampling locations, particularly to residential properties and those properties in or near sensitive environments.

7.4 Management of Investigation-Derived Waste

All waste streams generated during this study, including purge water collected from groundwater monitoring wells and decontamination wastewater will be managed according to TCEQ Superfund Program SOP No. 1.4 (Management of Investigative Derived Waste) and "Management of Investigation-Derived Wastes during Site Inspections", EPA/540/G-91/009, May 1991. For the purposes of this FSP, the preference is to store both RCRA hazardous and non-hazardous IDW on-site in chemically compatible 55-gallon drums whenever it complies with the appropriate regulations and when it does not pose any immediate threat to human health and the environment. Anticipated waste for these O&M sampling events include purged groundwater, decontamination wastewater, contaminated personal protective equipment (PPE) and disposable sampling equipment. Used PPE and disposable sampling equipment will be placed in plastic bags and disposed of as non-hazardous solid waste. After the second semi-annual groundwater monitoring event and once the IDW has been properly classified, DBS&A will coordinate with a licensed disposal company for the removal, transport and disposal/recycling of all generated waste stored on-site.

7.5 Spill Prevention and Drum Handling

The specifics of all spills, regardless of size, will be documented in the field logbook and project managers will be notified of the spill immediately. During groundwater monitoring activities, the following spill prevention measures will be followed by all field personnel:

- Careful attention and proper equipment should be utilized when transferring waste liquids from one container to another;
- Use of proper drum handling techniques, such as awareness of weight restrictions, limited movement of full containers, and the use of drum moving equipment (i.e. drum dolly), when required;
- Secondary containment will be utilized during the movement of drums or other large containers of liquids;
- Drum lids and rings and other container lids will be secured during movement and storage.

8.0 Exceptions, Additions and Changes to the TCEQ Superfund QAPP

Exceptions, additions, and changes to the TCEQ Superfund Program QAPP (Document No. 200919.7) are presented below. The changes are listed by method and reference the specific elements and tables of the TCEQ Superfund QAPP.

8.1 Method Detection Limits

Exception to QAPP Element B.5.1 (Definitive Analytical Methods): Table B5.1.16-3 entitled *“Summary of Calibration and QC Procedures for Method SW6020A”* specifies that a method detection limit (MDL) study be performed “once per 12 month period.” The following phrase will be added to the statement: “or perform detectability check standards (DCSs) on a quarterly basis throughout the year to verify the MDL.”

References

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U.S. Environmental Protection Agency (EPA). September 2004. *Superfund Record of Decision (ROD).* Rockwool Industries, Inc., Bell County, Texas.

U.S. Environmental Protection Agency (EPA). February 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4*). EPA/240/B-06/001. OEI. Washington, D.C.

Appendix A
TCEQ Superfund Program SOPs

STANDARD OPERATING PROCEDURE NO. 1.1
INITIAL SITE RECONNAISSANCE

1.0 METHOD SUMMARY

This standard operating procedure (SOP) provides guidance for conducting an initial site reconnaissance. The purpose of conducting a site reconnaissance is to familiarize personnel with the site and to identify hazards which may affect field activities.

2.0 EQUIPMENT/APPARATUS/REAGENTS

2.1 Equipment List

- Appropriate personal protective equipment (PPE) (if conditions are unknown, initial site entry should be conducted in Level B PPE)
- Air monitoring equipment (e.g., OVA)

3.0 PROCEDURES

1. Obtain site access (access agreements).
2. Identify site boundaries.
3. Identify any special requirements for the preparation of the site (e.g., heavy equipment required to clear trees).
4. Identify areas on the site which may require control (i.e., fencing).
5. Identify vehicle access routes.
6. An organic vapor analyzer (OVA) is typically used during this survey. These gross measurements may be used on a preliminary basis to (1) determine levels of personal protection, (2) establish site work zones, and (3) map candidate areas for more thorough qualitative and quantitative studies involving air sampling.
7. Identify locations for central decontamination area and exits for it, field office/laboratory, and emergency equipment (e.g., fire extinguishers and PPE).

4.0 CAUTIONS AND INTERFERENCES

Two people should perform the initial site reconnaissance staying together at all times. Also, all instrumentation should be intrinsically safe or explosion-proof.

STANDARD OPERATING PROCEDURE NO. 1.2
PREPARATION AND CONTROL

1.0 METHOD SUMMARY

This standard operating procedure (SOP) provides guidance for site preparation and control. It is intended to assist field personnel in preparing the site before conducting any work activities.

2.0 EQUIPMENT/APPARATUS/REAGENTS

2.1 Equipment List

- Appropriate personal protective equipment (PPE)
- Caution tape, orange cones and/or other visible means of delineating boundaries
- Heavy gauge plastic sheeting
- Collection systems for decontamination areas (e.g., sump pump)
- 55-gallon drums or other appropriate containers
- Sheets of plywood
- Hay bales
- 2 x 4 lumber
- Landscape timbers
- Tables or sawhorse benches
- Site Plan

3.0 PROCEDURES

1. Don appropriate PPE.
2. Identify and mark utility locations in accordance with SOP 2.4
3. Designate and mark the decontamination zone with caution tape, orange cones and/or other visible means. To control access of personnel and equipment to possible contaminants, the site will be divided into work zones. There is only one entrance and exit to the zones. Three categories of zones and one command post are utilized. For all operations except Level D, work zones will be designated as follows:
    1. Support Zone or Clean Zone -- Along with the command post, this is the outermost boundary of the site. Contamination of personnel and equipment in this area is unlikely.
    2. Contamination Reduction Zone -- This area serves as a corridor between the exclusion zone and the support zone and is the area where decontamination activities occur. All personnel and equipment passing through this corridor from the exclusion zone to the support zone must undergo appropriate decontamination.
    3. Exclusion Zone -- This is the area where actual operations are being conducted. Access to this area is limited to personnel and equipment being utilized at that particular time for the specific operation in progress. The risk of contamination in this area is high.
    4. Create a central decontamination area for drilling rigs and other large equipment (see SOP 1.5). The decontamination area should be large enough to allow storage of cleaned equipment and materials prior to use, as well as drums of decontamination waste. The decontamination area shall be lined with heavy gauge plastic sheeting, and designed with a collection system to capture decontamination waters. Solid wastes shall be accumulated in 55-gallon drums or other

appropriate containers and stored in a designated investigative derived waste (IDW) storage area (see SOP 1.4).

A large equipment decontamination pad can be constructed by placing sheets of plywood on the ground and covering them with plastic sheeting. Walls for controlling over spray can be created from hay bales or by constructing 2 x 4 frames covered with plastic sheeting. Landscape timbers can be used to create berms around the floor of the decontamination pad. A sump pump should be used to collect decontamination water and transfer the water to 55-gallon drums.

A small equipment decontamination line can be created by placing plastic sheeting on the ground and using tables or sawhorse benches to hold wash basins.

Decontamination lines are site specific since they are dependent upon the types of contamination and the type of work activity onsite. It is usually a location in a shaded area in which the wind can help to cool personnel.

5. Identify the locations of utilities, the field office/laboratory, IDW storage areas, exclusion zone, contamination reduction zone (including decontamination facilities), and the clean zone on a site plan.

4.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.

STANDARD OPERATING PROCEDURE NO. 1.3
SITE RESTORATION

SOP#: 1.3
DATE: 11/29/2001
REVISION #: 0
PAGE 1 of 1

1.0 METHOD SUMMARY

This standard operation procedure (SOP) describes the steps necessary for site restoration. Upon completion of field activities, the site should be repaired to its original condition when possible. All drums or waste containers should be staged in a designated staging area and all other waste should be removed. All borings should be backfilled.

2.0 EQUIPMENT/APPARATUS/REAGENTS

Varies depending on which of the following tasks are completed.

3.0 PROCEDURES

1. Minimize impacts to work sites and sampling locations, particularly those in or near sensitive environments, such as wetlands with the use of soil erosion fences or by diverting streams/brooks during work operations.
2. Fill boreholes and pits, re-vegetate or erect erosion fences as necessary, re-establish streams, brooks, etc, as applicable.
3. Remove all sampling, decontamination equipment, and other items introduced to the site upon completion of work.
4. Remove all drums, trash, and other waste upon completion of work at the site.
5. Transport decontamination and/or purge water and soil cuttings to the designated locations.

4.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.

STANDARD OPERATING PROCEDURE NO. 1.4
MANAGEMENT OF INVESTIGATIVE DERIVED WASTE

1.0 METHOD SUMMARY

This standard operating procedure (SOP) provides standard operating procedures for managing investigative derived waste (IDW) generated during field activities. Materials which may become IDW include:

- Personnel protective equipment (PPE) including disposable coveralls, gloves, booties, respirator canisters, splash suits, etc.
- Disposable equipment including plastic ground and equipment covers, aluminum foil, conduit pipe, composite liquid waste samplers (COLIWASAs), disposable bailers, rope or twine, Teflon® tubing, broken or unused sample containers, sample container boxes, tape, etc.
- Soil cuttings from drilling or hand augering.
- Excess soil sample material.
- Drilling mud or water used for water rotary drilling.
- Ground water obtained through well development or well purging.
- Cleaning fluids such as spent solvents and washwater.
- Packing and shipping materials.

2.0 EQUIPMENT/APPARATUS/REAGENTS

2.1 Equipment List

- 55-gallon drums
- Labels for drums
- Wrenches for securing drum lids
- Marking pens (for marking on labels and on drums)
- Lumber (for creating storage area)
- Plastic sheeting (for storage area)
- Plywood (for storage area flooring)
- 5-gallon buckets
- Manifests
- Drum log

3.0 PROCEDURES

Be sure to keep all hazardous waste separate from non-hazardous waste. Label each container properly and keep a log (Appendix A) of all the drums or containers, stating their identification number and contents. Drill cuttings from different holes can be put in the same drums provided they originate from similar areas of the site (e.g., upgradient, background borings, etc.).

3.1 Management of Non-Hazardous IDW

1. If necessary, compact the waste into a reusable container, such as a 55-gallon drum to reduce the volume of non-hazardous waste.
2. If the waste is generated from an active facility, seek permission from the operator of the facility to place the *non-hazardous* PPE, disposable equipment, and/or paper/cardboard wastes into the facility dumpsters. These materials may also be taken to a nearby permitted landfill. On larger studies, waste hauling services may be obtained and a dumpster located at the study site.

3. Dispose of *non-hazardous* IDW such as drill cuttings, purge or development water, decontamination washwater, drilling muds, etc. in a unit with an environmental permit such as a landfill or sanitary sewer. These materials must not be placed into dumpsters.
4. Seek permission to place these types of IDW into the facility treatment system if the facility is active.

3.2 Management of Hazardous IDW

1. Properly contain and label all suspected or identified hazardous wastes. Wastes should be stored in labeled 55-gallon drums at a segregated staging facility with a secondary containment structure.
2. Take care to keep non-hazardous materials segregated from hazardous waste contaminated materials.
3. Review appropriate sample results to determine waste characterization and perform any specific analysis required by the permitted disposal facility.
4. Hazardous wastes may be stored on site for a maximum of 90 days before they must be manifested and shipped to a permitted treatment or disposal facility.
5. Dispose of hazardous IDW as specified in the USEPA and TNRCC regulations. If appropriate, place these wastes in an active facility waste treatment system.
6. Anticipate generation of hazardous IDW, if possible, to permit arrangements for proper containerization, labeling, transportation, and disposal/treatment in accordance with USEPA and TNRCC regulations.

4.0 CAUTIONS AND INTERFERENCES

1. All liquid and soil/sediment IDW *must* be containerized and analyzed before disposal.
2. The collection handling, and proposed disposal method must be specified in the site work plan.

APPENDIX A

DRUMMED MATERIAL WORKSHEET

Project Name	**Project Number**
Site Address	**Project Manager**

Drum No.	Boring No.	Date	Contents	Sample ID	Lab Results	Disposition

SOP#: 1.5
DATE: 11/29/2001
REVISION #: 0

STANDARD OPERATING PROCEDURE NO. 1.5
DECONTAMINATION

1.0 METHOD SUMMARY

This standard operating procedure (SOP) provides a description of the methods used for preventing, minimizing, or limiting cross-contamination of samples due to inappropriate or inadequate equipment decontamination and to provide general guidelines for developing decontamination procedures for sampling equipment to be used during hazardous waste operations. This SOP does not address personnel decontamination.

Removing or neutralizing contaminants from equipment minimizes the likelihood of sample cross contamination, reduces or eliminates transfer of contaminants to clean areas, and prevents the mixing of incompatible substances. Gross contamination can be removed by physical decontamination procedures. These abrasive and non-abrasive methods include the use of brushes, air and wet blasting, and high and low pressure water cleaning.

2.0 EQUIPMENT/APPARATUS/REAGENTS

- Non-phosphate detergent
- Tap water
- Distilled or deionized water
- Long and short handled brushes
- Bottle brushes
- Drop cloth/plastic sheeting
- Paper towels
- Plastic or galvanized tubs or buckets
- Pressurized sprayers
- Aluminum foil
- Ziploc® bags
- Trash bags
- Appropriate personal protective equipment (PPE)
- Face shield (for hard hat)
- High pressure washer (if necessary)
- Fuel for high pressure washer
- 55-gallon drums
- Plywood
- Sump pump
- Landscape timbers, 4 x 4's, or 2 x 4's

3.0 PROCEDURES

3.1 Decontamination

The prime contractor shall describe all decontamination of drilling equipment, well construction materials, sampling equipment, tools, etc in the project work plan. All samples and equipment leaving the contaminated area of a site must be decontaminated to remove any contamination that may have adhered to equipment. This includes casing, drill bits, auger flights, the portions of drill rigs that stand above boreholes, sampling devices, and instruments, such as slugs and sounders. In addition, the contractor shall take care to prevent the sample from coming into contact with potentially contaminating substances, such as tape, oil, engine exhaust, corroded surfaces, and dirt.

The following procedures shall be used to decontaminate large pieces of equipment, such as casings, auger flights, pipe and rods, and those portions of the drill rig that may stand directly over a boring or well location or that come into contact with casing, auger flights, pipe, or rods:

1. Prepare the decontamination zone in accordance with SOP 1.2.
2. Don appropriate PPE.
3. Deposit the contaminated equipment on the plastic drop cloth/sheet or in a container inside the CRZ.
4. Place large pieces of equipment (e.g., auger flights) on sawhorses.

5. Use a high-pressure washer and a low-phosphate soap (e.g, Alconox) to remove encrusted material from grossly contaminated equipment. If necessary, use a brush to scrub the equipment until all visible dirt, grime, grease, oil, loose paint, rust flakes, etc., have been removed.
6. Rinse all equipment with potable water.
7. Store the equipment on sawhorses or wrapped in clean plastic sheeting.
8. Decontamination water should be collected and transferred to a 55-gallon drum at the end of the day or whenever significant quantities of water have accumulated. Drums of investigative derived waste (IDW) should be managed in accordance with SOP 1.4.

The following procedures shall be used to decontaminate small pieces of sampling equipment such as split spoons, bailers, trowels/spoons and bowls:

1. Prepare the decontamination zone in accordance with SOP 1.2.
2. Don appropriate PPE.
3. Scrub the equipment with a solution of potable water and low-phosphate soap (e.g., Alconox).
4. If organic constituents are contaminants of concern, rinse the equipment with a pesticide-grade solvent, typically acetone. If acetone is a constituent of concern, substitute methanol as the rinse agent.
5. Rinse the equipment with copious quantities of distilled or deionized water.
6. Allow the equipment to air dry on a clean surface or rack elevated at least two feet above ground.
7. Wrap the sampling device in aluminum foil or place in Ziploc® bags prior to reuse.

At the completion of the decontamination activities, all fluids and solid waste should be containerized and managed in accordance with SOP 1.4.

If a particular contaminant fraction is not present at the site, the ten (10) step decontamination procedure specified above may be modified for site specificity. For example, the solvent rinse may be eliminated if organics are not of concern at a site. Modifications to the standard procedure should be documented in the site specific work plan or subsequent report.

4.0 CAUTIONS AND INTERFERENCES

1. The use of distilled/deionized water commonly available from commercial vendors is typically acceptable for decontamination of sampling equipment.
2. The use of an untreated potable water supply is not an acceptable substitute for tap water. Tap water may be used from any municipal or industrial water treatment system.
3. If solvents are utilized in decontamination they raise health and safety, and waste disposal concerns.
4. Damage can be incurred by solvent washing of complex and sophisticated sampling equipment.

STANDARD OPERATING PROCEDURE NO. 6.1
FIELD ACTIVITY DOCUMENTATION AND REPORTING

1.0 METHOD SUMMARY

This SOP provides requirements for documenting and reporting site activities. The objective of the documentation program is to accurately and completely describe all field activities, thereby demonstrating that all field activities are conducted in accordance with the project specific Field Sampling Plan or Field Work Plan and applicable Superfund Program Standard Operating Procedures (SOPs).

2.0 EQUIPMENT/APPARATUS/REAGENTS

Equipment typically required for documenting the progress of the project includes:

- Field logbook (all weather or water resistant)
- Field forms
- Camera
- Video recorder (if necessary)
- Permanent marking pens
- Ink pens (with waterproof, black ink)

The field logbook shall contain the following information at a minimum:

- Location, date and time of each activity
- Weather conditions (changes)
- Activity being performed
- Identity of the person(s) performing the activity
- The numerical value and units of any field measurements
- The identity of, and the calibration results for, each field instrument being used
- All information required to demonstrate that the work is conducted in accordance with applicable Sampling Plans, Work Plans and SOPs
- visitors to the site

Specific information which shall be included for each sample includes:

- Sample type and sampling method
- The identity of each sample and depth(s) from which it was collected
- The amount of each sample
- Sample description (e.g., color, odor, clarity)
- Identification of sampling devices
- Identification of conditions that might affect the representativeness of a sample (e.g., refueling operations, damaged well casings)
- All information required to demonstrate that the work is conducted in accordance with applicable Sampling Plans, Work Plans and SOPs

All information relating to installation and development of monitor wells, installation of temporary groundwater sampling points, well development, well purging, groundwater sample collection and all other sampling activities or field work shall be recorded in a field logbook or field form(s). When field forms are used the field logbook shall reference the data noted on field forms and the field forms shall be dated and signed by the author. The field logbook will be bound with consecutively numbered pages and will be suitable for submission as evidence in legal proceedings. Each entry in the field logbooks will be signed and dated by the author. All original data recorded in the field logbook and other field forms will be written using permanent, waterproof ink. Errors made in the field logbook will be corrected by the individual making the entry by crossing a line through the error, entering the correct information, and dating and initialing the correction. The field logbooks and field forms will become part of the project file, and should be kept in the project file at all times when not in the possession of the field team.

3.0 PHOTOGRAPHS

General guidelines (all types of photos):

- If possible, use a camera that has a time and/or date stamp. Record the date and time each photo was taken on the photo or with the photo file (as applicable) and in the field logbook.
- Do not use special lenses (i.e., wide-angle lenses) as they can distort the image
- A brief, accurate description of what the photograph shows, including the name of the site and location shall be recorded in the field logbook.
- Include the name of the photographer, and witness, as applicable.

When photographs are taken the record of each frame exposed/recorded is kept in the bound field logbook along with the information above required for each photograph. The field investigator shall then enter the required information on the prints, slides or CD (if digital photos) using the photographic record from the bound field logbook, to identify each photograph.

Conventional 35 mm Cameras

- Obtain negatives in one continuous, uncut sheet and include with the pictures.
- Arrange photos in album format and include the above information for each photo and submit with the field logbook.

Digital Cameras

- Submit a CD-R of the downloaded picture files in JPEG format (include the above information for each photo) and submit with the field logbook.
- Digital camera recording mode (dependent on camera's pixel resolution quality and picture quality mode) shall be set to achieve a minimum pixel resolution of 1600 x 1200 or higher.

4.0 OTHER FIELD FORMS

Other types of records which may be used in the field include:

- Drum inventory forms
- Well development/purging records
- Boring logs
- Well construction diagrams (as-builts)

5.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.

STANDARD OPERATING PROCEDURE NO. 6.4
SAMPLE HANDLING AND CONTROL

1.0 METHOD SUMMARY

This SOP presents procedures for maintaining control of environmental samples following collection through shipment to the analytical laboratory. In addition, this SOP describes standard chain-of-custody protocols which should be followed to document the possession of samples from the time of collection until the laboratory report is submitted.

2.0 EQUIPMENT/APPARATUS/REAGENTS

Equipment needed for use in this SOP includes:

- Precleaned sample containers
- Preservatives (if not in containers)
- Sturdy cooler, in good repair
- Fiberglass strapping tape
- Duct tape
- Clear tape
- Bubble wrap or other packing material
- Ziploc-type bags
- Trash bags
- Ice
- Shipping labels
- Pens, markers, etc.

3.0 PROCEDURES

3.1 Sample Identification

The contractor should identify procedures for unique sample identification and the relation to field identification (i.e., how sample numbers are assigned). Samples shall be uniquely identified, labeled, and documented in the field at the time of collection. Samples collected for laboratory analysis are identified by using standard sample labels which are affixed to the sample containers. Most analytical laboratories will supply the necessary labels. The following information shall be included on the sample label at the time of collection using waterproof, non-erasable ink:

- Project number
- Field identification or sample station number
- Date and time of sample collection
- Designation of the sample as a grab or composite
- Whether the sample is preserved or unpreserved
- The types of analyses to be performed
- Any relevant comments (such as readily detectable or identifiable odor, color, or known hazardous properties)
- Signature or initials of the sampler(s)

3.2 Sample Packaging

Environmental samples should be packed prior to shipment using the following procedures:

1. Allow sufficient headspace (approximately 10 percent of the volume of the container) in all bottles (except volatile organic analysis (VOA) vials with a septum seal) to compensate for any pressure and temperature changes which may occur during shipment.
2. Ensure that the lids on all bottles are tight.
3. Select a sturdy cooler in good repair. Secure and tape the drain plug with fiberglass strapping tape or duct tape. Line the cooler with a heavy duty plastic garbage bag.

4. Place glass sample bottles into bubble wrap bags or wrap a layer of bubble wrap around glass containers. Many laboratories provide bubble wrap bags for sample shipment. Place two to three VOA vials in a single bag.
5. Place the bottles in the cooler with larger bottles on the bottom inside the garbage bag. Insert polyethylene bottles between glass bottles for cushion. Put VOA vials (in bubble wrap bags) on their side on top of the larger sample containers.
6. Ensure that a trip blank has been included as appropriate for VOA samples and that a temperature blank (if supplied) is included as outlined in SOP No. 6.3, and SOP No. 6.5.
7. Place ice that has been "double bagged" on top of and/or between the samples. Fill remaining void space in the cooler with bubble wrap. Ensure that a sufficient quantity of ice has been placed into the cooler to maintain VOC samples at 4^{o}C. In summer months, it may be necessary to fill as much as 50 percent of the cooler volume with ice to properly cool warm samples.
8. Securely fasten the top of the garbage bag with tape.
9. Place the Chain-of-Custody record into a Ziploc-type bag and tape the bag to the inside of the cooler lid.
10. Close the cooler and securely tape (preferably with fiberglass strapping tape) the top of the cooler shut. Chain-of-custody seals (preferably two) should be affixed to the cooler with clear tape so that the cooler can not be opened without breaking the seals.
11. Place the shipping label in a sealed pouch on the lid of the cooler for shipment. A label containing the name and address of the shipper and the destination should be placed on the outside of each additional cooler included in the shipment.

3.3 Sample Shipping

Samples collected in the field shall be transported to the laboratory or field testing site as expeditiously as possible (within 24 hours of sampling) to avoid hold time exceedances and to ensure that samples remain properly preserved. Samples for VOC analysis must be maintained at a temperature of 4^{o}C.

In general environmental samples include drinking water, most ground water and ambient surface water, soil, sediment, treated municipal and industrial wastewater effluent, biological specimens, or any samples not expected to be contaminated with high levels of hazardous materials. Samples collected from process wastewater streams, drums, bulk storage tanks, soil, sediment, or water samples from areas suspected of being highly contaminated may require shipment as dangerous goods. Regulations for packing marking, labeling, and shipping of dangerous goods by air transport are promulgated by the International Air Transport Authority (IATA), which is equivalent to United Nations International Civil Aviation Organization (UN/ICAO). It is the responsibility of the shipper to ensure that shipments are made in accordance with all applicable laws, including contents and labeling.

3.4 Sample Chain-of-Custody

Procedures to ensure the custody and integrity of the samples should begin at the time of sampling and continue through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal. Records concerning the custody and condition of the samples are maintained in field laboratory records.

The contractor shall maintain chain-of-custody records for all field and field QC samples. A sample is defined as being within a person's custody if any of the following conditions exist:

- It is in their possession,
- It is in their view,

- It was in their possession and they secured it in a locked area, or
- It is in a designated secured area.

All sample containers shall be sealed in a manner that shall prevent or provide detection of tampering if it occurs. In no case shall tape be used to seal sample containers. Samples shall not be packaged with activated carbon unless prior approval is obtained from TCEQ.

The following minimum information concerning the sample shall be documented on the TCEQ chain-of-custody form (Attachment 1):

- Unique sample identification
- Date and time of sample collection
- Source of sample (including name, location, and sample type)
- Designation of matrix spike/matrix spike duplicate (MS/MSD)
- Preservative used
- Analyses required
- Number of sample containers
- Pertinent field data (pH, temperature, elevated headspace results or contaminant concentrations)
- Serial numbers of custody seals and transportation cases (if used)
- Name(s) of person(s) collecting the samples
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratory or laboratories
- Transporter tracking number (if applicable) or courier receipts

4.0 CAUTIONS AND INTERFERENCES

This section is not applicable to this SOP.

CHAIN OF CUSTODY RECORD

Page ____ of ____

Project Name

Project No.

Project Location

Project Manager

Sampler(s)

Sample		Type		Sample Identification	Matrix	Containers		Analytical Parameters										Remarks
Date	Time	Comp.	Grab			No.	Type											

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by:			Method of Shipment	
Received by:			Airbill No.	
Relinquished by:			Lab Address	
Received for Laboratory by:				

STANDARD OPERATING PROCEDURE NO. 6.5
COLLECTION OF QA/QC SAMPLES

1.0 METHOD SUMMARY

Quality assurance/quality control samples are collected to attempt to determine if sample bottle preparation, sample shipment, handling, and storage procedures had an impact on the sample integrity. Data validation is an integral part of the sampling program and consists of reviewing and assessing the quality of data and determining the usability of the data based on previously defined objectives.

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following equipment is used for collection of QA/QC samples:

- Pre-cleaned sample containers (with preservatives, if required)
- Analyte-free water (distilled or deionized)
- Stainless steel sampling bowl
- Stainless steel sampling spoon
- Other equipment as prescribed for collecting soil or water samples

3.0 PROCEDURES

3.1 Collection Field QA/QC Samples

3.1.1 Equipment Blanks

Equipment blanks should be collected using the following procedures:

1. Properly decontaminate the sampling device. Equipment blanks are not collected on disposable equipment (e.g., disposable bailers).
2. Select the proper sample containers and an appropriate quantity of analyte-free water (deionized or distilled).
3. Complete the sample labels with the appropriate information.
4. Slowly pour the analyte-free water through or over the sampling device until the sample bottle is filled to the appropriate level.
5. Securely tighten the cap on the bottle.
6. Prepare the bottle for shipment in accordance with SOP 6.5 (Sampling Handling and Control).

3.1.2 Field Blanks

Field blanks should be collected downwind of possible VOC sources. The procedures for collecting field blanks are:

1. Select the proper sample containers (VOC vials) for collecting the sample and an appropriate quantity of analyte-free water.
2. Complete the sample labels with the appropriate information.
3. Pour the water into the vial just to overflowing so that there is a meniscus at the top of the vials.
4. Securely tighten the lid on the sample vials.
5. Prepare the sample for shipment in accordance with SOP 6.5 (Sampling Handling and Control).

3.1.3 Field Duplicate Samples

Duplicate samples should be collected simultaneously or in immediate succession, using identical recovery techniques, and treated in an identical manner during storage, transportation, and analysis. If possible, collect duplicate samples in areas known to be contaminated to assess the laboratory's ability to measure contamination.

1. Select the proper sample containers for collecting a sample and a duplicate sample.

2. Complete the sample labels with the appropriate information.
3. Collect the sample as required.
   a. Groundwater Samples
      i. Collect the sample in accordance with the appropriate sampling SOP.
      ii. Fill the sample bottle half full with the pump or bailer then fill the duplicate sample bottle half full. Fill the remainder of the sample bottle then the remainder of the duplicate sample bottle. If a bailer is used, attempt to fill equal quantities from each bailer load into the sample and duplicate bottles.
   b. Soil Samples
      i. Collect the sample in accordance with the appropriate sampling SOP but collect double the required sample volume.
      ii. Place the sample material into a stainless steel bowl and homogenize the sample with a stainless steel spoon. Do not homogenize samples for VOC analysis as the homogenization will cause a release of VOC constituents.
      iii. Quarter the sample bowl and set aside two of the sample quarters.
      iv. Homogenize the sample again.
      v. Fill the appropriate sample jars using the material from the bowl, placing equal portions of sample into the sample bottles.
4. Securely tighten the caps on the sample bottles.
5. Prepare the sample for shipment in accordance with SOP 6.5 (Sampling Handling and Control).

3.1.4 Field Replicate (Split) Samples

If possible, collect field replicate samples from areas known to be contaminated to assess the laboratory's ability to measure contamination.

1. Select the proper sample containers for collecting a sample and a replicate sample.
2. Complete the sample labels with the appropriate information.
3. Prepare the sample using the same methods described in Section 3.1.3.
4. Place the field replicate samples in a separate cooler for shipment to the second laboratory.

3.1.5 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Many laboratories can prepare the MS/MSD samples from the submitted sample volume. The sampler is only required to identify the sample for MS/MSD analysis on the chain of custody. If the sampler is required to collect MS/MSD samples, they should be collected as replicate samples but with three sets of samples (one original sample, one matrix spike sample, and one matrix spike duplicate).

3.1.6 Temperature Blank

Temperature blanks are typically prepared by the analytical laboratory and included in the shipment of sample coolers and containers. One temperature blank should be returned to the laboratory in each sample cooler.

3.1.7 Trip Blank

Trip blanks are usually prepared by the analytical laboratory using analyte-free water and included in the shipment of sample coolers and containers. Trip blanks should only be submitted with samples requiring VOC analysis. One trip blank should be included in each sample cooler containing samples for VOC analysis. The procedures for submitting a trip blank are:

- Prepare the coolers for shipment to the laboratory. If possible, pack all samples for VOC analysis in one cooler so that only one trip blank is required.
- Identify the trip blank on the chain-of-custody record. If the project will continue for several days, be sure to number trip blanks sequentially so that multiple trip blanks with the same identification number are not submitted to the laboratory.
- Ensure that VOC analysis (or benzene, toluene, ethylbenzene, and xylenes (BTEX) at Leaking Petroleum Storage Tank (LPST) sites) is the selected analysis for the trip blank.

4.0 CAUTIONS AND INTERFERENCES

The types of QA/QC samples and frequency for collection are typically outlined in the project Quality Assurance Project Plan (QAPP). It is important to identify the sample frequency prior to beginning the field effort. QA/QC samples should be selected to match the sampling program (i.e., it is not necessary to collect trip blanks for sites where only samples for metals analysis are being collected).

STANDARD OPERATING PROCEDURE NO. 7.1
WATER LEVEL/SEDIMENT MEASUREMENT

1.0 METHOD SUMMARY

An accurate water level measurement is necessary to calculate purge volumes and to create water level surface maps. This SOP describes the steps necessary to collect a water level/sediment level from a monitoring well.

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following is a typical equipment list used for water level/sediment measurement of groundwater monitoring wells.

2.1 Equipment List

- Water level indicator
- Well keys
- PID or FID
- Logbook
- As-built diagrams of monitoring wells
- Calculator
- Plastic sheeting
- Bolt cutters
- Cotton string
- Clear bailers
- Nylon rope
- Weights
- Appropriate personal protective equipment (PPE)

3.0 PROCEDURES

3.1 Water level/Sediment Measurement

1. Start at the least contaminated well, if known.
2. Inspect the well for signs of tampering or other damage. If tampering is suspected, (i.e., casing is damaged, lock or cap is missing) this shall be recorded in the field log book and on the well sampling form and reported to the Field Operations Leader. Wells that are suspected to have been tampered with shall not be sampled until the Field Operations Leader has discussed the matter with the project manager.
3. Lay plastic sheeting around the well to minimize likelihood of contamination of equipment from soil adjacent to the well.
4. Remove locking well cap, note location, time of day, and date in field notebook or appropriate log form.
5. Remove well casing cap.
6. For confined aquifers, wait for water level to equilibrate before measuring water level.

7. Turn on the water level meter.

8. Press the battery check button (if so equipped). A solid tone will be heard if the battery is good.

9. Lower water level measuring device or equivalent (i.e., permanently installed transducers or airline) into well, unreeling the measuring tape from the spool of the meter as you go.

10. Continue lowering the probe until a continuous tone is heard. This tone indicates that the probe has come in contact with the water.

11. Holding the measuring tape near the measuring reference point, alternately raise and lower the probe across the depth at which the tone sounds. This will ensure that you have an accurate measurement of the depth to water. Record the distance from water surface to the referenced measuring point on well casing in site logbook. Alternatively, if there is no reference point, note that water level measurement is from top of steel casing, top of PVC riser pipe, from ground surface, or some other position on the wellhead, typically on the north edge. Water level measurement should be recorded to the nearest 0.01 foot.

12. Measure total depth of well (at least twice to confirm measurement) and record in the site logbook or field data sheet. Total depth measurements should be recorded to the nearest 0.01 foot..

13. If the field investigator suspects that excessive sediment buildup may be occurring at the bottom of the well, the measured total depth should be compared with the total depth at the time of drilling (from boring log). If the sediment thickness exceeds one foot, or is excessively impeding the flow of groundwater through the well screen, the well shall be redeveloped in accordance with SOP 5.6 (Monitor Well Development/Abandonment).

14. Decontaminate water level probe in accordance with SOP 1.5 (Decontamination).

3.2 Measurement of Separate Phase Liquids (DNAPL or LNAPL)

Separate phase organics frequently occur at hazardous waste sites as light non-aqueous phase liquids (LNAPL) or dense non-aqueous phase liquids (DNAPL). The presence of these constituents should be documented if possible. The presence of LNAPL can be confirmed using a clear bailer by lowering the bailer to just below the top of the water surface, removing the bailer, and observing the contents. The volume of LNAPL recovered can be enhanced through the use of a product cup. The presence of DNAPL can be confirmed by one of two ways.

1. Lower a weighted bailer to the bottom of the well, remove the bailer and observe the contents for any free product.

2. Lower a length of weighted cotton string to the bottom of the well, remove the string and observe the string for the DNAPL staining.

3. Measure and record the thickness of any free product identified to the nearest 0.01 ft.

4.0 CAUTIONS AND INTERFERENCES

Water levels in wells should measured from the least contaminated to the most contaminated or from upgradient to downgradient if chemistry is unknown.

STANDARD OPERATING PROCEDURE NO. 7.4
MICRO PURGING A MONITORING WELL

1.0 METHOD SUMMARY

Micro purging is an approach to purging based on the observation that groundwater flows through the well screen in most formations with sufficient velocity to maintain an exchange with formation water surrounding the well screen. By placing a pump within the screen interval and pumping at a low-flow rate which does not induce drawdown of the water column, a representative sample of formation groundwater can be collected with minimal withdrawal of stagnant water. Ideally micro purging should be conducted in wells in which dedicated pumps have been installed. It is possible to use non-dedicated pumps if a sufficient amount of time is allowed for the water level to equilibrate following insertion of the pump. Whenever possible, micro purging and low-flow sampling methods are preferred for use at Superfund sites.

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following is a typical equipment list used for micro purging groundwater monitoring wells.

Equipment List

- Logbook
- As-built diagrams of monitoring wells
- Field data sheets
- Plastic sheeting
- Generator, if using pump
- Air compressor for bladder pumps
- Pump
- Gasoline for generator or an electrical source
- Discharge tubing for pump
- Control box (if necessary)
- Appropriate pump fittings (e.g., hose clamps, barbed fittings, etc.)
- Drums
- Marking pen for labeling drums
- Wrench for opening/sealing drums
- Appropriate PPE

3.0 PROCEDURES

The procedures for micro purging are as follows:

1. All non-dedicated equipment shall be decontaminated in accordance with SOP 1.5 (Decontamination) prior to sampling activities.
2. Assemble pump, hoses and safety cable, and, if using a non-dedicated pump, lower the pump into the well. The pump should be set at or just above the screened interval if the aquifer is under confined conditions (depth to water is above the screen), or just below the air/water interface if the aquifer is under unconfined conditions (water table straddles screen).
3. If using a non-dedicated pump, allow sufficient time for the water level to equilibrate to obtain a representative sample.
4. Make connections between the pump and control box if using an air-lift or bladder pump (i.e., Well Wizard).
5. Use a ground fault interrupter (GFCI) or ground the generator to avoid possible electric shock.
6. Attach power supply and begin micro purging the well. A well should be purged at or below its recovery rate, ideally less than 0.2 to 0.3 L/min.
7. Monitor the drawdown in the well. If the drawdown exceeds 0.3 ft, then reduce the pumping rate to ensure that drawdown does not exceed 0.3 ft.

8. Connect the water quality meters to the discharge hose and measure field parameters in accordance with Section 7.5 (Measurements of Monitor Well Field Parameters).
9. Repeat the measurements at a regular interval (i.e., every minute). Record the values in the field log book. Continue purging until the measured parameters stabilize for 3 successive readings.
10. If field parameters have not stabilized after 3 successive readings, continue taking measurements at 3 minute intervals up to a maximum of 5 successive readings. If, after 5 successive readings, the parameters have not stabilized, an entry shall be made in the field logbook indicating that sampling will be conducted without stabilized parameters.
11. Purge water should be containerized on site or handled as specified in the site specific project plan.

4.0 CAUTIONS AND INTERFERENCES

The primary goal in performing groundwater sampling is to obtain a representative sample of the groundwater body. Analysis can be compromised by field personnel in two primary ways: (1) taking an unrepresentative sample, or (2) by incorrect handling of the sample. There are numerous ways of introducing foreign contaminants into a sample, and these must be avoided by following strict sampling procedures and utilizing trained field personnel. While laboratory methods have become extremely sensitive, well controlled and quality assured, they cannot compensate for a poorly collected sample. The collection of a sample should be as sensitive, highly developed and quality assured as the analytical procedures.

In a nonpumping well, there will be little or no vertical mixing of the water, and stratification will occur. The well water in the screened section will mix with the groundwater due to normal flow patterns, but the well water above the screened section will remain isolated, become stagnant, and may lack the contaminants representative of the groundwater. Persons sampling should realize that stagnant water may contain foreign material inadvertently or deliberately introduced from the surface resulting in an unrepresentative sample. To safeguard against collecting nonrepresentative stagnant water, the following guidelines and techniques should be adhered to during sampling:

1. Water level and sediment thickness measurements should be taken prior to beginning the purging activities.
2. As a general rule, all monitoring wells should be pumped (preferred) or bailed prior to sampling. Purge water should be containerized on site or handled as specified in the site specific project plan.
3. For wells that can be easily pumped or bailed to dryness, micro purging and low-flow sampling methods shall be used.

Materials of construction for samplers and evacuation equipment (bladders, pump, bailers, tubing, etc.) should be limited to stainless steel, Teflon, and glass in areas where concentrations are expected to be at or near the detection limit. The tendency of organics to leach into and out of many materials makes the selection of materials critical for trace analyses. The use of plastics, such as PVC or polyethylene, should be avoided when analyzing for organics. However, PVC may be used for evacuation equipment as it will not come in contact with the sample, and in highly contaminated wells, disposable equipment (i.e., polypropylene bailers) may be appropriate to avoid cross-contamination.

STANDARD OPERATING PROCEDURE NO. 7.5
MEASUREMENT OF FIELD PARAMETERS

1.0 METHOD SUMMARY

Field parameters are collected during surface water or groundwater sampling events to identify physical/chemical characteristics of the sample that are representative of field conditions as they exist at the time of sample collection. They are also used to indicate when stagnant water has been removed from the well so that sampling may begin. Numerous instruments are commercially available for measuring field parameters. The setup and use of all instruments should follow a basic format to imply consistency of use. Regardless of the brand of meter used, all meters should be properly maintained and operated in accordance with the manufacturer's instructions and calibrations should be checked prior to use.

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following is a typical equipment list used for measuring field parameters:

2.1 Equipment List

- Logbook
- Field data sheets
- Decontamination solutions
- Tap water
- Field parameter instruments (pH meter, thermometer, conductivity meter, turbidimeter, DO meter)
- Calibration standards
- Tap water
- Non-phosphate soap (Note: Alconox is not considered a non-phosphate soap; rather a low-phosphate soap)
- Glass bulb thermometer

3.0 PROCEDURES

3.1 Temperature

Temperature is a measure of hotness or coldness on a defined scale as measured using a thermometer. Typical types of thermometers include**:**

- Digital (thermo-couple) thermistor
- Glass bulb mercury filled
- Bi-metal strip/dial indicator

No matter which type of thermometer is used, it should be calibrated prior to use, if possible. Digital thermometers should be calibrated prior to use by comparison with a mercury bulb thermometer and should agree within ± 0.5 ^{o}C.

The procedures for measuring temperature are as follows:

1. Clean the probe end with analyte-free water and immerse into sample.
2. Swirl the thermometer in the sample.
3. Allow the thermometer to equilibrate with the sample.
4. Suspend the thermometer away from the sides and bottom to observe the reading.
5. Record the reading in the field log book or on the appropriate sampling log sheet. Units of temperature are degrees Celsius (^{o}C) and should be recorded to the nearest tenth (0.1).

Conversion Formulas:

$^{o}F = (1.8\ ^{o}C) + 32^{o}$ or $^{o}C = 0.56\ (^{o}F - 32^{o})$

3.2 pH

Hydrogen ion concentration (pH) is used to express both acidity and alkalinity on a scale which ranges from 0 to 14 with 7 representing neutrality.

The procedures for measuring pH in the field are as follows:

1. Calibrate the instrument in accordance with the manufacturer's specifications.
2. Collect a sample. Measure the temperature prior to measuring the pH.
3. Immerse the probe in the sample, keeping it away from the sides and bottom of the sample container. Allow ample time for the probe to equilibrate with the sample.
4. While suspending the probe away from the sides and bottom of the sample container, record the pH. Units of pH are standard units and should be recorded in tenths (0.1).
5. Rinse the probe with analyte-free water and store it in an analyte-free water filled container until the next sample is ready.
6. Perform a post calibration at the end of the day and record all findings.

3.3 Conductivity

Conductivity is defined as the quality or power of conducting or transmitting. The procedures for measuring conductivity in the field are as follows:

1. Calibrate the instrument in accordance with the manufacturer's specifications.
2. Collect the sample and check and record its temperature.
3. Correct the conductivity instruments temperature adjustment to the temperature of the sample (if required).
4. Immerse the probe in the sample keeping it away from the sides and bottom of the container. It is important that the entire portion of the probe be wetted by the sample. This will be evident when some of the sample water is seen coming out of the small weep hole.
5. Record the result in the field log book or field sampling sheet. Units of conductivity are micro ohms per centimeter (µohms/cm) at 25°C. Results should be reported to the nearest 10 units for readings below 1,000 μohms/cm and to the nearest 100 units for readings above 1,000 μohms/cm.
6. Rinse probe.

3.4 Dissolved Oxygen

Dissolved oxygen (DO) should be measured in-situ or "down hole" whenever possible. If in-situ measurements are not possible, precautions should be taken to minimize the time the sample is exposed to ambient air. Dissolved oxygen readings should not exceed the saturation limit of oxygen in water (8 to 10 mg/l). If readings greater than 10mg/l are observed, the meter is probably not functioning correctly. The procedures for collecting a DO sample are as follows:

1. Inspect the membrane of the DO meter for air bubbles and/or holes. If air bubbles or holes exist, replace the membrane.
2. Calibrate the DO meter in accordance with the manufacturer's specifications.
3. Measure the temperature of the sample and adjust the temperature setting of the DO meter, if so equipped.
4. Record the reading in the field log book or field sampling sheet. Dissolved oxygen is measured in units of mg/l. Results should be reported to the nearest tenth of a unit (0.1).

3.5 Turbidity

Turbidity is measured using a nephelometer/turbidimeter. The procedures for measuring turbidity are as follows:

1. Rinse the sample cell with analyte-free water.
2. Follow the manufacturer's specifications for collecting a turbidity measurement.
3. Record the reading in the field log book or field sampling sheet. The units of turbidity are nephelometric turbidity units or NTUs. Units should be recorded to the nearest whole unit.

4.0 CAUTIONS AND INTERFERENCES

Refer to owner's manual for instructions on proper calibration methods of all field parameter measuring equipment.

STANDARD OPERATING PROCEDURE NO. 7.8
GROUNDWATER SAMPLING USING A LOW-FLOW TECHNIQUES

1.0 METHOD SUMMARY

Most hazardous waste site investigations utilize some form of a groundwater sampling or monitoring program to fully characterize the nature and extent of groundwater contamination. In order to obtain a representative groundwater sample for chemical analysis it is important to remove stagnant water in the borehole or pump tubing before collection of the sample. This may be achieved using a variety of instruments including pumps and bailers. Once purging is completed and the correct laboratory-cleaned sample containers have been prepared, sampling may proceed. Sampling may be conducted with any of the above instruments, and need not be the same as the device used for purging. During sampling, a field data sheet should be completed, a chain of custody form prepared, and all pertinent data recorded in the site logbook. This SOP describes the procedures for sampling a monitoring well using low-flow techniques. Low-flow methods are typically used in conjunction with micropurging (See SOP 7.4).

2.0 EQUIPMENT/APPARATUS/REAGENTS

The following is a typical equipment list used for sampling groundwater monitoring wells using a pump.

- Field data sheets and sample jar labels
- Chain-of-custody forms/Custody seals
- Sample containers
- Knife or scissors
- 5-gallon buckets
- Plastic sheeting
- Shipping containers
- Packing materials
- Ziploc-type plastic bags
- Field parameter instruments (pH meter, thermometer, conductivity meter, turbidimeter, DO meter)
- Calibration standards
- Non-phosphate soap (Note: Alconox is not considered a non-phosphate soap; rather a low-phosphate soap)
- Generator, if using pump
- Air compressor for bladder pumps
- Pump
- Gasoline for generator
- Discharge tubing for pump
- Control box (if necessary)
- Appropriate pump fittings (e.g., hose clamps, barbed fittings, etc.)
- Appropriate PPE

3.0 PROCEDURES

This section outlines the procedures for collecting representative groundwater samples using the following steps: Each step in the procedure is covered in a separate SOP. The reference SOP is in parenthesis.

Low-flow sampling procedures should be used whenever pumps are used for groundwater sampling. These procedures should be used in conjunction with micropurging techniques.

1. Prepare for sampling using: SOP 6.1 (Documentation), 6.3 (Collection of VOCs), 6.4 (Sample Handling and Control), and 6.5 (Collection of QC Samples).
2. Water level/sediment measurements will be taken in accordance with SOP 7.1 (Water Level Measurement)
3. Measurement of field parameters will be done in accordance with SOP 7.5 (Measurements of Monitoring Well Field Parameters).
4. Purging will be done in accordance with SOP 7.4 (Micro Purging).
5. Allow well to recharge after purging to 90% of the static water level.

6. Disconnect flow-through cells.
7. Assemble and label the appropriate bottles.
8. Set the pump height so that the intake is near the center of the screened interval.
9. Adjust the flow rate of the pump to minimize aeration and bubble formation. A flow rate of <0.5 L/min is typically appropriate. The pump discharge should produce a thin, continuous stream of water when filling the sample container.
10. Begin using the pump to fill the appropriate container. Samples should be collected in the following order:
    - Volatile organic compounds (VOCs)
    - Semi-volatile organic compounds (SVOCs); including polyaromatic hydrocarbons (PAHs)
    - Inorganic constituents (metals)
    - Mercury
    - Cyanide
    - Total organic carbon (TOC)
    - Total organic halogen (TOX)
    - Samples requiring field filtration
    - Samples for field parameter measurement
    - Samples for nutrient anion determinations
11. Filter and preserve samples as required by sampling plan.
12. Cap the sample container tightly and place pre-labeled sample container in a pre-chilled cooler.
13. Replace the well cap.
14. Log all samples in the site logbook and on the chain-of-custody form and label all samples in accordance with SOP 6.1 (Documentation).
15. Package samples and complete necessary paperwork in accordance with SOP 6.4 (Sample Handling and Control).
16. Transport sample to decontamination zone for preparation for transport to analytical laboratory.

4.0 CAUTIONS AND INTERFERENCES

Before sampling, monitoring wells shall be allowed to stabilize for a minimum period of 24 hours after development.

The primary goal in performing groundwater sampling is to obtain a representative sample of the groundwater body. Analysis can be compromised by field personnel in two primary ways: (1) taking an unrepresentative sample, or (2) by incorrect handling of the sample. There are numerous ways of introducing foreign contaminants into a sample, and these must be avoided by following strict sampling procedures and utilizing trained field personnel. While laboratory methods have become extremely sensitive, well controlled and quality assured, they cannot compensate for a poorly collected sample. The collection of a sample should be as sensitive, highly developed and quality assured as the analytical procedures.

Sample withdrawal methods require the use of pumps, compressed air, bailers, and samplers. Ideally, sample withdrawal equipment should be completely inert, economical to manufacture, easily cleaned, sterilized, reusable, able to operate at remote sites in the absence of power sources, and capable of delivering variable rates for sample collection. Wells should be sampled as soon as possible after purging (certainly no more than 24 hours) and should be sampled in order from least contaminated to most contaminated or from upgradient to downgradient if chemistry is unknown. Water levels shall be allowed to recover to 90% of the static water level before sampling. All non-dedicated equipment shall be decontaminated in accordance with SOP 1.5 (Decontamination) prior to use or upon completion of the sampling activities.

STANDARD OPERATING PROCEDURE NO. 17.1
GLOBAL POSITIONING SYSTEM DATA COLLECTION AND SUBMISSION

1.0 METHOD SUMMARY

TCEQ requires the use of Global Positional System (GPS) in conjunction with other technologies to collect and maintain positional data that provides physical and environmental site information about plume and contaminate changes over time. Also GPS technologies are used to provide the boundaries of buildings, real property, waste areas, locations of wells and other relevant site features.

2.0 GPS CERTIFICATION

To ensure that TCEQ receives reliable and accurate positional data, TCEQ OPP 8.12 requires that the GPS data collector must be certified. The TCEQ staff may obtain GPS certification by attending a training course presented by either an internal GPS trainer or by a manufacturer-certified GPS trainer. Non-TCEQ staff may obtain GPS certification from a manufacturer-certified GPS trainer. All GPS data collectors must verify that the certification instruction they have received meets the minimum elements listed in Table 1 - GPS Certified Training Minimum Elements in the Third Party GPS Training Certification section of this SOP.

3.0 EQUIPMENT/APPARATUS

A DGPS (Differential Global Positioning System) receiver can be either a stand alone unit, or a GPS module with Differential GPS antenna and relevant satellite subscription, plugged into a portable computer. The DGPS receiver must:

- Have six channel parallel reception or better.
- Have sub-meter horizontal accuracy.
- Employ these processing parameters:
    - Position acquisition rate - 1/second or better
    - Position mode - 3D (uses 4 satellites)
    - Maximum PDOP - 6(or less)
    - Minimum Elevation - User-Selectable (record elevation accuracy)
- Have the ability to perform real-time differential correction (no post processing).
- Receive correction data from a recognized, reliable source, and which is appropriate for real-time correction in the geographic area in which the GPS measurements will be made.
- Output correction data in RTCM-SC104 (Radio Technical Commission of Maritime Service - Special Committee Paper No.104) format via an RS-232 cable or other compatible connection which matches the DGPS receiver.
- Have ability to store at least 180 position measurements.
- Have ability to transfer almanac and position data to a personal computer via a serial port or USB connection.
- Include software to perform mission planning, differential correction, point data averaging, and conversion to common formats (Grid or ArcView).
- Have a water and shock resistant case.
- Include portable power source(s) which will last a full working day.
- All weather proof Field Log Book.
- A laser rangefinder (optional)

4.0 GPS DATA COLLECTION AND ACCURACY

Horizontal Accuracy - All horizontal positions collected using certified GPS units shall maintain sub-meter accuracy. In order to meet sub-meter accuracy, latitude and longitude coordinates should be carried out to at least 6 places for decimal degree and at least 2 place for decimal seconds.

DGPS - Differential Global Positioning System (DGPS) receiver which corrects the atmospheric effects. DGPS are used for realtime GPS mapping and tracking without the need for post-processing.

PDOP - Positional Dilution of Precision. A measure of the quality of a GPS measurement taken from a given set of four satellites at a given time. If the satellites are not widely distributed from the user's location, the PDOP value will be higher, and the quality of the measurement will be diminished. PDOP values greater than 6 are not acceptable.

Datum - A mathematical model used by cartographers to define the shape of the earth in a specific area. Always use North America Datum of 1983 (NAD 83).

Differential Correction - A process applied to raw GPS data that removes certain types of errors; primarily, the error introduced by Selective Availability. This process requires correction data from a reference GPS receiver operating from a precisely known location. Correction data must be obtained from a recognized, reliable source (such as the reference network maintained by the Texas Department of Transportation) or Racal LandStar, and certain Trimble units, provide a satellite delivered GPS correction service, which provide 24 hour accurate and reliable real time precise positioning on land and in the air. For full coverage in Texas, the differential signal is transmitted to the user by high-power geostationary satellites. The GPS and differential signal are both received by the GPS via a single antenna.

A single position reading obtained through appropriate use of real-time correction must have sub-meter accuracy.

Collection Methods - GPS data may be collected using one of three methods:

- Superimposed - The superimposed method involves standing on top of or next to the subject for which you are collecting GPS locational data. Collect 60-100 readings.
- Centroid - The centroid method is used when the superimposed method cannot be used (e.g. well inside a locked fence or structure). Take points equal distance from the desired point by starting and stopping the GPS and by averaging these points. The unit will average the point for each reading and then all the points as one point which will be the center of all the readings. Collect a minimum of 30 readings per point prior to averaging.
- Offset - The offset method is used when the superimposed method cannot be used and only when accurate offset measurements can be made (e.g. Using a laser rangefinder, tape measure, etc.) The potential error associated with the offset measurement must be added to the potential error associated with the GPS measurement. A note in the GPS logging software and the field log book of bearing and distance from the offset location can be used but location must be corrected before it is entered into a table or shape file.
- Points - The point is used for well and sample locations, gates, sub-meter objects, etc.
- Line - The line is used for trail, road, stream, berm, etc.

- Polygon - The polygon is used for buildings, site boundary, waste area, ponds or piles, etc. If it is hard to walk the entire perimeter, readings can be taken at each corner of the polygon by starting and stopping the GPS at the corners and within the same Station. The program will add the line in between the points of the Station to create a polygon.

5.0 DATA SUBMITTALS

Correction Status - All GPS data submitted must have a field indicating each record's differential correction status. There are only two selections available:

- Differential Correction - Indicates that the record has been differentially corrected.
- Uncorrected - Indicates that the record has not been differentially corrected.

Offset - The offset points must be noted in the field log book and actual points calculated before entering the station into the final database or shape file.

Events - Each event must be in separate data table or shape file.

Data Sets - Each data set must be in separate file or layer (e.g All wells, buildings, site boundaries, sample results/event, site features, roads, trails, utilities, etc. must be in separate layers/tables).
Arc View files - All data must be in Decimal Degrees, NAD 83 exported to Arc View 3.2 as a shape files with the relevant metadata, a hard copy of the Arc View tables must accompany the electronic version for TCEQ submittal.

Field Log Book - Site name location and details of field activity must be noted in the field log book, including the name and coordinates of each station and bearing and distance details describing any station off-sets.

Minimum Attributes - All GPS data submitted to TCEQ should conform to the data attributes defined in Table 1.

Table 1
GPS Data Attributes

Attribute	Data Type	Field Length	Description
Latitude	Number	Double	Decimal Degree to a minimum of six decimal places
Longitude	Number	Double	Decimal Degree to a minimum of six decimal places
Site Name	Text	50	Superfund Site Name
Station Name	Text	50	Monitoring well number or Sample name
Station Reference / Comments	Text	50	Station Location Relative to Facility
Station Type	Text	10	Point, Line or Polygon
Collector Name	Text	50	Last Name, First Initial
GPS Certificate Number	Text	8	TCEQ GPS Certificate Number
Collection Method	Text	15	Superimposed, Centroid, Offset
Datum	Text	5	Horizontal Datum (NAD27, NAD83 or WGS84)
Max PDOP	Number	Single	Maximum PDOP value in effect during data collection (not > 6)
Receiver Type	Text	50	GPS model name & accuracy
Correction Status*	Text	50	Tells whether or not GPS data was differentially corrected
GPS Date	Date	N/A	Date GPS data was collected
GPS Time	Text	8	Time GPS data was collected
Total Positions Collected	Number	Integer	Number of positions collected/corrected

*** Data that is not differentially corrected will be rejected.**

Data Format - GPS data submitted to TCEQ should be in electronic format (dBASE IV, .dbf file format is preferred). The following is an example of how the data table should be structured. The data may be submitted via email, on diskette, or CD.

Table 2
Third Party GPS Data

Example Data Table

Latitude	Longitude	Site Name	Station Name	Station Reference/ Comments	Collector Name	TCEQ GPS Certificate Number	Datum	Collection Method	Max PDOP	Receiver Type	Correction Status	GPS Date	GPS Time	Total Positions
11.111000	99.999000	Pioneer	MW-21	NW Corner	Terry, D	95081107	NAD83	Superimposed	4.4	Trimble XRS DGPS	Differential Correction	5/22/00	10:10 AM	61
11.111100	99.999100	Pioneer	MW-22	Center of the facility	Terry, D	95081107	NAD83	Centroid	5.2	Trimble XRS DGPS	Differential Correction	5/22/00	10:25 AM	108
11.111200	99.999200	Pioneer	MW-23	S of entrance	Terry, D.	95081107	NAD83	Superimposed	3.5	Trimble XRS DGPS	Differential Correction	5/22/00	1:38 PM	66
11.111200	99.999200	Pioneer	site location	South Entrance of facility	Terry, D.	95081107	NAD83	Superimposed	3.5	Trimble XRS DGPS	Differential Correction	5/22/00	3:38 PM	60

Third Party GPS Training Certification
Minimum Qualifications
Texas Natural Resource Conservation Commission

TCEQ OPP 8.12 requires all GPS training courses to include both lecture/classroom discussion and hands-on exercises. Table 1 contains the minimum elements that must be included in any TCEQ-recognized GPS certification training course

Table 1
GPS Certification Training
Minimum Elements

Minimum lecture and/or demonstration elements	**Minimum hands-on exercises, to be successfully completed by each student**
☐ Background of the Global Positioning System. ☐ GPS accuracy issues. ☐ Relevant Agency operating policies. ☐ Operation of GPS equipment, including basic troubleshooting. ☐ Data collection procedures. ☐ Differential correction, both real time processing and post processing. ☐ Coordinate averaging for point locations. ☐ Data output in formats appropriate for import to GIS or tabular databases.	☐ Pre-planning, including data quality objectives, equipment and materials needed, logistics of field data collection, and prediction of GPS data collection conditions. ☐ Navigation to a given coordinate. ☐ Storing and transferring raw positional data. ☐ Differential correction of raw data through post processing. ☐ Averaging corrected point data and outputting to a GIS file.
Class exercises shall also include computer plotting of point data to allow students to better understand GPS accuracy issues and the effects of differential correction and point data averaging	
Note: All certified GPS users recognized by TCEQ must be recertified every 2 years; • Sales or user demonstrations do NOT constitute GPS training; • GPS training courses should last a minimum of six to eight hours; • The TCEQ GPS operating policy is available online at: http://www.tceq.state.tx.us/gis/gisplcy.html	

Individuals obtaining or with current GPS certification training must verify that the instruction they have received meets the minimum elements listed in Table 1. Therefore, fill out the attached form, along with copies of GPS training certificates, and return them to:

David P. Terry
TCEQ GPS Coordinator (MCC-155)
SWAP Team
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087
(512) 239 4755
Email: dterry@tceq.state.tx.us

GPS Certification Verification Form
Texas Commission on Environmental Quality

Contact Information				
GPS Training Coordinator Information			**Training Provider Information**	
Name			Organization Providing GPS Training	
Organization			Instructor	
Mailing Address			Course Name	
City	State	ZIP	Course Date	Course Hours
Email Address			GPS System (e.g. Trimble, Magellan, etc.)	Manufacture Yes ☐ No ☐

The following individual(s) have received GPS certification training that complies with TCEQ OPP 8.12 minimum training elements:

Name	Title

I hereby state that the information provided is true, accurate, and complete to the best of my abilities

Signature of GPS Training Coordinator or GPS Trainer   Title   Date

Printed Name   Telephone Number   Extension

Appendix B
NELAP-Recognized Laboratory Accreditation Certificate and Fields of Accreditation

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

DHL Analytical Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Executive Director Texas Commission on Environmental Quality

Certificate Number: T104704211-10-3
Effective Date: 6/2/2010
Expiration Date: 4/30/2011

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate:	T104704211-10-3
Expiration Date:	4/30/2011
Issue Date:	6/2/2010

DHL Analytical Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercedeall previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non Potable Water***

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Lead	TX	1075	10156204

Method EPA 160.1

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	10009208

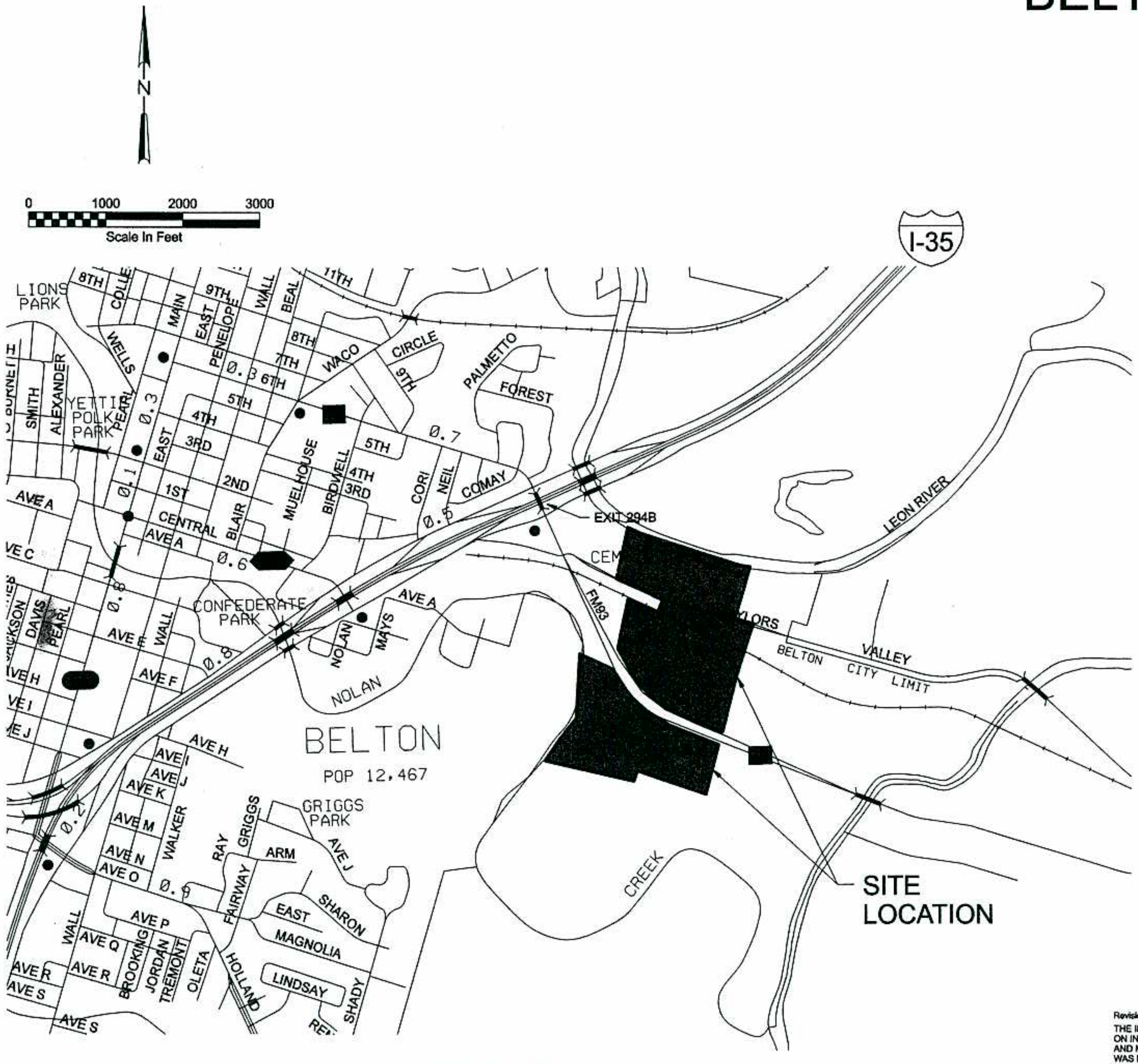
Appendix C
CH2MHill Drawings

AS-BUILT DRAWINGS

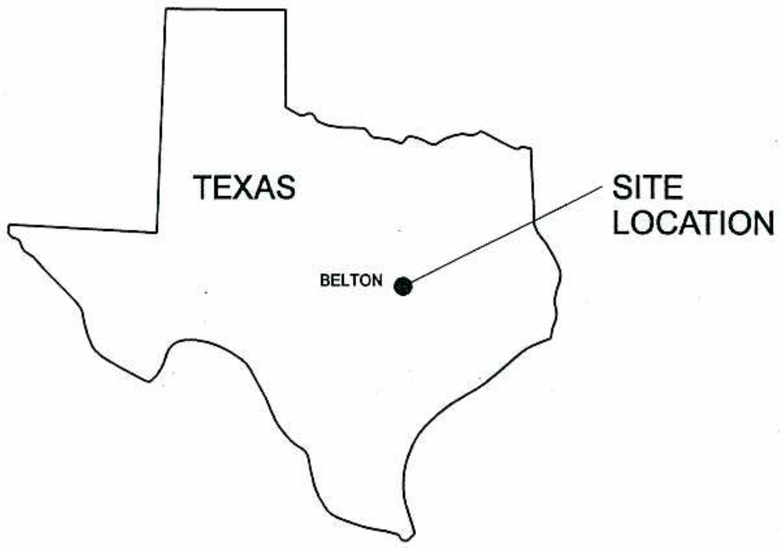
SOIL / WASTE EXCAVATION AND SITE RESTORATION

ROCKWOOL INDUSTRIES, INC SUPERFUND SITE

BELTON, TEXAS



LOCATION MAP



INDEX TO DRAWINGS

SHT NO.	DWG NO.	SHEET TITLE / DESCRIPTION
1	C-1	SITE LOCATION AND DRAWING INDEX
2	C-2	SITE VICINITY MAP AND ACCESS PLAN
3	C-3	SITE PREPARATION PLAN GEER PROPERTY - CEMETERY AREA AND NORTH PROPERTY
4	C-4	SITE PREPARATION PLAN OU2 AND CENTRAL PROPERTY
5	C-5	EXCAVATION / WASTE REMOVAL PLAN GEER PROPERTY - CEMETERY AREA
6	C-6	EXCAVATION / WASTE REMOVAL PLAN NORTH PROPERTY
7	C-7	EXCAVATION / WASTE REMOVAL PLAN LEON RIVER EMBANKMENT
8	C-8	EXCAVATION / WASTE REMOVAL PLAN OU2 AND CENTRAL PROPERTY
9	C-9	COVER AND FINISHED GRADE PLAN GEER PROPERTY - CEMETERY AREA
10	C-10	COVER AND FINISHED GRADE PLAN NORTH PROPERTY
11	C-11	FINISHED GRADE PLAN - CONTAINMENT CELL OU2 AND CENTRAL PROPERTY
12	C-12	CULVERT PROFILES AND DETAILS GEER PROPERTY - CEMETERY AREA
13	C-13	SECTIONS GEER PROPERTY - CEMETERY AREA AND NORTH PROPERTY
14	C-14	SECTIONS OU2 AND CENTRAL PROPERTY
15	C-15	DETAILS COVER, CHAIN LINK FENCE, AND SEDIMENT FENCE
16	C-16	DETAILS STORMWATER AND LEON RIVER EMBANKMENT
17	C-17	EXCAVATION PLAN CONTAINMENT CELL
18	C-18	FINISHED GRADE PLAN CONTAINMENT CELL
19	C-19	SECTIONS AND DETAILS CONTAINMENT CELL
20	C-20	DETAILS MONITORING WELL

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

THE INFORMATION PROVIDED IN THE RECORD DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS FROM OBSERVATIONS AND MEASUREMENTS TAKEN DURING CONSTRUCTION. CH2M HILL WAS NOT PRESENT DURING CONSTRUCTION OF THE CONTRACT AND THEREFORE, WILL NOT BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DESIGN CHANGES THAT MAY HAVE HAPPENED DURING CONSTRUCTION WITHOUT NOTIFICATION OR APPROVAL OF CH2M HILL, WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS FROM THE INFORMATION PROVIDED.

DAVID J. STIEB
79795

David J. Stieb 1-24-06

DSGN RE THOMPSON
JA BOOTH
DR DC EVANS
CHK RE THOMPSON
MD WILSON
APVD DJ STIEB

NO.	DATE	REVISION	BY	APVD
1	1/2006	RECORD DRAWINGS	JB	DS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

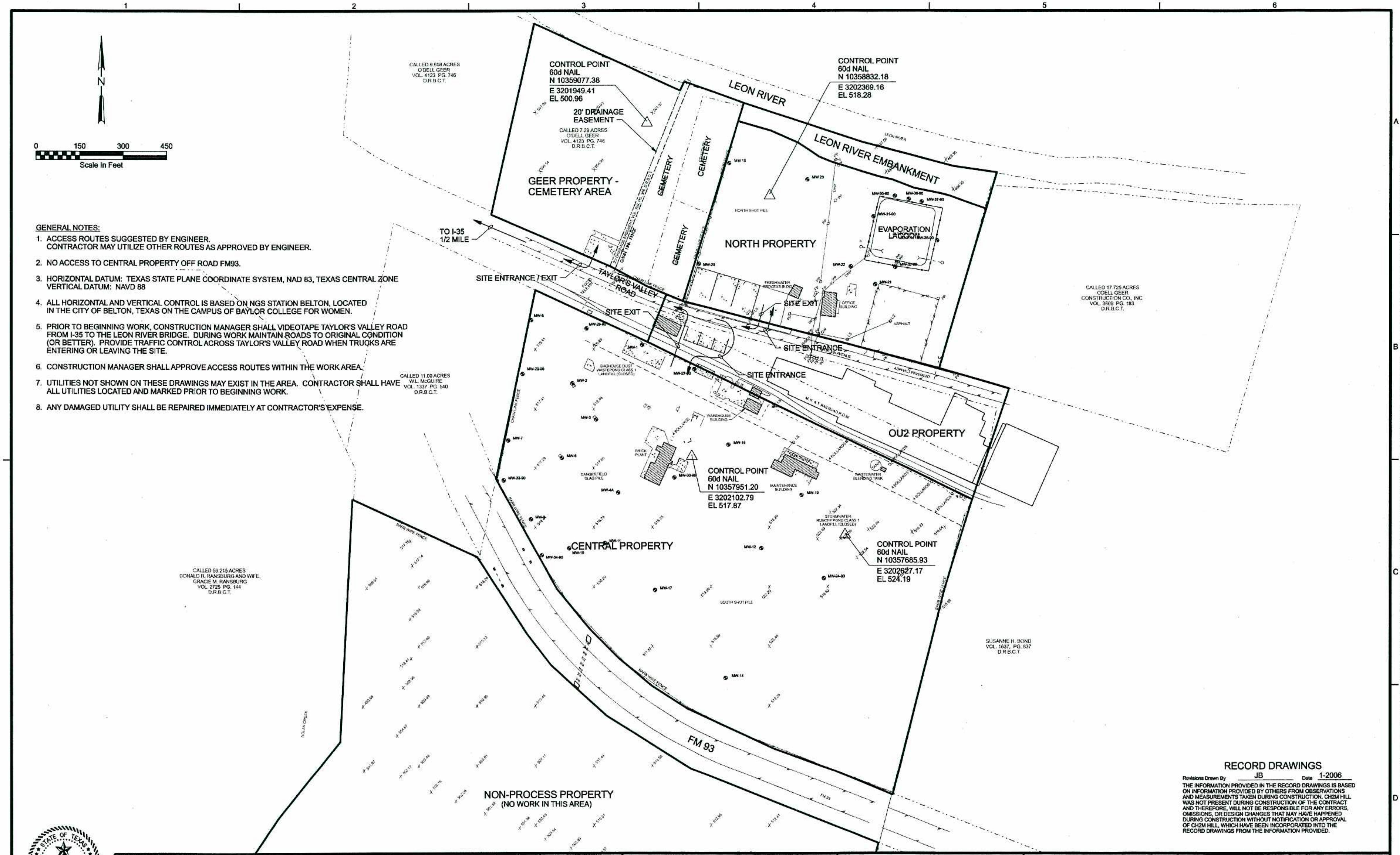
EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL

SITE LOCATION AND DRAWING INDEX

SHEET 1
DWG C-1
DATE JAN 2006
PROJ 185014

FILENAME: 05nc100d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:40:08 AM



GENERAL NOTES:

1. ACCESS ROUTES SUGGESTED BY ENGINEER.
   CONTRACTOR MAY UTILIZE OTHER ROUTES AS APPROVED BY ENGINEER.
2. NO ACCESS TO CENTRAL PROPERTY OFF ROAD FM93.
3. HORIZONTAL DATUM: TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, TEXAS CENTRAL ZONE
   VERTICAL DATUM: NAVD 88
4. ALL HORIZONTAL AND VERTICAL CONTROL IS BASED ON NGS STATION BELTON, LOCATED IN THE CITY OF BELTON, TEXAS ON THE CAMPUS OF BAYLOR COLLEGE FOR WOMEN.
5. PRIOR TO BEGINNING WORK, CONSTRUCTION MANAGER SHALL VIDEOTAPE TAYLOR'S VALLEY ROAD FROM I-35 TO THE LEON RIVER BRIDGE. DURING WORK MAINTAIN ROADS TO ORIGINAL CONDITION (OR BETTER). PROVIDE TRAFFIC CONTROL ACROSS TAYLOR'S VALLEY ROAD WHEN TRUCKS ARE ENTERING OR LEAVING THE SITE.
6. CONSTRUCTION MANAGER SHALL APPROVE ACCESS ROUTES WITHIN THE WORK AREA.
7. UTILITIES NOT SHOWN ON THESE DRAWINGS MAY EXIST IN THE AREA. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED AND MARKED PRIOR TO BEGINNING WORK.
8. ANY DAMAGED UTILITY SHALL BE REPAIRED IMMEDIATELY AT CONTRACTOR'S EXPENSE.

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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David J. Stieb 1-24-

DSGN	RE THOMPSON JA BOOTH						VERIFY SCALE
DR	DC EVANS						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 ▬ 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAWINGS	JB	DS	
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD	

CH2MHILL

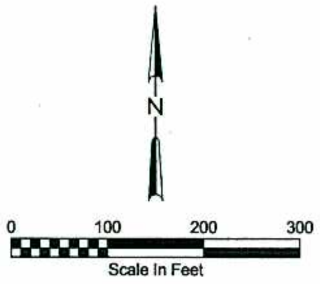
EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL

SITE VICINITY MAP AND ACCESS PLAN

SHEET	2
DWG	C-2
DATE	JAN 2006
PROJ	185014

FILENAME: 05nc101d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:40:50 AM

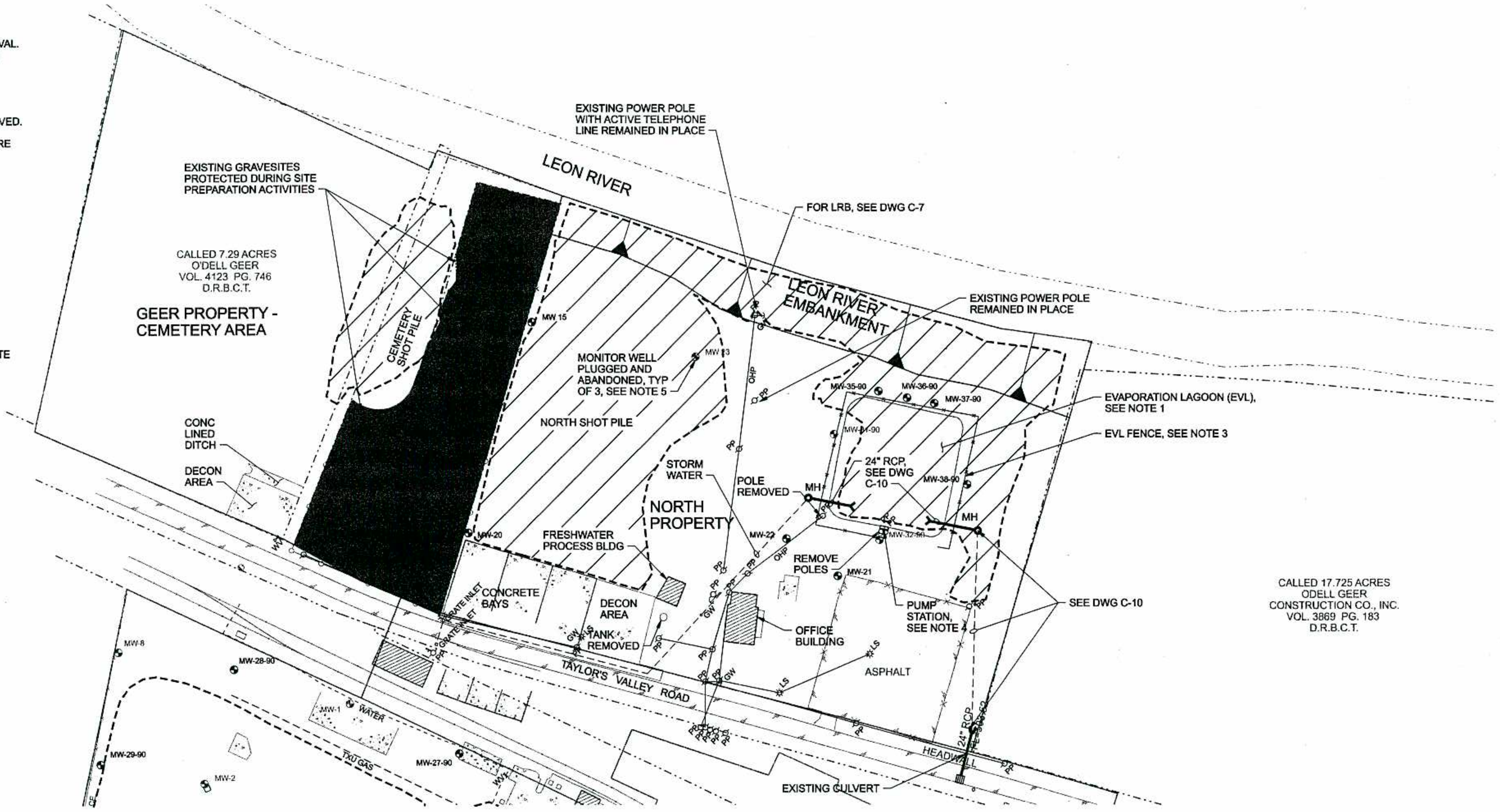


NOTES:

1. WATER FROM EVL INITIALLY PUMPED TO LEON RIVER PER TCEQ APPROVAL. REMAINING AND COLLECTED STORMWATER USED FOR CONSTRUCTION ACTIVITIES IN CONTAMINATED AREAS.
2. ALL WOODY VEGETATION WITHIN CLEARING LIMITS REMOVED.
3. EVAPORATION LAGOON FENCE, POWER POLES (EXCEPT THOSE DESIGNATED TO PROTECT) AND WIRES WITHIN CLEARING LIMITS REMOVED.
4. EXISTING CONCRETE EVAPORATION LAGOON PUMP STATION STRUCTURE DEMOLISHED BELOW GRADE AND BACKFILLED WITH SOIL.
5. MONITOR WELLS MW-23, MW-31-90, AND MW-32-90 PLUGGED AND ABANDONED.

LEGEND

-·-·-·-	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
▨	SITE DISTURBANCE / CLEARING LIMITS
■	NON-WORK AREA, DO NOT DISTURB
†	APPROXIMATE LOCATION OF EXISTING CEMETERY GRAVESITE
◉	EXISTING MONITOR WELL
═	EXISTING ROAD
┼	EXISTING RAILROAD
▨	EXISTING BUILDING
░	EXISTING CONCRETE
PP○	EXISTING POWER POLE
LS✲	EXISTING LIGHT
FH	FIRE HYDRANT
GW	GUY WIRE
OHP	OVERHEAD POWER
MH	MANHOLE
WV	WATER VALVE
- - - -	EXISTING UNDERGROUND UTILITY



RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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David J. Stieb 1-24-06

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CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAWINGS	JB	DS
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VERIFY SCALE

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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

EPA
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ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
SITE PREPARATION PLAN
GEER PROPERTY - CEMETERY AREA
AND NORTH PROPERTY

SHEET	3
DWG	C-3
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncp101d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:01:01 PM

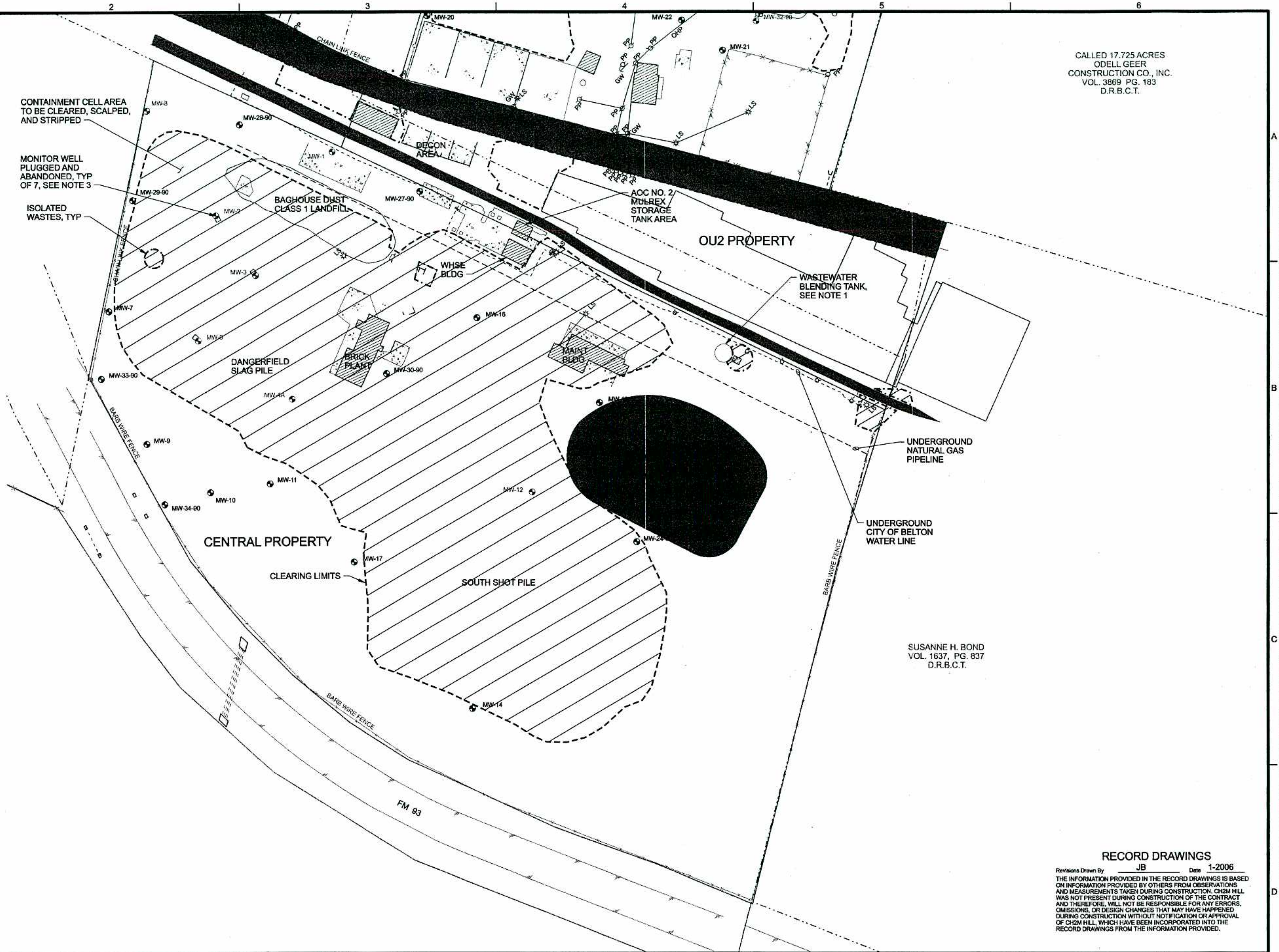
0 100 200 300
Scale In Feet

NOTES:

1. WATER (APPROXIMATELY 187,500 GAL) FROM WASTEWATER BLENDING TANK WAS USED FOR DUST SUPPRESSION.
2. WOODY VEGETATION IN CLEARING/EXCAVATION AREAS LESS THAN 3 INCHES IN DIAMETER REMOVED. TREES WITH A TRUNK DIAMETER GREATER THAN 3 INCHES WERE PRESERVED.
3. MONITOR WELLS MW-1, MW-2, MW-3, MW-4A, MW-6, MW-8, AND MW-12 PLUGGED AND ABANDONED.

LEGEND

-·-·-·-	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
▭	SITE DISTURBANCE / CLEARING LIMITS
■	NON-WORK AREA, DO NOT DISTURB
●	EXISTING MONITOR WELL
→	EXISTING ROAD
┼┼┼	EXISTING RAILROAD
▨	EXISTING BUILDING
░	EXISTING CONCRETE
PP ⌀	EXISTING POWER POLE
LS ✲	EXISTING LIGHT
GW	GUY WIRE
FH	FIRE HYDRANT
MH	MANHOLE
WV	WATER VALVE
OHP	OVERHEAD POWER
- - - -	EXISTING UNDERGROUND UTILITY



RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb 1-24-06

DSGN	RE THOMPSON JA BOOTH
DR	DC EVANS
CHK	RE THOMPSON MD WILSON
APVD	DJ STIEB

NO.	DATE	REVISION	BY	APVD
2	1/2006	RECORD DRAWINGS	JB	DS
1	1/2005	ADDENDUM 1	JB	RT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

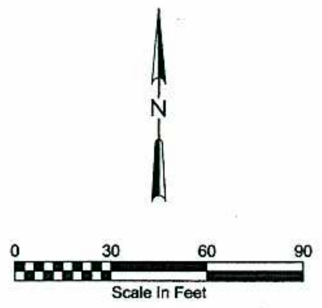
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
SITE PREPARATION PLAN
OU2 AND CENTRAL PROPERTY

SHEET	4
DWG	C-4
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncp103d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:01:30 PM

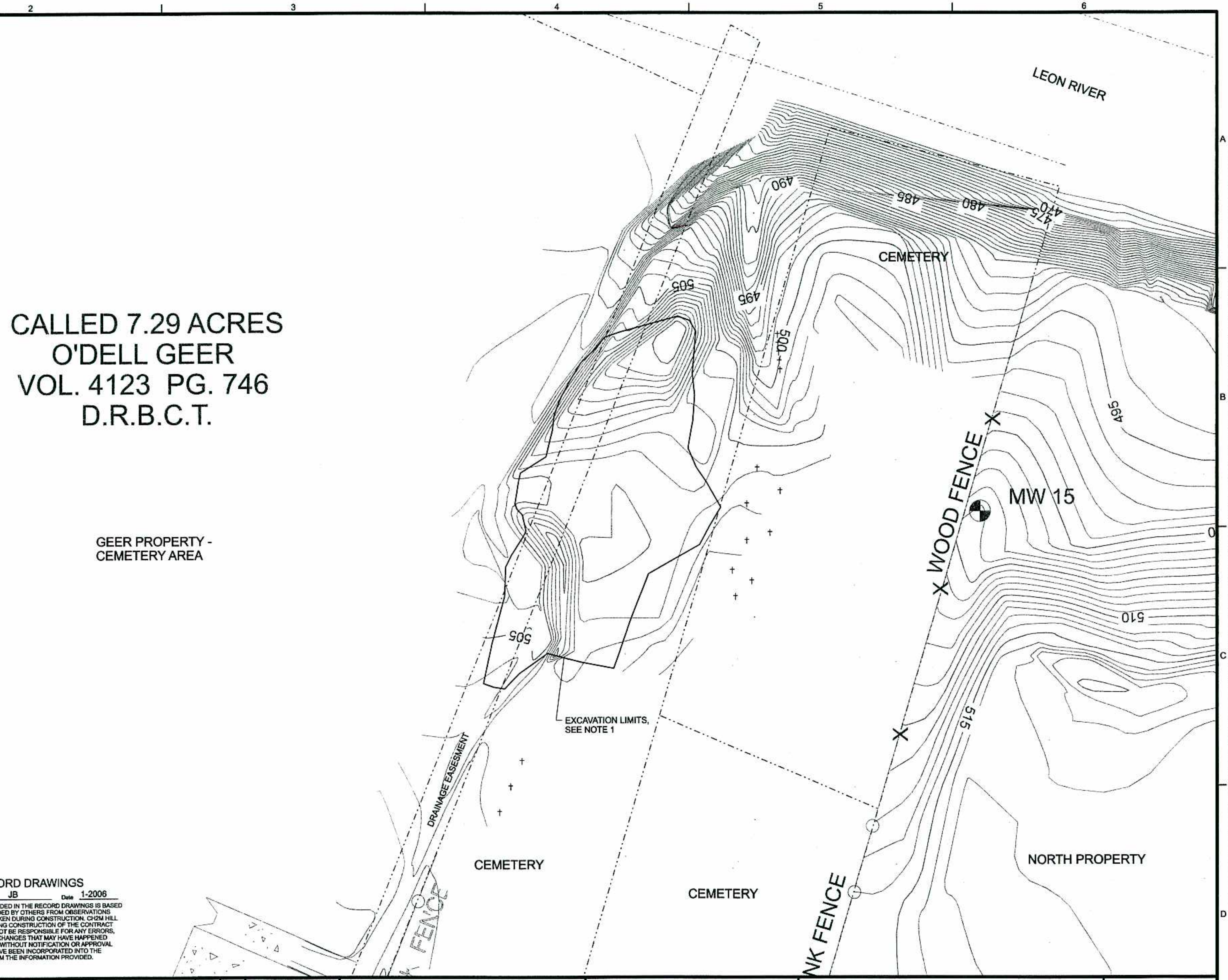


NOTES:

1. WASTE EXCAVATED TO THE EXTENT POSSIBLE WITHIN EXCAVATION LIMITS. REMAINING MATERIALS REGRADED AND COVERED WITH 12" CLAY AND 6" TOPSOIL PER THE DESIGN.
2. EXCAVATED MATERIALS WERE PLACED IN THE CONTAINMENT CELL.
3. GRAVESITES ADJACENT TO WORK AREA WERE MARKED AND PROTECTED.

LEGEND

- -··-··- PROPERTY LINE / RIGHT OF WAY (R.O.W.)
- ——— EXCAVATION LIMITS
- † APPROXIMATE LOCATION OF EXISTING CEMETERY GRAVESITE
- ◐ EXISTING MONITOR WELL
- EXISTING ROAD
- EXISTING RAILROAD
- ▨ EXISTING BUILDING
- EXISTING CONCRETE
- PP EXISTING POWER POLE
- LS EXISTING LIGHT
- - - - - EXISTING UNDERGROUND UTILITY



RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb 1-24-06

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS					
CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAWINGS	JB	DS
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

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0 ▬▬▬ 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
EXCAVATION / WASTE REMOVAL PLAN
GEER PROPERTY - CEMETERY AREA

SHEET	5
DWG	C-5
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncx101d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:02:00 PM

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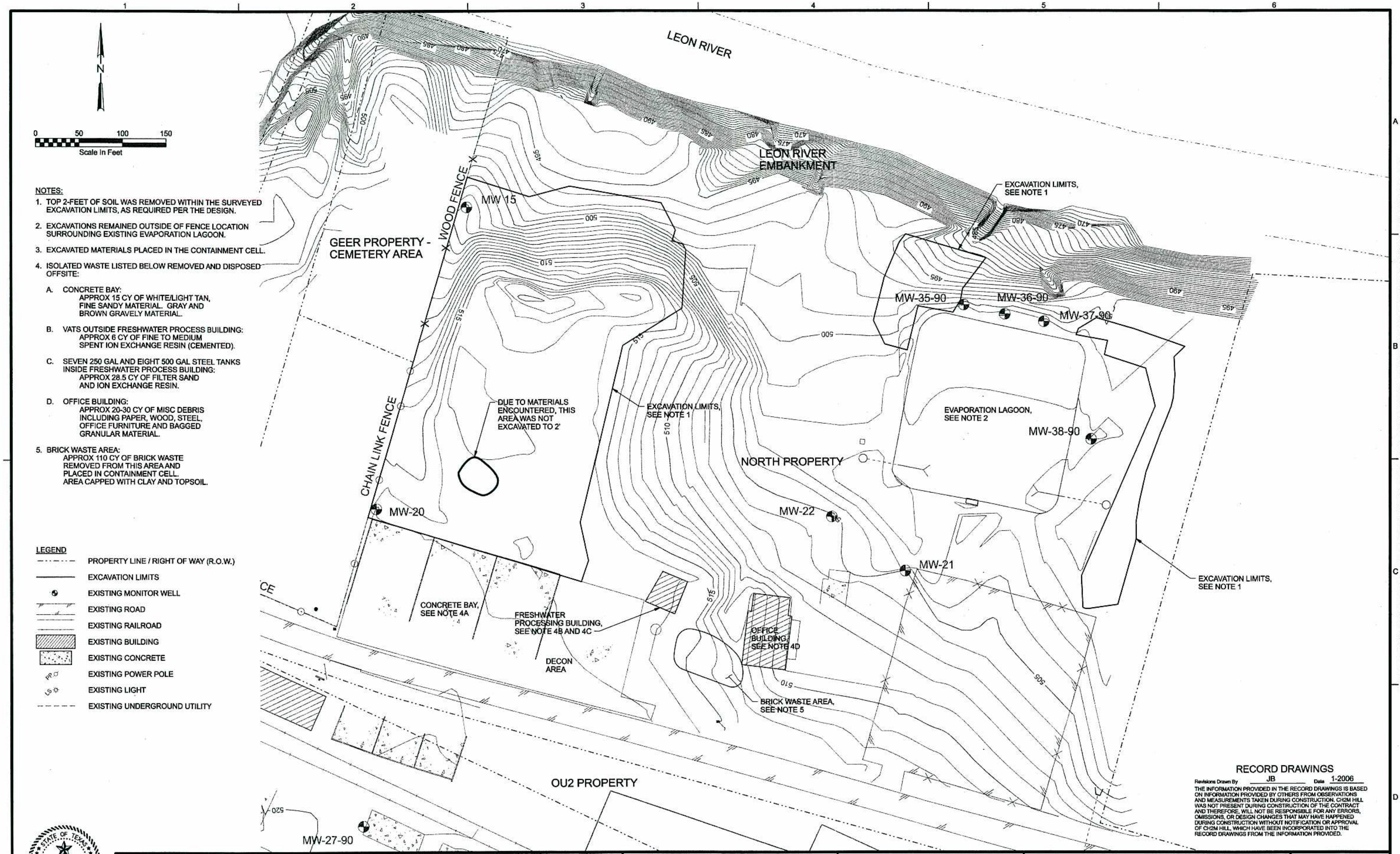

NOTES:

1. TOP 2-FEET OF SOIL WAS REMOVED WITHIN THE SURVEYED EXCAVATION LIMITS, AS REQUIRED PER THE DESIGN.
2. EXCAVATIONS REMAINED OUTSIDE OF FENCE LOCATION SURROUNDING EXISTING EVAPORATION LAGOON.
3. EXCAVATED MATERIALS PLACED IN THE CONTAINMENT CELL.
4. ISOLATED WASTE LISTED BELOW REMOVED AND DISPOSED OFFSITE:
   - A. CONCRETE BAY:
     APPROX 15 CY OF WHITE/LIGHT TAN, FINE SANDY MATERIAL. GRAY AND BROWN GRAVELY MATERIAL.
   - B. VATS OUTSIDE FRESHWATER PROCESS BUILDING:
     APPROX 6 CY OF FINE TO MEDIUM SPENT ION EXCHANGE RESIN (CEMENTED).
   - C. SEVEN 250 GAL AND EIGHT 500 GAL STEEL TANKS INSIDE FRESHWATER PROCESS BUILDING:
     APPROX 28.5 CY OF FILTER SAND AND ION EXCHANGE RESIN.
   - D. OFFICE BUILDING:
     APPROX 20-30 CY OF MISC DEBRIS INCLUDING PAPER, WOOD, STEEL, OFFICE FURNITURE AND BAGGED GRANULAR MATERIAL.
5. BRICK WASTE AREA:
   APPROX 110 CY OF BRICK WASTE REMOVED FROM THIS AREA AND PLACED IN CONTAINMENT CELL.
   AREA CAPPED WITH CLAY AND TOPSOIL.

LEGEND

- -··-··- PROPERTY LINE / RIGHT OF WAY (R.O.W.)
- ——— EXCAVATION LIMITS
- ◐ EXISTING MONITOR WELL
- EXISTING ROAD
- EXISTING RAILROAD
- ▨ EXISTING BUILDING
- ░ EXISTING CONCRETE
- PP○ EXISTING POWER POLE
- LS☼ EXISTING LIGHT
- - - - - EXISTING UNDERGROUND UTILITY

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS					
CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAINGS	JB	DS
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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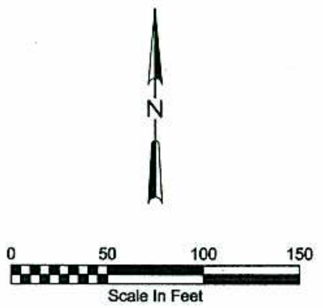
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
EXCAVATION / WASTE REMOVAL PLAN
NORTH PROPERTY

SHEET	6
DWG	C-6
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncx102d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:02:23 PM

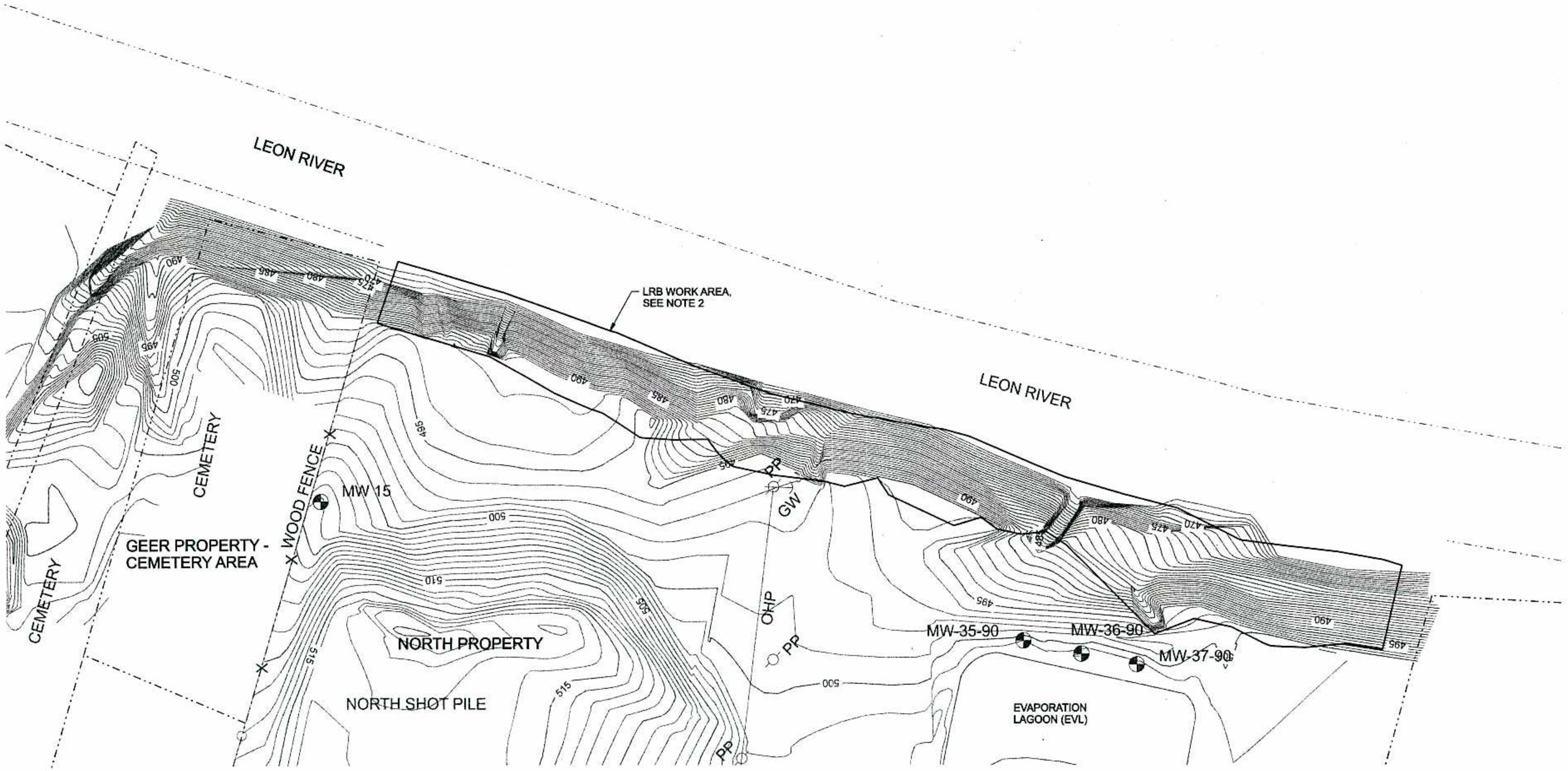


NOTES:

1. ALL TREES AND VEGETATION REMOVED FROM LRB IN PREPARATION FOR ACB PLACEMENT.
2. ALL PLUGS, CONCRETE RUBBLE, AND OTHER REFUSE REMOVED FROM THE LRB WORK AREA.
3. AFTER EXCAVATION LRB REGRADED TO CREATE A WORKABLE SLOPE SURFACE. LATERAL EXTENTS OF LRB COVERED WITH NON-WOVEN GEOTEXTILE THEN OVERLAID WITH 8" OR 4" ARTICULATING CONCRETE BLOCK (ACB). ALL ACB BACKFILLED WITH SITE-DERIVED SOIL, HYDROMULCHED, AND COVERED WITH STRAW MATTING.

LEGEND

— · · — · · —	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
●	EXISTING MONITOR WELL
═	EXISTING ROAD
┼┼┼	EXISTING RAILROAD
▨	EXISTING BUILDING
▒	EXISTING CONCRETE
PP○	EXISTING POWER POLE
LS☼	EXISTING LIGHT
– – – –	EXISTING UNDERGROUND UTILITY



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STATE OF TEXAS
MICHAEL DAVID WILSON
82125
REGISTERED PROFESSIONAL ENGINEER
1/25/06

DSGN	MD WILSON					
DR	DC EVANS					
CHK	MD WILSON	1	1/2006	RECORD DRAWINGS	MW	MW
APVD	MD WILSON	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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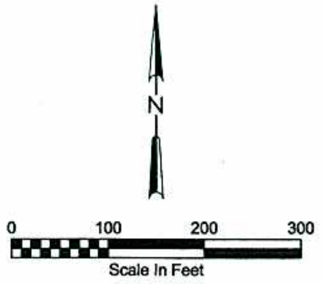
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
EXCAVATION / WASTE REMOVAL PLAN
LEON RIVER EMBANKMENT

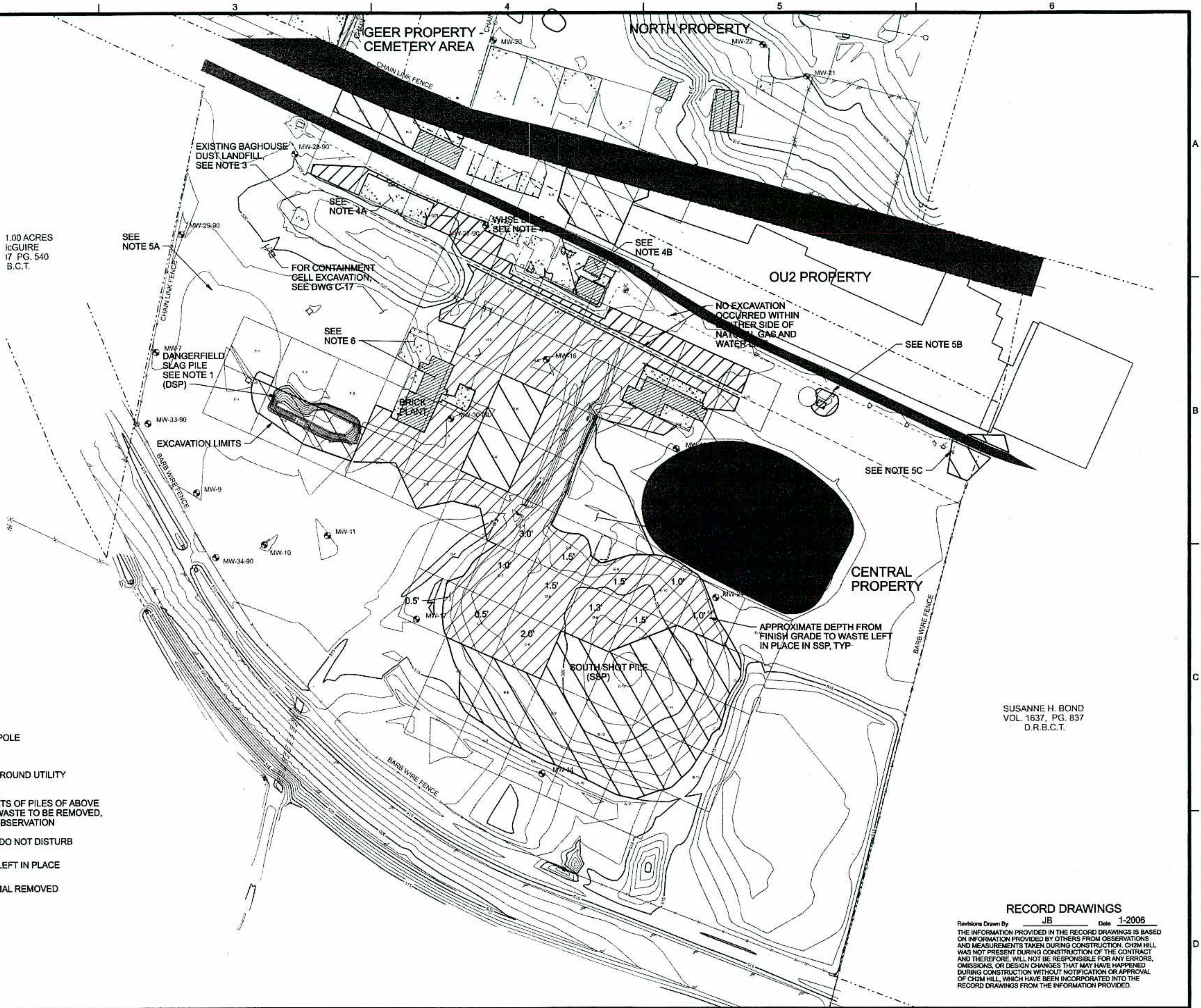
SHEET	7
DWG	C-7
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncx103d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:02:59 PM



NOTES:

1. DSP REMOVED DOWN TO ORIGINAL GROUND SURFACE (APPROX ELEV 518 FEET) AND DISPOSED IN CONTAINMENT CELL. ADDITIONAL EXCAVATION PERFORMED AFTER REMOVAL OF DSP. ADDITIONAL EXCAVATED MATERIAL PLACED IN THE CONTAINMENT CELL.
2. MATERIAL FROM SSP EXCAVATED TO APPROXIMATE DEPTHS SHOWN AND PLACED IN THE CONTAINMENT CELL AND EVL.
3. EXISTING BAGHOUSE DUST LANDFILL: TOP 12" OF MATERIAL IN EXCAVATION AREA STRIPPED AND STOCKPILED FOR USE AS VEGETATIVE COVER MATERIAL. ALL VISIBLE WASTE MATERIAL EXCAVATED AS DIRECTED BY ENGINEER AND PLACED IN THE CONTAINMENT CELL.
4. ISOLATED WASTE LISTED BELOW REMOVED AND DISPOSED AS INDICATED.
   - A. APPROX 55 CY ASPHALTIC MATERIAL SPILLED FROM RUPTURED ABOVE GROUND TANK ONTO CONCRETE SLAB. APPROX 150 CY OF SIMILAR MATERIAL CONTAINED INSIDE TWO OTHER ABOVE GROUND TANKS. WASTE DISPOSED IN CONTAINMENT CELL.
   - B. 30 CY GELATINOUS RESIN CONTAINED IN THREE 6,000 GAL ABOVE GROUND STORAGE TANKS. WASTE DISPOSED IN CONTAINMENT CELL.
   - C. 12 CY SOLID WASTE INCLUDES PAPER, WOOD, OFFICE DEBRIS, TOOLS AND UNKNOWN MATERIAL ON FLOOR OF WAREHOUSE AND MAINTENANCE BUILDINGS. WASTE DIPOSED OFFSITE IN C/D LANDFILL.
5. OTHER SOIL / WASTE REMOVAL SITES (EXCAVATED MATERIAL PLACED IN CONTAINMENT CELL):
   - A. ISOLATED WASTE REMOVED AS A PART OF THE CONTAINMENT CELL EXCAVATION. WASTE WAS A COMBINATION OF SLAG AND C/D WASTES. C/D WASTES DISPOSED OFFSITE.
   - B. MATERIAL REMOVED FROM AREA SHOWN TO DEPTH OF 1'. EXCAVATED AROUND EXISTING STRUCTURE.
   - C. MATERIAL EXCAVATED FROM DESIGNATED AREA ON BOTH SIDES OF RAILROAD TRACKS TO DEPTH OF 1'.
6. ALL BRICKS INSIDE BRICK PLANT BUILDING REMOVED AND DISPOSED IN CONTAINMENT CELL. EXISTING CONCRETE SLAB NORTH OF BAGHOUSE DUST IMPOUNDMENT DEMOLISHED FOR CONTAINMENT CELL CONSTRUCTION. SUMP IN BRICK PLANT EXCAVATED TO 4-FEET, FILLED WITH SELECT FILL, AND CAPPED WITH 4" CONCRETE TO BRING AREA UP TO GRADE (PER EPA DIRECTION).



LEGEND

- -·-·- PROPERTY LINE / RIGHT OF WAY (R.O.W.)
- —— EXCAVATION LIMITS
- ● EXISTING MONITOR WELL
- EXISTING ROAD
- EXISTING RAILROAD
- ▨ EXISTING BUILDING
- ⁘ EXISTING CONCRETE
- PP ○ EXISTING POWER POLE
- LS ☼ EXISTING LIGHT
- - - - - EXISTING UNDERGROUND UTILITY
- —— WASTE PILE AREA APPROXIMATE LIMITS OF PILES OF ABOVE GROUND VISIBLE WASTE TO BE REMOVED, FIELD VERIFY BY OBSERVATION
- ■ NON-WORK AREA, DO NOT DISTURB
- ▨ WASTE MATERIAL LEFT IN PLACE
- ▧ ALL WASTE MATERIAL REMOVED

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN	RE THOMPSON JA BOOTH
DR	DC EVANS
CHK	RE THOMPSON MD WILSON
APVD	DJ STIEB

NO.	DATE	REVISION	BY	APVD
2	1/2006	RECORD DRAWINGS	JB	DS
1	1/2005	ADDENDUM 1	JB	RT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ■ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
EXCAVATION / WASTE REMOVAL PLAN OU2 AND CENTRAL PROPERTY

SHEET	8
DWG	C-8
DATE	JAN 2006
PROJ	185014

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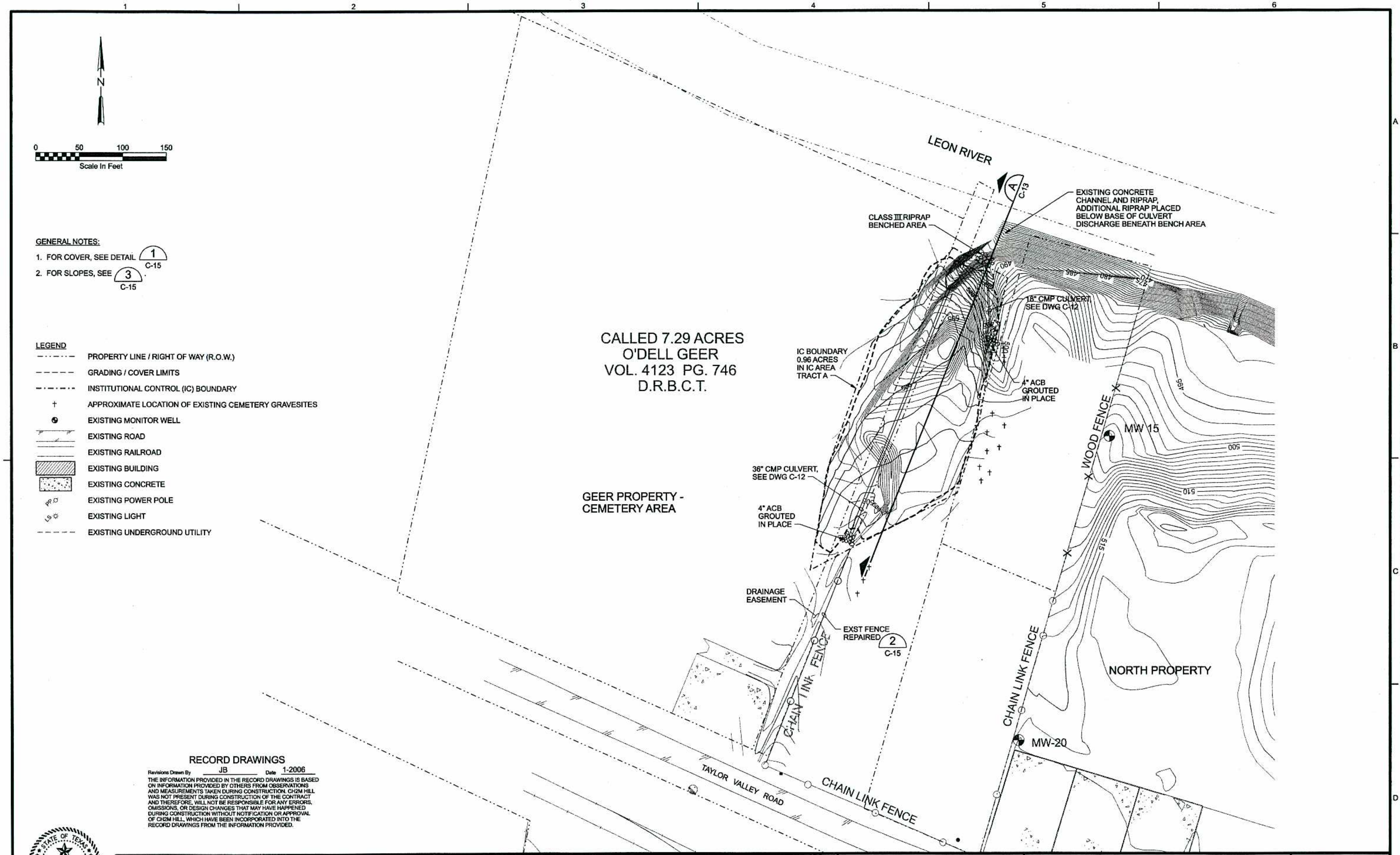

GENERAL NOTES:

1. FOR COVER, SEE DETAIL 1/C-15
2. FOR SLOPES, SEE 3/C-15.

LEGEND

—··—··—	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
— — — —	GRADING / COVER LIMITS
—·—·—·	INSTITUTIONAL CONTROL (IC) BOUNDARY
†	APPROXIMATE LOCATION OF EXISTING CEMETERY GRAVESITES
●	EXISTING MONITOR WELL
═	EXISTING ROAD
═	EXISTING RAILROAD
▨	EXISTING BUILDING
⁘	EXISTING CONCRETE
PP○	EXISTING POWER POLE
LS☼	EXISTING LIGHT
- - - -	EXISTING UNDERGROUND UTILITY

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb 1-24-05

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS					
CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAWINGS	JB	DS
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

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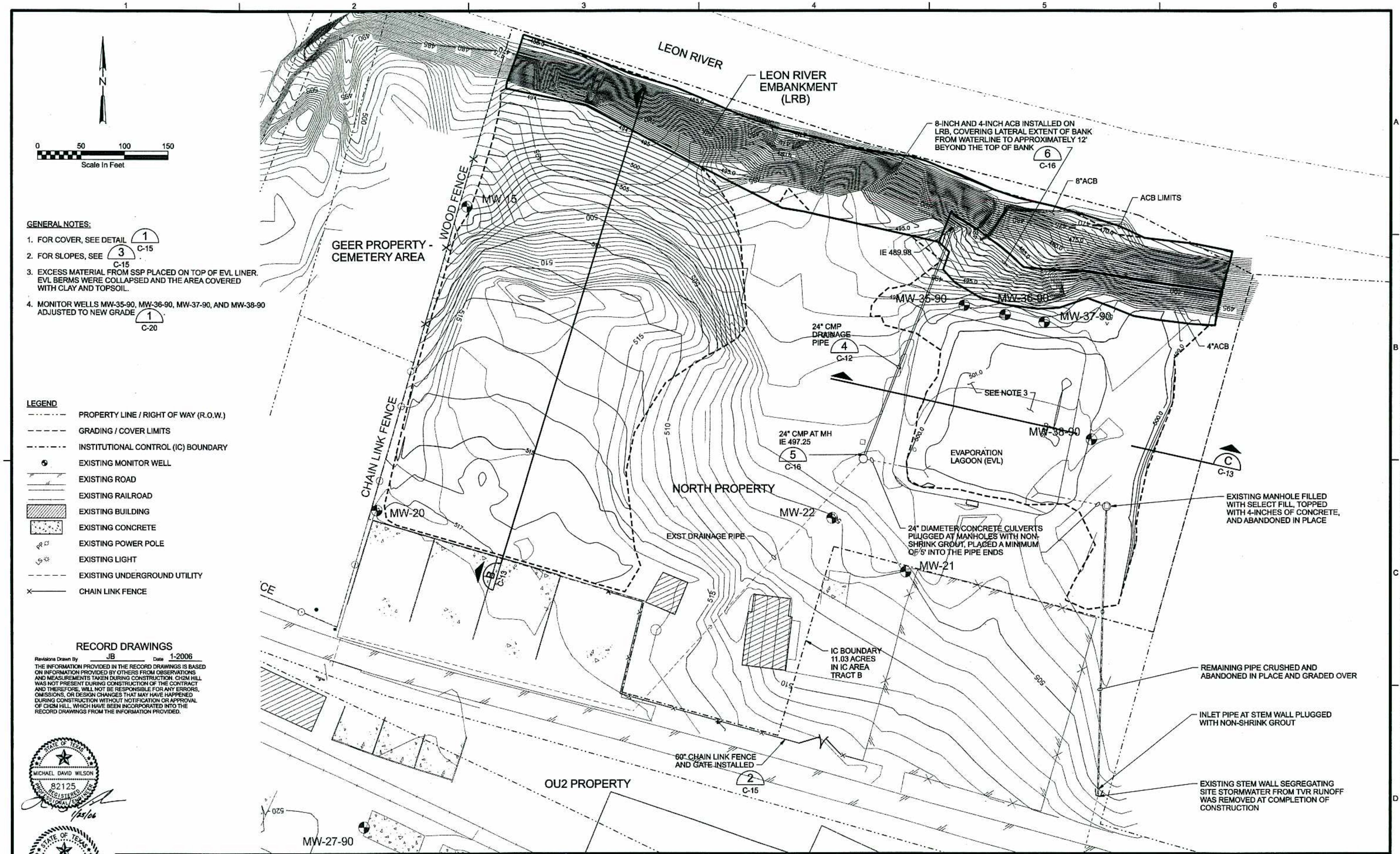
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
COVER AND FINISHED GRADE PLAN
GEER PROPERTY - CEMETERY AREA

SHEET	9
DWG	C-9
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncg101d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:44:47 AM



GENERAL NOTES:

1. FOR COVER, SEE DETAIL 1 / C-15
2. FOR SLOPES, SEE 3 / C-15
3. EXCESS MATERIAL FROM SSP PLACED ON TOP OF EVL LINER. EVL BERMS WERE COLLAPSED AND THE AREA COVERED WITH CLAY AND TOPSOIL.
4. MONITOR WELLS MW-35-90, MW-36-90, MW-37-90, AND MW-38-90 ADJUSTED TO NEW GRADE 1 / C-20

LEGEND

- · - · -	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
- - - -	GRADING / COVER LIMITS
— · · —	INSTITUTIONAL CONTROL (IC) BOUNDARY
◐	EXISTING MONITOR WELL
═	EXISTING ROAD
╪	EXISTING RAILROAD
▨	EXISTING BUILDING
⛆	EXISTING CONCRETE
PP ○	EXISTING POWER POLE
LS ☼	EXISTING LIGHT
- - - -	EXISTING UNDERGROUND UTILITY
×———	CHAIN LINK FENCE

RECORD DRAWINGS

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MICHAEL DAVID WILSON
82125
1/25/06

DAVID J. STIEB
79795
David J. Stieb 1-24-06

DSGN	JA BOOTH MD WILSON					
DR	DC EVANS					
CHK	RE THOMPSON	1	1/2006	RECORD DRAWINGS	MW	DS
APVD	MD WILSON DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

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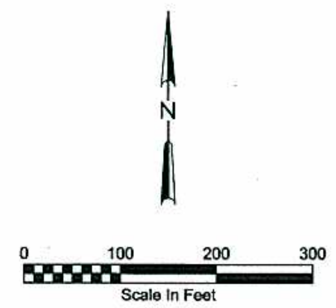
CH2MHILL

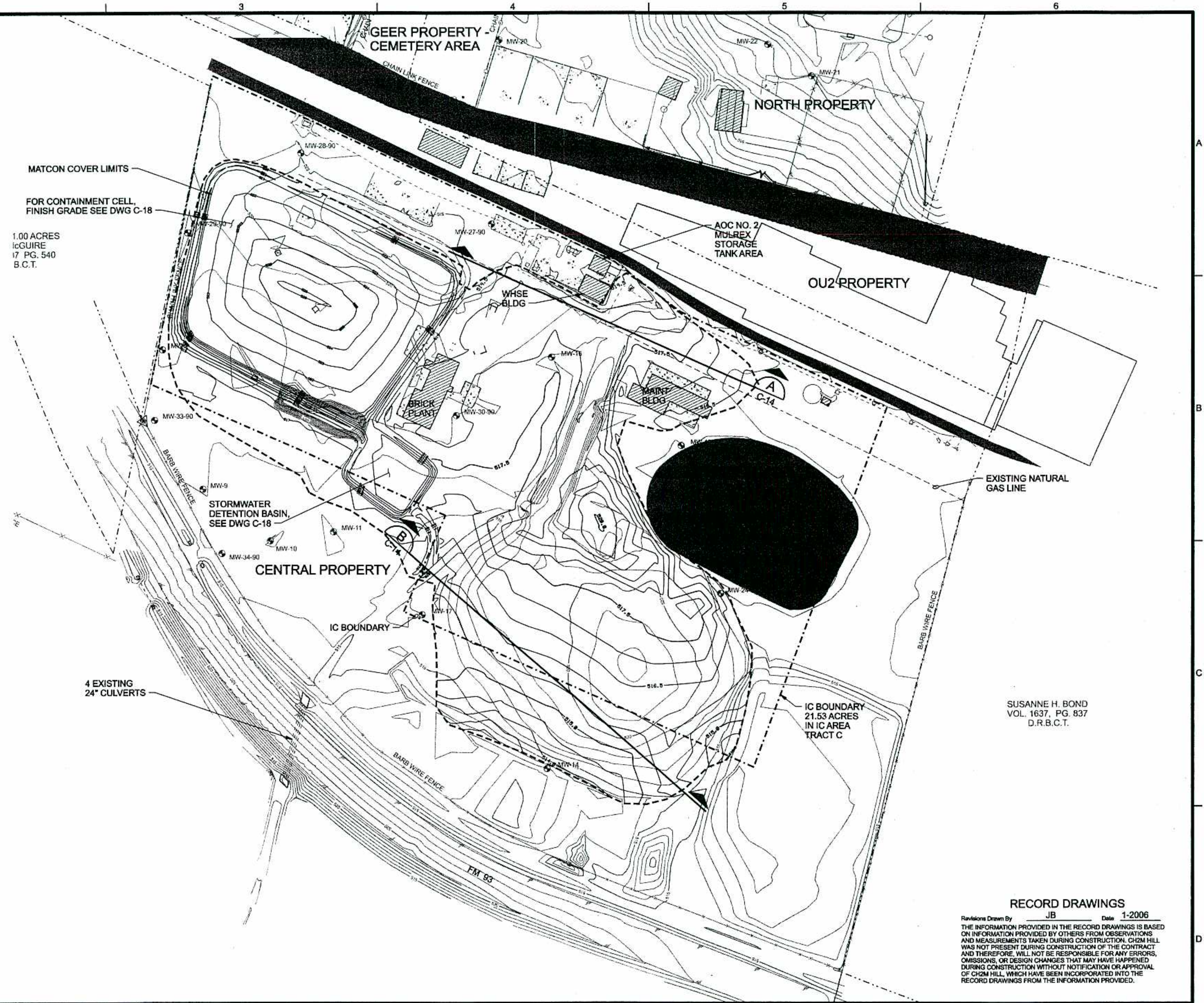
EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
COVER AND FINISHED GRADE PLAN
NORTH PROPERTY

SHEET	10
DWG	C-10
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncg102d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:45:23 AM





LEGEND

— · · — · · —	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
— — — —	GRADING LIMITS
— · — · —	INSTITUTIONAL CONTROL (IC) BOUNDARY
■	NON-WORK AREA, DO NOT DISTURB
⊕	EXISTING MONITOR WELL
═	EXISTING ROAD
═	EXISTING RAILROAD
▨	EXISTING BUILDING
⁘	EXISTING CONCRETE
PP ⌀	EXISTING POWER POLE
LS ☼	EXISTING LIGHT
- - - -	EXISTING UNDERGROUND UTILITY

NOTES:

1. ENTIRE GRADING LIMITS COVERED WITH MIN 12" CLAY AND 6" TOPSOIL. 1 / C-15
2. MONITOR WELLS MW-16 AND MW-30-90 ADJUSTED TO NEW GRADE 1 / C-20

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb
1-24-06

		NO.	DATE	REVISION	BY	APVD
DSGN	RE THOMPSON JA BOOTH	3	1/2006	RECORD DRAWINGS	JB	DS
DR	DC EVANS	2	7/2005	DESIGN REVISION 1	JB	RT
CHK	RE THOMPSON MD WILSON	1	1/2005	ADDENDUM 1	JB	RT
APVD	DJ STIEB					

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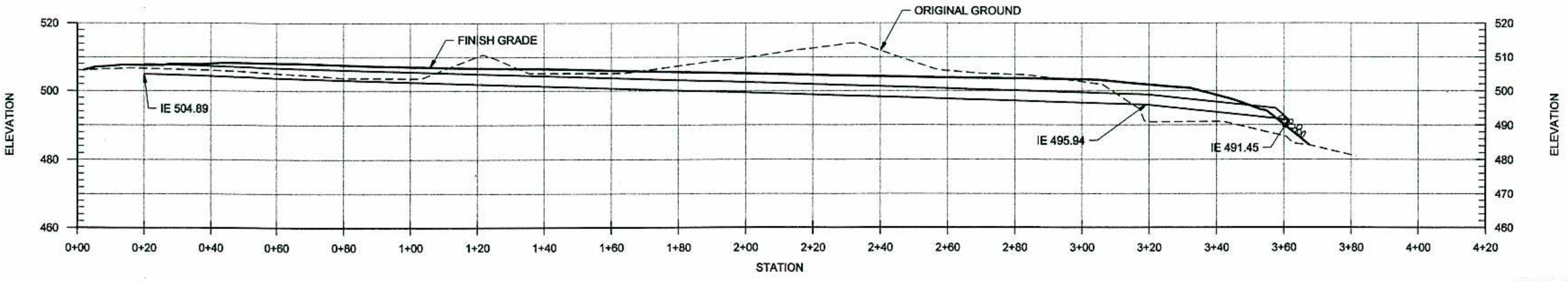
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
FINISHED GRADE PLAN
CONTAINMENT CELL
OU2 AND CENTRAL PROPERTY

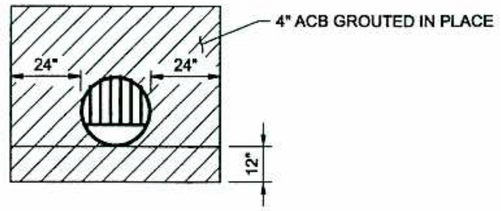
SHEET	11
DWG	C-11
DATE	JAN 2006
PROJ	185014

FILENAME: 06ncg116d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:04:17 PM



36" CULVERT PROFILE

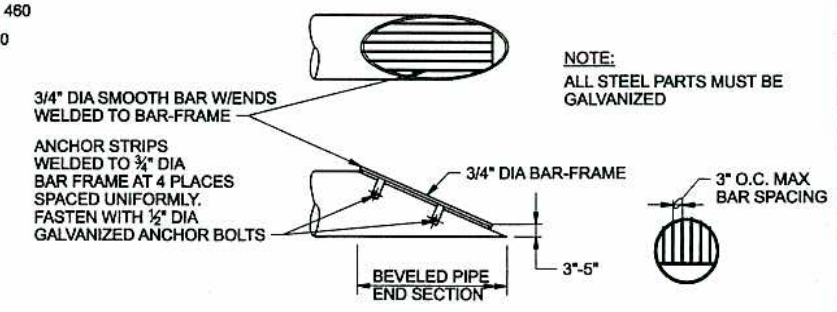
1"=20'



CULVERT END DETAIL ②

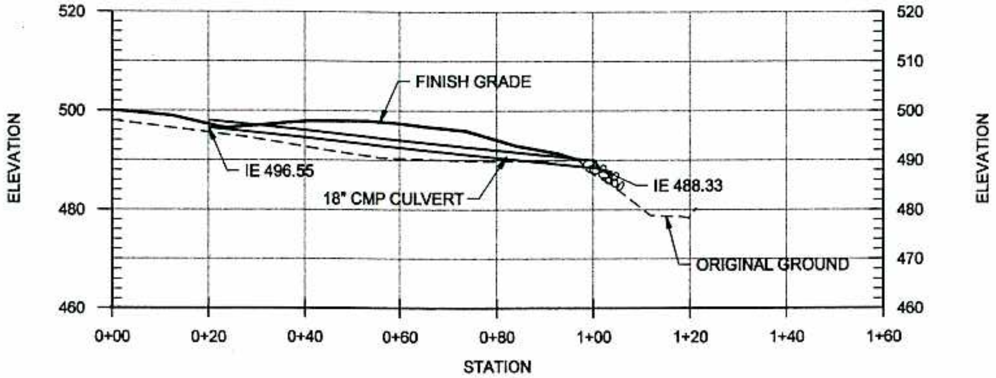
NTS

NOTE:
1. FOR TRENCH BACKFILL REQUIREMENTS SEE ④.



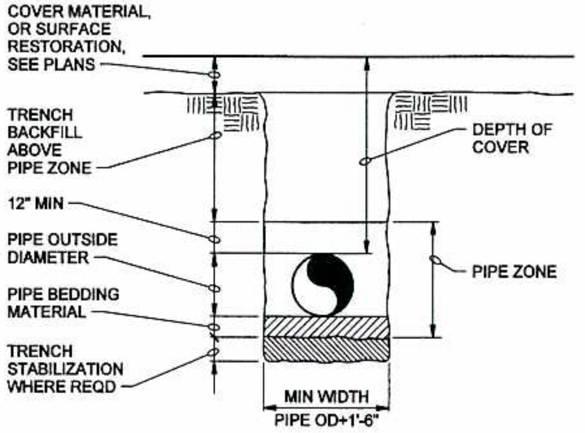
TRASH RACK DETAIL ③

NTS



18" CULVERT PROFILE

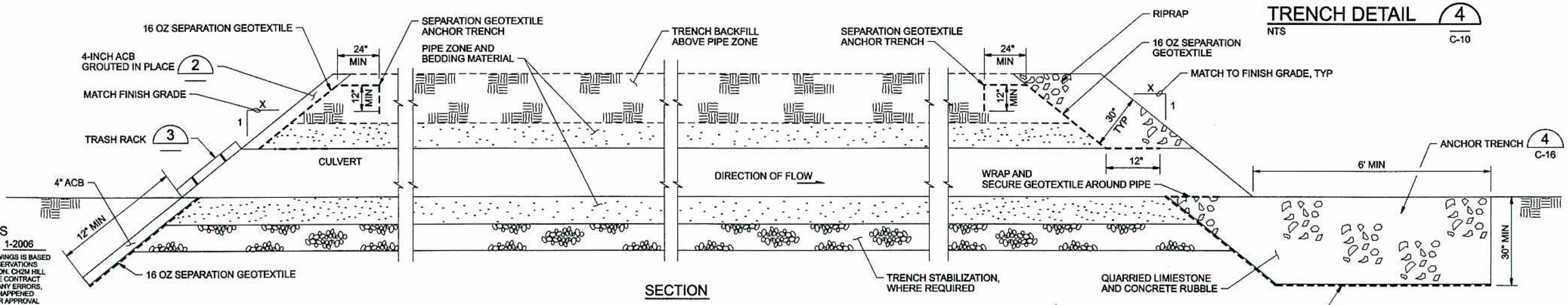
1"=20'



TRENCH DETAIL ④

NTS

C-10



CULVERT INSTALLATION DETAIL ①

NTS

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

THE INFORMATION PROVIDED IN THE RECORD DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS FROM OBSERVATIONS AND MEASUREMENTS TAKEN DURING CONSTRUCTION. CH2M HILL WAS NOT PRESENT DURING CONSTRUCTION OF THE CONTRACT AND THEREFORE, WILL NOT BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DESIGN CHANGES THAT MAY HAVE HAPPENED DURING CONSTRUCTION WITHOUT NOTIFICATION OR APPROVAL OF CH2M HILL, WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS FROM THE INFORMATION PROVIDED.

DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS					
CHK	RE THOMPSON MD WILSON	1	1/2006	RECORD DRAWINGS	JB	DS
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

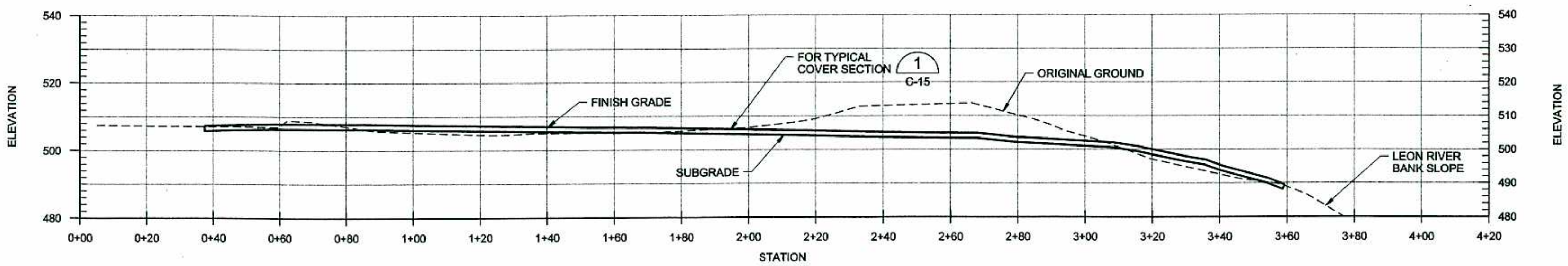
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
CULVERT PROFILES AND DETAILS
GEER PROPERTY - CEMETERY AREA

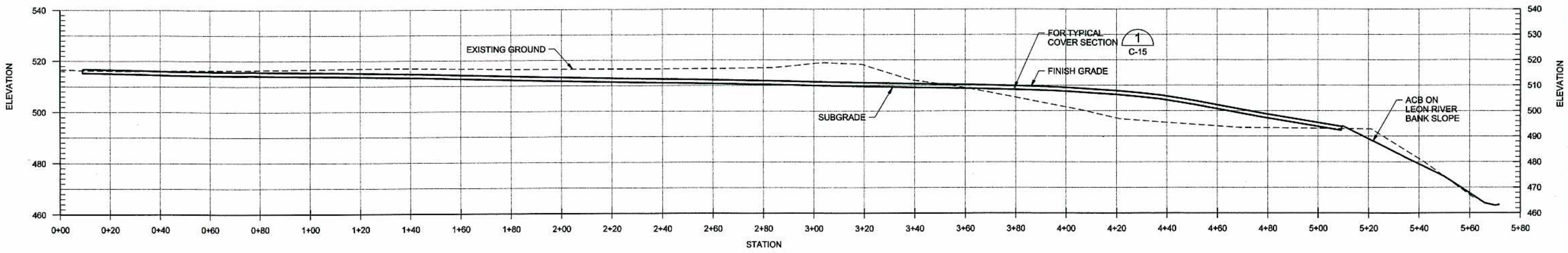
SHEET	12
DWG	C-12
DATE	JAN 2006
PROJ	185014

FILENAME: 05ncg104d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:46:06 AM



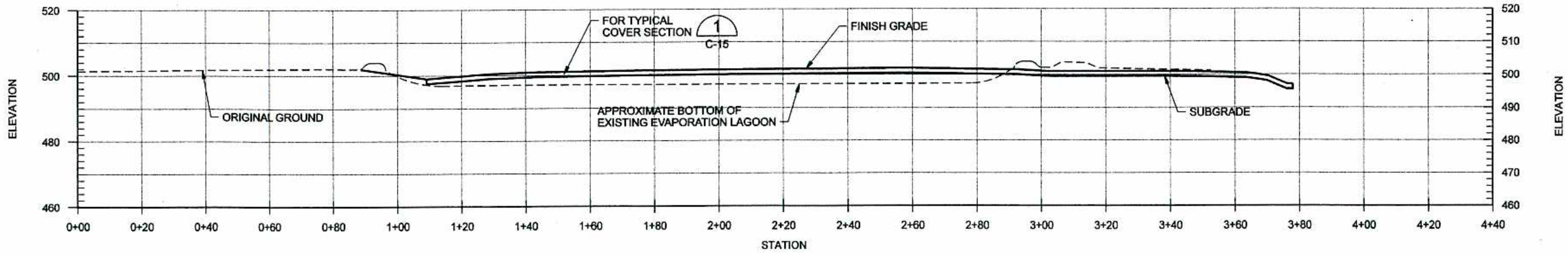
SECTION A

1"=20' C-9



SECTION B

1"=20' C-10



SECTION C

1"=20' C-10

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN RE THOMPSON
JA BOOTH
DR DC EVANS
CHK RE THOMPSON
MD WILSON
APVD DJ STIEB

NO.	DATE	REVISION	BY	APVD
1	1/2006	RECORD DRAWINGS	JB	DS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

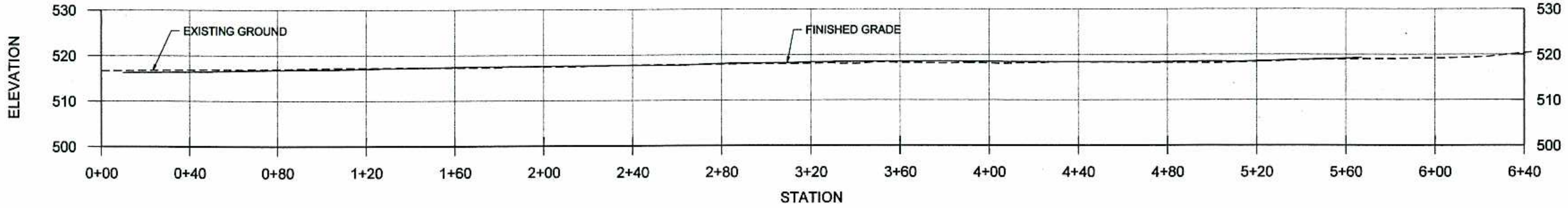
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

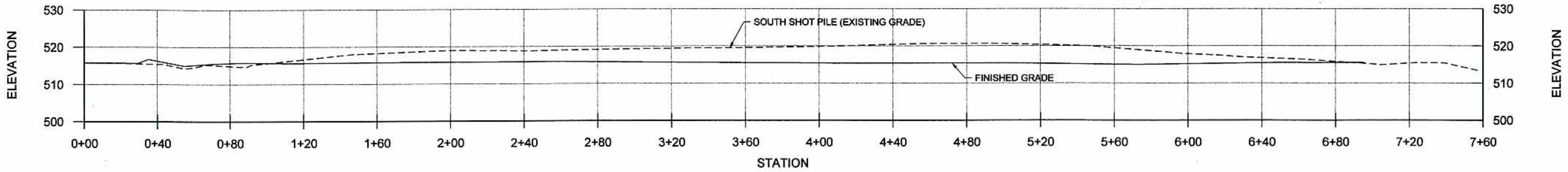
CIVIL
SECTIONS
GEER PROPERTY - CEMETERY AREA
AND NORTH PROPERTY

SHEET	13
DWG	C-13
DATE	JAN 2006
PROJ	185014

FILENAME: 05nc201d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:41:21 AM



SECTION A
C-11
1"=30' HORIZONTAL
1"=15' VERTICAL



SECTION B
C-11
1"=30' HORIZONTAL
1"=15' VERTICAL

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN	RE THOMPSON JA BOOTH
DR	DC EVANS
CHK	RE THOMPSON MD WILSON
APVD	DJ STIEB

NO.	DATE	REVISION	BY	APVD
1	1/2006	RECORD DRAWINGS	JB	DS

VERIFY SCALE
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0 ▬ 1"
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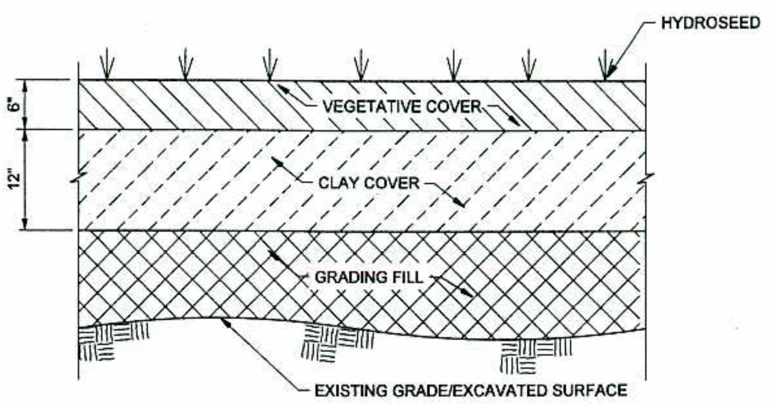
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
SECTIONS
OU2 AND CENTRAL PROPERTY

SHEET	14
DWG	C-14
DATE	JAN 2006
PROJ	185014

FILENAME: 05nc202d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:42:33 AM



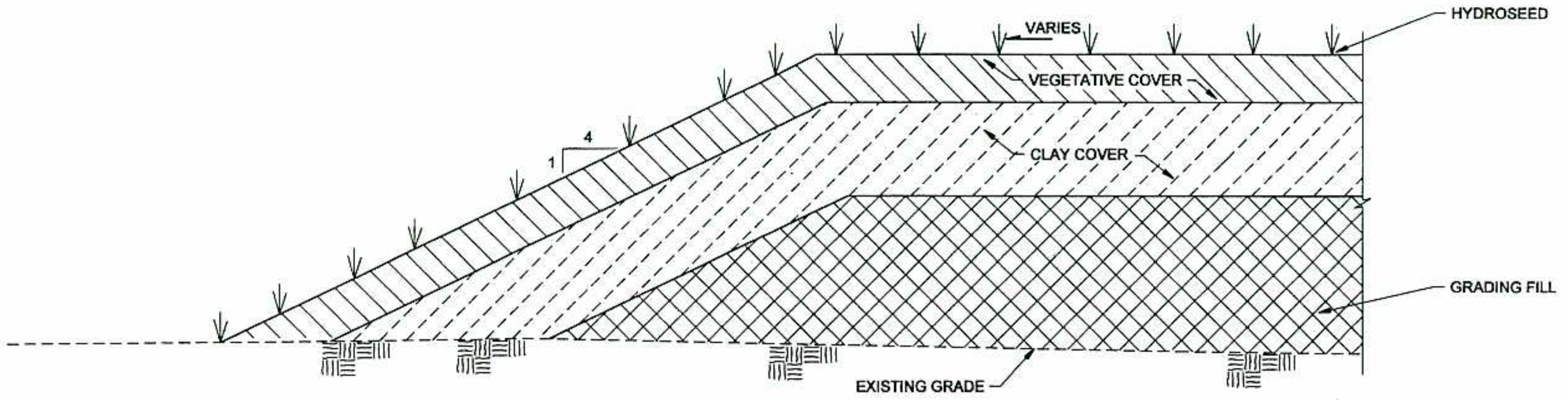
NOTES:

1. SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

COVER DETAIL ①

NTS

C-9, C-10, C-11, C-13



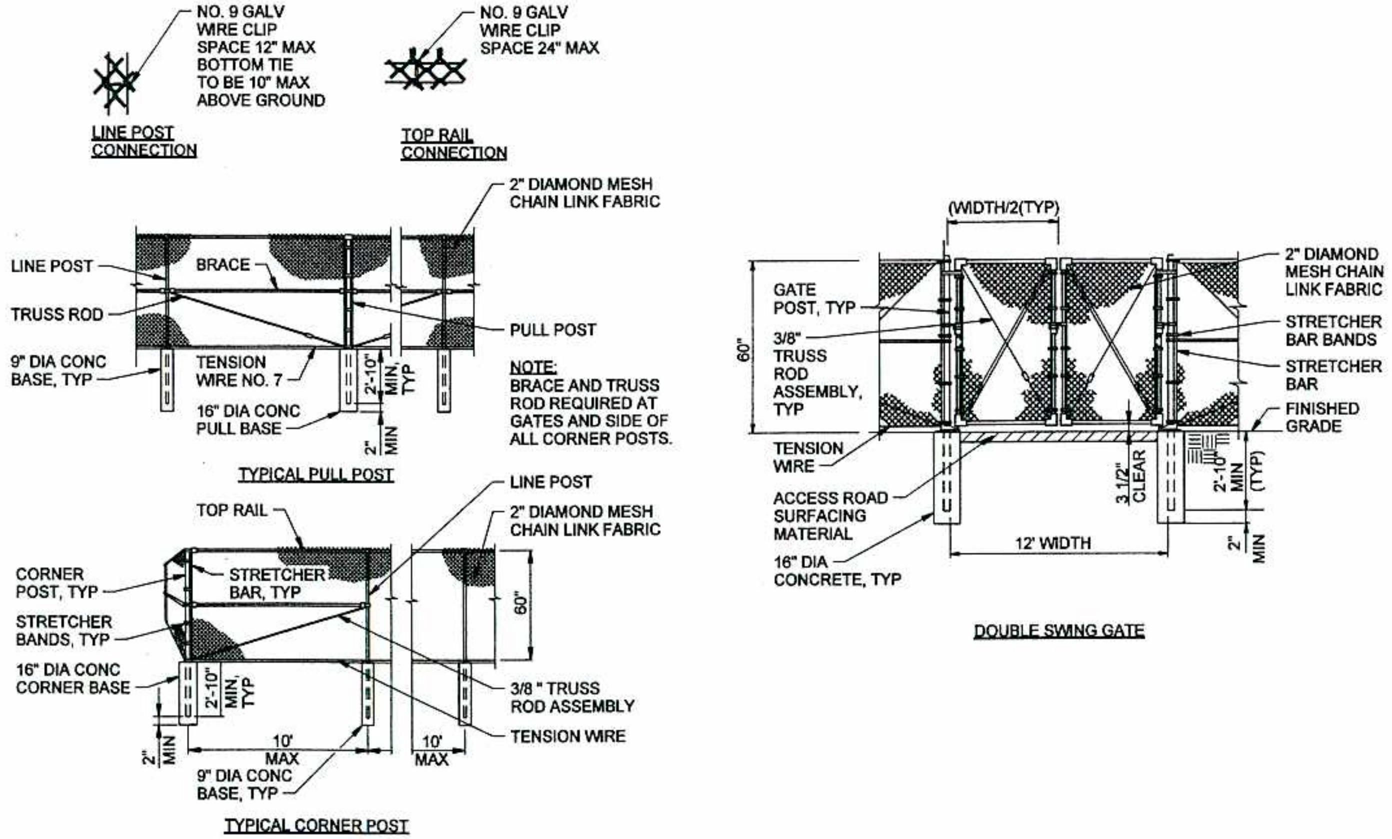
NOTES:

1. DETAIL SHOWN IS TYPICAL FOR 4:1 SLOPE AT THE PERIMETER FROM COVER TO EXISTING GROUND.

4:1 AND STEEPER SLOPE DETAIL ③

NTS

C-9, C-10



LINE POST CONNECTION

TOP RAIL CONNECTION

TYPICAL PULL POST

TYPICAL CORNER POST

DOUBLE SWING GATE

CHAIN LINK FENCE DETAIL ②

NTS

C-9, C-10

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN RE THOMPSON
JA BOOTH
DR DC EVANS
CHK RE THOMPSON
MD WILSON
APVD DJ STIEB

NO.	DATE	REVISION	BY	APVD
1	1/2006	RECORD DRAWINGS	JB	DS

VERIFY SCALE
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0 ▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

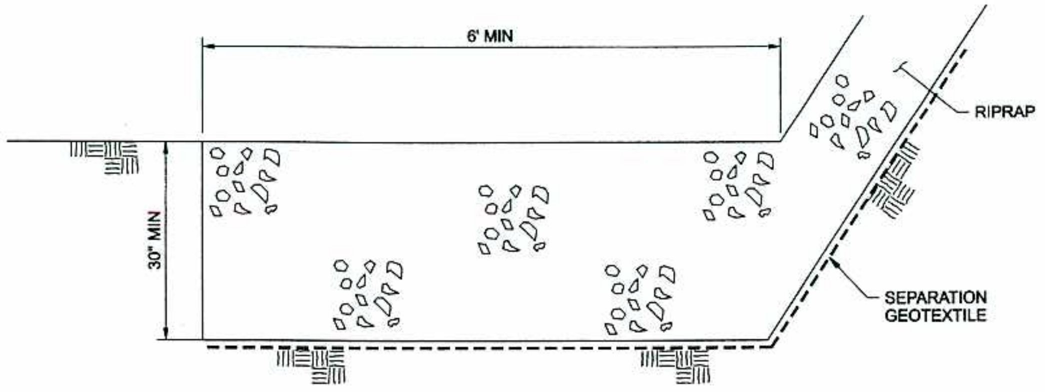
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

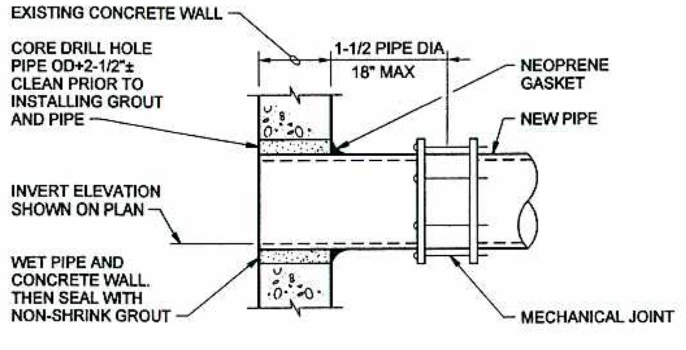
CIVIL
DETAILS

SHEET 15
DWG C-15
DATE JAN 2006
PROJ 185014

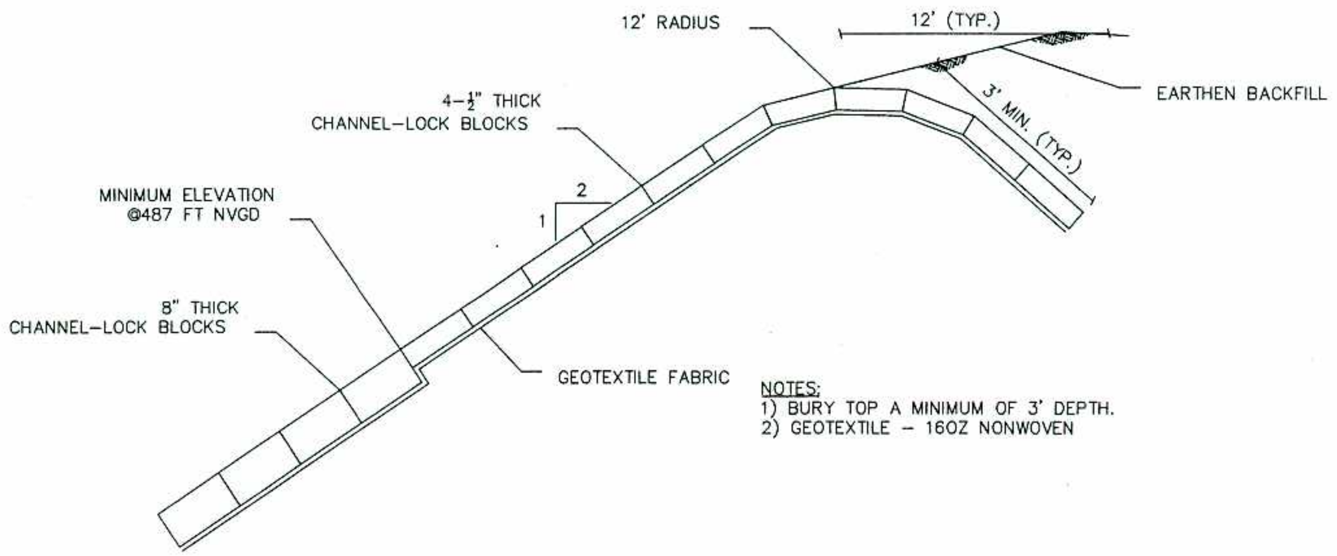
FILENAME: 05nc401d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:43:10 AM



RIPRAP ANCHOR TRENCH DETAIL 4
NTS C-12

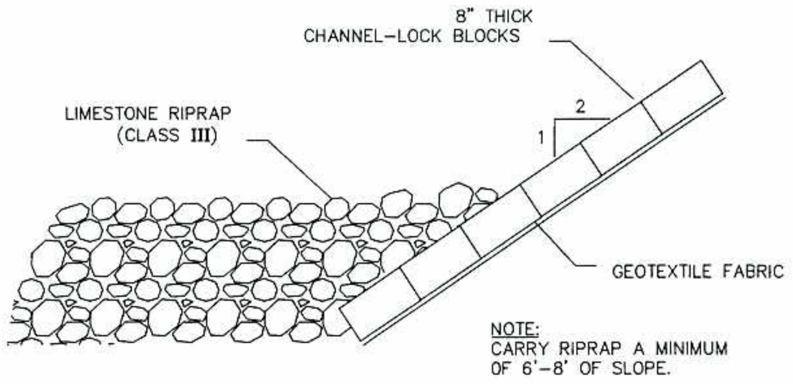


PIPE CONNECTION 5
NTS C-10



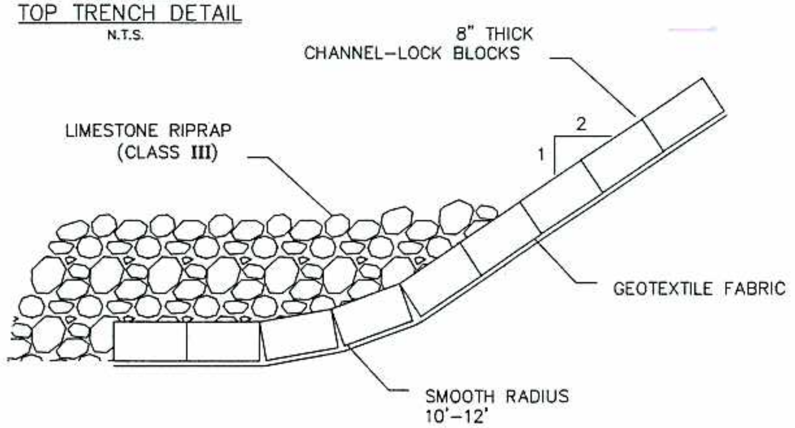
NOTES:
1) BURY TOP A MINIMUM OF 3' DEPTH.
2) GEOTEXTILE – 16OZ NONWOVEN

LEON RIVER
TOP TRENCH DETAIL
N.T.S.

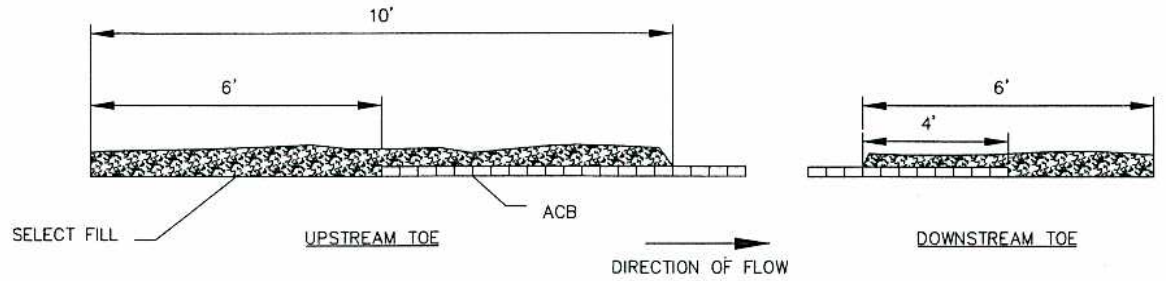


NOTE:
CARRY RIPRAP A MINIMUM OF 6'-8' OF SLOPE.

LEON RIVER
TOE DETAIL #2
(IF REQUIRED)
N.T.S.



LEON RIVER
TOE DETAIL #1
N.T.S.



LEON RIVER
FLANK DETAILS
N.T.S.

NOTE:
8" ACB INSTALLED FROM WATER LINE TO MIN ELEV 487. REMAINDER OF BANK NOT COVERED WITH 8" ACB COVERED WITH 4" ACB.

TYPICAL ACB SECTION 6
NTS C-10

RECORD DRAWINGS
Revisions Drawn By JB Date 1-2006
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MICHAEL DAVID WILSON 82125
1/25/06

DAVID J. STIEB 79795
David J. Stieb 1-24-06

DSGN	MD WILSON JA BOOTH						VERIFY SCALE
DR	DC EVANS						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 ▬ 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	RE THOMPSON	1	1/2006	RECORD DRAWINGS	JB	DS	
APVD	MD WILSON DJ STIEB	NO.	DATE	REVISION	BY	APVD	

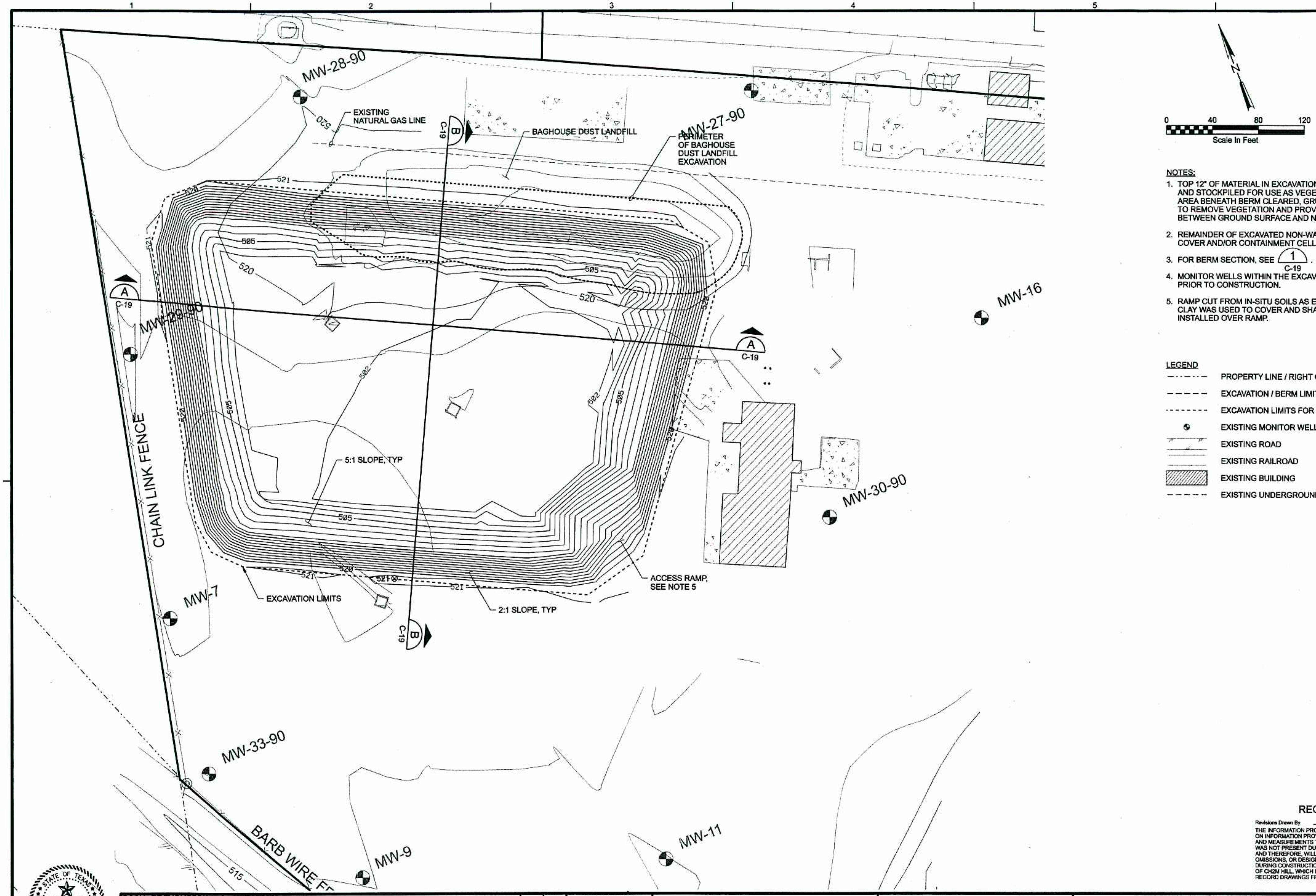
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
DETAILS

SHEET	16
DWG	C-16
DATE	JAN 2006
PROJ	185014

FILENAME: 05nc402d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:43:56 AM



NOTES:

1. TOP 12" OF MATERIAL IN EXCAVATION AREA STRIPPED AND STOCKPILED FOR USE AS VEGETATIVE COVER MATERIAL. AREA BENEATH BERM CLEARED, GRUBBED, AND STRIPPED TO REMOVE VEGETATION AND PROVIDE A GOOD INTERFACE BETWEEN GROUND SURFACE AND NEW BERM.
2. REMAINDER OF EXCAVATED NON-WASTE MATERIAL USED AS CLAY COVER AND/OR CONTAINMENT CELL BERM MATERIAL.
3. FOR BERM SECTION, SEE 1 / C-19.
4. MONITOR WELLS WITHIN THE EXCAVATION LIMITS ABANDONED PRIOR TO CONSTRUCTION.
5. RAMP CUT FROM IN-SITU SOILS AS EXCAVATION PROGRESSED. CLAY WAS USED TO COVER AND SHAPE RAMP. LINER MATERIALS INSTALLED OVER RAMP.

LEGEND

— · · — · · —	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
— — — — —	EXCAVATION / BERM LIMITS
- - - - - - - -	EXCAVATION LIMITS FOR CONTAINMENT CELL
●	EXISTING MONITOR WELL
	EXISTING ROAD
	EXISTING RAILROAD
▨	EXISTING BUILDING
- - - - -	EXISTING UNDERGROUND UTILITY

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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DAVID J. STIEB
79795

David J. Stieb 1-24-06

DSGN	RE THOMPSON JA BOOTH
DR	DC EVANS
CHK	RE THOMPSON MD WILSON
APVD	DJ STIEB

NO.	DATE	REVISION	BY	APVD
3	1/2006	RECORD DRAWINGS	JB	DS
2	7/2005	DESIGN REVISION 1	JB	RT
1	1/2005	ADDENDUM 1	JB	RT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

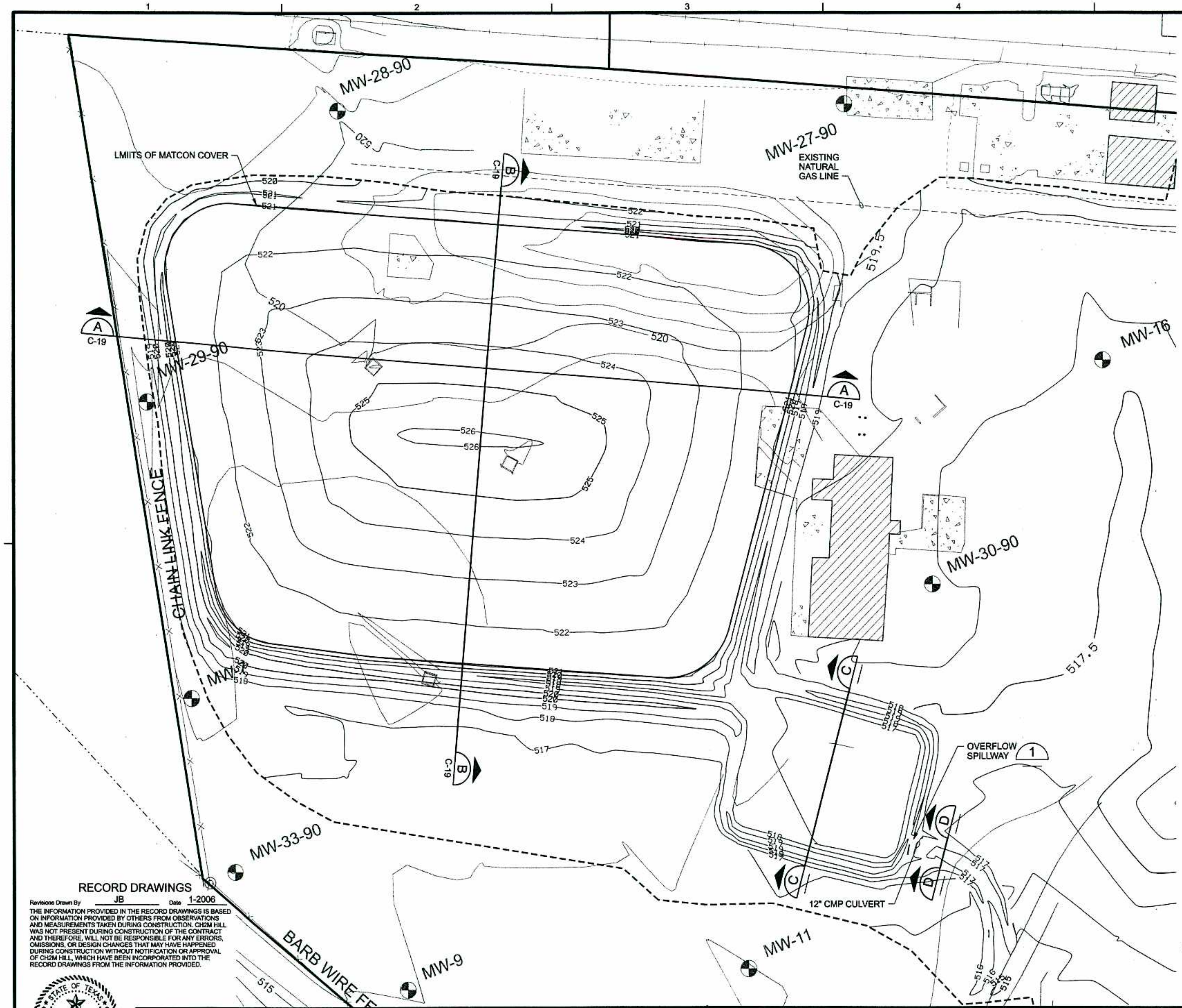
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
EXCAVATION PLAN
CONTAINMENT CELL

SHEET	17
DWG	C-17
DATE	JAN 2006
PROJ	185014

FILENAME: 06ncx114d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:05:29 PM



RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

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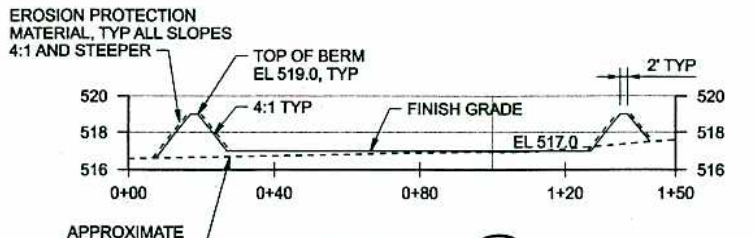
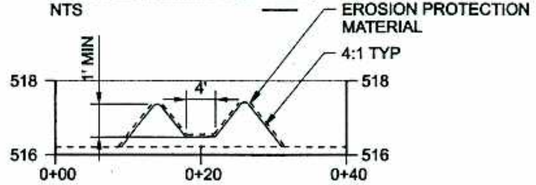
DAVID J. STIEB
79795

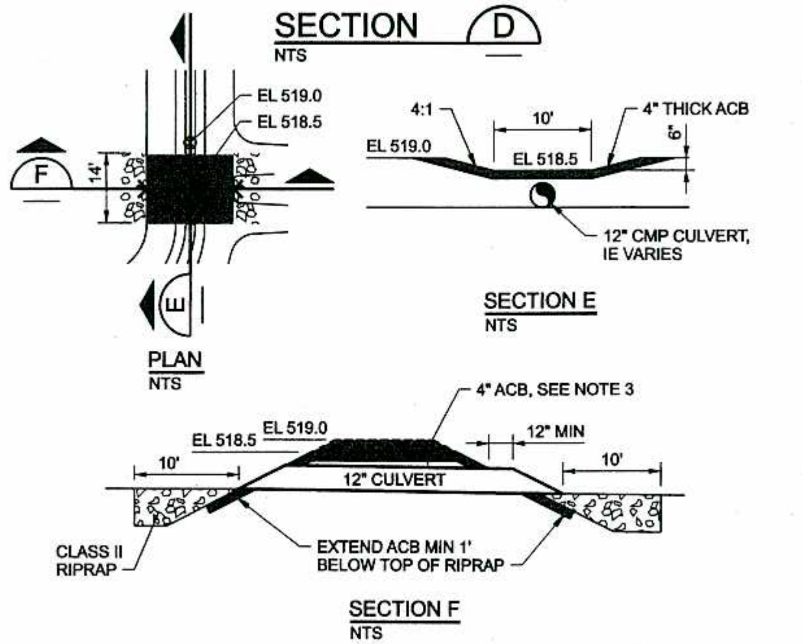
David J. Stieb
1-24-06



SECTION C
NTS



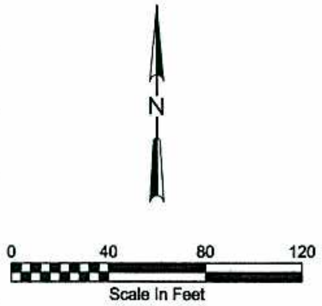
SECTION D
NTS



OVERFLOW SPILLWAY 1
NTS

NOTES:

1. FOR BERM AND COVER SECTION, SEE 1/C-19.
2. PIPE ZONE AND BACKFILL MATERIAL FOR 12" CULVERT IS CLAY.
3. 4" ARTICULATED CONCRETE BLOCK (ACB) MATERIAL PLACED TO LIMITS SHOWN ACCORDING TO MANUFACTUER'S RECOMMENDATIONS. CULVERT INLET AND OUTLET GROUTED AS RECOMENDED BY MANUFACTURER. ACB EXTENDED MIN 1' BELOW RIPRAP ON UPSTREAM AND DOWNSTREAM ENDS.



LEGEND

-··-··-	PROPERTY LINE / RIGHT OF WAY (R.O.W.)
– – – –	GRADING LIMITS
- - - - -	SLOPE BREAK
●	EXISTING MONITOR WELL
═	EXISTING ROAD
┼┼┼	EXISTING RAILROAD
▨	EXISTING BUILDING
- - - - -	EXISTING UNDERGROUND UTILITY

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS	3	1/2006	RECORD DRAWINGS	JB	DS
CHK	RE THOMPSON MD WILSON	2	7/2005	DESIGN REVISION 1	JB	RT
		1	1/2005	ADDENDUM 1	JB	RT
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ▬▬▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

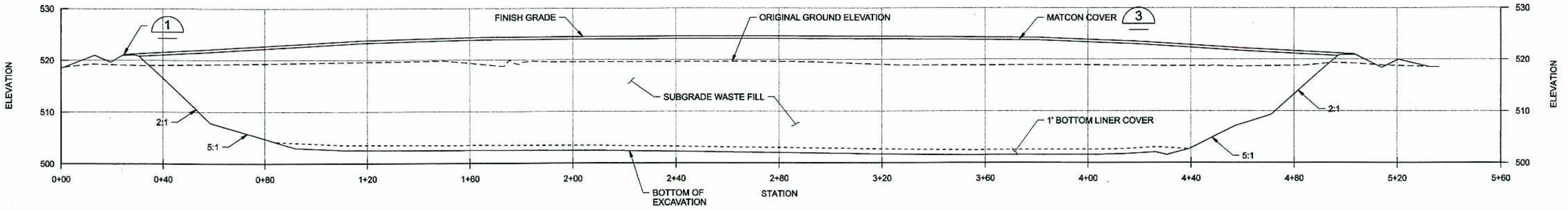
CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
FINISHED GRADE PLAN
CONTAINMENT CELL

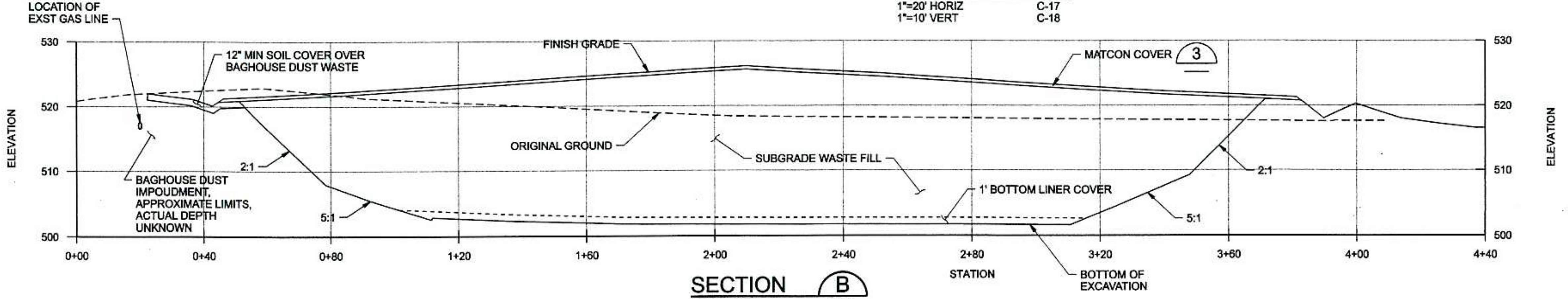
SHEET	18
DWG	C-18
DATE	JAN 2006
PROJ	185014

FILENAME: 06ncg117d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:04:47 PM



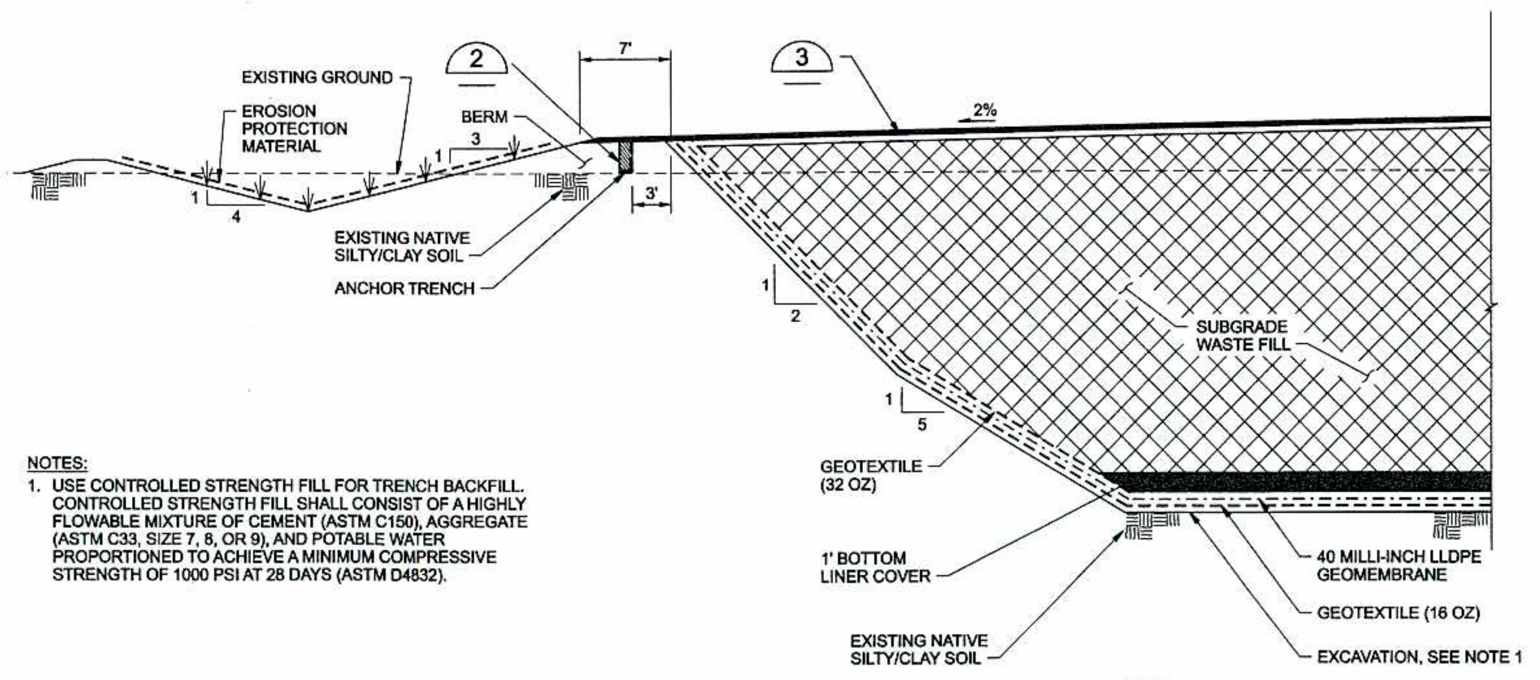
SECTION A

1"=20' HORIZ C-17
1"=10' VERT C-18



SECTION B

1"=20' HORIZ C-17
1"=10' VERT C-18

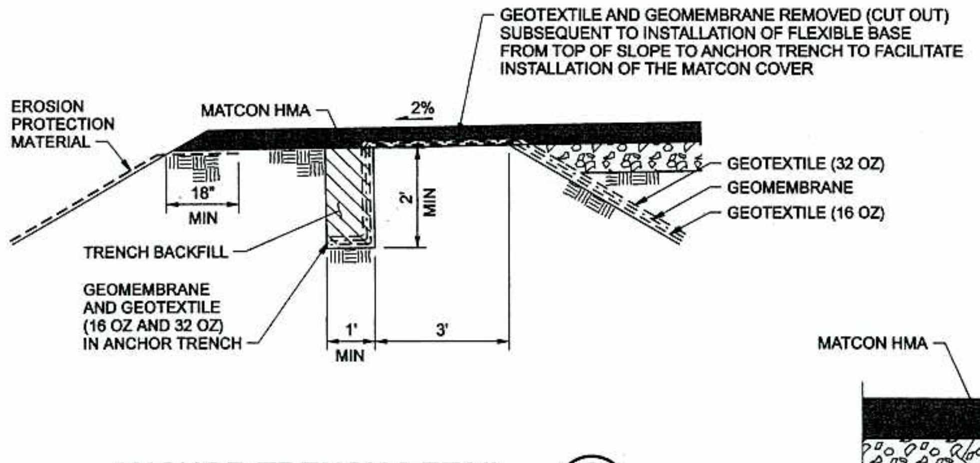


NOTES:

1. USE CONTROLLED STRENGTH FILL FOR TRENCH BACKFILL. CONTROLLED STRENGTH FILL SHALL CONSIST OF A HIGHLY FLOWABLE MIXTURE OF CEMENT (ASTM C150), AGGREGATE (ASTM C33, SIZE 7, 8, OR 9), AND POTABLE WATER PROPORTIONED TO ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 1000 PSI AT 28 DAYS (ASTM D4832).

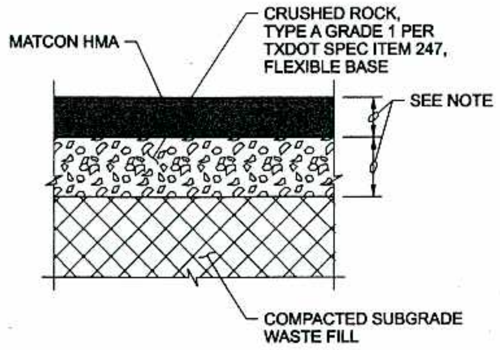
CONTAINMENT CELL DETAIL 1

NTS C-17, C-18



ANCHOR TRENCH DETAIL 2

NTS



NOTE: MINIMUM THICKNESS AS DETERMINED BY WILDER CONSTRUCTION.

COVER DETAIL 3

NTS

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

THE INFORMATION PROVIDED IN THE RECORD DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS FROM OBSERVATIONS AND MEASUREMENTS TAKEN DURING CONSTRUCTION. CH2M HILL WAS NOT PRESENT DURING CONSTRUCTION OF THE CONTRACT AND THEREFORE, WILL NOT BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DESIGN CHANGES THAT MAY HAVE HAPPENED DURING CONSTRUCTION WITHOUT NOTIFICATION OR APPROVAL OF CH2M HILL, WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS FROM THE INFORMATION PROVIDED.

DAVID J. STIEB
79795

David J. Stieb
1-24-06

DSGN	RE THOMPSON JA BOOTH
DR	DC EVANS
CHK	RE THOMPSON MD WILSON
APVD	DJ STIEB

NO.	DATE	REVISION	BY	APVD
3	1/2006	RECORD DRAWINGS	JB	DS
2	7/2005	DESIGN REVISION 1	JB	RT
1	1/2005	ADDEDUM 1	JB	RT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

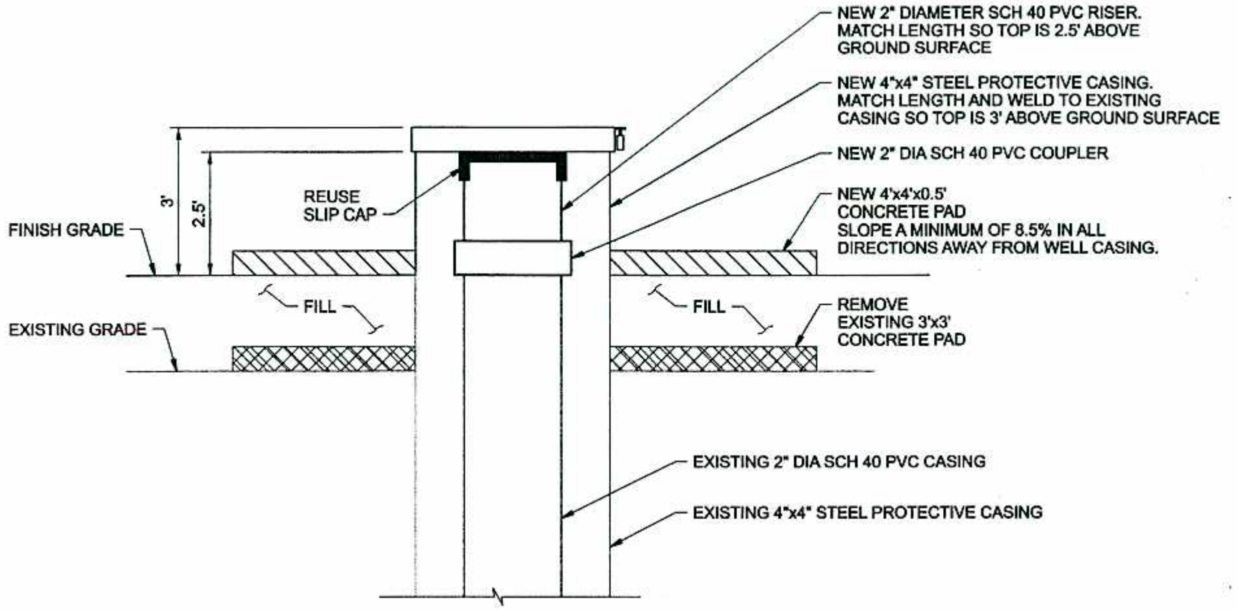
EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL
SECTIONS AND DETAILS
CONTAINMENT CELL

SHEET	19
DWG	C-19
DATE	JAN 2006
PROJ	185014

FILENAME: 06nc212d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 12:03:50 PM

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. ©CH2M HILL



NOTES:

1. ALTERATION PERFORMED AT WELLS MW-16, MW-30-90, MW-35-90, MW-36-90 MW-37-90, AND MW-38-90.

MONITOR WELL ALTERATION DETAIL (1)

NTS C-10, C-11

RECORD DRAWINGS

Revisions Drawn By JB Date 1-2006

THE INFORMATION PROVIDED IN THE RECORD DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS FROM OBSERVATIONS AND MEASUREMENTS TAKEN DURING CONSTRUCTION. CH2M HILL WAS NOT PRESENT DURING CONSTRUCTION OF THE CONTRACT AND THEREFORE, WILL NOT BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DESIGN CHANGES THAT MAY HAVE HAPPENED DURING CONSTRUCTION WITHOUT NOTIFICATION OR APPROVAL OF CH2M HILL, WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS FROM THE INFORMATION PROVIDED.

DAVID J. STIEB
79795

David J. Stieb 1-24-06

DSGN	RE THOMPSON JA BOOTH					
DR	DC EVANS	2	1/2006	RECORD DRAWINGS	JB	DS
CHK	RE THOMPSON MD WILSON	1	1/2005	ADDENDUM 1	JB	RT
APVD	DJ STIEB	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

EPA
REGION 6 DALLAS, TEXAS
ROCKWOOL INDUSTRIES
BELTON, TEXAS

CIVIL

MONITOR WELL DETAILS

SHEET	20
DWG	C-20
DATE	JAN 2006
PROJ	185014

FILENAME: 05nc403d_185014.dgn PLOT DATE: 01/23/2006 PLOT TIME: 11:44:16 AM

Appendix D
Boring Locations and Contour Maps

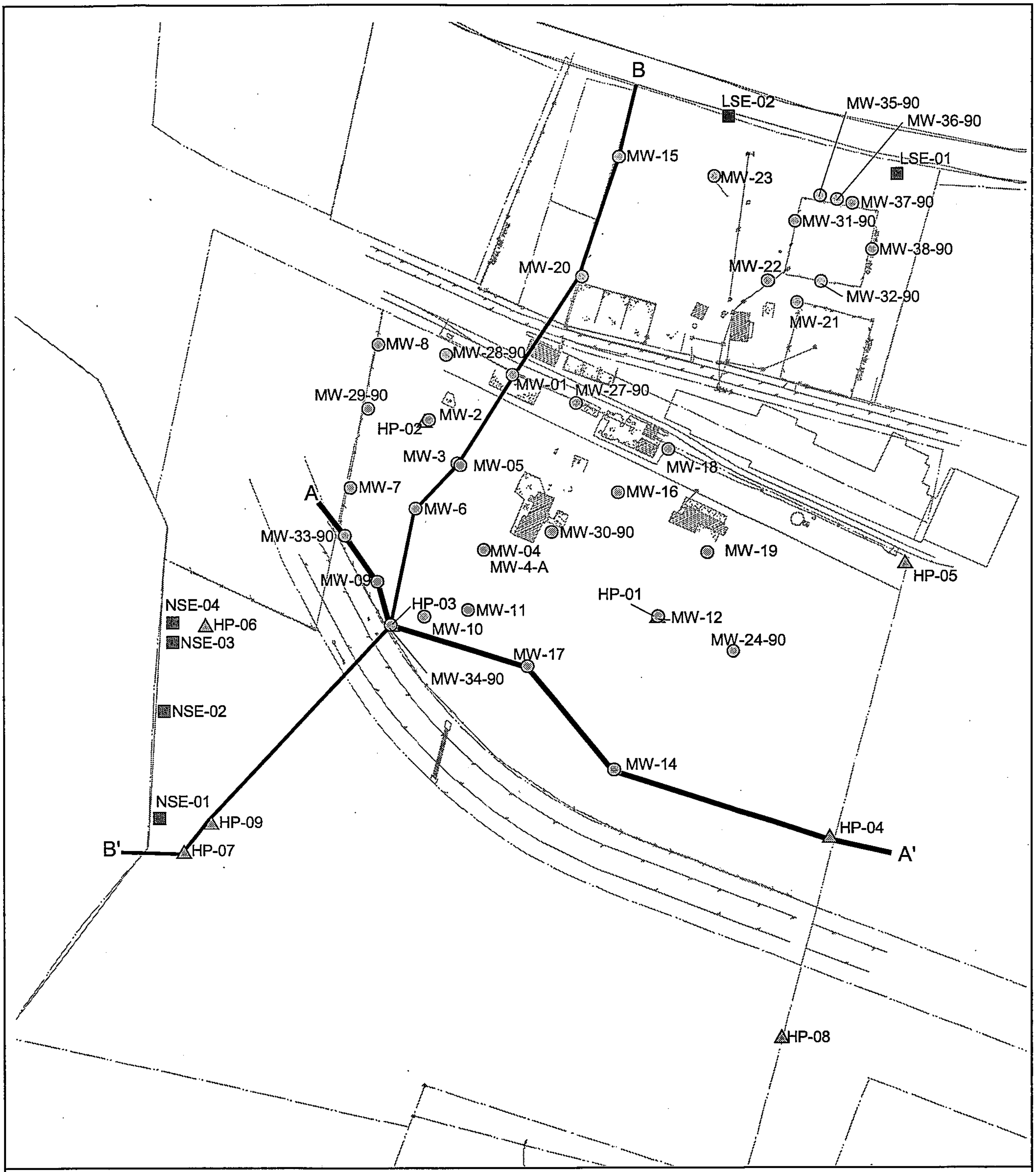


Figure 4.3
Monitor Well Boring Locations
Rockwool Remedial Investigation
Belton, Texas

CH2MHILL

T:\ISI\Proj\RockWoolIYing_RI_new\apr\contour.apr (MW Boring Layout)

26 JUN 02 10

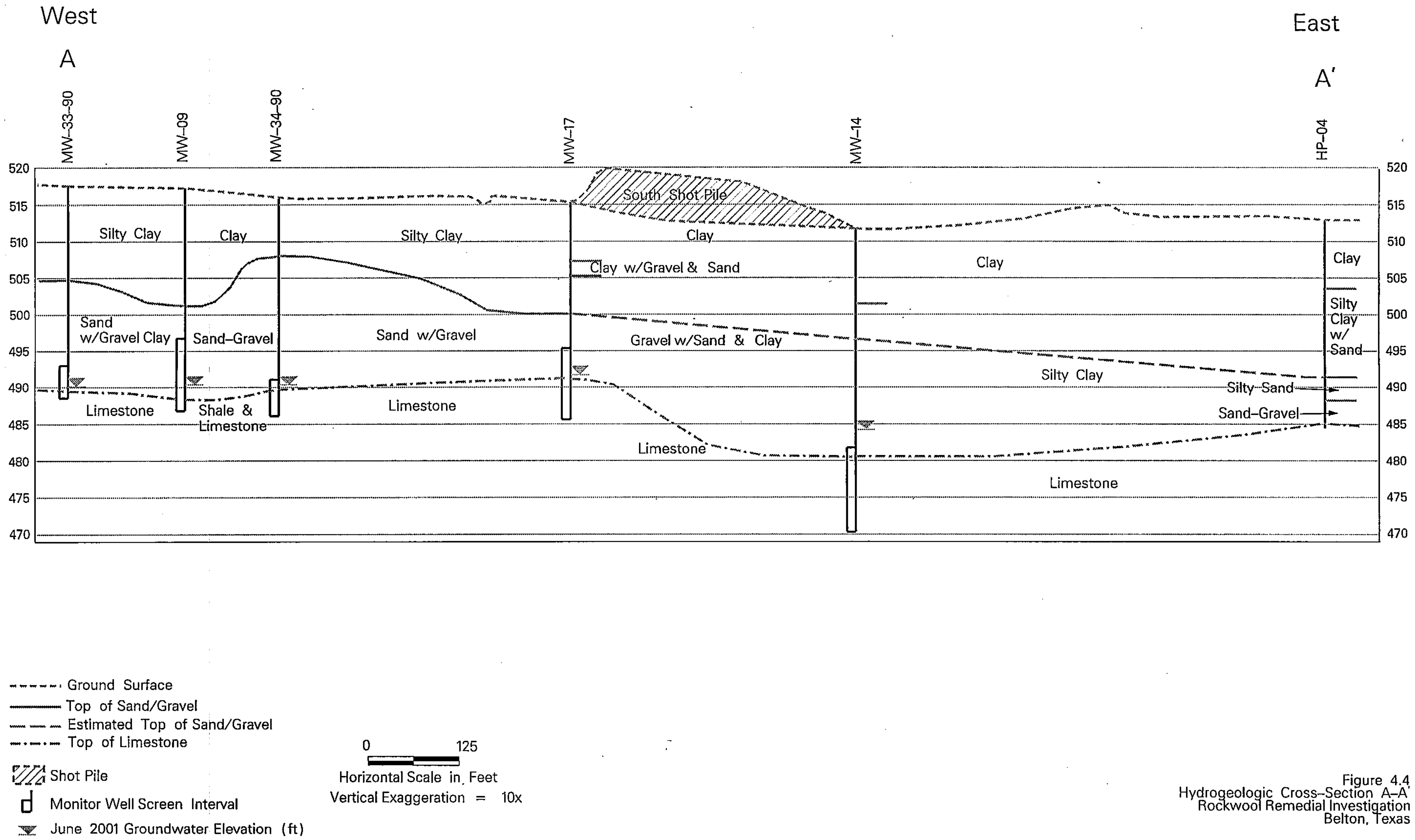


Figure 4.4
Hydrogeologic Cross-Section A-A'
Rockwool Remedial Investigation
Belton, Texas

T:\IS\Proj\RockWool\Ying_RI_new\cad\xsection_a_b_11x17.dgn

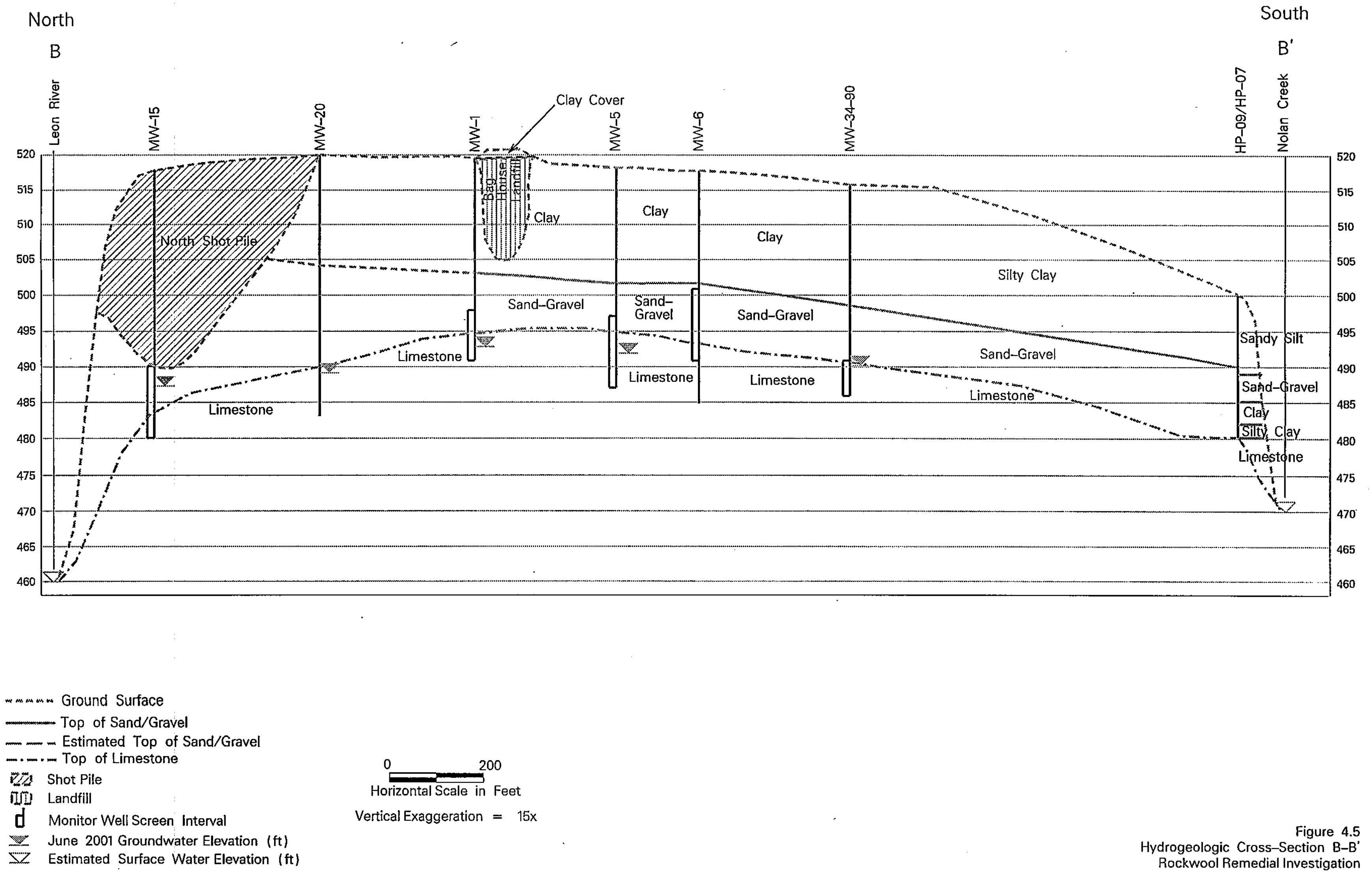
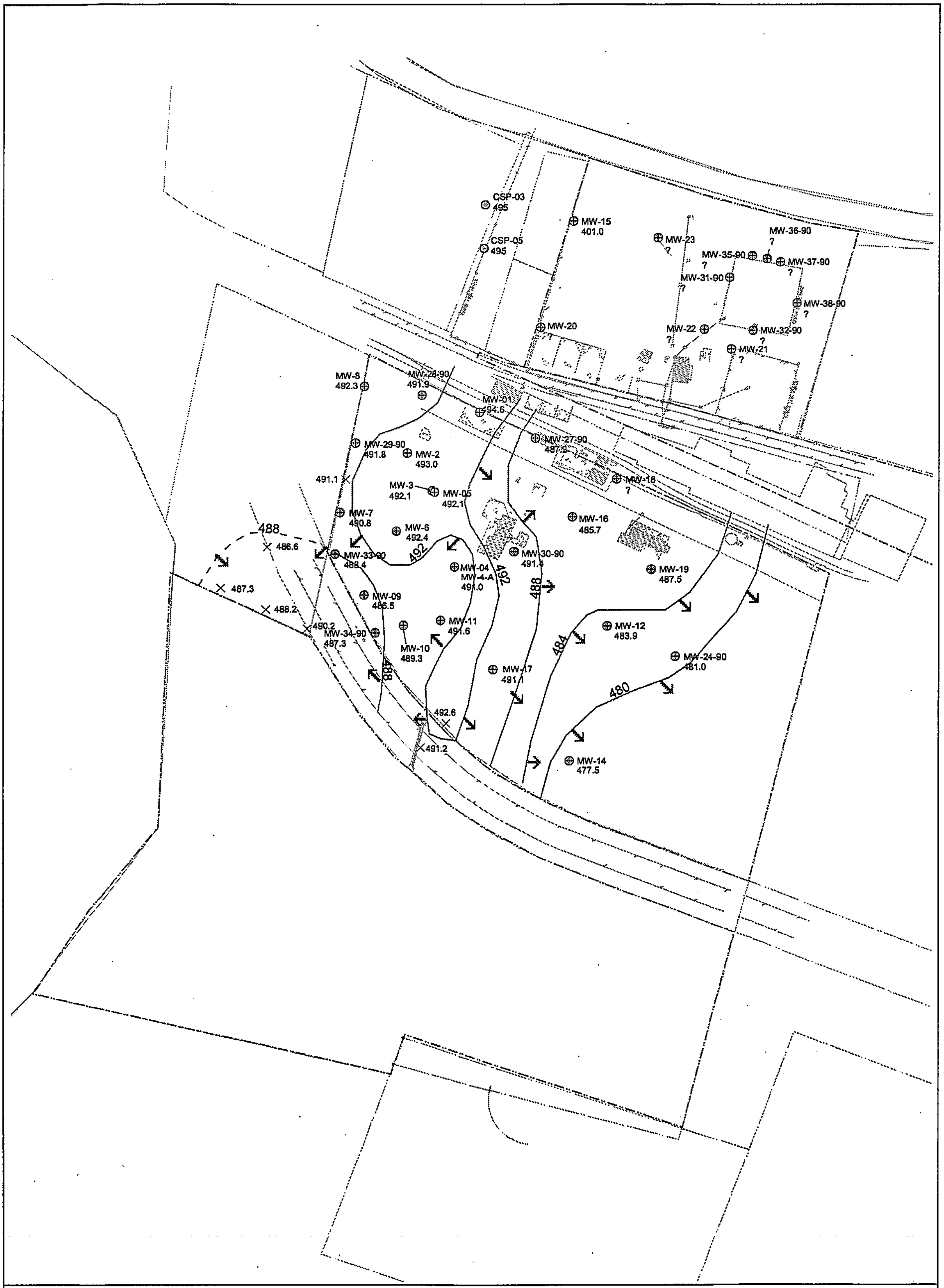


Figure 4.5
Hydrogeologic Cross-Section B-B'
Rockwool Remedial Investigation
Belton, Texas

T:\IS\Proj\RockWool\Ying_RI_new\cad\xsection_a_b_11x17.dgn



LEGEND

- × 1992 RFI Soil Boring and Top of Limestone Elevation (ft)
- ── Top of Limestone Elevation Contour (Interval 4 ft)
- – – Inferred Top of Limestone Elevation Contour
- ·····–·· Site Boundary
- ⊕ Monitor Well and Top of Limestone Elevation (ft)
- ◎ Soil Boring and Top of Limestone Elevation (ft)
- ? Unknown Top of Limestone Elevation
- ← Inferred Direction of Limestone Dip

N

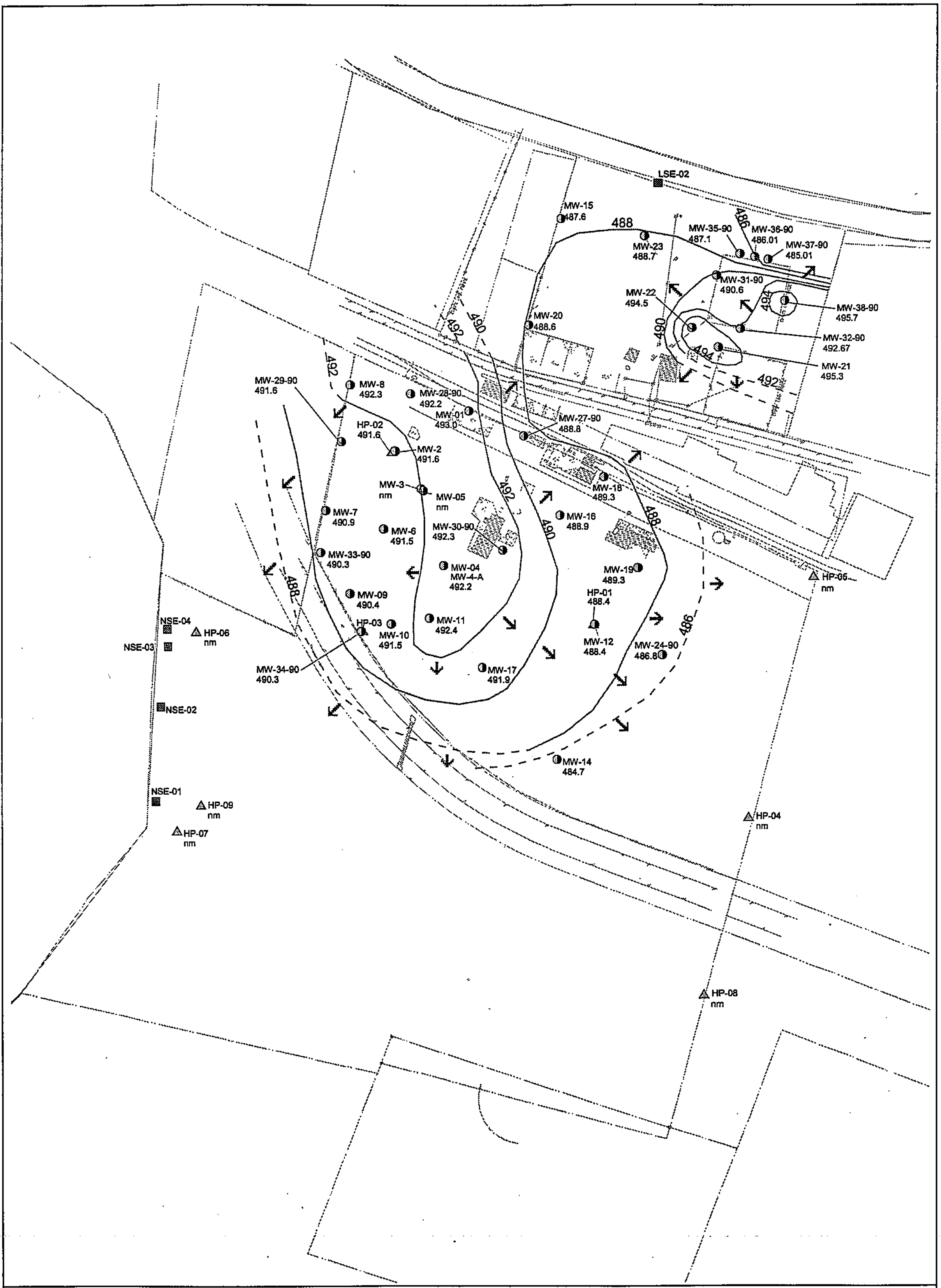
0 300 Feet

Figure 4.6
Top of Limestone Structure Contour Map
Rockwool Remedial Investigation
Belton, Texas

CH2MHILL

ls\proj\rockwool\ying_rl_new\apr\contour.apr (Top of Limestone Layout)

19 JUN 02 15



LEGEND

- △ Hydropunch Location
- ▩ Groundwater Seep Location
- ◐ Monitor Well Location and Groundwater Elevation (ft)
- —— Groundwater Elevation Contour (Interval 2 ft)
- – – Inferred Groundwater Elevation Contour (ft)
- nm Measuring Point Elevation or Depth to Water Not Measured
- ← Inferred Direction of Groundwater Flow

N

0 300 Feet

Figure 4.7
Groundwater Elevation Contour and Flow
June 2001
Rockwool Remedial Investigation
Belton, Texas

CH2MHILL

ls|proj|rockwool|ying_rl_new|apr|contour.apr (GW Elevation and Flow Layout)

19 JUN 02 15

Appendix E
Form TCEQ-10452
Consent for Access to Property

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

If you have questions on how to fill out this form or about the State Superfund program, please telephone the TCEQ toll-free at 1-800-633-9363.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact the TCEQ at 1-800-633-9363.

CONSENT FOR ACCESS TO PROPERTY

Please Print

(Name of Property Owner or Tenant in Residence)

(Street Number and Street Name of Property)

, Texas

(City or Town in Which Property Is Located) (ZIP Code of Property)

(County in Which Property Is Located)

( )

(Telephone Number of Property Owner or Tenant in Residence)

I voluntarily consent to agents, contractors, subcontractors, officers, designees, and employees of the Texas Commission on Environmental Quality (TCEQ) entering and having continued access to my property for the following purposes:

(1) taking such soil, water, and air samples as may be necessary;

(2) taking other actions related to the investigation of surface or subsurface conditions; and

(3) taking response actions necessary to mitigate any threat to human health or the environment.

I realize that these actions by the TCEQ are undertaken pursuant to its authority under the Texas Health and Safety Code and the Texas Water Code, including Section 361.032 of the Texas Health and Safety Code and Section 26.014 of the Texas Water Code.

(Signature of Property Owner or Tenant in Residence) (Date)

(Name of Site)

State Superfund Program MC 225 ■ TCEQ ■ PO Box 13087 ■ Austin TX 78711-3087
1-800-633-9363 ■ Internet address: **www.tceq.state.tx.us**

Distribution: ***White:*** *TCEQ* ***Yellow:*** *Contractor* ***Pink:*** *Property Owner (or Lessee)*

TCEQ-10452 (02/04)

printed with soy-based ink

LA COMISIÓN DE CALIDAD AMBIENTAL DE TEXAS

Si usted tiene preguntas de como llenar esté formulario o preguntas acerca del programa de Superfund en Texas, por favor llame al teléfono 1-800-633-9363. Esta llamada es grátis.

Los indivíduos tienen el derecho de pedir y revisar su información personal que la agencia recoge en sus formularios. Pueden corregir errores e información. Para revisar la informacion, puede llamar a la TCEQ al 1-800-633-9363.

CONSENTIMIENTO PARA EL ACCESO A LA PROPIEDAD

Por favor use letra de molde

____
(Nombre de dueño de la propiedad o arrendatario en la residencia)

____
(Número de calle y el nombre de la calle de la propiedad)

________________________________, Texas __________
(Ciudad o pueblo en cual la propiedad se localiza) (código postal de la propiedad)

____
(Condado en donde la propiedad se localiza)

( ) __________________________
(El número teléfonico del dueño de la propiedad o arrendatario en la residencia)

Yo voluntariamente doy consentimiento a agentes, contratistas, subcontratistas, oficiales, designarios, y a los empleados de La Comisión de Calidad Ambiental de Texas (TCEQ) el acceso contínuo a mi propiedad para los propósitos siguientes:

(1) tomar como sean necesario muestras de suelo, agua y aire

(2) tomar otras acciones relacionadas a la investigación de condiciones de superficie o debajo de la superficie; y

(3) tomar acciones necesarias para mitigar cualquier amenaza a la salud humana o el ambiente

Yo entiendo que estas acciones por la TCEQ se emprenden según su autoridad bajo el Código de la Salud y la Seguridad de Texas y el Código de Agua de Texas, inclusive la Sección 361.032 del Código de Salud y Seguridad de Texas y la Sección 26.014 del Código de Agua de Texas.

____
(Firma del Dueño de Propiedad o Arrendatario en la Residencia) (Fecha)

____
(Nombre del Sitio)

Superfund Program MC 225 ■ TCEQ ■ PO Box 13087 ■ Austin TX 78711-3087
1-800-633-9363 ■ dirección de Internet **www.tceq.state.tx.us**

Distribución: ***Blanca:*** *TCEQ* ***Amarilla:*** *Contratista* ***Rosa:*** *Dueño (o Arrendatorio)*

TCEQ-10452-esp (02/04)

impresa usando tinta a base de soya

Attachment 5. DHL Analytical NELAP Certification

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704211-14-12
Effective Date: 5/1/2014
Expiration Date: 4/30/2015

Executive Director Texas Commission on Environmental Quality

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704211-14-12
Expiration Date: 4/30/2015
Issue Date: 5/1/2014

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Cadmium	TX	1030	10014605
Chromium	TX	1040	10014605
Copper	TX	1055	10014605
Lead	TX	1075	10014605
Manganese	TX	1090	10014605
Nickel	TX	1105	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Thallium	TX	1165	10014605
Uranium	TX	3035	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Fluoride	TX	1730	10053006
Nitrate as N	TX	1810	10053006
Nitrite as N	TX	1840	10053006

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total Cyanide	TX	1635	10060409

Method SM 4500-CN^{-} E

Analyte	AB	Analyte ID	Method ID

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704211-14-12
Expiration Date: 4/30/2015
Issue Date: 5/1/2014

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Total Cyanide	TX	1635	20096428

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704211-14-12
Expiration Date: 4/30/2015
Issue Date: 5/1/2014

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 150.1

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10008409

Method EPA 160.1

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	10009208

Method EPA 160.2

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	10009606

Method EPA 1664

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	AB	Analyte ID	Method ID
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605

Certificate: T104704211-14-12
Expiration Date: 4/30/2015
Issue Date: 5/1/2014

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605
Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053006
Chloride	TX	1575	10053006

Matrix: ***Non-Potable Water***

Fluoride	TX	1730	10053006
Nitrate as N	TX	1810	10053006
Nitrate-nitrite	TX	1820	10053006
Nitrite as N	TX	1840	10053006
Sulfate	TX	2000	10053006

Method EPA 305.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Acidity, as CaCO3	TX	1500	10054203

Method EPA 310.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 335.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	10060205

Method EPA 365.2

Analyte	**AB**	**Analyte ID**	**Method ID**
Orthophosphate as P	TX	1870	10070403
Phosphorus	TX	1910	10070403

Method EPA 376.2

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfide	TX	2005	10074609

Method EPA 415.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 602

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10102202
Ethylbenzene	TX	4765	10102202

Matrix: ***Non-Potable Water***

m+p-xylene	TX	5240	10102202
Methyl tert-butyl ether (MTBE)	TX	5000	10102202
o-Xylene	TX	5250	10102202
Toluene	TX	5140	10102202
Xylene (total)	TX	5260	10102202

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204

Matrix: ***Non-Potable Water***

Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 608

Analyte	AB	Analyte ID	Method ID
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate:	**T104704211-14-12**
Expiration Date:	**4/30/2015**
Issue Date:	**5/1/2014**

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207
cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
Total trihalomethanes	TX	5205	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**

Certificate: **T104704211-14-12**

DHL Analytical, Inc.

Expiration Date: **4/30/2015**

Issue Date: **5/1/2014**

2300 Double Creek Drive
Round Rock, TX 78664-3801

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,3,4,6-Tetrachlorophenol	TX	6735	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401
2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4,4'-DDD	TX	7355	10107401
4,4'-DDE	TX	7360	10107401
4,4'-DDT	TX	7365	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: **T104704211-14-12**
Expiration Date: **4/30/2015**
Issue Date: **5/1/2014**

DHL Analytical, Inc.

2300 Double Creek Drive
Round Rock, TX 78664-3801

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Matrix: ***Non-Potable Water***

Aldrin	TX	7025	10107401
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10107401
alpha-Chlordane	TX	7240	10107401
Anthracene	TX	5555	10107401
Aroclor-1016 (PCB-1016)	TX	8880	10107401
Aroclor-1221 (PCB-1221)	TX	8885	10107401
Aroclor-1232 (PCB-1232)	TX	8890	10107401
Aroclor-1242 (PCB-1242)	TX	8895	10107401
Aroclor-1248 (PCB-1248)	TX	8900	10107401
Aroclor-1254 (PCB-1254)	TX	8905	10107401
Aroclor-1260 (PCB-1260)	TX	8910	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Chloroisopropyl) ether	TX	5780	10107401
bis(2-Ethylhexyl) phthalate (DEHP)	TX	6255	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Dieldrin	TX	7470	10107401
Diethyl phthalate	TX	6070	10107401
Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401

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Matrix: ***Non-Potable Water***

Di-n-octyl phthalate	TX	6200	10107401
Endosulfan I	TX	7510	10107401
Endosulfan II	TX	7515	10107401
Endosulfan sulfate	TX	7520	10107401
Endrin	TX	7540	10107401
Endrin aldehyde	TX	7530	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10107401
gamma-Chlordane	TX	7245	10107401
Heptachlor	TX	7685	10107401
Heptachlor epoxide	TX	7690	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401

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Matrix: ***Non-Potable Water***

Pyridine	TX	5095	10107401
Toxaphene (Chlorinated camphene)	TX	8250	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162400

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165807

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Propylene Glycol	TX	6657	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174808
Ethylbenzene	TX	4765	10174808
m+p-xylene	TX	5240	10174808
Methyl tert-butyl ether (MTBE)	TX	5000	10174808
o-Xylene	TX	5250	10174808
Toluene	TX	5140	10174808
Xylene (total)	TX	5260	10174808

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179007
Aroclor-1221 (PCB-1221)	TX	8885	10179007
Aroclor-1232 (PCB-1232)	TX	8890	10179007
Aroclor-1242 (PCB-1242)	TX	8895	10179007
Aroclor-1248 (PCB-1248)	TX	8900	10179007
Aroclor-1254 (PCB-1254)	TX	8905	10179007

Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179007
PCBs (total)	TX	8870	10179007

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184802
1,1,1-Trichloroethane	TX	5160	10184802
1,1,2,2-Tetrachloroethane	TX	5110	10184802
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184802
1,1,2-Trichloroethane	TX	5165	10184802
1,1-Dichloroethane	TX	4630	10184802
1,1-Dichloroethylene	TX	4640	10184802
1,1-Dichloropropene	TX	4670	10184802
1,2,3-Trichlorobenzene	TX	5150	10184802
1,2,3-Trichloropropane	TX	5180	10184802
1,2,4-Trichlorobenzene	TX	5155	10184802
1,2,4-Trimethylbenzene	TX	5210	10184802
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184802
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184802
1,2-Dichlorobenzene	TX	4610	10184802
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184802
1,2-Dichloropropane	TX	4655	10184802
1,3,5-Trimethylbenzene	TX	5215	10184802
1,3-Dichlorobenzene	TX	4615	10184802
1,3-Dichloropropane	TX	4660	10184802
1,4-Dichlorobenzene	TX	4620	10184802
1-Chlorohexane	TX	4510	10184802
2,2-Dichloropropane	TX	4665	10184802
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184802
2-Chloroethyl vinyl ether	TX	4500	10184802
2-Chlorotoluene	TX	4535	10184802

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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Matrix: ***Non-Potable Water***

2-Hexanone (MBK)	TX	4860	10184802
4-Chlorotoluene	TX	4540	10184802
4-Isopropyltoluene (p-Cymene)	TX	4915	10184802
4-Methyl-2-pentanone (MIBK)	TX	4995	10184802
Acetone (2-Propanone)	TX	4315	10184802
Acrolein (Propenal)	TX	4325	10184802
Acrylonitrile	TX	4340	10184802
Benzene	TX	4375	10184802
Bromobenzene	TX	4385	10184802
Bromochloromethane	TX	4390	10184802
Bromodichloromethane	TX	4395	10184802
Bromoform	TX	4400	10184802
Carbon disulfide	TX	4450	10184802
Carbon tetrachloride	TX	4455	10184802
Chlorobenzene	TX	4475	10184802
Chlorodibromomethane	TX	4575	10184802
Chloroethane (Ethyl chloride)	TX	4485	10184802
Chloroform	TX	4505	10184802
cis-1,2-Dichloroethylene	TX	4645	10184802
cis-1,3-Dichloropropene	TX	4680	10184802
Dibromomethane (Methylene bromide)	TX	4595	10184802
Dichlorodifluoromethane (Freon-12)	TX	4625	10184802
Ethylbenzene	TX	4765	10184802
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184802
Hexachlorobutadiene	TX	4835	10184802
Iodomethane (Methyl iodide)	TX	4870	10184802
Isopropyl ether	TX	4905	10184802
Isopropylbenzene (Cumene)	TX	4900	10184802
m+p-xylene	TX	5240	10184802
Methyl acetate	TX	4940	10184802

Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184802
Methyl chloride (Chloromethane)	TX	4960	10184802
Methyl tert-butyl ether (MTBE)	TX	5000	10184802
Methylcyclohexane	TX	4965	10184802
Methylene chloride (Dichloromethane)	TX	4975	10184802
Naphthalene	TX	5005	10184802
n-Butylbenzene	TX	4435	10184802
n-Propylbenzene	TX	5090	10184802
o-Xylene	TX	5250	10184802
sec-Butylbenzene	TX	4440	10184802
Styrene	TX	5100	10184802
T-amylmethylether (TAME)	TX	4370	10184802
tert-Butyl alcohol	TX	4420	10184802
tert-Butylbenzene	TX	4445	10184802
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184802
Toluene	TX	5140	10184802
Total trihalomethanes	TX	5205	10184802
trans-1,2-Dichloroethylene	TX	4700	10184802
trans-1,3-Dichloropropylene	TX	4685	10184802
trans-1,4-Dichloro-2-butene	TX	4605	10184802
Trichloroethene (Trichloroethylene)	TX	5170	10184802
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184802
Vinyl acetate	TX	5225	10184802
Vinyl chloride	TX	5235	10184802
Xylene (total)	TX	5260	10184802

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185805
1,2,4-Trichlorobenzene	TX	5155	10185805
1,2-Dichlorobenzene	TX	4610	10185805

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Matrix: ***Non-Potable Water***

1,2-Diphenylhydrazine	TX	6220	10185805
1,3-Dichlorobenzene	TX	4615	10185805
1,4-Dichlorobenzene	TX	4620	10185805
1-Naphthylamine	TX	6425	10185805
2,3,4,6-Tetrachlorophenol	TX	6735	10185805
2,4,5-Trichlorophenol	TX	6835	10185805
2,4,6-Trichlorophenol	TX	6840	10185805
2,4-Dichlorophenol	TX	6000	10185805
2,4-Dimethylphenol	TX	6130	10185805
2,4-Dinitrophenol	TX	6175	10185805
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185805
2,6-Dichlorophenol	TX	6005	10185805
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185805
2-Chloronaphthalene	TX	5795	10185805
2-Chlorophenol	TX	5800	10185805
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185805
2-Methylnaphthalene	TX	6385	10185805
2-Methylphenol (o-Cresol)	TX	6400	10185805
2-Naphthylamine	TX	6430	10185805
2-Nitroaniline	TX	6460	10185805
2-Nitrophenol	TX	6490	10185805
2-Picoline (2-Methylpyridine)	TX	5050	10185805
3,3'-Dichlorobenzidine	TX	5945	10185805
3-Methylcholanthrene	TX	6355	10185805
3-Nitroaniline	TX	6465	10185805
4,4'-DDD	TX	7355	10185805
4,4'-DDE	TX	7360	10186002
4,4'-DDT	TX	7365	10185805
4-Aminobiphenyl	TX	5540	10185805
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185805

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Matrix: ***Non-Potable Water***

4-Chloro-3-methylphenol	TX	5700	10185805
4-Chloroaniline	TX	5745	10185805
4-Chlorophenyl phenylether	TX	5825	10185805
4-Dimethyl aminoazobenzene	TX	6105	10185805
4-Methylphenol (p-Cresol)	TX	6410	10185805
4-Nitroaniline	TX	6470	10185805
4-Nitrophenol	TX	6500	10185805
7,12-Dimethylbenz(a) anthracene	TX	6115	10185805
a-a-Dimethylphenethylamine	TX	6125	10185805
Acenaphthene	TX	5500	10185805
Acenaphthylene	TX	5505	10185805
Acetophenone	TX	5510	10185805
Aldrin	TX	7025	10186002
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10186002
alpha-Chlordane	TX	7240	10185601
Aniline	TX	5545	10185805
Anthracene	TX	5555	10185805
Aroclor-1016 (PCB-1016)	TX	8880	10186002
Aroclor-1221 (PCB-1221)	TX	8885	10185203
Aroclor-1232 (PCB-1232)	TX	8890	10185407
Aroclor-1242 (PCB-1242)	TX	8895	10185203
Aroclor-1248 (PCB-1248)	TX	8900	10186002
Aroclor-1254 (PCB-1254)	TX	8905	10185601
Aroclor-1260 (PCB-1260)	TX	8910	10185203
Atrazine	TX	7065	10185805
Azinphos-methyl (Guthion)	TX	7075	10185805
Benzidine	TX	5595	10185805
Benzo(a)anthracene	TX	5575	10185805
Benzo(a)pyrene	TX	5580	10185805
Benzo(b)fluoranthene	TX	5585	10185805

Matrix: ***Non-Potable Water***

Benzo(e)pyrene	TX	5605	10185805
Benzo(g,h,i)perylene	TX	5590	10185805
Benzo(k)fluoranthene	TX	5600	10185805
Benzoic acid	TX	5610	10185805
Benzyl alcohol	TX	5630	10185805
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10185203
Biphenyl	TX	5640	10185805
bis(2-Chloroethoxy)methane	TX	5760	10185805
bis(2-Chloroethyl) ether	TX	5765	10185805
bis(2-Chloroisopropyl) ether	TX	5780	10185805
bis(2-Ethylhexyl) phthalate (DEHP)	TX	6255	10185805
Butyl benzyl phthalate	TX	5670	10185805
Caprolactam	TX	7180	10185805
Carbaryl (Sevin)	TX	7195	10185407
Carbazole	TX	5680	10185805
Carbophenothion	TX	7220	10185407
Chlordane (tech.)	TX	7250	10185203
Chlorfenvinphos	TX	7255	10185805
Chrysene	TX	5855	10185805
Coumaphos	TX	7315	10186002
Crotoxyphos	TX	7330	10185407
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10185805
Demeton	TX	7390	10185407
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185601
Dibenz(a,h) anthracene	TX	5895	10185805
Dibenzofuran	TX	5905	10185805
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10186002
Dicrotophos	TX	7465	10185407
Dieldrin	TX	7470	10186002

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Matrix: ***Non-Potable Water***

Diethyl phthalate	TX	6070	10185805
Dimethoate	TX	7475	10185805
Dimethyl phthalate	TX	6135	10185805
Di-n-butyl phthalate	TX	5925	10185805
Di-n-octyl phthalate	TX	6200	10185805
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185805
Disulfoton	TX	8625	10185601
Endosulfan I	TX	7510	10185805
Endosulfan II	TX	7515	10185203
Endosulfan sulfate	TX	7520	10185601
Endrin	TX	7540	10185203
Endrin aldehyde	TX	7530	10185805
Endrin ketone	TX	7535	10186002
EPN (Phosphonothioic acid, phenyl-, O-ethyl O-(p-nitrophenyl) ester)	TX	7550	10186002
Ethion	TX	7565	10185805
Ethyl methanesulfonate	TX	6260	10185805
Famphur	TX	7580	10185407
Fensulfothion	TX	7600	10185203
Fenthion	TX	7605	10186002
Fluoranthene	TX	6265	10185805
Fluorene	TX	6270	10185805
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10185203
gamma-Chlordane	TX	7245	10185203
Heptachlor	TX	7685	10185601
Heptachlor epoxide	TX	7690	10185805
Hexachlorobenzene	TX	6275	10185805
Hexachlorobutadiene	TX	4835	10185805
Hexachlorocyclopentadiene	TX	6285	10185805
Hexachloroethane	TX	4840	10185805

Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185805
Indeno(1,2,3-cd) pyrene	TX	6315	10185805
Isodrin	TX	7725	10185407
Isophorone	TX	6320	10185805
Leptophos	TX	7755	10186002
Malathion	TX	7770	10186002
Methoxychlor	TX	7810	10185601
Methyl methanesulfonate	TX	6375	10185805
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10186002
Monocrotophos	TX	7880	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185805
Nitrobenzene	TX	5015	10185805
n-Nitrosodiethylamine	TX	6525	10185805
n-Nitrosodimethylamine	TX	6530	10185805
n-Nitrosodi-n-butylamine	TX	5025	10185805
n-Nitrosodi-n-propylamine	TX	6545	10185805
n-Nitrosodiphenylamine	TX	6535	10185805
n-Nitrosopiperidine	TX	6560	10185805
Parathion, ethyl	TX	7955	10185805
Pentachlorobenzene	TX	6590	10185805
Pentachloronitrobenzene (PCNB)	TX	6600	10185805
Pentachlorophenol	TX	6605	10185805
Phenacetin	TX	6610	10185805
Phenanthrene	TX	6615	10185805
Phenol	TX	6625	10185805
Phorate	TX	7985	10186002
Phosmet (Imidan)	TX	8000	10186002
Phosphamidon	TX	8005	10185805

Matrix: ***Non-Potable Water***

Pronamide (Kerb)	TX	6650	10185805
Pyrene	TX	6665	10185805
Pyridine	TX	5095	10185805
Quinoline	TX	6670	10185805
Sulfotepp	TX	8155	10186002
Terbufos	TX	8185	10185805
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10186002
Tetraethyl pyrophosphate (TEPP)	TX	8210	10185407
Toxaphene (Chlorinated camphene)	TX	8250	10185203

Method EPA 8321

Analyte	**AB**	**Analyte ID**	**Method ID**
2,4,5-T	TX	8655	10188804
2,4-D	TX	8545	10188804
2,4-DB	TX	8560	10188804
Dalapon	TX	8555	10188804
Dicamba	TX	8595	10188804
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10188804
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10188804
MCPA	TX	7775	10188804
MCPP	TX	7780	10188804
Silvex (2,4,5-TP)	TX	8650	10188804

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807

Matrix: ***Non-Potable Water***

4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Nitroglycerin	TX	6485	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
Pentaerythritoltetranitrate (PETN)	TX	9558	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10193803
Total Cyanide	TX	1635	10193803

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10197203

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9070

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201000

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Matrix: ***Non-Potable Water***

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
Carbon dioxide	TX	3755	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2130 B

Analyte	AB	Analyte ID	Method ID
Turbidity	TX	2055	20048220

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20044615

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045618

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID
Total hardness as CaCO3	TX	1755	20046611

Method SM 2510 B

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048617

Method SM 2540 C

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	20050413

Method SM 2540 D

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	20051212

Method SM 3500-Cr D

Analyte	AB	Analyte ID	Method ID

Matrix: ***Non-Potable Water***

Chromium	TX	1040	20066266

Method SM 4500-CN^{-} E

Analyte	AB	Analyte ID	Method ID
Total Cyanide	TX	1635	20096428

Method SM 4500-CN^{-} G

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20097227

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20105220

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20109415

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20124225
Phosphorus	TX	1910	20124225

Method SM 4500-S2^{-} D

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20125864

Method SM 5220 D

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	20136816

Method SM 5310 C

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20138823

Method TCEQ 1005

Analyte	AB	Analyte ID	Method ID
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605
Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605

Matrix: ***Solid & Chemical Materials***

Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053006
Chloride	TX	1575	10053006
Fluoride	TX	1730	10053006
Nitrate as N	TX	1810	10053006
Nitrate-nitrite	TX	1820	10053006
Nitrite as N	TX	1840	10053006
Sulfate	TX	2000	10053006

Method EPA 310.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	10064401

Method EPA 365.2

Analyte	**AB**	**Analyte ID**	**Method ID**
Orthophosphate as P	TX	1870	10070403
Phosphorus	TX	1910	10070403

Method EPA 6020

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10156204

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Matrix: ***Solid & Chemical Materials***

Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	10162400

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Matrix: ***Solid & Chemical Materials***

Method EPA 7470

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10165807

Method EPA 7471

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10166208

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Propylene Glycol	TX	6657	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174808
Ethylbenzene	TX	4765	10174808
m+p-xylene	TX	5240	10174808
Methyl tert-butyl ether (MTBE)	TX	5000	10174808
o-Xylene	TX	5250	10174808
Toluene	TX	5140	10174808
Xylene (total)	TX	5260	10174808

Method EPA 8082

Analyte	AB	Analyte ID	Method ID
Aroclor-1016 (PCB-1016)	TX	8880	10179007
Aroclor-1221 (PCB-1221)	TX	8885	10179007
Aroclor-1232 (PCB-1232)	TX	8890	10179007
Aroclor-1242 (PCB-1242)	TX	8895	10179007
Aroclor-1248 (PCB-1248)	TX	8900	10179007
Aroclor-1254 (PCB-1254)	TX	8905	10179007
Aroclor-1260 (PCB-1260)	TX	8910	10179007
PCBs (total)	TX	8870	10179007

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Matrix: ***Solid & Chemical Materials***

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184802
1,1,1-Trichloroethane	TX	5160	10184802
1,1,2,2-Tetrachloroethane	TX	5110	10184802
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184802
1,1,2-Trichloroethane	TX	5165	10184802
1,1-Dichloroethane	TX	4630	10184802
1,1-Dichloroethylene	TX	4640	10184802
1,1-Dichloropropene	TX	4670	10184802
1,2,3-Trichlorobenzene	TX	5150	10184802
1,2,3-Trichloropropane	TX	5180	10184802
1,2,4-Trichlorobenzene	TX	5155	10184802
1,2,4-Trimethylbenzene	TX	5210	10184802
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184802
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184802
1,2-Dichlorobenzene	TX	4610	10184802
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184802
1,2-Dichloropropane	TX	4655	10184802
1,3,5-Trimethylbenzene	TX	5215	10184802
1,3-Dichlorobenzene	TX	4615	10184802
1,3-Dichloropropane	TX	4660	10184802
1,4-Dichlorobenzene	TX	4620	10184802
1-Chlorohexane	TX	4510	10184802
2,2-Dichloropropane	TX	4665	10184802
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184802
2-Chloroethyl vinyl ether	TX	4500	10184802
2-Chlorotoluene	TX	4535	10184802
2-Hexanone (MBK)	TX	4860	10184802
4-Chlorotoluene	TX	4540	10184802

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Matrix: ***Solid & Chemical Materials***

4-Isopropyltoluene (p-Cymene)	TX	4915	10184802
4-Methyl-2-pentanone (MIBK)	TX	4995	10184802
Acetone (2-Propanone)	TX	4315	10184802
Acrolein (Propenal)	TX	4325	10184802
Acrylonitrile	TX	4340	10184802
Benzene	TX	4375	10184802
Bromobenzene	TX	4385	10184802
Bromochloromethane	TX	4390	10184802
Bromodichloromethane	TX	4395	10184802
Bromoform	TX	4400	10184802
Carbon disulfide	TX	4450	10184802
Carbon tetrachloride	TX	4455	10184802
Chlorobenzene	TX	4475	10184802
Chlorodibromomethane	TX	4575	10184802
Chloroethane (Ethyl chloride)	TX	4485	10184802
Chloroform	TX	4505	10184802
cis-1,2-Dichloroethylene	TX	4645	10184802
cis-1,3-Dichloropropene	TX	4680	10184802
Dibromomethane (Methylene bromide)	TX	4595	10184802
Dichlorodifluoromethane (Freon-12)	TX	4625	10184802
Ethylbenzene	TX	4765	10184802
Hexachlorobutadiene	TX	4835	10184802
Iodomethane (Methyl iodide)	TX	4870	10184802
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184802
Isopropylbenzene (Cumene)	TX	4900	10184802
m+p-xylene	TX	5240	10184802
Methyl acetate	TX	4940	10184802
Methyl bromide (Bromomethane)	TX	4950	10184802
Methyl chloride (Chloromethane)	TX	4960	10184802
Methyl tert-butyl ether (MTBE)	TX	5000	10184802

Matrix: ***Solid & Chemical Materials***

Methylcyclohexane	TX	4965	10184802
Methylene chloride (Dichloromethane)	TX	4975	10184802
Naphthalene	TX	5005	10184802
n-Butylbenzene	TX	4435	10184802
n-Propylbenzene	TX	5090	10184802
o-Xylene	TX	5250	10184802
sec-Butylbenzene	TX	4440	10184802
Styrene	TX	5100	10184802
tert-Butylbenzene	TX	4445	10184802
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184802
Toluene	TX	5140	10184802
trans-1,2-Dichloroethylene	TX	4700	10184802
trans-1,3-Dichloropropylene	TX	4685	10184802
trans-1,4-Dichloro-2-butene	TX	4605	10184802
Trichloroethene (Trichloroethylene)	TX	5170	10184802
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184802
Vinyl acetate	TX	5225	10184802
Vinyl chloride	TX	5235	10184802
Xylene (total)	TX	5260	10184802

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185805
1,2,4-Trichlorobenzene	TX	5155	10185805
1,2-Dichlorobenzene	TX	4610	10185805
1,2-Diphenylhydrazine	TX	6220	10185805
1,3-Dichlorobenzene	TX	4615	10185805
1,4-Dichlorobenzene	TX	4620	10185805
1-Naphthylamine	TX	6425	10185805
2,3,4,6-Tetrachlorophenol	TX	6735	10185805
2,4,5-Trichlorophenol	TX	6835	10185805

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Matrix: ***Solid & Chemical Materials***

2,4,6-Trichlorophenol	TX	6840	10185805
2,4-Dichlorophenol	TX	6000	10185805
2,4-Dimethylphenol	TX	6130	10185805
2,4-Dinitrophenol	TX	6175	10185805
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185805
2,6-Dichlorophenol	TX	6005	10185805
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185805
2-Chloronaphthalene	TX	5795	10185805
2-Chlorophenol	TX	5800	10185805
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185805
2-Methylnaphthalene	TX	6385	10185805
2-Methylphenol (o-Cresol)	TX	6400	10185805
2-Naphthylamine	TX	6430	10185805
2-Nitroaniline	TX	6460	10185805
2-Nitrophenol	TX	6490	10185805
2-Picoline (2-Methylpyridine)	TX	5050	10185805
3,3'-Dichlorobenzidine	TX	5945	10185805
3-Methylcholanthrene	TX	6355	10185805
3-Nitroaniline	TX	6465	10185805
4,4'-DDD	TX	7355	10185203
4,4'-DDE	TX	7360	10186002
4,4'-DDT	TX	7365	10185407
4-Aminobiphenyl	TX	5540	10185805
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185805
4-Chloro-3-methylphenol	TX	5700	10185805
4-Chloroaniline	TX	5745	10185805
4-Chlorophenyl phenylether	TX	5825	10185805
4-Dimethyl aminoazobenzene	TX	6105	10185805
4-Methylphenol (p-Cresol)	TX	6410	10185805
4-Nitroaniline	TX	6470	10185805

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Matrix: ***Solid & Chemical Materials***

4-Nitrophenol	TX	6500	10185805
7,12-Dimethylbenz(a) anthracene	TX	6115	10185805
a-a-Dimethylphenethylamine	TX	6125	10185805
Acenaphthene	TX	5500	10185805
Acenaphthylene	TX	5505	10185805
Acetophenone	TX	5510	10185805
Aldrin	TX	7025	10186002
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10185407
alpha-Chlordane	TX	7240	10185805
Aniline	TX	5545	10185805
Anthracene	TX	5555	10185805
Aroclor-1016 (PCB-1016)	TX	8880	10186002
Aroclor-1221 (PCB-1221)	TX	8885	10185805
Aroclor-1232 (PCB-1232)	TX	8890	10185407
Aroclor-1242 (PCB-1242)	TX	8895	10185407
Aroclor-1248 (PCB-1248)	TX	8900	10185805
Aroclor-1254 (PCB-1254)	TX	8905	10185805
Aroclor-1260 (PCB-1260)	TX	8910	10185407
Atrazine	TX	7065	10185805
Azinphos-methyl (Guthion)	TX	7075	10185203
Benzidine	TX	5595	10185805
Benzo(a)anthracene	TX	5575	10185805
Benzo(a)pyrene	TX	5580	10185805
Benzo(b)fluoranthene	TX	5585	10185805
Benzo(e)pyrene	TX	5605	10185805
Benzo(g,h,i)perylene	TX	5590	10185805
Benzo(k)fluoranthene	TX	5600	10185805
Benzoic acid	TX	5610	10185805
Benzyl alcohol	TX	5630	10185805
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10185601

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Matrix: ***Solid & Chemical Materials***

Biphenyl	TX	5640	10185805
bis(2-Chloroethoxy)methane	TX	5760	10185805
bis(2-Chloroethyl) ether	TX	5765	10185805
bis(2-Chloroisopropyl) ether	TX	5780	10185805
bis(2-Ethylhexyl) phthalate (DEHP)	TX	6255	10185805
Butyl benzyl phthalate	TX	5670	10185805
Caprolactam	TX	7180	10185805
Carbaryl (Sevin)	TX	7195	10185601
Carbazole	TX	5680	10185805
Carbophenothion	TX	7220	10185805
Chlordane (tech.)	TX	7250	10185805
Chlorfenvinphos	TX	7255	10185203
Chrysene	TX	5855	10185805
Coumaphos	TX	7315	10185805
Crotoxyphos	TX	7330	10185203
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10186002
Demeton	TX	7390	10185805
Demeton-o	TX	7395	10185805
Demeton-s	TX	7385	10185601
Dibenz(a,h) anthracene	TX	5895	10185805
Dibenzofuran	TX	5905	10185805
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185805
Dicrotophos	TX	7465	10185805
Dieldrin	TX	7470	10185407
Diethyl phthalate	TX	6070	10185805
Dimethoate	TX	7475	10185805
Dimethyl phthalate	TX	6135	10185805
Di-n-butyl phthalate	TX	5925	10185805
Di-n-octyl phthalate	TX	6200	10185805
Dioxathion	TX	7495	10185601

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Matrix: ***Solid & Chemical Materials***

Diphenylamine	TX	6205	10185805
Disulfoton	TX	8625	10185407
Endosulfan I	TX	7510	10185601
Endosulfan II	TX	7515	10185805
Endosulfan sulfate	TX	7520	10186002
Endrin	TX	7540	10185601
Endrin aldehyde	TX	7530	10186002
Endrin ketone	TX	7535	10186002
EPN (Phosphonothioic acid, phenyl-, O-ethyl O-(p-nitrophenyl) ester)	TX	7550	10186002
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185805
Famphur	TX	7580	10186002
Fensulfothion	TX	7600	10185805
Fenthion	TX	7605	10186002
Fluoranthene	TX	6265	10185805
Fluorene	TX	6270	10185805
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10185407
gamma-Chlordane	TX	7245	10185601
Heptachlor	TX	7685	10185601
Heptachlor epoxide	TX	7690	10185203
Hexachlorobenzene	TX	6275	10185805
Hexachlorobutadiene	TX	4835	10185805
Hexachlorocyclopentadiene	TX	6285	10185805
Hexachloroethane	TX	4840	10185805
Hexachlorophene	TX	6290	10185601
Indeno(1,2,3-cd) pyrene	TX	6315	10185805
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185805
Leptophos	TX	7755	10185407
Malathion	TX	7770	10185601

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Matrix: ***Solid & Chemical Materials***

Methoxychlor	TX	7810	10185203
Methyl methanesulfonate	TX	6375	10185805
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185805
Monocrotophos	TX	7880	10185805
Naled	TX	7905	10185805
Naphthalene	TX	5005	10185805
Nitrobenzene	TX	5015	10185805
n-Nitrosodiethylamine	TX	6525	10185805
n-Nitrosodimethylamine	TX	6530	10185805
n-Nitrosodi-n-butylamine	TX	5025	10185805
n-Nitrosodi-n-propylamine	TX	6545	10185805
n-Nitrosodiphenylamine	TX	6535	10185805
n-Nitrosopiperidine	TX	6560	10185805
Parathion, ethyl	TX	7955	10185805
Pentachlorobenzene	TX	6590	10185805
Pentachloronitrobenzene (PCNB)	TX	6600	10185805
Pentachlorophenol	TX	6605	10185805
Phenacetin	TX	6610	10185805
Phenanthrene	TX	6615	10185805
Phenol	TX	6625	10185805
Phorate	TX	7985	10185407
Phosmet (Imidan)	TX	8000	10185203
Phosphamidon	TX	8005	10186002
Pronamide (Kerb)	TX	6650	10185805
Pyrene	TX	6665	10185805
Pyridine	TX	5095	10185805
Quinoline	TX	6670	10185805
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185805

Matrix: ***Solid & Chemical Materials***

Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10186002
Tetraethyl pyrophosphate (TEPP)	TX	8210	10185407
Toxaphene (Chlorinated camphene)	TX	8250	10185203

Method EPA 8321

Analyte	**AB**	**Analyte ID**	**Method ID**
2,4,5-T	TX	8655	10188804
2,4-D	TX	8545	10188804
2,4-DB	TX	8560	10188804
Dalapon	TX	8555	10188804
Dicamba	TX	8595	10188804
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10188804
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10188804
MCPA	TX	7775	10188804
MCPP	TX	7780	10188804
Silvex (2,4,5-TP)	TX	8650	10188804

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Nitroglycerin	TX	6485	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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Matrix: ***Solid & Chemical Materials***

Pentaerythritoltetranitrate (PETN)	TX	9558	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total Cyanide	TX	1635	10193803

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197203
pH	TX	1900	10197203

Method EPA 9045

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10198400

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Sulfate	TX	2000	10199209

Method SM 2320 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Alkalinity as CaCO3	TX	1505	20045618

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048617

Method SSA/ASA Part 3:14

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	60049505

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Matrix: ***Solid & Chemical Materials***

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208