QUALITY ASSURANCE SAMPLING PLAN

FOR

WEST FERTILIZER EXPLOSION
1471 JERRY MASHEK DRIVE
WEST, MCLENNAN COUNTY, TEXAS

Prepared For

U.S. Environmental Protection Agency Region 6
1445 Ross Ave.
Dallas, Texas 75202

Contract No. EP-W-06-042
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April 2013

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On-scene Coordinator/Task Monitor

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Date

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1. INTRODUCTION

Weston Solutions, Inc. (WESTON®), the Superfund Technical Assessment and Response Team (START-3) contractor, has been tasked by the U.S. Environmental Protection Agency (EPA) Region 6 Prevention and Response Branch (PRB) under Contract Number EP-W-06-042 to conduct soil sampling operations at the West Fertilizer Explosion emergency response. A Proposed Soil Sampling Locations Map is provided as Figure 1-1. START-3 has prepared this Quality Assurance Sampling Plan (QASP) to describe the technical scope of work to be completed as part of this incident. In the event elevated levels of pesticides and herbicides detected by laboratory analysis, additional assessment may be conducted under this scope of work.

1.1 PROJECT OBJECTIVES

The EPA Team will conduct a soil sampling investigation to determine if pesticides and herbicides stored at the fertilizer facility migrated into public areas. The objective of the sampling will be to assess potential impact of the pesticides and herbicides to surrounding public property to determine if additional actions are necessary.

The objectives of the sampling will be achieved by comparing the analytical results of the sampling event from the impacted area against both risk-based standards and area background concentrations. The EPA Team will utilize clean, one-time-use plastic scoops to collect soil samples and analyze for the presence of pesticides and herbicides.

1.2 PROJECT TEAM

The EPA Team for this task will consist of START-3 personnel to perform the sampling activities. The EPA OSC will determine the number of and location of samples to be collected. START-3 will collect the samples as necessary, record the activities at each sample location in the field logbook, and verify sample documentation. Sample documentation and preparation is also the responsibility of the START-3 Data Manager.

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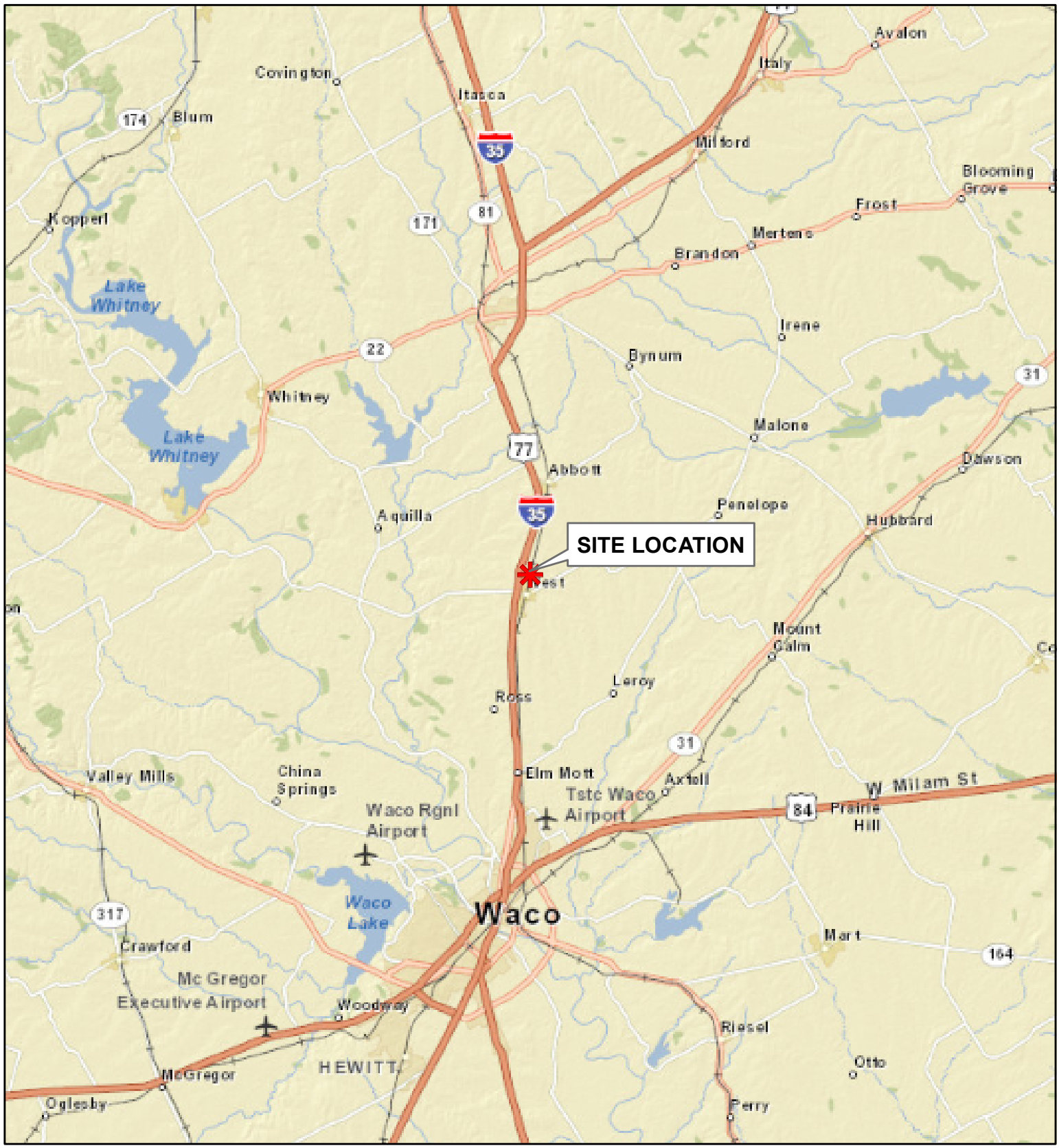

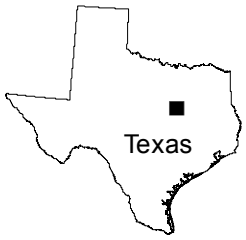

US EPA REGION 6

Site Location Map

West, Texas Explosion

Figure 1-1

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EPA
REGION-SIX
EMERGENCY RESPONSE TEAM

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1.3 QASP FORMAT

This QASP has been organized in a format intended to facilitate and effectively meet the objective of the response event. The QASP is organized in the following sections:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Sampling Approach and Procedures
- Section 4 – Quality Assurance

Tables are included at the end of each representative section. All figures are provided as separate Portable Document Format (PDF) files. Appendices are attached with the following information:

Appendix A WESTON Standard Operating Procedures

Appendix B Site-Specific Data Quality Objectives

Appendix C West Fertilizer Explosion TDD pending

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2. SITE BACKGROUND

Information about the site location and description, site history and features, and a summary of previous investigations is included in the following subsections.

2.1 SITE LOCATION AND DESCRIPTION

West Fertilizer Company is located at 1471 Jerry Mashek Drive, West, McLennan County, Texas, situated east of the residential community and west of agricultural. The site encompasses approximately 11 acres and located at latitude 31.81565˚ North and longitude 97.08805˚ West. A Site Location Map is provided as Figure 1-1 and a Site Area Map is provided as Figure 1-2.

The site is a former fertilizer formulation facility that had a catastrophic explosion and fire on 17 April 2013. The facility was destroyed in the explosion and fire. Based upon Tier II reports from the facility and information from inspecting agencies, including the Texas Department of Agriculture, the following pesticides or herbicides in addition to the fertilizers, anhydrous ammonia and ammonium nitrate, are believed to have been on-site at the time of the fire and explosion. These materials include:

- Atrizine™ (herbicide)
  2-chloro-4-ethylamino-6-isopropylamino-s-triazine, CASRN 1912-24-9
- Grazon™ (herbicide)
  Picloram (4-amino-3,5,6-trichloropyridine-2-carboxylic acid, CASRN 1918-02-1)
  2,4-D (2,4-Dichlorophenoxyacetic acid, CASRN 94-75-7)
- Roundup® (herbicide)
  Glyphosate, isopropylamine salt, CASRN 38641-94-0 and CASRN 1071-83-6

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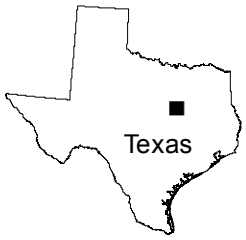
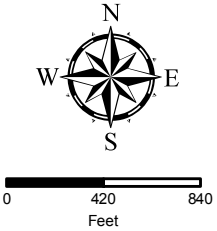


US EPA REGION 6

Site Area Map

West, Texas Explosion

Figure 1-2



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2.2 SITE CONCERNS

The contaminants of concern for the West Fertilizer Explosion Site are, but not limited to, pesticides and herbicides stored on-site at the time of the fire and explosion. Public exposure to these compounds in concentrations above those that would be encountered under the recommended usage of these compounds could result in adverse health effects.

3. SAMPLING APPROACH AND PROCEDURES

Samples collected by the EPA Team will be used to evaluate the potential presence of pesticides and herbicides within the soils in proximity to the West Fertilizer Co. facility.

3.1 OVERVIEW OF SAMPLING ACTIVITIES

The EPA Team will collect soil samples from publicly accessible areas. Samples will be collected from 0-1 inches below ground surface (bgs) at approximately fifteen (15) sample points based upon access and site conditions, and as determined by EPA OSC. The EPA Team will use SCRIBE software to manage sample data.

3.1.1 Data Quality Objectives

The objectives of the sampling activities described in this QASP are to determine if there has been a release of site-related pesticides and herbicides into the surrounding environment at levels that may pose a risk to human health. To accomplish this, the following data quality objective (DQO) has been established and is included in Appendix A:

- Determine if there is a release of site-related contamination into the surrounding environment.

The DQO was developed using the seven-step process set forth in the *EPA Guidance for Quality Assurance Project Plans: EPA QA/G-5*.

The analytical results of the soil sampling will be evaluated against soil screening levels for the targeted pesticides are the Texas Commission on Environmental Quality (TCEQ) Protective

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Legend

- Explosion Location
- Proposed Soil Sample Locations

US EPA REGION 6

Proposed Soil Sample Location Map

West, Texas Explosion

Figure 3-1

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA
REGION-SIX
EMERGENCY RESPONSE TEAM

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Concentration Limit (PCL) for residential soils, EPA Regional Screening Levels (RSLs) if PCL is not available, and local soil background concentrations.

Chemical	CASRN	Screening Level (mg/kg)	Basis (PCL or RSL)
Atrazine	1912-24-9	21	PCL
2,4-D	94-75-7	73	PCL
Glyphosate	1071-83-6	6700	PCL
Picloram	1918-02-1	4700	PCL
Propiconazole	60207-90-1	790	RSL

3.1.2 Health and Safety Plan Implementation

The EPA Team START-3 field activities will be conducted in accordance with the site-specific health and safety plan (HASP). The Field Safety Officer (FSO) will be responsible for implementation of the HASP during field investigation activities.

3.2 SAMPLING/MONITORING APPROACH

Samples will be collected in general accordance with the EPA Emergency Response Team (ERT) and WESTON Standard Operating Procedures (SOPs) for soil sampling following WESTON SOP 1002.04. The specific sampling procedures are described below.

3.2.1 Soil Sampling

As part of this assessment, the EPA Team will collect soil samples at 0-1 inches bgs to document concentrations of site related contaminants in the environment surrounding the facility. Two background sample locations (playground condition and easement conditions) has been identified at the West Elementary School. Samples will be collected using pre-cleaned, one time use plastic scoops to prevent cross-contamination.

Soil samples will be submitted to Test Americas Laboratories and analyzed by SW846 Methods 8270, 8151, 8141, and 8321.

3.2.2 Investigation-Derived Waste (IDW)

It is anticipated minimal amounts of IDW will be generated during this activity and will be disposed of as site related trash. If additional sampling and investigation are required, additional steps to mitigate IDW will be implemented.

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3.2.3 Sampling and Sample Handling Procedures

Samples will be collected using equipment and procedures appropriate to the matrix, parameters, and sampling objectives. The volume of the sample collected must be sufficient to perform the laboratory analysis requested. Samples must be stored in the proper types of containers and preserved in a manner appropriate to the analysis to be performed.

Clean, decontaminated sampling equipment and sample containers will be maintained in a clean, segregated area. Samples will be collected with clean decontaminated equipment following WESTON SOP 1201.01. Samples collected for laboratory analysis will be placed directly into pre-cleaned, unused glass or plastic containers. Sampling personnel will change gloves between each sample collection/handling. Samples will be assembled and catalogued prior to shipping to the designated laboratory (following WESTON SOP 1101.1 and 1102.01).

3.2.4 Field Quality Control Samples

The EPA Team will collect field duplicate samples as needed during the sampling activities. QA/QC samples will be collected according to the following:

- Blind field duplicate samples will be collected during sample activities for locations selected by the EPA Team. The data obtained from these samples will be used to ensure the quality assurance of the sampling procedures and laboratory analytical data by following an evaluation of reproducibility of results. Efforts will be made to collect duplicate samples from an area collocated from the original sample location where there is visual evidence of contamination or where contamination is suspected. It is anticipated that two duplicate soil samples for pesticides and herbicides will be collected.
- Temperature blanks will be prepared in the field and will consist of one 40-milliliter glass sample container with Teflon-lined septum cap. The temperature blank will be packaged along with the field samples in the shipping cooler and will represent the temperature of the incoming cooler upon receipt at the laboratory. Use of these samples within a shipping container enables the laboratory to assess the temperature of the shipment without disturbing any of the field samples.

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3.3 SAMPLE MANAGEMENT

Specific nomenclature that will be used by the EPA team will provide a consistent means to facilitate the sampling and overall data management for the project (SOP 0110.01). Any deviations from the sample nomenclature proposed below must be approved by the EPA OSC. The sample nomenclature for this sampling event is presented below:

Site ID + Station – Depth - Collection Type + QC Type – Collection Date

Where:

Site ID: A three-digit identifier used to designate the particular physical location where the sample was collected.

Station: A two-digit code used to designate the sample location.

Depth: A two-digit code used to designate the maximum depth of a sample collected.

Collection Type: A one-digit code used to designate what matrix of sample was collected.

QC Type: A one-digit code used to designate the QC type of the sample.

Collection Date: The collection date should be entered in format YYYYMMDD.

Example:

WFE01-01-51-20130421
WFE03-01-52-20130421

Where:

- WFE01 – designates the property identified as 01
- WFE03 – designates the property identified as 03
- 01 – stands for maximum sample depth of 1 inch
- 51 – stands for a normal soil sample
- 52 – stands for a duplicate soil sample
- 20130421 – stands for the collection date of 21 April 2013

Sample data management will be completed utilizing SCRIBE including Chain-of-Custody (COC) and sample documentation needs.

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3.4 DECONTAMINATION

While, no decontamination is anticipated to be necessary, any nondisposable sampling equipment (metal trowels, stainless steel bowls, etc.) used during the sample collection process will be thoroughly pre-cleaned before initial use, between use, and at the end of the field investigation. Equipment decontamination will be completed in the following steps:

- High-pressure water spray or brush, if needed, to remove soil/sediment from the equipment.
- Nonphosphate detergent and potable water wash to clean the equipment.
- Final potable water rinse.
- Equipment air-dried.

Personnel decontamination procedures will be described in the site-specific HASP that will be prepared by START-3 prior to implementation of activities at the site.

3.5 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES

Once collected, samples will be stored on ice in coolers on-site until shipped for laboratory analysis. The samples will be shipped via common carrier to the laboratory or driven by the EPA Team.

START-3 will receive analytical results based on discussions with the EPA OSC. This turnaround time (TAT) is initiated when the samples are received at the laboratory and continues until the analytical results are made available to START-3 either verbally or by providing facsimile or email copies of the results for review. Samples that have been analyzed will be disposed by the designated laboratory in accordance with the laboratory SOPs.

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Table 3-1
Requirements for Containers, Preservation Techniques, Sample Volumes, and Holding Times

Name	Analytical Methods	Container	Preservation	Minimum Sample Volume or Weight	Maximum Holding Time
Herbicides	SW846 8151	Glass	4°C	16 oz	14 days
Organophosphorus Pesticides	SW846 8141	Glass	4°C	16oz	14 days
SVOCs + TIC, parameter is Atrazine	SW846 8270	Glass	4°C	16oz	14 days
Glyphosate (by DI leachate)	SW846 8321	Glass	4°C	16oz	14 days

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4. QUALITY ASSURANCE

Quality Assurance (QA) will be conducted in accordance with the WESTON Corporate Quality Management and Programmatic Quality Assurance Project Plan (QAPP), dated December 2009, and the WESTON Quality Management Manual, dated September 2012. The PTL will be responsible for QA/QC of the field investigation activities. The designated laboratory utilized during the investigation will be responsible for QA/QC related to the analytical work. The EPA Team will also collect samples as necessary to verify that laboratory QA/QC is consistent with the required standards as discussed in the QASP.

4.1 SAMPLE CHAIN-OF-CUSTODY PROCEDURES

The EPA Team will utilize SCRIBE for all sample documentation and chain-of-custody COC preparation needs. Because of the evidentiary nature of sample collection, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. After sample collection and identification, the samples will be maintained under the COC procedures. Personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly.

The COC procedures are documented in WESTON SOP 1101.01, and will be made available to personnel involved with the sampling. A typical COC record included in WESTON SOP 1101.01 will be completed each time a sample or group of samples is prepared for shipment to the laboratory. The record will repeat the information on each of the sample labels and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and the member of the sampling team who originally relinquished the samples will retain another copy. The EPA Team will complete a COC form for all samples sent to the selected off-site laboratory.

Samples relinquished to the participating laboratories will be subject to the following procedures for transfer of custody and shipment:

- The COC record will accompany samples. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time

of the sample transfer on the record. This custody record documents transfer of sample custody from the sampler to another person or to the laboratory.

- Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis with separate, signed custody records enclosed in each sample box or cooler. Sample shipping containers will be custody-sealed for shipment to the laboratory. The preferred procedure includes use of a custody seal wrapped across filament tape that is wrapped around the package at least twice. The custody seal will then be folded over and stuck to the seal to ensure that the only access to the package is by cutting the filament tape or breaking the seal to unwrap the tape.
- If sent by common carrier, a bill of lading or airbill will be used. Bill of lading and airbill receipts will be retained in the project file as part of the permanent documentation of sample shipping and transfer.

WESTON SOPs 1101.01 and 1102.01, provided in Appendix B, describe these procedures in more detail.

4.2 PROJECT DOCUMENTATION

Documents will be completed legibly and in ink and by entry into field logbooks, Response Manager, or SCRIBE. Response Manager is the Enterprise Data Collection System designed to provide near real-time access to non-analytical data normally collected in logbooks. Response Manager provides a standard data collection interface for modules of data normally collected by the EPA Team while on-site. These modules fall into two basic categories for Response and Removal. The modules include Emergency Response, Reconnaissance, Facility Assessment, Shipping, Containers, Materials, Calls, HHW, and General/Site Specific data. The system provides users with a standard template for laptop/desktop/tablet PCs that will synchronize to the secure web interface using merge replication technology to provide access to field collected data via on the RRC-EDMS EPA Web Hub.

Response Manager also includes an Analytical Module that is designed to give SCRIBE users the ability to synchronize the SCRIBE field data to the RRC-EDMS Web Hub. This allows analytical data managers and data validators access to data to perform reviews from anywhere with an Internet connection. The Analytical Module is designed to take the analytical data entered into EPA SCRIBE software and make it available for multiple users to access on one site. The EPA Team will utilize SCRIBE for all data entry on-site and will upload to the Response Manager Analytical Module.

Field Documentation

The following field documentation will be maintained as described below.

Field Logbook

The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. All entries will be signed by the individuals making them. Entries should include, at a minimum, the following:

- Site name and project number.
- Names of personnel on-site.
- Dates and times of all entries.
- Description of all site activities, including site entry and exit times.
- Noteworthy events and discussions.
- Weather conditions.
- Site observations.
- Identification and description of samples and locations.
- Subcontractor information and names of on-site personnel.
- Dates and times of sample collections and chain-of-custody information.
- Records of photographs.
- Site sketches.
- Calibration results.

Sample Labels

Sample labels will be securely affixed to the sample container. The labels will clearly identify the particular sample and include the following information:

- Site name and project number.
- Date and time the sample was collected.
- Sample preservation method.
- Analysis requested.
- Sampling location.

Chain-of-Custody Record

A chain-of-custody will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept by each individual who has signed it.

Custody Seal

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual who has custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

Photographic Documentation

The EPA Team will use photo documentation to record site conditions and activities as site work progresses. Initial conditions should be well documented by photographing features that define the site-related contamination or special working conditions. Representative photographs should be taken of each type of site activity. The photographs should show typical operations and operating conditions as well as special situations and conditions that may arise during site activities. Site final conditions should also be documented as a record of how the site appears at completion of the work.

Photograph documentation will involve either a film camera or digital camera capable of recording the date associated with the image. Each photograph will be recorded in the logbook and within Response Manager with the location of the photographer, direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken). Where appropriate, the photograph location, direction, and subject will also be shown on a site sketch and recorded within Response Manager.

Report Preparation

At the completion of the project, the EPA Team will review and validate laboratory data and prepare a draft report of field activities and analytical results for EPA OSC review. Draft deliverable documents will be uploaded to the EPA TeamLink website for EPA OSC review and comment.

Response Manager

The EPA Team will use the Response Manager module located on the EPA Web Hub, https://solutions.westonproject.net/epawebhub/, to compile and organize the data collected from project activities. The information to be included encompasses some or all of the following depending on the specific project needs:

- General Module – site-specific data including location and type of site. It also includes an area for key site locations including geo-spatial data associated with the key site locations.
- Emergency Response Module – includes the following sub-modules: Basic Info, HAZMAT, Release, Time Line Log, Incident Zones, Photos, Sensitive Receptors, Evacuations, Source, Cause, and Weather.
- Reconnaissance Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for targeted reconnaissance efforts. Typically the data in this module is associated with ESF-10 deployments and the clean-up of orphaned containers and hazardous debris, but the module can be utilized for any or all reconnaissance activities.
- Facility Assessment Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for assessments of structures. Typically utilized for EPA regulated program facilities during an ESF-10 deployment of resources. This module can be utilized to track the assessment of any facilities including multiple assessments of the fixed facilities.
- Shipping Module – provides standard templates for creating a cradle-to-grave record of all waste shipments from the site until they are recycled or destroyed. This includes the ability to capture manifests and manifest line items and upload photos/original documents to support the records.
- Container Module – provides standard templates for cataloguing containers including HAZCAT and Layer information in each container. The module also allows for tracking which containers are bulked.
- Properties Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for collection of property data including access agreements and assessments of the property and current status of property regarding the site removal action.
- Materials Module – provides standard templates for tracking materials that are brought on-site or that are removed from the site.
- Daily Reports – provides standard templates for tracking daily site activities, daily site personnel, and daily site notes for reporting back to the EPA OSC in a POLREP or SITREP.
- HHW Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for tracking the amount of HHW collected at individual collection stations by HHW type.
- Data Files – data files can be uploaded in the photo module section and be associated with individual records or with the site in general. The meta-data associated with that data file can be filled in using the photo log fields.

APPENDIX A

STANDARD OPERATING PROCEDURES

REFERENCED STANDARD OPERATING PROCEDURES

SOP	**1101.01**				
GROUP	Sampling Handling				
SUB-GROUP	Sample Custody				
TITLE	Sample Custody in the Field				
DATE	**4/20/2013**	**FILE**	Document1	**PAGE**	1 of 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents procedures for maintaining sample chain of custody (COC) during activities where samples are collected.

PROCEDURE

Sample custody is defined as being under a person's custody if any of the following conditions exist:

- It is in their possession.
- It is in their view, after being in their possession.
- It was in their possession and currently located in locked area with the person claiming custody only having access to the area.
- It is in a designated secure area.

A designated field sample team member will be personally responsible for the care and custody of collected samples until the samples are transferred to another person or properly dispatched to the laboratory. To the extent practicable, as few people as possible will handle the samples.

Sample tags or labels will be completed and applied to the container of each sample. When the tags or labels are being completed, waterproof ink will be used. If waterproof ink is not used, the tags or labels will be covered by transparent waterproof tape. Sample containers may also be placed in Ziploc-type storage bags. These storage bags aid in keeping the sample container dry. Also, should the sample container break, the bag will aid to retain the sample container contents. Information typically included on the sample tags or labels will include the following:

- Project Code
- Station Number and Location
- Sample Identification Number
- Date and Time of Sample Collection
- Type of Laboratory Analysis Required
- Preservation Required, if applicable
- Collector's Signature
- Priority (optional)
- Anticipated Concentration Range (Low, Medium, or High)
- Other Remarks

Additional information may include:

- Sample Analysis Priority

A COC form will be completed each time a sample or group of samples is prepared for transfer to the laboratory. The form will repeat the information on each of the sample labels and will serve as documentation of handling

during shipment. The minimum information requirements of the COC form are listed in Table 1101.01-A. An example COC form is shown in Figure 1101.01-A. The completed COC must be reviewed by the Field Team Leader or Site Manager prior to sample shipment. The COC form will remain each sample shipping container at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples or in a project file.

TABLE 1101.01-A CHAIN OF CUSTODY FORM

INFORMATION	COMPLETED BY	DESCRIPTION
COC	Laboratory	Enter a unique number for each chain of custody form
SHIP TO	Field Team	Enter the laboratory name and address
CARRIER	Field Team	Enter the name of the transporter (e.g., FedEx) or hand-carried
AIRBILL	Field Team	Enter the airbill number or transporter tracking number (if applicable)
PROJECT NAME	Field Team	Enter the project name
SAMPLER NAME	Field Team	Enter the name of the person collecting the samples
SAMPLER SIGNATURE	Field Team	Signature of the person collecting the samples
SEND RESULTS TO	Field Team	Enter the name and address of the prime contractor
FIELD SAMPLE ID	Field Team	Enter the unique identifying number given to the field sample (includes MS, MSD, field duplicate and field blanks)
DATE	Field Team	Enter the year and date the sample was collected in the format mm/dd/yy (e.g., 10/13/05)
TIME	Field Team	Enter the time the sample was collected in 24 hour format (e.g., 0900)
MATRIX	Field Team	Enter the sample matrix (e.g., water, soil)
PRESERVATIVE	Field Team	Enter the preservative used (e.g., HNO3, ice) or “none”
FILTERED/UNFILTERED	Field Team	Enter “F” if the sample was filtered or “U” if the sample was not filtered
CONTAINERS	Field Team	Enter the number of containers associated with the sample
MS/MSD	Field Team or Laboratory	Enter “X” if the sample is designated for the MS/MSD
ANALYSES REQUESTED	Field Team	Enter the method name of the analysis requested (e.g., SW6010A)
COMMENTS	Field Team	Enter comments
SAMPLE CONDITION UPON RECEIPT AT LABORATORY	Laboratory	Enter any problems with the condition of any sample(s)
COOLER TEMPERATURE	Laboratory	Enter the internal temperature of the cooler, in degrees C, upon opening
SPECIAL INSTRUCTIONS/ COMMENTS	Laboratory	Enter any special instructions or comments
RELEASED BY (SIG)	Field Team and Laboratory	Enter the signature of the person releasing custody of the samples
COMPANY NAME	Field Team and Laboratory	Enter the company name employing the person releasing/receiving custody
RECEIVED BY (SIG)	Field Team and Laboratory	Enter the signature of the person receiving custody of the samples
DATE	Field Team and Laboratory	Enter the date in the format M/D/YY (e.g., 6/3/96) when the samples were released/received
TIME	Field Team and Laboratory	Enter the date in 24 hour format (e.g., 0900) when the samples were released/received

SOP	**1102.01**				
GROUP	Sample Handling				
SUB-GROUP	Sample Shipping				
TITLE	Sample Shipping				
DATE	4/20/2013	**FILE**	1102-01.DOC	**PAGE**	1 of 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the procedures for sample shipping that will be implemented during field work involving sampling activities.

TERMS

COC - Chain-of-Custody

PROCEDURE

Prior to shipping or transferring custody of samples, they will be packed according to DOT and/or IATA. requirements with sufficient ice to maintain an internal temperature of 4°C ± 2°C during transport to the laboratory. Samples relinquished to the participating laboratories will be subject to the following procedures for transfer of custody and shipment:

1. Samples will be accompanied by a COC record. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time of the sample transfer on the record. If sent by common carrier, a bill of lading or airbill should be used. Bill of lading and airbill receipts will be retained in the project file as part of the permanent documentation of sample shipping and transfer. This custody record documents transfer of sample custody from the sampler to another person or to the laboratory. The designated laboratory will accept custody in the field upon sample pick-up or at the laboratory if the samples are delivered via field personnel or a courier service.
2. Samples will be properly packed in approved shipping containers for laboratory pick-up by the appropriate laboratory for analysis, with separate, signed custody records enclosed in each sample box or cooler. Sample shipping containers will be padlocked or custody-sealed for transfer to the laboratory. The preferred procedure includes use of a custody seal wrapped across filament tape that is wrapped around the package at least twice. The custody seal will then be folded over and stuck to it so that the only access to the package is by cutting the filament tape or breaking the seal to unwrap the tape. The seal will then be signed. The designated laboratory will accept custody of the samples upon receipt.
3. Whenever samples are split with state representatives or other parties, the COC record will be marked to indicate with whom the samples were split.
4. The field sampler will call the designated laboratory to inform them of sample shipment and verify sample receipt as necessary.

SOP	**1201.01**				
GROUP	Decontamination				
SUB-GROUP	Sampling Equipment Decontamination				
TITLE	Sampling Equipment Decontamination				
DATE	4/20/2013	**FILE**	1201-01.DOC	**PAGE**	1 of 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the methods used for minimizing the potential for cross-contamination, and provides general guidelines for sampling equipment decontamination procedures.

PROCEDURE

As part of the Health and Safety Plan (HASP), develop and set up a decontamination plan before any personnel or equipment enter the areas of potential exposure. The decontamination plan should include the following:

- The number, location, and layout of decontamination stations
- Which decontamination apparatus is needed
- The appropriate decontamination methods
- Methods for disposal of contaminated clothing, apparatus, and solutions

Decontamination Methods

Personnel, samples, and equipment leaving the contaminated area of a site will be decontaminated. Various decontamination methods will be used to either physically remove contaminants, inactivate contaminants by disinfection or sterilization, or both. The physical decontamination techniques appropriate for equipment decontamination can be grouped into two categories: abrasive methods and non-abrasive methods.

Abrasive Cleaning Methods

Abrasive cleaning methods work by rubbing/scrubbing the surface containing the contaminant. This method includes mechanical and wet blasting methods.

Mechanical cleaning methods use brushes of metal or nylon. The amount and type of contaminants removed will vary with the hardness of bristles, length of brushing time, and degree of brush contact.

Cleaning can also be accomplished by water blasting which is also referred to as steam cleaning and pressure washing. Pressure washing utilizes high-pressure that is sprayed from a nozzle onto sampling equipment to physically remove soil or (potentially) contaminated material. Steam cleaning is a modification of pressure washing where the water is heated to temperatures approaching 100°C to assist in removing organic constituents from equipment.

Disinfection/Rinse Methods

Disinfectants are a practical means of inactivating chemicals or contaminants of concern. Standard sterilization methods involve heating the equipment which is impractical for large equipment. Rinsing removes contaminants through dilution, physical attraction, and solubilization.

The use of distilled/deionized water commonly available from commercial vendors may be acceptable for decontamination of sampling equipment provided that it has been verified by laboratory analysis to be target analyte free. Tap water may be used from any municipal water treatment system for mixing of decontamination solutions. An untreated potable water supply is not an acceptable substitute for tap water. Acids and solvents are occasionally utilized in decontamination of equipment to remove metals and organics, respectively, from sampling equipment. Other than ethanol, these are avoided when possible due to the safety, disposal, and transportation concerns associated with them.

Equipment or apparatuses that may be selected for use include the following:

- Personal protective clothing.
- Non-phosphate detergent.
- Selected solvents for removal of polar and nonpolar organics (ethanol, methanol, and hexane).
- Acid washes for removal of metals (nitric acid).
- Long-handled brushes.
- Drop cloths or plastic sheeting.
- Paper towels.
- Galvanized tubs or buckets.
- Distilled, deionized, or tap water (as required by the project).
- Storage containers for spent wash solutions.
- Sprayers (pressurized and non-pressurized).
- Trash bags.
- Safety glasses or splash shield.

<u>Field Sampling Equipment Cleaning Procedures</u>

The following procedures should be followed:

1. Where applicable, follow physical removal procedures previously described (pressure wash, scrub wash).
2. Wash equipment with a non-phosphate detergent solution.
3. Rinse with tap water.
4. Rinse with distilled or deionized water.
5. Rinse with 10% nitric acid if the sample will be analyzed for metals/organics.
6. Rinse with distilled or deionized water.
7. Use a solvent rinse (pesticide grade) if the sample will be analyzed for organics.
8. Air dry the equipment completely.
9. Rinse again with distilled or deionized water.

10. Place in clean bag or container for storage/transport to subsequent sampling locations.

Selection of the solvent for use in the decontamination process is based on the contaminants present at the site. Solvent rinses are not necessarily required when organics are not a contaminant of concern and may be eliminated from the sequence specified below. Similarly, an acid rinse is not required if the analyses do not include inorganics. Use of a solvent is required when organic contamination is present on-site. Typical solvents used for removal of organic contaminants include acetone, ethanol, hexane, methanol, or water. An acid rinse step is required if metals are present on-site. If a particular contaminant fraction is not present at the site, the ten-step decontamination procedure listed above may be modified for site specificity.

Sampling equipment that requires the use of plastic tubing should be disassembled and the tubing replaced with clean tubing before commencement of sampling and between sampling locations. Plastic tubing should not be reused.

SOP	**1501.01**				
GROUP	Field Documentation				
SUB-GROUP					
TITLE	Field Logbook				
DATE	4/20/2013	**FILE**	Document1	**PAGE**	1 of 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the procedures for documenting activities observed or completed in the field in a field logbook. The documentation should represent all activities of WESTON personnel and entities under WESTON's supervision.

TERMS

FSP - Field Sampling Plan

SAP - Sampling and Analysis Plan

QAPP - Quality Assurance Project Plan

HASP - Health and Safety Plan

PROCEDURE

Field logbooks will be used and maintained during field activities to document pertinent information observed or completed by WESTON personnel or entities that WESTON is responsible for providing oversight. Field logbooks are legal documents that form the basis for later written reports and may serve as evidence in legal proceedings. The Site Manager or Field Team Leader will review field log entries daily and initial each page of entries. Field logbooks will be maintained by the Site Manager or Field Team Leader during field activities and transferred to the project files for a record of activities at the conclusion of the project. General logbook entry procedures are listed below.

- Logbooks must be permanently bound with all pages numbered to the end of the book. Entries should begin on page 1.
- Only use blue or black ink (waterproof) for logbook entries.
- Sign entries at the end of the day, or before someone else writes in the logbook.
- If a complete page is not used, draw a line diagonally across the blank portion of the page and initial and date the bottom line.
- If a line on the page is not completely filled, draw a horizontal line through the blank portion.
- Ensure that the logbook clearly shows the sequence of the day's events.
- Do not write in the margins or between written lines, and do not leave blank pages to fill in later.
- If an error is made, make corrections by drawing a single line through the error and initialing it.

- Maintain control of the logbook and keep in a secure location.

Field logbooks will contain, at a minimum, the following information, if applicable:

General Information

- Name, location of site, and work order number.
- Name of the Site Manager or Field Team Leader.
- Names and responsibilities of all field team members using the logbook (or involved with activities for which entries are being made).
- Weather conditions.
- Field observations.
- Names of any site visitors including entities that they represent.

Sample Collection Activities

- Date(s) and times of the sample collection or event.
- Number and types of collected samples.
- Sample location with an emphasis on any changes to documentation in governing documents (i.e., SAP, FSP). This may include measurements from reference points or sketches of sample locations with respect to local features.
- Sample identification numbers, including any applicable cross-references to split samples or samples collected by another entity.
- A description of sampling methodology, or reference to any governing document (i.e., FSP, SAP, QAPP).
- Summary of equipment preparation and decontamination procedures.
- Sample description including depth, color, texture, moisture content, and evidence of waste material or staining.
- Air monitoring (field screening) results.
- Types of laboratory analyses requested.

Site Health and Safety Activities

- All safety, accident, and/or incident reports.
- Real-time personnel air monitoring results, if applicable, or if not documented in the HASP.

- Heat/cold stress monitoring data, if applicable.
- Reasons for upgrades or downgrades in personal protective equipment.
- Health and safety inspections, checklists (drilling safety guide), meetings/briefings.
- Calibration records for field instruments.

Oversight Activities

- Progress and activities performed by contractors including operating times.
- Deviations of contractor activities with respect to project governing documents (i.e., specifications).
- Contractor sampling results and disposition of contingent soil materials/stockpiles.
- Excavation specifications and locations of contractor confirmation samples.

General site housekeeping and safety issues by site contractors.

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the requirements for collecting information related to photodocumentation of site activities.

FORMS

Blank Photograph Logs can be printed from WESTON On-Line from the Records Management Application. Selecting the Reports/Project Planning/Blank Photo Logs menu option will generate a project specific log with 36 entries.

PROCEDURE

Photographs

Unless specifically requested by the EPA Assignor, START-3 will document all site, sampling and special events using photographs. Photographs will be used so they can be electronically scanned for use in trip reports and other site deliverables. Slides will be taken only if specifically requested by the EPA Assignor.

START will use digital cameras, as available, from the START-3 office. This will eliminate film and processing costs and save labor by eliminating the need for scanning each photograph independently. If digital cameras are not available, standard 35mm cameras will be utilized.

<u>Use of 35 mm Film</u>

- Uniquely number each roll of film obtained for use.
- Record the following information for each negative exposed:
    1. Date and Time.
    2. Photographer Name.
    3. Witness Name.
    4. Orientation (Landscape, Portrait, or Panoramic).
    5. Description (including activity being performed, specific equipment of interest, sample location(s), compass direction photographer is facing).
- Record “NA” for the negatives not used if the roll is not completely used prior to development.
- Record unique roll number on receipt when film is submitted for development.
- Verify descriptions on log with negative numbers when photographs are received from processing.

All cameras should utilize a date stamp feature to document the date of the photography. Descriptions of the photograph subject, date, time, site name and location should be noted in the site log book which can be translated to photograph labels following developing. It is not necessary to record film speed, camera type or lens size for automatic cameras using standard settings. Special lenses, lens filters or other photograph enhancement features should be noted in the log book.

Video Tape

When requested on a TDD, START members will document site activities using hand-held video recorders. High quality videotapes will be utilized to accommodate future copying, dubbing and splicing activities. All video cameras should utilize the date stamp and video counter features to help identify if the film has been edited or altered.

SPECIFIC PROTOCOL

Adhere to the following protocol for both photographic and video documentation:

- Enter description of filming activities in the site log book documenting type of camera, time (military time) and date, filming individual, and orientation angle of the viewing angle.

- Print the site name, PCS number, and coverage dates on each roll of film/diskette/video tape that has been used.

- Submit film as necessary for processing to ensure that all information on the developing envelope is complete.

- If film is not processed in a timely manner, notify the vendor immediately.

- Label all photographs/video with information including the project PCS#, site name, site location, date and time, description of photograph, and photographer.

- Store all site negatives, original videos or diskettes in the official site file.

- Be objective for all photographs/video. Ensure the purpose of the photograph is entered into the site log (e.g., documenting labels for enforcement, or condition of neighboring properties prior to the initiation of a removal action, or documenting an exposure pathway).

SOP	**1502.02**			
GROUP	Field Documentation			
SUB-GROUP				
TITLE	Photograph Management and Reporting			
DATE	4/30/02	**FILE**	Document1	**PAGE** 1 OF 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the requirements for managing and reporting information related to photographic documentation of site activities.

PROCEDURE

Enter the Photograph Log information specified in SOP 1502.01 into WESTON On-Line *Records Management Application*. The data entry screen can be accessed by selecting the *Data/Photograph Log* menu option.

REPORTS

Complete Photograph Logs can be printed from WESTON On-Line from the *Records Management Application.* Selecting the *Reports/Summary Tables/Photographs/Logs* menu option will generate a specific log for a selected roll of film.

Photograph Templates can be printed from WESTON On-Line from the *Records Management Application.* Selecting the *Reports/Summary Tables/Photographs/Templates* menu option will generate templates for mounting the photographs for a selected roll of film.

APPENDIX B

SCREENING LEVELS

Screening levels:

Soil screening levels for the targeted pesticides are the Texas Commission on Environmental Quality (TCEQ) Protective Concentration Limit (PCL) for residential soils or EPA Regional Screening Level (RSL) if PCL is not available.

Chemical	CASRN	Screening Level (mg/kg)	Basis (PCL or RSL)
Atrazine	1912-24-9	21	PCL
2,4-D	94-75-7	73	PCL
Glyphosate	1071-83-6	6700	PCL
Picloram	1918-02-1	4700	PCL
Propiconazole	60207-90-1	790	RSL

APPENDIX C

DATA QUALITY OBJECTIVES

Data Quality Objectives – Soil Assessment Sampling

STEP 1. STATE THE PROBLEM	
SOIL SAMPLES WILL BE COLLECTED FOLLOWING AN EXPLOSION AT THE WEST FERTILIZER COMPANY FACILITY IN WEST, TEXAS TO DETERMINE IF SITE-RELATED CONTAMINANTS MIGRATED OFF-SITE FOLLOWING A CATASTROPHIC EXPLOSION RESULTING IN EXTENSIVE DAMAGE WITHIN A MULTI-BLOCK AREA OF THE FACILITY. ANALYTICAL RESULTS WILL BE COMPARED TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) PROTECTIVE CONCENTRATION LIMIT (PCL) FOR RESIDUAL SOILS OR EPA REGIONAL SCREENING LEVEL (RSL) IF PCL IS NOT AVAILABLE.	
STEP 2. IDENTIFY THE DECISION	
ARE THE CONCENTRATIONS OF CONSTITUENTS OF CONCERN IN SOILS, REPRESENTED BY A SAMPLE, ABOVE SPECIFIED ACTION LEVELS?	
IDENTIFY THE ALTERNATIVE ACTIONS THAT MAY BE TAKEN BASED ON THE DECISIONS.	▪ If any contaminant exceeds the specified action level, the soil represented by that sample will be considered contaminated and will require additional attention. ▪ If no contaminants exceed the specified action level, the soil represented by that sample will not require additional attention.
STEP 3. IDENTIFY INPUTS TO THE DECISION	
IDENTIFY THE INFORMATIONAL INPUTS NEEDED TO RESOLVE A DECISION.	▪ Contaminant concentrations in soil samples collected during assessment investigation sampling effort.
IDENTIFY THE SOURCES FOR EACH INFORMATIONAL INPUT AND LIST THE INPUTS THAT ARE OBTAINED THROUGH ENVIRONMENTAL MEASUREMENTS.	▪ Samples collected from each identified location no greater than a 50-foot by 50-foot area. ▪ Analytical results obtained from the laboratory following SW846 Methods 8270, 8151, 8141, and 8321.
BASIS FOR THE CONTAMINANT SPECIFIC ACTION LEVELS.	TCEQ PCLs for residential soils or EPA RSLs if PCLs are not available.
IDENTIFY POTENTIAL SAMPLING TECHNIQUES AND APPROPRIATE ANALYTICAL METHODS.	▪ Sampling technique is to utilize dedicated plastic scoop to collect composite sample at each location. ▪ SW846 Methods 8270, 8151, 8141, and 8321

Data Quality Objectives – Soil Confirmation Sampling (continued)

STEP 4. DEFINE THE BOUNDARIES OF THE STUDY	
DEFINE THE DOMAIN OR GEOGRAPHIC AREA WITHIN WHICH ALL DECISIONS MUST APPLY.	▪ The soil sample locations are selected based on proximity to the facility where the explosion occurred.
SPECIFY THE CHARACTERISTICS THAT DEFINE THE POPULATION OF INTEREST.	CONTAMINANT CONCENTRATIONS IN SOILS.
DEFINE THE SCALE OF DECISION MAKING.	THE SCALE OF DECISION WILL BE FOR SOIL REPRESENTED BY EACH SAMPLE COLLECTED FROM THE SITE.
DETERMINE THE TIME FRAME TO WHICH THE DATA APPLY.	THE DATA WILL APPLY UNTIL THE SOIL REPRESENTED BY THE SAMPLE RECEIVES APPROPRIATE RESPONSE ACTIONS.
DETERMINE WHEN TO COLLECT DATA.	SAMPLES WILL BE COLLECTED DURING 21 APRIL 2013 FIELD ACTIVITIES.
IDENTIFY PRACTICAL CONSTRAINTS ON DATA COLLECTION.	▪ Inclement weather. ▪ Site access not attainable. ▪ Debris in soils.
STEP 5. DEVELOP A DECISION RULE	
SPECIFY THE PARAMETER THAT CHARACTERIZES THE POPULATION OF INTEREST.	TCEQ PCLS FOR RESIDENTIAL SOILS OR EPA RSLS IF PCLS NOT AVAILABLE.
SPECIFY THE ACTION LEVEL FOR THE DECISION.	TCEQ PCLS FOR RESIDENTIAL SOILS OR EPA RSLS IF PCLS NOT AVAILABLE.
DEVELOP A DECISION RULE.	IF ANY RESULT IN A SOIL SAMPLE IS ABOVE THE PCLS OR RSLS, THEN SOIL REPRESENTED BY THAT SAMPLE WILL REQUIRE ADDITIONAL ATTENTION; OTHERWISE, THE SOIL DOES NOT REQUIRE ADDITIONAL ATTENTION.

Data Quality Objectives – Soil Confirmation Sampling (continued)

STEP 6. SPECIFY LIMITS ON DECISION ERRORS	
DETERMINE THE POSSIBLE RANGE OF THE PARAMETER OF INTEREST.	CONTAMINANT CONCENTRATIONS MAY RANGE FROM 0 MG/KG TO MORE THAN THE PCLS OR RSLS.
DEFINE BOTH TYPES OF DECISION ERRORS AND IDENTIFY THE POTENTIAL CONSEQUENCES OF EACH.	TYPE I ERROR: DECIDING THAT THE SPECIFIED AREA REPRESENTED BY THE SOIL SAMPLE DOES NOT EXCEED THE SPECIFIED ACTION LEVEL WHEN, IN TRUTH, THE SOIL CONCENTRATION OF THE CONTAMINANT EXCEEDS ITS SPECIFIED ACTION LEVEL. THE CONSEQUENCE OF THIS DECISION ERROR IS THAT CONTAMINATED SOIL WILL REMAIN ON SITE, POSSIBLY ENDANGERING HUMAN HEALTH AND THE ENVIRONMENT. THIS DECISION ERROR IS MORE SEVERE. TYPE II ERROR: DECIDING THAT THE SPECIFIED AREA REPRESENTED BY THE SOIL SAMPLE DOES EXCEED THE SPECIFIED ACTION LEVEL WHEN, IN TRUTH, IT DOES NOT. THE CONSEQUENCES OF THIS DECISION ERROR ARE THAT REMEDIATION OF THE SPECIFIED AREA WILL CONTINUE AND UNNECESSARY COSTS WILL BE INCURRED.
ESTABLISH THE TRUE STATE OF NATURE FOR EACH DECISION RULE.	THE TRUE STATE OF NATURE WHEN THE SOIL IS DECIDED TO BE BELOW THE SPECIFIED ACTION LEVEL WHEN IN FACT, IT IS NOT BELOW THE SPECIFIED ACTION LEVEL, IS THAT THE AREA MAY NEED REMEDIAL ACTION. THE TRUE STATE OF NATURE WHEN THE SOIL IS DECIDED TO BE ABOVE THE SPECIFIED ACTION LEVEL WHEN IN FACT, IT IS NOT ABOVE THE SPECIFIED ACTION LEVEL, IS THAT THE AREA MAY NOT NEED REMEDIAL ACTION.
DEFINE THE TRUE STATE OF NATURE FOR THE MORE SEVERE DECISION ERROR AS THE BASELINE CONDITION OR THE NULL HYPOTHESIS (H_o) AND DEFINE THE TRUE STATE FOR THE LESS SEVERE DECISION ERROR AS THE ALTERNATIVE HYPOTHESIS (H_a).	H_o: THE SOIL REPRESENTED BY THE SOIL SAMPLE OF THE SPECIFIED AREA IS ABOVE THE SPECIFIED ACTION LEVEL. H_a: THE SOIL REPRESENTED BY THE SOIL SAMPLE OF THE SPECIFIED AREA IS BELOW THE SPECIFIED ACTION LEVEL.

Data Quality Objectives – Soil Confirmation Sampling (continued)

STEP 6. SPECIFY LIMITS ON DECISION ERRORS	
ASSIGN THE TERMS "FALSE POSITIVE" AND "FALSE NEGATIVE" TO THE PROPER DECISION ERRORS.	▪ False Positive Error = Type I ▪ FALSE NEGATIVE ERROR = TYPE II
ASSIGN PROBABILITY VALUES TO POINTS ABOVE AND BELOW THE ACTION LEVEL THAT REFLECT THE ACCEPTABLE PROBABILITY FOR THE OCCURRENCES OF DECISION ERRORS.	TO BE ASSIGNED BASED ON DISCUSSIONS WITH EPA ON-SCENE COORDINATOR (OSC) AND EPA TOXICOLOGIST.
STEP 7. OPTIMIZE THE DESIGN	
REVIEW THE DQOs	THE SAMPLING PROGRAM WAS DESIGNED TO SATISFY THE DQOS WITH WHAT IS KNOWN REGARDING MATERIAL STORED AT THE WEST FERTILIZER FACILITY.
DEVELOP GENERAL SAMPLING AND ANALYSIS DESIGN. ***EIGHT (9) SAMPLES, INCLUDING 1 FIELD DUPLICATE, AS WELL AS ONE (1) MATRIX-SPIKE/MATRIX-SPIKE DUPLICATE [MS/MSD] SAMPLES) WILL BE COLLECTED UTILIZING SAMPLING PROCEDURES DESCRIBED IN SECTION 2 OF THE QASP. THE SAMPLES WILL BE ANALYZED BY THE TEST AMERICA LABORATORIES FOLLOWING METHODS SPECIFIED IN THIS DOCUMENT. ANY CHANGES TO SAMPLE LOCATIONS WILL BE DISCUSSED WITH THE EPA OSC PRIOR TO RELOCATION.***	

THIS DOCUMENT WAS PREPARED BY WESTON SOLUTIONS, INC., EXPRESSLY FOR EPA. IT SHALL NOT BE RELEASED OR DISCLOSED IN WHOLE OR IN PART WITHOUT THE EXPRESS, WRITTEN PERMISSION OF THE EPA.

APPENDIX C

COPY OF TDD is PENDING

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