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PROJECT SPECIFIC PLAN FOR AREA 9, PHASE I CERTIFICATION SAMPLING

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

JANUARY 19, 2001

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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REVISION A
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Revision A

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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

A9PI	Area 9, Phase I
ASL	analytical support level
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CU	certification unit
DQO	Data Quality Objectives
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FEMP	Fernald Environmental Management Project
FRL	final remediation level
GC	gas chromatograph
GPC	gas proportional counting
GPS	Global Positioning System
ICP-AES	inductively coupled plasma-atomic emission spectroscopy
LAN	Local Area Network
mg/kg	milligrams per kilogram
pCi/g	picoCuries per gram
PSP	project specific plan
QA	Quality Assurance
QC	Quality Control
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SDFP	Soil and Disposal Facility Project
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Area 9, Phase I (A9PI) is a 71.9-acre parcel of land adjacent to the northern half (approximately) of the eastern property boundary of the Fernald Environmental Management Project (FEMP), extending a distance of 750 feet from the property fence line (Figure 1-1). The majority of the property is plowed field used for crop production. A smaller portion of the field is in pasture.

Consistent with the Sitewide Excavation Plan (SEP), 52.9 acres of the 71.9 acres of A9PI require certification because they are immediately adjacent to two on-property areas that underwent remediation and have since been certified (Figure 1-2). The purpose of certification is to verify that residual soil constituent of concern (COC) concentrations meet the final remediation levels (FRLs) and background concentrations when evaluated by statistical criteria documented in Appendix G of the SEP. In this case, the COC concentrations will have to meet the more stringent off-property FRLs.

1.2 SCOPE

This Project Specific Plan (PSP) includes details of certification sampling that will take place in the 52.9 acres of A9PI that are adjacent to remediated, on-property Area 1, Phase I and a small portion of Area 1, Phase II. Field activities will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program, as discussed in Section 2.0 of this PSP, will be consistent with Data Quality Objectives (DQO) SL-052, Revision 3, which is included as Appendix A of this PSP.

1.3 KEY PROJECT PERSONNEL

Key project personnel responsible for performance of the project are listed in Table 1-1.

TABLE 1-1
KEY PROJECT PERSONNEL

Title	Primary	Alternate
DOE Contact	Kathi Nickel	Rob Janke
Area 9, Phase I Project Manager	Eric Woods	Jyh-Dong Chiou
Area 9, Phase I Characterization Lead	Lisa Ludwick	TBD
Field Sampling Lead	Tom Buhrlage	Jim Hey
Surveying Lead	Jim Schwing	Jim Capannari
WAO Contact	Linda Barlow	Sue Lorenz
Laboratory Contact	Denise Arico	Carl Reynolds
Data Validation Contact	Jim Chambers	Vicky Zimmerman
FACTS/SED Database Management Contact	Cara Sue Schaefer	Anna Russel
Quality Assurance Contact	Reinhard Friske	Mary Eleton
Health and Safety Contact	Debra Grant	Phil Thomas/ Jeff Middaugh

FACTS – Fernald Analytical Customer Tracking System
SED – Sitewide Environmental Database
TBD – to be determined
WAO – Waste Acceptance Organization

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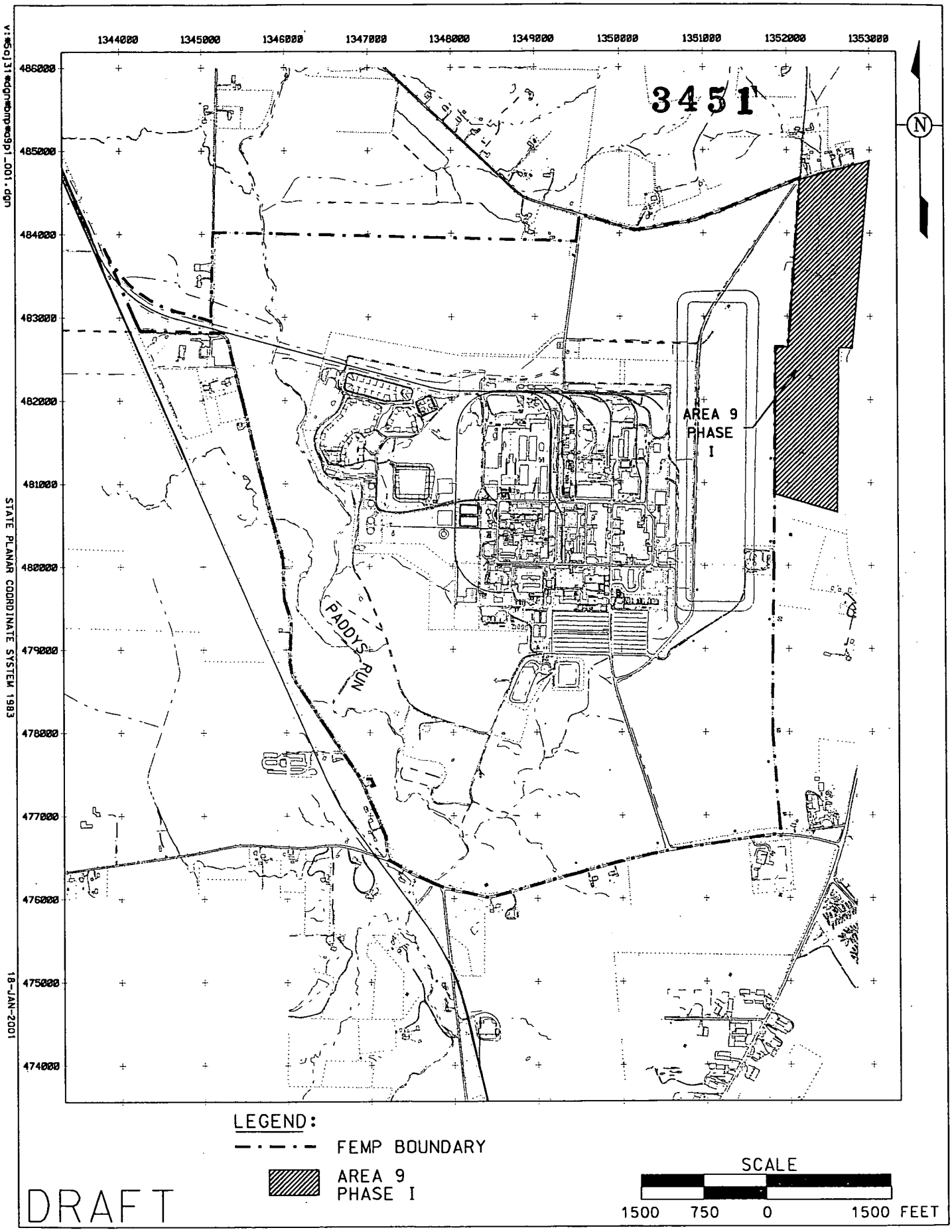

FIGURE 1-1. AREA 9, PHASE I LOCATION MAP

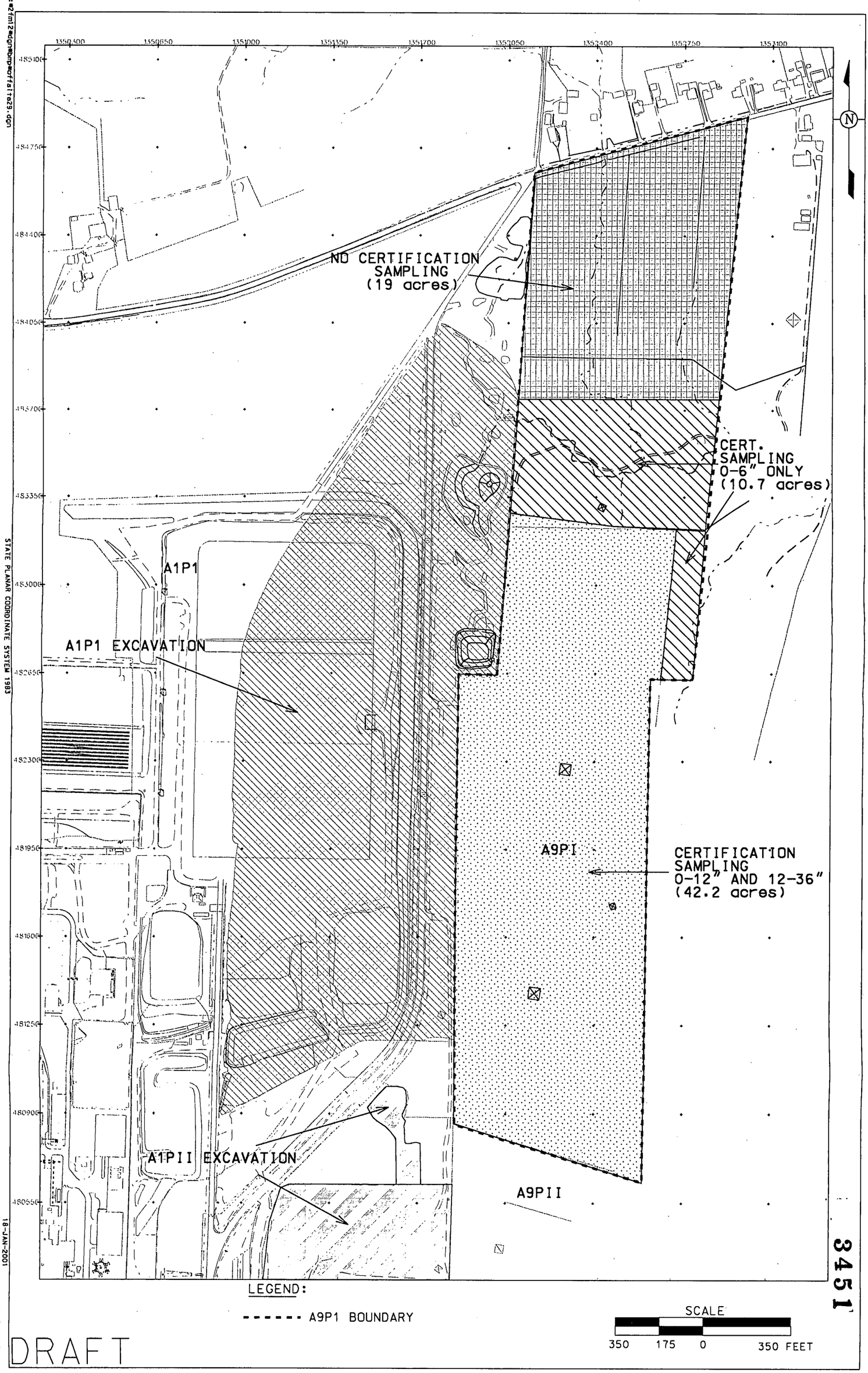

FIGURE 1-2. PROPOSED CERTIFICATION STRATEGY FOR AREA 9, PHASE I

2.0 CERTIFICATION SAMPLING PROGRAM

2.1 CERTIFICATION DESIGN

Details and logic of the certification design are described in the A9PI Certification Design Letter (CDL). Within A9PI, 20 certification units (CUs) have been established; 12 Group 1 and eight Group 2. Each CU was divided into 16 sub-CUs. Within each sub-CU, one certification sample location has been identified. All sample locations were tested against the minimum distance criterion as defined in the SEP and the A9PI CDL within each CU. Certification sampling will consist of sample collection at the 16 selected locations, plus one duplicate sample within each CU. The sample locations, duplicate samples, and archive samples are identified in Appendix B.

2.2 SURVEYING

Prior to commencement of certification sampling activities, the NAD83 State Planar coordinates for each selected sampling location will be surveyed and identified in the field with a flag. All locations will be field verified to make sure no surface obstacles will prevent collection at the planned location. Appendix B and Figure 2-1 shows the tentative certification sampling locations, all of which meet the minimum distance criterion.

2.3 PHYSICAL SOIL SAMPLE COLLECTION

Certification sample collection will be conducted differently in the unplowed area (Section 2.3.1) than in the plowed area (Section 2.3.2) of A9PI. All samples will be collected according to procedure SMPL-01, Solids Sampling. At the discretion of the Field Sampling Lead, samples may be collected using various methods specified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses.

Prior to the advancement of the soil borings, the field sampling technician will remove all surface vegetation within 6 inches of the locations to be sampled using a gloved hand or stainless steel trowel and taking care not to remove any of the surface soil. In order to meet the quality control requirements for duplicate samples, twice the soil volume (a second core) will be collected at one location per CU, as identified in Appendix B. The duplicate soil samples will be collected according to procedure SMPL-21, Section 6.5, and will not be homogenized with the original sample. All samples, including duplicates, will be assigned unique sample identification numbers as shown in Appendix B. The container blanks will be collected (see Section 4.1) from both the core liner and the end caps that will be used to seal it.

If a subsurface obstacle prevents sample collection at the specified location, it can be moved according to the following guidelines:

- The distance moved must be as small as possible (less than 3 feet);
- It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum distance criterion;
- If the distance moved is greater than 3 feet, the move must be documented in a Variance/Field Change Notice (V/FCN) considered as significant, which will be approved by the agencies prior to collection.

Anytime a location is moved, Figure 2-1 should be used to determine the best direction to move the point to adhere to the above guidelines. The Characterization Lead should be contacted when a sample location is moved. All final sampling locations will be documented in the A9PI Certification Report.

Customer sample numbers and FACTS identification numbers will be assigned to all samples collected. The sample labels will be completed with sample collection information, and technicians will complete a Field Activity Log (FAL), a Sample Collection Log, and a Chain of Custody/Request for Analysis form in the field prior to submittal of the samples. All soil samples collected from one CU (including duplicates) will be batched and submitted to the Sample Processing Laboratory (SPL) under one set of Chain of Custody forms. All samples originating from a single CU will represent one analytical release. Rinsates/container blanks will be listed together on a separate chain of custody form. Based on historical data, precertification scan data and process knowledge, no photoionization detector survey or radiological survey will be necessary. Also, no alpha/beta screens will be required for samples to be shipped off site.

2.3.1 Sample Collection in CUs 01 Through 04

Samples will be collected from 0 to 6 inches using 3-inch diameter, 6-inch long, plastic or stainless steel liners that will be sealed using plastic end caps. Samples will be collected from all 16 sample locations in each CU, including one duplicate sample. Thirteen samples from each CU (12 plus one duplicate) will be collected for analysis. The four samples designated as "archive" will be stored in the event they are needed for additional analyses. Upon completion of sample collection, the 0 to 6-inch boreholes will be collapsed and no additional abandonment is necessary.

2.3.2 Sample Collection in CUs 05 Through 20

Samples will be collected from 0 to 12 inches at all 16 locations in each CU; and also from 12 to 36 inches at the four sample locations designated as "archive" samples. Twelve 0 to 12-inch interval samples will be collected for analysis. The 0 to 12-inch interval will be homogenized in accordance with SMPL-01, and the appropriate volumes placed into the proper sample containers. The four 0 to 12-inch samples from the locations designated as "archive" will be stored in the sample tubes sealed with end caps in the event they are needed for additional analyses. The four 12 to 36-inch interval samples from each CU (four total) will be collected for analysis and designated as background certification samples. The 12 to 36-inch interval will be homogenized in accordance with SMPL-01, and the appropriate volumes placed into the proper sample containers. One duplicate sample will be collected from each CU, as indicated on Figure 2-1 and in Appendix B. Each borehole will be backfilled with unused portion of the soil core and/or surrounding soil, as directed by the Field Sampling Lead.

2.3.3 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from sampling equipment to subsequent soil samples. Field Technicians will ensure that sampling equipment (core tubes and caps) has been decontaminated prior to transport to the field. As described in SMPL-01, all sampling equipment will have been decontaminated before it is transported to the field site, and the 6-inch core liners will be decontaminated using the Level II (Section K.11 of the SCQ) procedure upon receipt from the manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between collection of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air drying of the equipment.

2.3.4 Physical Sample Identification

Each soil certification sample will be assigned a unique sample identification number as *A9P1-C-CU-Location-Interval-Analysis-QC*, where:

A9P1	=	Sample collected from Remediation A9PI (Note that the number "1" is used in place of the roman numeral "I" in the ID for data management purposes)
C	=	Certification Sample
CU	=	Certification unit from which sample was collected (numbered as 01 to 20)
Location	=	Sample Location number within each CU (1 through 16)
Interval	=	"1" = 0 to 6-inch interval; "2" = 0 to 12-inch interval; "3" = 12 to 36-inch interval

Analysis	=	"R" indicates radiological analysis; "M" indicates metals; "V" indicates archives; "P" indicates aroclor-1260.
QC	=	Quality control sample, if applicable. A "D" indicates a duplicate sample; "X" indicates a rinseate sample; "Y" indicates a container blank sample.

For example, a duplicate sample taken from the 15th sample location from CU-02 from 0 to 12 inches for radiological analysis would be identified as A9P1-C-02-15-2-R-D. Rinsates and container blanks will be identified as A9P1-C-CU-X and A9P1-C-CU-Y, respectively, and the analysis code (-R) will be also be added. So for example, the rinsate collected for CU 05 will be identified as A9P1-C-05-X.

3.0 CERTIFICATION SAMPLE ANALYSIS

Most samples will be analyzed at the on-site laboratory, permitting capacity. Samples collected for strontium-90 and aroclor-1260 will be analyzed at an off-site laboratory. The strontium-90 and aroclor-1260 samples will be prepared for shipment to an off-site laboratory from the Fluor Fernald Approved Laboratories List per procedure S.P. 766-S-1000, Shipping Samples to Offsite Laboratories. Primary radiological COCs will be analyzed on site by gamma spectroscopy, based on detector availability. Technitium-99 will be analyzed by gas proportional counting (GPC). Metals will be analyzed on site by inductively coupled plasma-atomic emission spectroscopy (ICP-AES). Strontium-90 will be analyzed off-site by GPC and aroclor-1260 will be analyzed off site by gas chromatograph (GC).

Immediately upon arrival at the laboratory where the analysis will take place, all samples should be prepared and sealed to begin the in-growth period for radium analysis if gamma spectroscopy is the chosen analytical method. Sampling and analytical requirements are listed in Table 3-1. The Target Analyte Lists (TAL) are shown in Table 3-2.

TABLE 3-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analytes/TAL	Sample Matrix	Lab	ASL	Preserve	Holding Time	Volume Required	Container [a]
Radiological (except Sr-90)	Solid	On-site or off-site	D [b]	None	6 months	300 g	Plastic or Stainless Steel Core Liner or Glass or Plastic
Radiological (except Sr-90)	Liquid	On-site or off-site	D [b]	HNO_3 to pH<2; Cool to 4°C	6 months	7 liters	Polyethylene/ plastic
Metals	Solid	On-site or off-site	D [b]	Cool to 4°C	6 months	50 g	Glass or plastic
Metals	Liquid	On-site or off-site	D [b]	HNO_3 to pH<2; Cool to 4°C	6 months	1 liter	Polyethylene/ plastic
Aroclor-1260	Solid	Off-site	D [b]	Cool to 4°C	14 days	120 g	Glass
Aroclor-1260	Liquid	Off-site	D [b]	Cool to 4°C	7 days	4 liters	Amber glass/ teflon lined lid
Strontium-90	Solid	Off-site	D [b]	None	6 months	100 g	Glass or plastic
Strontium-90	Liquid	Off-site	D [b]	HNO_3 to pH<2; Cool to 4°C	6 months	2 liters	Polyethylene/ plastic

[a] Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements and SCQ requirements are met. Metals and Radiological samples may be collected in the same container as long and the volume requirements are met.

[b] Soil samples will be collected according to Analytical Support Level (ASL) D requirements. During analysis, the detection level for total uranium and thorium will be set at 10 percent of the FRL (i.e., analyses are considered ASL E).

TABLE 3-2
TARGET ANALYTE LISTS
A9PICERT-A
(TAL A)

GAMMA SPECTROSCOPY ANALYSIS	
ASL E*	Total Uranium (FRL 50 mg/kg)
ASL E*	Radium-226 (FRL 1.5 pCi/g)
ASL E*	Radium-228 (FRL 1.4 pCi/g)
ASL E*	Thorium-228 (FRL 1.5 pCi/g)
ASL E*	Thorium-232 (FRL 1.4 pCi/g)
ASL E*	Cesium-137 (FRL 0.82 pCi/g)
GPC	
ASL E*	Technecium-99 (FRL 1.0 pCi/g)
ICP-AES or Graphite	
ASL E*	Arsenic (FRL 9.6 mg/kg)
ASL E*	Beryllium (FRL 0.62 mg/kg)
GC (off-site lab)	
ASL E*	Aroclor-1260 (FRL 0.004 mg/kg)
GPC (off-site lab)	
ASL E*	Strontium-90 (FRL 0.61 pCi/g)

* Analytical requirements will meet ASL D with a minimum detection level set at 10 percent of the FRL

mg/kg – milligrams per kilogram
pCi/g – picoCuries per gram

TARGET ANALYTE LISTS
A9PICERT-B
(TAL B)

GAMMA SPECTROSCOPY ANALYSIS	
ASL E*	Total Uranium (FRL 50 mg/kg)
ASL E*	Radium-226 (FRL 1.5 pCi/g)
ASL E*	Radium-228 (FRL 1.4 pCi/g)
ASL E*	Thorium-228 (FRL 1.5 pCi/g)
ASL E*	Thorium-232 (FRL 1.4 pCi/g)
GPC	
ASL E*	Technecium-99 (FRL 1.0 pCi/g)
ICP-AES or Graphite	
ASL E*	Arsenic (FRL 9.6 mg/kg)
ASL E*	Beryllium (FRL 0.62 mg/kg)
GC (off-site lab)	
ASL E*	Aroclor-1260 (FRL 0.004 mg/kg)

* Analytical requirements will meet ASL D with a minimum detection level set at 10 percent of the FRL

4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

Per requirements of the SEP and DQO SL-052, Revision 3, the field quality control, analytical and data validation requirements are as follows:

- Field Quality Control (QC) requirements include one duplicate for each CU, as noted in Appendix B and Section 2.4. Two container blanks will be collected - one before sample collection begins and one at the conclusion of sample collection for the entire A9PI area - for the push tubes. If an alternate sample collection method is used, one rinseate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field. All field QC samples will be analyzed for TAL A.

- All analyses will be performed at ASL D or E, where D meets the minimum detection level of 10 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for a minimum of 10 percent of the data, with an ASL B data package for the remaining 90 percent.

- All field data will be validated. All laboratory results will be validated to ASL B, and a minimum of 10 percent of the results will be validated to ASL D. Since each CU represents one analytical release, an ASL D package will be provided for each sample from a minimum of two of the 20 CUs. The Characterization Lead will designate which packages will be validated to ASL D. If any result is rejected during validation, the sample will be re-analyzed or an archive sample will be analyzed in its place. Also, all data from that laboratory per CU will be validated to Level D. If necessary, this change will be documented in a V/FCN.

Once all data are validated as required, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for the each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP.

If any sample collection or analytical methods are used that are not in accordance with the SCQ, the Project Manager and Characterization Lead must determine if the qualitative data from the samples will be beneficial to certification decision making. If the data will be beneficial, the Project Manager and Characterization Lead will ensure that:

- The PSP is revised to include references confirming that the new method supports data needs,

- variations from the SCQ methodology are documented in the PSP, or

- data validation of the affected samples is requested or qualifier codes of J (estimated) and R (rejected) be attached to detected and nondetected results, respectively.

4.2 PROJECT-SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

Programs supporting this work are responsible for ensuring team members work to and are trained to applicable documents. Additionally, programs supporting this work are responsible for ensuring team members in their organizations are qualified and maintain qualification for site access requirements. The Project Manager will be responsible for ensuring any project-specific training required to perform work per this PSP is conducted.

To ensure consistency and data integrity, field activities in support of the PSP will follow the requirements and responsibilities outlined in the procedures and guidance documents referenced below.

- Sitewide Excavation Plan (SEP)
- SEP Addendum
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe Model 5400
- EQT-33, Real-time Differential Global Positioning System
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9502, Shipping Samples to Offsite Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

4.3 INDEPENDENT ASSESSMENT

Independent assessment may be performed by the FEMP Quality Assurance (QA) organization by conducting a surveillance, consisting of monitoring/observing on-going project activities and work areas to verify conformance to specified requirements. The surveillance will be planned and documented in accordance with Section 12.3 of the SCQ.

4.4 IMPLEMENTATION OF CHANGES

Before the implementation of changes, the Field Sampling Lead will be informed of the proposed changes. Once the Field Sampling Lead has obtained written or verbal approval (electronic mail is acceptable) from the Characterization Lead and QA for the changes to the PSP, the changes may be implemented. Changes to the PSP will be noted in the applicable FALs and on a V/FCN. QA must

receive the completed V/FCN, which includes the signatures of the Characterization and Sampling Manager, Area Project Manager, and QA within seven days of implementation of the change. Ohio Environmental Protection Agency and U.S. Environmental Protection Agency will be given a 14-day review period prior to implementing the change(s) for any V/FCNs identified as "significant" per Soil and Disposal Facility Project (SDFP) guidelines.

5.0 HEALTH AND SAFETY

Technicians will conform to precautionary surveys performed by personnel representing the Utility Engineer, Industrial Hygiene, and Radiological Control as applicable. All work performed on this project will be performed in accordance to applicable Environmental Monitoring project procedures, RM-0020 (Radiological Control Requirements Manual), RM-0021 (Safety Performance Requirements Manual), Fluor Fernald work permit, and other applicable permits. Each technician must concur with all safety permits applicable to performance of their assigned duties, and a safety briefing will be conducted prior to the initiation of field activities.

All emergencies shall be reported immediately to the site communication center at 648-6511 or contact "control" on the radio.

Health and safety considerations specific to A9PI include steep terrain and uneven footing. Field Technicians and their supervisor should walk down the area prior to sampling. Appropriate safety precautions should be taken by following applicable Safety Performance Requirements in RM-0021 and Fluor Fernald work permits.

6.0 DISPOSITION OF WASTE

During sampling activities, field personnel may generate small amounts of soil, water, and contact waste. Excess soil generated during sample collection will be replaced in the borehole. Contact waste generation will be minimized by limiting contact with sample media, and by only using disposable materials that are necessary. Contact waste will be bagged and brought back to site for disposal in an uncontrolled area dumpster. Generation of decontamination waters will be minimized in the field. Decontamination water that is generated will be contained in a plastic bucket with a lid and returned to site for disposal. A waste water discharge form must be completed for disposal. On-site decontamination of equipment will take place at a facility that discharges to the Advanced Wastewater Treatment Facility, either directly or indirectly, through the storm water collection system.

Following analysis, remaining soil will be returned to A9PI and spread at the point of origin (i.e., sampling location), if possible. If access restrictions prevent this, the WAO contact should be consulted for disposition options. WAO should also be consulted in the event that additional significant waste volumes are generated.

7.0 DATA MANAGEMENT

A data management process will be implemented so information collected during the investigation will be properly managed following completion of the field activities. As specified in Section 5.1 of the SCQ, daily activities will be recorded on the FAL, with sufficient detail to be able to reconstruct a particular situation without reliance on memory. Sample Collection Logs will be completed according to procedure ADM-02, Field Prerequisites. Field records and real-time data files must include the PSP number for project records management.

Electronically recorded data from the Global Positioning System (GPS) will be downloaded to disks or to the Local Area Network (LAN) using the ethernet connection. Field documentation, such as the FAL, the Sample Collection Log, and the Sample Request/Sample Analysis Chain of Custody Log will undergo an internal QC review by the field team members. Copies will then be generated and delivered to the Data Management Contact, who will perform an evaluation of the data and create the appropriate links between the electronically recorded data and the paper-generated data. The paper-generated data will be sent to data entry personnel for input into the Oracle System. Field logs may be completed in the field and maintained in loose-leaf form. Field packages will be validated by the QA validation team.

The Laboratory Contact will report all analytical data from on-site and off-site laboratories in preliminary form to the Characterization Lead as soon as the data area available in the FACTS database. The Characterization Lead will designate which packages are validated to ASL D. After validation, qualified data will be entered into the SED. All final results from this sampling effort will be pulled from the SED and reported to the Characterization Lead in the final data report format.

APPENDIX A

DATA QUALITY OBJECTIVES SL-052, REV. 3

Control Number 3451

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

Approval: _____ Date: 3/13/00
James Chambers
DQO Coordinator

Approval: _____ Date: 3/13/00
J.D. Chiou
SCEP Project Director

Rev. #	0	1	2	3			
Effective Date:	4/28/99	6/10/99	2/3/00	3/13/00			

DATA QUALITY OBJECTIVES
Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team

The members of the scoping team included individuals with expertise in QA, analytical methods, field sampling, statistics, laboratory analytical methods and data management.

Conceptual Model of the Site

Soil sampling was conducted at the Fernald Environmental Management Project (FEMP) during the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS). Final Remediation Levels (FRLs) for constituents of concern (COCs), along with the extent of soil contaminated above the FRLs, were identified in the OU5 Record of Decision (ROD). Actual soil remediation activities now fall under the guidance of the final Sitewide Excavation Plan (SEP).

As outlined in the SEP, the FEMP has been divided into individual Remediation Areas (or phased areas within a Remediation Area) to sequentially carry out soil remedial activities. Under the strategy identified in the SEP, pre-design investigations are first conducted to better define the limits of soil excavation requirements. Following any necessary excavation, pre-certification real-time scanning activities are conducted to evaluate residual patterns of soil contamination. Pre-certification scan data should provide a level of assurance that the FRLs will be achieved. When pre-certification data indicate that remediation goals are likely to be met, they are used to define certification units (CUs) within the Remediation Area of interest. Table 2-9 of the final SEP identifies a list of area-specific COCs (ASCOCs) for each Remediation Area at the FEMP. Based on existing data and production knowledge, a subset of these ASCOCs are conservatively identified within each CU as potentially present in the CU. This suite of CU-specific COCs is the subset of the ASCOCs to be evaluated against the FRLs within that CU. At a minimum, the five primary radiological COCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained as CU-specific COCs for certification of each CU.

Delineation and justification for the final CU boundaries, along with each corresponding suite of CU-specific ASCOCs is documented in a Certification Design Letter. Upon approval of the Certification Design Letter by the EPA, certification activities can begin. Section 3.4 of the final SEP presents the general certification strategy.

1.0 Statement of Problem

FEMP soil and potentially impacted adjacent off-property soil must be certified on a CU by CU basis for compliance with the FRLs of all CU-specific ASCOCs. The appropriate sampling, analytical and information management criteria must be developed to provide the required qualified data necessary to demonstrate attainment of certification statistical criteria. For every area undergoing certification, a sampling plan must be in place that will direct soil samples to be collected which are representative of the CU-specific COC concentrations within the framework of the certification approach identified in the final SEP. The appropriate analytical methodologies must be selected to provide the required data.

Exposure to Soil

The cleanup standards, or FRLs, were developed for a final site land use as an undeveloped park. Under this exposure scenario, receptors could be directly exposed to contaminated soil through dermal contact, external radiation, incidental ingestion, and/or inhalation of fugitive dust while visiting the park. Exposure to contaminated soil by the modeled receptor is expected to occur at random locations within the boundaries of the FEMP and would not be limited to any single area. Some soil FRLs were developed based on the modeled cross-media impact potential of soil contamination to the underlying aquifer. In these instances, potential exposure to contaminants would be indirect through the groundwater pathway, and not directly linked to soil exposure. Off-site soil FRLs were established at more conservative levels than the on-property soil FRLs, based on an agricultural receptor. Benchmark Toxicity Values (BTVs) are also being considered in the cleanup process by assessing habitat impact of individual BTVs under post-remedial conditions.

Available Resources

Time: Certification sampling will be accomplished by the field sampling team prior to interim or final regrading or release of soil for construction activities. The certification sampling schedule must allow sufficient time, in the event additional remediation is required, to demonstrate certification of FRLs prior to permanent construction or regrading. Certification sampling will have to be completed and analytical results validated and statistical analysis completed prior to submission of a Certification Report to the regulatory agencies.

Project Constraints: Certification sampling and analytical testing must be performed with existing manpower, materials and equipment to support the certification effort. Remediation areas are prioritized for certification sampling and analysis according to the date required for initiation of sequential construction activities in those areas. Fluor Daniel Fernald (FDF) and DOE must demonstrate post-remedial compliance with the CU-specific COC FRLs to release the designated Remediation Area for

planned interim grading, eventual restoration under the Natural Resources Restoration Plan (NRRP), and other final land use activities.

2.0 Identify the Decision

Decision

Demonstrate within each CU if all CU-specific COCs pass the certification criteria. These criteria are as follows: 1) The average concentration of each CU-specific COC is below the FRL and within the agreed upon confidence limits (95% for primary ASCOCs and 90% for secondary ASCOCs); and 2) the hot-spot criteria, that no result for any CU-specific COC is more than two times the associated soil FRL. The certification criteria are discussed in greater detail in Section 3.4.4 of the final SEP.

Possible Results

1. The average concentration of each CU-specific COC is demonstrated to be below the FRLs within the confidence level, with no single result for any CU-specific COC greater than two times the associated FRL. The CU can then be certified as attaining remediation goals.

2. The average concentration of at least one CU-specific COC is demonstrated to be above the FRL at the given confidence level. The CU will fail certification and require additional remedial action, per Section 3.4.5 of the final SEP.

3. If a result(s) of one or more CU-specific COC is demonstrated to be at or above two times the FRL, the CU will fail certification. The CU will fail certification and require additional remedial action per Section 3.4.5 of the final SEP. A combination of results 2 and 3 also constitutes certification failure.

3.0 Inputs That Affect the Decision

Required Information

Certification data will be obtained through physical soil sampling. Based on the certification analytical results, the average concentrations of each CU-specific COC with specified confidence levels will be calculated using the statistical methods identified in Appendix G of the final SEP.

Source of Information

Per the SEP, analysis of certification samples for each CU-specific COC will be conducted at analytical support level (ASL) D in accordance with methods and QA/QC standards in the FEMP Sitewide CERCLA Quality Assurance Project Plan [SCQ].

Contaminant-Specific Action Levels
The cleanup levels are the soil FRLs published in the OU5 and OU2 RODs. BTVs being considered in the remediation process are discussed for consideration during certification in Appendix C of the NRRP.

Methods of Sampling and Analysis
Physical soil samples will be collected in accordance with the applicable site sampling procedures. Per the SEP, laboratory analysis will be conducted at ASL D using QA/QC protocols specified in the SCQ. Full raw data deliverables will be required from the laboratory to allow for appropriate data validation. For FEMP-approved on- and off-site laboratories, the analytical method used will meet the required precision, accuracy and detection capabilities necessary to achieve FRL analyte ranges.

4.0 The Boundaries of the Situation

Spatial Boundaries
Domain of the Decision: The boundaries of this certification DQO extend to all surface, stockpile and fill soil in areas that are undergoing certification as part of FEMP remediation.

Population of Soil: Soil includes all excavated surfaces, undisturbed relatively unimpacted native soil, and sub-surface intervals (stockpile or fill areas only) in areas undergoing certification sampling and analysis.

Scale of Decision Making
Based on considerations of the final certification units and the COC evaluation process, the CU-specific COCs are determined. The area undergoing certification will be evaluated on a CU basis, based on physical sample results, as to whether it has passed or failed the criteria for attainment of certification (final SEP Section 3.4.4).

Temporal Boundaries
Time frame: Certification sampling must be performed in time to sequentially release certified areas for scheduled interim grading, restoration, and other final land use activities. Certification sampling data received from the laboratory will be validated and statistically evaluated. Certification results and findings will be documented in Certification Reports, which must be submitted to and approved by the regulatory agencies prior to release of the areas for scheduled interim grading, restoration, and other final land use activities.

Practical Considerations: Some areas undergoing remediation will not be accessible for certification sampling until decontamination/demolition and remedial excavation activities are complete. Other areas, such as wood lots, that are relatively uncontaminated and not planned for excavation, may require preparation, such as cutting of grass or removal of undergrowth prior to certification sampling, thus requiring coordination with FEMP Maintenance personnel.

5.0 Decision Rule

Successful certification of soil within the boundaries of a certification unit (CU) demonstrates that the certified soil (surface or subsurface) has concentrations of CU-specific COC(s) that meet the established criteria for attainment of Certification.

Parameters of Interest
The parameters of interest are the individual and average surface soil concentrations of CU-specific COCs and confidence limits on the calculated average within a CU. OU2 and OU5 ROD identify all applicable soil FRLs. The SEP identifies the ASCOCs, a subset of which will be used to establish CU-specific COCs within each Remediation Area undergoing certification sampling and analysis.

Action Levels
The applicable action levels are the on- and off-property soil FRLs published in the OU5 or OU2 ROD for each ASCOC.

Decision Rules
If the average concentration for each CU-specific COC is demonstrated to be below the FRLs within the agreed upon confidence level (95% for primary COCs; 90% for secondary COCs), and no analytical result exceeds two times the soil FRL, then the CU can be certified as complying with the cleanup criteria. If a CU does not meet the FRLs within the agreed upon confidence level for one or more CU-specific COCs, or one or more analytical results for one or more CU-specific COCs is greater than two times the associated soil FRL, then the CU fails certification and requires further assessment as per the SEP.

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

Decision Error 1: This decision error occurs when the decision maker decides that a CU has met the certification criteria, when in reality, the certification criteria have not been met. This situation could result in an increased risk to human health and the environment. In addition, this type of error could result in regulatory fees and penalties.

Decision Error 2: This decision error occurs when the decision maker decides a CU does not met the certification criteria, when actually, the certification criteria have been met. This error would result in unnecessary added costs due to the excavation of soil containing COC concentrations below their FRLs, and an increased volume of soil assigned to the OSDF. In addition, unnecessary delays in the remediation schedule may result.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the certification criteria are not met (average CU-specific COC concentrations not below the FRL within the specified confidence limits; or a single sample result above two times the FRL). The true state of nature for Decision Error 2 is that certification criteria are met (average CU-specific COC concentrations are below the FRL within the specified confidence limits, and no result is above two times the FRL). Decision Error 1 is the more severe error due to the potential threat this poses to human health and the environment.

Null Hypothesis

H_o: The average concentration of at least one CU-specific COC within a CU is equal to or greater than the associated FRL.

H_1: The average concentration of all CU-specific COCs within a CU is less than the action levels.

False Positive and False Negative Errors

A false positive is Decision Error 1: less than or equal to five percent ($p = .05$) is considered the acceptable decision error in determination of compliance with FRLs for primary ASCOCs, while ten percent ($p = .10$) is acceptable for secondary ASCOCs.

A false negative is Decision Error 2: less than or equal to 20 percent is considered the acceptable decision error. This decision error is controlled through the determination of sample sizes (see Section G.1.4.1 of the final SEP).

7.0 Design for Obtaining Quality Data

Section 3.4.2 of the final SEP presents the specifics of the certification sampling design. The following text describes the general certification sampling design.

Soil Sample Locations

In order to select certification sampling locations, each CU is divided into 16 approximately equal sub-CUs. Certification sample locations are then generated by randomly selecting an easting and northing coordinate within the boundaries of each cell. Additional alternative sample locations are also generated in case the original random sample location fails the minimum distance criterion. The minimum distance criterion is defined as the minimum distance allowed between random sample locations in order to eliminate the chance of random sample points clustering within a small area. This clustering would tend to over emphasize a small area and, conversely, under represent a large area in certification determination. By not allowing sample locations to be too closely arranged, the sample locations are spread out and provide a more uniform coverage, thus reducing the possibility of large unsampled areas. The equation for determining minimum distance criterion is presented in Section 3.4.2.1 of the SEP.

In the event that the original random sample location failed the minimum distance criterion, the first alternate location was selected and all the locations were retested. This process continued until all 16 random locations passed the minimum distance criteria.

Each CU is also divided into four quadrants, each of which contains 4 sub-CUs and 4 sample locations. Three of the four locations per quadrant (12 per CU) are then selected for sample collection and analysis. The other one per quadrant (4 per CU) are designated as "archives", and samples will not be collected and analyzed unless need arises due to analytical or validation problems warrant. Per Section 3.4.2 of the SEP, as few as 8 samples may be collected from Group 2 CUs for analysis of secondary COCs.

Physical Samples

Physical soil certification samples will be collected from the surface according to SMPL-01 at locations identified in the PSP (generally 12 of the 16 locations per CU).

If stockpiled soil is to be certified, two CUs will be established, on for the stockpile and one for the underlying soil (i.e., the "footprint"). To certify the stockpile, samples will be collected from predetermined random intervals from within the stockpiled soil at each certification sampling location identified in the PSP. To certify the footprint, the first 6-inches of native soil present at each sampling location will also be collected for certification. If fill soil is to be certified, the strategy (surface or sampling at depth) will be based on results from the precertification scan of the fill area(s), as discussed in the Certification Design Letter and the certification PSP.

Laboratory Analysis

As defined in the PSP, a minimum of 8 to 12 samples per CU will be submitted to the on-site laboratory or a FDF approved off-site laboratory for analysis. All certification analyses will meet ASL D requirements per the SCQ except for the HAMDC. Samples will be analyzed for all CU-specific ASCOCs, with minimum detection levels set according to the SCQ and applicable project guidelines.

Validation

All field data will be validated. Also, a minimum of 10 percent of the analytical data from each laboratory will be subject to analytical validation to ASL D requirements in the SCQ, and will require an ASL D package. The remaining analytical data will be validated to a minimum of ASL B, and will require an ASL B package.

8.0 Use of Data to Test Null Hypothesis

Appendix G of the final SEP discusses in detail, the statistical evaluations of certification data used to determine attainment of certification criteria.

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

1B. Project Phase: (Put an X in the appropriate selection.)

RI☐ FS☐ RD☐ RA☒ RvA☐ Other (specify) _____

1C. DQO No.: SL-052, Rev. 2 DQO Reference No.: _____

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2. Media Characterization: (Put an X in the appropriate selection.)

Air☐ Biological☐ Groundwater☐ Sediment☒ Soil☒
Waste☐ Wastewater☐ Surface Water☐ Other (specify) _____

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3. Data Use with Ananlytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable data use)

Site Characterization A☐ B☐ C☐ D☐ E☐	Risk Assessment A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives A☐ B☐ C☐ D☐ E☐	Engineering Design A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation A☐ B☐ C☐ D☐ E☐	Other A☐ B☐ C☐ D☒ E☐

4A. Drivers: Remediation Area Remedial Action Work Plans, Applicable or Relevant and Appropriate Requirements (ARARs) and Operable Unit 2 and Operable Unit 5 Records of Decision (ROD), Sitewide Excavation Plan (SEP).

4B. Objective: Confirmation that remediation areas at the FEMP, or adjacent off-property areas, have met certification criteria on a CU by CU basis.

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5. Site Information (Description):

The OU2 and OU5 RODs have identified areas at the FEMP that require soil remediation activities. The RODs specify that the soil in these areas will be demonstrated to be below the FRLs. Certification is necessary for all FEMP soil and some adjacent off-property soil to demonstrate that the residual soil does not contain COC contamination exceeding the FRL at a specified confidence level.

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH	☐	2. Uranium	☒*	3. BTX	☐
Temperature	☐	Full Radiological	☒*	TPH	☐
Specific Conductance	☐	Metals	☒*	Oil/Grease	☐
Dissolved Oxygen	☐	Cyanide	☐		
Technetium-99	☒*	Silica	☐		
4. Cations	☐	5. VOA	☒*	6. Other (specify)	
Anions	☐	BNA	☐		
TOC	☐	PEST	☒*		
TCLP	☐	PCB	☒*		
CEC	☐	COD	☐		

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

Equipment Selection	Refer to SCQ Section
ASL A _____	SCQ Section _____
ASL B _____	SCQ Section _____
ASL C _____	SCQ Section _____
ASL D Per SCQ and PSP	SCQ Section Appendix G, Tbls. 1&3
ASL E Per PSP	SCQ Section Appendix H (final)

7A. Sampling Methods: (Put an X in the appropriate selection.)

Biased☐ Composite☐ Grab☒ Environmental☐ Grid☐
Intrusive☒ Non-Intrusive☐ Phased☐ Source☐ Random☒*
*Systematic random samples, selected one per cell and meeting the minimum distance criterion

7B. Sample Work Plan Reference: Project Specific Plan for the associated Remediation area Remedial Action Work Plan

Background samples: OU5 RI

7C. Sample Collection Reference: Associated PSP(s), SMPL-01

8. Quality Control Samples: (Put an X in the appropriate selection.)

8A. Field Quality Control Samples:

Trip Blanks	☒[1]	Container Blanks	☒
Field Blanks	☒[2]	Duplicate Samples	☒
Equipment Rinsate Blanks	☒	Split Samples	☒[3]
Preservative Blanks	☐	Performance Evaluation Samples	☐

Other (specify) _____

1) Collected for volatile organic sampling
2) As noted in the PSP
3) Split samples will be taken where required by the EPA

8B. Laboratory Quality Control Samples:

Method Blank	☒	Matrix Duplicate/Replicate	☒
Matrix Spike	☒	Surrogate Spikes	☒
Tracer Spike	☒	Other (specify) _____	

9. Other: Please identify any other germane information that may impact the data quality or gathering of this particular objective, task, or data use.

Sample density will be dependent upon the CU size (Group 1 [250'x250'] or Group 2 [500'x500']), as determined by historical and pre-certification scan data.

APPENDIX B

AREA 9, PHASE I CERTIFICATION SAMPLES

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
1	1-1	0"-6"	A9P1-C-1-1-1-RM	TAL A	1352107.1	483623.77
		0"-6"	A9P1-C-1-1-1-R			
		0"-6"	A9P1-C-1-1-1-P			
	1-2A	0"-6"	A9P1-C-1-2-1-V	ARCHIVE	1352144.05	483581.23
	1-3	0"-6"	A9P1-C-1-3-1-RM	TAL A	1352173.12	483619.23
		0"-6"	A9P1-C-1-3-1-R			
		0"-6"	A9P1-C-1-3-1-P			
	1-4	0"-6"	A9P1-C-1-4-1-RM	TAL A	1352137.36	483546.77
		0"-6"	A9P1-C-1-4-1-R			
		0"-6"	A9P1-C-1-4-1-P			
	1-5A	0"-6"	A9P1-C-1-5-1-V	ARCHIVE	1352189.35	483552.91
	1-6	0"-6"	A9P1-C-1-6-1-RM	TAL A	1352103.52	483516.4
		0"-6"	A9P1-C-1-6-1-R			
		0"-6"	A9P1-C-1-6-1-P			
	1-7	0"-6"	A9P1-C-1-7-1-RM	TAL A	1352221.47	483503.55
		0"-6"	A9P1-C-1-7-1-R			
		0"-6"	A9P1-C-1-7-1-P			
	1-8	0"-6"	A9P1-C-1-8-1-RM	TAL A	1352114.67	483467.38
		0"-6"	A9P1-C-1-8-1-R			
		0"-6"	A9P1-C-1-8-1-P			
	1-9	0"-6"	A9P1-C-1-9-1-RM	TAL A	1352218.2	483456.24
		0"-6"	A9P1-C-1-9-1-R			
		0"-6"	A9P1-C-1-9-1-P			
	1-10	0"-6"	A9P1-C-1-10-1-RM	TAL A	1352133.45	483419.04
		0"-6"	A9P1-C-1-10-1-R			
		0"-6"	A9P1-C-1-10-1-P			
	1-11A	0"-6"	A9P1-C-1-11-1-V	ARCHIVE	1352170.54	483425.42
	1-12	0"-6"	A9P1-C-1-12-1-RM	TAL A	1352082.29	483352.84
		0"-6"	A9P1-C-1-12-1-R			
		0"-6"	A9P1-C-1-12-1-P			
	1-13D	0"-6"	A9P1-C-1-13-1-RM	TAL A	1352174.03	483387.89
		0"-6"	A9P1-C-1-13-1-2-1-R			
		0"-6"	A9P1-C-1-13-1-2-1-P			
		0"-6"	A9P1-C-1-13-1-2-1-RM-D	TAL A	1352174.03	483387.89
		0"-6"	A9P1-C-1-13-1-2-1-R-D			
		0"-6"	A9P1-C-1-13-1-2-1-P-D			
	1-14	0"-6"	A9P1-C-1-14-1-RM	TAL A	1352100.95	483310.31
		0"-6"	A9P1-C-1-14-1-R			
		0"-6"	A9P1-C-1-14-1-P			
	1-15	0"-6"	A9P1-C-1-15-1-RM	TAL A	1352148.3	483294.73
		0"-6"	A9P1-C-1-15-1-R			
		0"-6"	A9P1-C-1-15-1-P			
	1-16A	0"-6"	A9P1-C-1-16-1-V	TAL A	1352205.23	483328.18
2	2-1A	0"-6"	A9P1-C-2-1-1-V	ARCHIVE	1352116.81	483709.98
	2-2	0"-6"	A9P1-C-2-2-1-RM	TAL B	1352244.74	483695.44
		0"-6"	A9P1-C-2-2-1-P			
	2-3	0"-6"	A9P1-C-2-3-1-RM	TAL B	1352346.53	483696.13
		0"-6"	A9P1-C-2-3-1-P			
	2-4	0"-6"	A9P1-C-2-4-1-RM	TAL B	1352410.84	483690.68
		0"-6"	A9P1-C-2-4-1-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
2 (cont.)	2-5	0"-6"	A9P1-C-2-5-1-RM	TAL B	1352529.01	483670.79
		0"-6"	A9P1-C-2-5-1-P			
	2-6A	0"-6"	A9P1-C-2-6-1-V	ARCHIVE	1352705.58	483676.05
	2-7	0"-6"	A9P1-C-2-7-1-RM	TAL B	1352777.55	483695.51
		0"-6"	A9P1-C-2-7-1-P			
	2-8	0"-6"	A9P1-C-2-8-1-RM	TAL B	1352859.93	483685.51
		0"-6"	A9P1-C-2-8-1-P			
	2-9	0"-6"	A9P1-C-2-9-1-RM	TAL B	1352349.09	483591.5
		0"-6"	A9P1-C-2-9-1-P			
	2-10A	0"-6"	A9P1-C-2-10-1-V	ARCHIVE	1352421.54	483634.27
	2-11	0"-6"	A9P1-C-2-11-1-RM	TAL B	1352453.9	483540.1
		0"-6"	A9P1-C-2-11-1-P			
	2-12	0"-6"	A9P1-C-2-12-1-RM	TAL B	1352530.1	483480.51
		0"-6"	A9P1-C-2-12-1-P			
	2-13D	0"-6"	A9P1-C-2-13-1-RM	TAL B	1352576.3	483591.64
		0"-6"	A9P1-C-2-13-1-P			
		0"-6"	A9P1-C-2-13-1-RM-D	TAL B	1352576.3	483591.64
		0"-6"	A9P1-C-2-13-1-P-D			
	2-14	0"-6"	A9P1-C-2-14-1-RM	TAL B	1352681.91	483487.81
		0"-6"	A9P1-C-2-14-1-P			
	2-15	0"-6"	A9P1-C-2-15-1-RM	TAL B	1352706.31	483542.98
		0"-6"	A9P1-C-2-15-1-P			
	2-16A	0"-6"	A9P1-C-2-16-1-V	ARCHIVE	1352775.73	483513.53
3	3-1	0"-6"	A9P1-C-3-1-1-RM	TAL B	1352288.09	483470.47
		0"-6"	A9P1-C-3-1-1-P			
	3-2A	0"-6"	A9P1-C-3-2-1-V	ARCHIVE	1352252.89	483382.78
	3-3	0"-6"	A9P1-C-3-3-1-RM	TAL B	1352324.55	483440.22
		0"-6"	A9P1-C-3-3-1-P			
	3-4	0"-6"	A9P1-C-3-4-1-RM	TAL B	1352500.57	483439.22
		0"-6"	A9P1-C-3-4-1-P			
	3-5	0"-6"	A9P1-C-3-5-1-RM	TAL B	1352629.7	483477.91
		0"-6"	A9P1-C-3-5-1-P			
	3-6	0"-6"	A9P1-C-3-6-1-RM	TAL B	1352766.31	483438.46
		0"-6"	A9P1-C-3-6-1-P			
	3-7	0"-6"	A9P1-C-3-7-1-RM	TAL B	1352839.18	483397.98
		0"-6"	A9P1-C-3-7-1-P			
	3-8A	0"-6"	A9P1-C-3-8-1-V	ARCHIVE	1352246.85	483310.33
	3-9	0"-6"	A9P1-C-3-9-1-RM	TAL B	1352349.8	483325.58
		0"-6"	A9P1-C-3-9-1-P			
	3-10	0"-6"	A9P1-C-3-10-1-RM	TAL B	1352416.18	483362.9
		0"-6"	A9P1-C-3-10-1-P			
	3-11	0"-6"	A9P1-C-3-11-1-RM	TAL B	1352483.63	483361.65
		0"-6"	A9P1-C-3-11-1-P			
	3-12A	0"-6"	A9P1-C-3-12-1-V	ARCHIVE	1352559.17	483329.93
	3-13	0"-6"	A9P1-C-3-13-1-RM	TAL B	1352614.53	483354.39
		0"-6"	A9P1-C-3-13-1-P			
	3-14	0"-6"	A9P1-C-3-14-1-RM	TAL B	1352675.67	483323.8
		0"-6"	A9P1-C-3-14-1-P			
	3-15A	0"-6"	A9P1-C-3-15-1-V	ARCHIVE	1352756.67	483324.5

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
3 (cont.)	3-16D	0"-6"	A9P1-C-3-16-1-RM	TAL B	1352797.05	483271.61
		0"-6"	A9P1-C-3-16-1-P			
		0"-6"	A9P1-C-3-16-1-RM-D	TAL B	1352797.05	483271.61
		0"-6"	A9P1-C-3-16-1-P-D			
4	4-1	0"-6"	A9P1-C-4-1-3-RM	TAL B	1352729.31	483203.48
		0"-6"	A9P1-C-4-1-3-P			
	4-2	0"-6"	A9P1-C-4-2-3-RM	TAL B	1352759.77	483157.19
		0"-6"	A9P1-C-4-2-3-P			
	4-3A	0"-6"	A9P1-C-4-3-3-V	ARCHIVE	1352781.49	483095.78
	4-4	0"-6"	A9P1-C-4-4-3-RM	TAL B	1352824.55	483209.97
		0"-6"	A9P1-C-4-4-3-P			
	4-5A	0"-6"	A9P1-C-4-5-3-V	ARCHIVE	1352719.29	483059.6
	4-6D	0"-6"	A9P1-C-4-6-3-RM	TAL B	1352750.25	483045.39
		0"-6"	A9P1-C-4-6-3-P			
		0"-6"	A9P1-C-4-6-3-RM-D	TAL B	1352750.25	483045.39
		0"-6"	A9P1-C-4-6-3-P-D			
	4-7	0"-6"	A9P1-C-4-7-3-RM	TAL B	1352785.07	483060.06
		0"-6"	A9P1-C-4-7-3-P			
	4-8	0"-6"	A9P1-C-4-8-3-RM	TAL B	1352800.23	483015.6
		0"-6"	A9P1-C-4-8-3-P			
	4-9A	0"-6"	A9P1-C-4-9-3-V	ARCHIVE	1352693.44	482913.9
	4-10	0"-6"	A9P1-C-4-10-3-RM	TAL B	1352726.59	482851.92
		0"-6"	A9P1-C-4-10-3-P			
	4-11	0"-6"	A9P1-C-4-11-3-RM	TAL B	1352769.43	482914.48
		0"-6"	A9P1-C-4-11-3-P			
	4-12	0"-6"	A9P1-C-4-12-3-RM	TAL B	1352795.76	482883.77
		0"-6"	A9P1-C-4-12-3-P			
	4-13A	0"-6"	A9P1-C-4-13-3-V	ARCHIVE	1352678	482646.05
	4-14	0"-6"	A9P1-C-4-14-3-RM	TAL B	1352699.89	482692.46
		0"-6"	A9P1-C-4-14-3-P			
	4-15	0"-6"	A9P1-C-4-15-3-RM	TAL B	1352726.79	482650.27
		0"-6"	A9P1-C-4-15-3-P			
	4-16	0"-6"	A9P1-C-4-16-3-RM	TAL B	1352764.05	482732.39
		0"-6"	A9P1-C-4-16-3-P			
5	5-1A	0"-12"	A9P1-C-5-1-2-V	ARCHIVE	1352373.42	483131.89
		12"-36"	A9P1-C-5-1-3-RM	TAL B		
		12"-36"	A9P1-C-5-1-3-P			
	5-2	0"-12"	A9P1-C-5-2-2-RM	TAL B	1352475.02	483114.28
		0"-12"	A9P1-C-5-2-2-P			
	5-3	0"-12"	A9P1-C-5-3-2-RM	TAL B	1352598.71	483155.69
		0"-12"	A9P1-C-5-3-2-P			
	5-4D	0"-12"	A9P1-C-5-4-2-RM	TAL B	1352644.23	483101.79
		0"-12"	A9P1-C-5-4-2-P			
		0"-12"	A9P1-C-5-4-2-RM-D	TAL B	1352644.23	483101.79
		0"-12"	A9P1-C-5-4-2-P-D			
	5-5	0"-12"	A9P1-C-5-5-2-RM	TAL B	1352368.64	482961.29
		0"-12"	A9P1-C-5-5-2-P			
	5-6	0"-12"	A9P1-C-5-6-2-RM	TAL B	1352471.09	483032.27
		0"-12"	A9P1-C-5-6-2-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
5 (cont.)	5-7	0"-12"	A9P1-C-5-7-2-RM	TAL B	1352573.42	483060.15
		0"-12"	A9P1-C-5-7-2-P			
	5-8A	0"-12"	A9P1-C-5-8-2-V	ARCHIVE	1352608.19	482987.25
		12"-36"	A9P1-C-5-8-3-RM	TAL B		
		12"-36"	A9P1-C-5-8-3-P			
	5-9	0"-12"	A9P1-C-5-9-2-RM	TAL B	1352358.14	482829.35
		0"-12"	A9P1-C-5-9-2-P			
	5-10	0"-12"	A9P1-C-5-10-2-RM	TAL B	1352451.61	482905.91
		0"-12"	A9P1-C-5-10-2-P			
	5-11A	0"-12"	A9P1-C-5-11-2-V	ARCHIVE	1352548.69	482836.88
		12"-36"	A9P1-C-5-11-3-RM	TAL B		
		12"-36"	A9P1-C-5-11-3-P			
	5-12	0"-12"	A9P1-C-5-12-2-RM	TAL B	1352633.15	482800.95
		0"-12"	A9P1-C-5-12-2-P			
	5-13	0"-12"	A9P1-C-5-13-2-RM	TAL B	1352329.06	482684.45
		0"-12"	A9P1-C-5-13-2-P			
	5-14	0"-12"	A9P1-C-5-14-2-RM	TAL B	1352387.79	482704.13
		0"-12"	A9P1-C-5-14-2-P			
	5-15A	0"-12"	A9P1-C-5-15-2-V	ARCHIVE	1352557.27	482696.76
		12"-36"	A9P1-C-5-15-3-RM	TAL B		
		12"-36"	A9P1-C-5-15-3-P			
	5-16	0"-12"	A9P1-C-5-16-2-RM	TAL B	1352637.07	482667.88
		0"-12"	A9P1-C-5-16-2-P			
6	6-1	0"-12"	A9P1-C-6-1-2-RM	TAL B	1352187.75	482551.9
		0"-12"	A9P1-C-6-1-2-P			
	6-2	0"-12"	A9P1-C-6-2-2-RM	TAL B	1352270.26	482604.21
		0"-12"	A9P1-C-6-2-2-P			
	6-3	0"-12"	A9P1-C-6-3-2-RM	TAL B	1352427.6	482538.38
		0"-12"	A9P1-C-6-3-2-P			
	6-4A	0"-12"	A9P1-C-6-4-2-V	ARCHIVE	1352537.1	482595.22
		12"-36"	A9P1-C-6-4-3-RM	TAL B		
		12"-36"	A9P1-C-6-4-3-P			
	6-5	0"-12"	A9P1-C-6-5-2-RM	TAL B	1352180.32	482450.62
		0"-12"	A9P1-C-6-5-2-P			
	6-6A	0"-12"	A9P1-C-6-6-2-V	ARCHIVE	1352265.2	482496.13
		12"-36"	A9P1-C-6-6-3-RM	TAL B		
		12"-36"	A9P1-C-6-6-3-P			
	6-7	0"-12"	A9P1-C-6-7-2-RM	TAL B	1352408.89	482473.11
		0"-12"	A9P1-C-6-7-2-P			
	6-8	0"-12"	A9P1-C-6-8-2-RM	TAL B	1352499.14	482422.29
		0"-12"	A9P1-C-6-8-2-P			
	6-9D	0"-12"	A9P1-C-6-9-2-RM	TAL B	1352150.12	482285.92
		0"-12"	A9P1-C-6-9-2-P			
		0"-12"	A9P1-C-6-9-2-RM-D	TAL B	1352150.12	482285.92
		0"-12"	A9P1-C-6-9-2-P-D			
	6-10	0"-12"	A9P1-C-6-10-2-RM	TAL B	1352282.44	482296.45
		0"-12"	A9P1-C-6-10-2-P			
	6-11	0"-12"	A9P1-C-6-11-2-RM	TAL B	1352449.38	482352.49
		0"-12"	A9P1-C-6-11-2-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
6 (cont.)	6-12A	0"-12"	A9P1-C-6-12-2-V	ARCHIVE	1352567.38	482301.26
		12"-36"	A9P1-C-6-12-3-RM	TAL B		
		12"-36"	A9P1-C-6-12-3-P			
	6-13	0"-12"	A9P1-C-6-13-2-RM	TAL B	1352172.21	482201.11
		0"-12"	A9P1-C-6-13-2-P			
	6-14A	0"-12"	A9P1-C-6-14-2-V	ARCHIVE	1352278.09	482180.55
		12"-36"	A9P1-C-6-14-3-RM	TAL B		
		12"-36"	A9P1-C-6-14-3-P			
	6-15	0"-12"	A9P1-C-6-15-2-RM	TAL B	1352425.71	482172.97
		0"-12"	A9P1-C-6-15-2-P			
	6-16	0"-12"	A9P1-C-6-16-2-RM	TAL B	1352519.49	482168.88
		0"-12"	A9P1-C-6-16-2-P			
7	7-1	0"-12"	A9P1-C-7-1-2-RM	TAL B	1352203.99	482119.8
		0"-12"	A9P1-C-7-1-2-P			
	7-2	0"-12"	A9P1-C-7-2-2-RM	TAL B	1352343.51	482065.49
		0"-12"	A9P1-C-7-2-2-P			
	7-3A	0"-12"	A9P1-C-7-3-2-V	ARCHIVE	1352458.12	482122.96
		12"-36"	A9P1-C-7-3-3-RM	TAL B		
		12"-36"	A9P1-C-7-3-3-P			
	7-4	0"-12"	A9P1-C-7-4-2-RM	TAL B	1352550.04	482099.72
		0"-12"	A9P1-C-7-4-2-P			
	7-5A	0"-12"	A9P1-C-7-5-2-RM	ARCHIVE	1352121.11	482010.06
		12"-36"	A9P1-C-7-5-3-V	TAL B		
		12"-36"	A9P1-C-7-5-3-P			
	7-6	0"-12"	A9P1-C-7-6-2-RM	TAL B	1352264.93	481947.51
		0"-12"	A9P1-C-7-6-2-P			
	7-7	0"-12"	A9P1-C-7-7-2-RM	TAL B	1352442.56	481937.88
		0"-12"	A9P1-C-7-7-2-P			
	7-8	0"-12"	A9P1-C-7-8-2-RM	TAL B	1352507.15	482019.63
		0"-12"	A9P1-C-7-8-2-P			
	7-9	0"-12"	A9P1-C-7-9-2-RM	TAL B	1352124.68	481883.45
		0"-12"	A9P1-C-7-9-2-P			
	7-10	0"-12"	A9P1-C-7-10-2-RM	TAL B	1352253.53	481819.87
		0"-12"	A9P1-C-7-10-2-P			
	7-11A	0"-12"	A9P1-C-7-11-2-V	ARCHIVE	1352360.69	481897.72
		12"-36"	A9P1-C-7-11-3-RM	TAL B		
		12"-36"	A9P1-C-7-11-3-P			
	7-12	0"-12"	A9P1-C-7-12-2-RM	TAL B	1352528.03	481875.73
		0"-12"	A9P1-C-7-12-2-P			
	7-13D	0"-12"	A9P1-C-7-13-2-RM	TAL B	1352154.13	481788.56
		0"-12"	A9P1-C-7-13-2-P			
		0"-12"	A9P1-C-7-13-2-RM-D	TAL B	1352154.13	481788.56
		0"-12"	A9P1-C-7-13-2-P-D			
	7-14A	0"-12"	A9P1-C-7-14-2-V	ARCHIVE	1352258.8	481710.56
		12"-36"	A9P1-C-7-14-3-RM	TAL B		
		12"-36"	A9P1-C-7-14-3-P			
	7-15	0"-12"	A9P1-C-7-15-2-RM	TAL B	1352401.11	481723.36
		0"-12"	A9P1-C-7-15-2-P			
	7-16	0"-12"	A9P1-C-7-16-2-RM	TAL B	1352486.06	481777.94
		0"-12"	A9P1-C-7-16-2-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
8	8-1	0"-12"	A9P1-C-8-1-2-RM	TAL B	1352189.53	481579
		0"-12"	A9P1-C-8-1-2-P			
	8-2A	0"-12"	A9P1-C-8-2-2-V	ARCHIVE	1352320.73	1352320.73
		12"-36"	A9P1-C-8-2-3-RM	TAL B		
		12"-36"	A9P1-C-8-2-3-P			
	8-3	0"-12"	A9P1-C-8-3-2-RM	TAL B	1352413.27	481601.91
		0"-12"	A9P1-C-8-3-2-P			
	8-4D	0"-12"	A9P1-C-8-4-2-RM	TAL B	1352486.57	481599.87
		0"-12"	A9P1-C-8-4-2-P			
		0"-12"	A9P1-C-8-4-2-RM-D	TAL B	1352486.57	481599.87
		0"-12"	A9P1-C-8-4-2-P-D			
	8-5A	0"-12"	A9P1-C-8-5-2-V	ARCHIVE	1352198.93	481498.1
		12"-36"	A9P1-C-8-5-3-RM	TAL B		
		12"-36"	A9P1-C-8-5-3-P			
	8-6	0"-12"	A9P1-C-8-6-2-RM	TAL B	1352315.76	481485.36
		0"-12"	A9P1-C-8-6-2-P			
	8-7	0"-12"	A9P1-C-8-7-2-RM	TAL B	1352405.58	481472.21
		0"-12"	A9P1-C-8-7-2-P			
	8-8	0"-12"	A9P1-C-8-8-2-RM	TAL B	1352475.61	481507.43
		0"-12"	A9P1-C-8-8-2-P			
	8-9	0"-12"	A9P1-C-8-9-2-RM	TAL B	1352214.44	481425.02
		0"-12"	A9P1-C-8-9-2-P			
	8-10	0"-12"	A9P1-C-8-10-2-RM	TAL B	1352297.47	481335.49
		0"-12"	A9P1-C-8-10-2-P			
	8-11A	0"-12"	A9P1-C-8-11-2-V	ARCHIVE	1352415.62	481365.99
		12"-36"	A9P1-C-8-11-2-RM	TAL B		
		12"-36"	A9P1-C-8-11-2-P			
	8-12	0"-12"	A9P1-C-8-12-2-RM	TAL B	1352477.5	481440.12
		0"-12"	A9P1-C-8-12-2-P			
	8-13	0"-12"	A9P1-C-8-13-2-RM	TAL B	1352179.51	481264.44
		0"-12"	A9P1-C-8-13-2-P			
	8-14A	0"-12"	A9P1-C-8-14-2-V	ARCHIVE	1352266.58	481248.61
		12"-36"	A9P1-C-8-14-2-RM	TAL B		
		12"-36"	A9P1-C-8-14-2-P			
	8-15	0"-12"	A9P1-C-8-15-2-RM	TAL B	1352384.23	481286.73
		0"-12"	A9P1-C-8-15-2-P			
	8-16	0"-12"	A9P1-C-8-16-2-RM	TAL B	1352493.9	481259.99
		0"-12"	A9P1-C-8-16-2-P			
9	9-1	0"-12"	A9P1-C-9-1-2-RM	TAL B	1352153.85	481181.26
		0"-12"	A9P1-C-9-1-2-P			
	9-2	0"-12"	A9P1-C-9-2-2-RM	TAL B	1352250.27	481185.41
		0"-12"	A9P1-C-9-2-2-P			
	9-3	0"-12"	A9P1-C-9-3-2-RM	TAL B	1352377.51	481179.88
		0"-12"	A9P1-C-9-3-2-P			
	9-4A	0"-12"	A9P1-C-9-4-2-V	ARCHIVE	1352490.57	481130.5
		12"-36"	A9P1-C-9-4-3-RM	TAL B		
		12"-36"	A9P1-C-9-4-3-P			
	9-5	0"-12"	A9P1-C-9-5-2-RM	TAL B	1352129.9	481034.68
		0"-12"	A9P1-C-9-5-2-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
9 (cont.)	9-6A	0"-12"	A9P1-C-9-6-2-V	ARCHIVE	1352229.08	481059.62
		12"-36"	A9P1-C-9-6-3-RM	TAL B		
		12"-36"	A9P1-C-9-6-3-P			
	9-7	0"-12"	A9P1-C-9-7-2-RM	TAL B	1352353.1	481053.89
		0"-12"	A9P1-C-9-7-2-P			
	9-8	0"-12"	A9P1-C-9-8-2-RM	TAL B	1352521.18	481019.55
		0"-12"	A9P1-C-9-8-2-P			
	9-9A	0"-12"	A9P1-C-9-9-2-V	ARCHIVE	1352112.05	480837.67
		12"-36"	A9P1-C-9-9-2-RM	TAL B		
		12"-36"	A9P1-C-9-9-2-P			
	9-10	0"-12"	A9P1-C-9-10-2-RM	TAL B	1352257.56	480872.5
		0"-12"	A9P1-C-9-10-2-P			
	9-11D	0"-12"	A9P1-C-9-11-2-RM	TAL B	1352424.91	480912.27
		0"-12"	A9P1-C-9-11-2-P			
		0"-12"	A9P1-C-9-11-2-RM-D	TAL B	1352424.91	480912.27
		0"-12"	A9P1-C-9-11-2-P-D			
	9-12	0"-12"	A9P1-C-9-12-2-RM	TAL B	1352522.37	480901.18
		0"-12"	A9P1-C-9-12-2-P			
	9-13A	0"-12"	A9P1-C-9-13-2-V	ARCHIVE	1352168.47	480801.25
		12"-36"	A9P1-C-9-13-2-RM	TAL B		
		12"-36"	A9P1-C-9-13-2-P			
	9-14	0"-12"	A9P1-C-9-14-2-RM	TAL B	1352329.26	480808.91
		0"-12"	A9P1-C-9-14-2-P			
	9-15	0"-12"	A9P1-C-9-15-2-RM	TAL B	1352443.2	480723.3
		0"-12"	A9P1-C-9-15-2-P			
	9-16	0"-12"	A9P1-C-9-16-2-RM	TAL B	1352556.78	480811.44
		0"-12"	A9P1-C-9-16-2-P			
10	10-1A	0"-12"	A9P1-C-10-1-2-V	ARCHIVE	1351862.4	480965.6
		12"-36"	A9P1-C-10-1-3-RM	TAL A		
		12"-36"	A9P1-C-10-1-3-R			
		12"-36"	A9P1-C-10-1-3-P			
	10-2	0"-12"	A9P1-C-10-2-2-RM	TAL A	1351906.41	480994.89
		0"-12"	A9P1-C-10-2-2-R			
		0"-12"	A9P1-C-10-2-2-P			
	10-3	0"-12"	A9P1-C-10-3-2-RM	TAL A	1351979.04	480971.44
		0"-12"	A9P1-C-10-3-2-R			
		0"-12"	A9P1-C-10-3-2-P			
	10-4	0"-12"	A9P1-C-10-4-2-RM	TAL A	1352075.64	480985.26
		0"-12"	A9P1-C-10-4-2-R			
		0"-12"	A9P1-C-10-4-2-P			
	10-5	0"-12"	A9P1-C-10-5-2-RM	TAL A	1351895.3	480934.8
		0"-12"	A9P1-C-10-5-2-R			
		0"-12"	A9P1-C-10-5-2-P			
	10-6A	0"-12"	A9P1-C-10-6-2-V	ARCHIVE	1351926.25	480943.02
		12"-36"	A9P1-C-10-6-3-RM	TAL A		
		12"-36"	A9P1-C-10-6-3-R			
		12"-36"	A9P1-C-10-6-3-P			
	10-7	0"-12"	A9P1-C-10-7-2-RM	TAL A	1351996.1	480923
		0"-12"	A9P1-C-10-7-2-R			
		0"-12"	A9P1-C-10-7-2-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
10 (cont.)	10-8	0"-12"	A9P1-C-10-8-2-RM	TAL A	1352068.1	480955.3
		0"-12"	A9P1-C-10-8-2-R			
		0"-12"	A9P1-C-10-8-2-P			
	10-9	0"-12"	A9P1-C-10-9-2-RM	TAL A	1352080.98	480915.89
		0"-12"	A9P1-C-10-9-2-R			
		0"-12"	A9P1-C-10-9-2-P			
	10-10	0"-12"	A9P1-C-10-10-2-RM	TAL A	1351891.45	480856.76
		0"-12"	A9P1-C-10-10-2-R			
		0"-12"	A9P1-C-10-10-2-P			
	10-11A	0"-12"	A9P1-C-10-11-2-V	ARCHIVE	1351954.38	480917.3
		12"-36"	A9P1-C-10-11-3-RM	TAL A		
		12"-36"	A9P1-C-10-11-3-R			
		12"-36"	A9P1-C-10-11-3-P			
	10-12D	0"-12"	A9P1-C-10-12-2-RM	TAL A	1352019.62	480891.99
		0"-12"	A9P1-C-10-12-2-R			
		0"-12"	A9P1-C-10-12-2-P			
		0"-12"	A9P1-C-10-12-2-RM-D	TAL A	1352019.62	480891.99
		0"-12"	A9P1-C-10-12-2-R-D			
		0"-12"	A9P1-C-10-12-2-P-D			
	10-13A	0"-12"	A9P1-C-10-13-2-V	ARCHIVE	1352057.51	480857.65
		12"-36"	A9P1-C-10-13-3-RM	TAL A		
		12"-36"	A9P1-C-10-13-3-R			
		12"-36"	A9P1-C-10-13-3-P			
	10-14	0"-12"	A9P1-C-10-14-2-RM	TAL A	1351928.25	480866.12
		0"-12"	A9P1-C-10-14-2-R			
		0"-12"	A9P1-C-10-14-2-P			
	10-15	0"-12"	A9P1-C-10-15-2-RM	TAL A	1352016.24	480837.44
		0"-12"	A9P1-C-10-15-2-R			
		0"-12"	A9P1-C-10-15-2-P			
	10-16	0"-12"	A9P1-C-10-16-2-RM	TAL A	1352056.74	480829.63
		0"-12"	A9P1-C-10-16-2-R			
		0"-12"	A9P1-C-10-16-2-P			
11	11-1	0"-12"	A9P1-C-11-1-2-RM	TAL A	1351851.91	481181.6
		0"-12"	A9P1-C-11-1-2-R			
		0"-12"	A9P1-C-11-1-2-P			
	11-2	0"-12"	A9P1-C-11-2-2-RM	TAL A	1351930.03	481175.24
		0"-12"	A9P1-C-11-2-2-R			
		0"-12"	A9P1-C-11-2-2-P			
	11-3	0"-12"	A9P1-C-11-3-2-RM	TAL A	1351994.38	481175.85
		0"-12"	A9P1-C-11-3-2-R			
		0"-12"	A9P1-C-11-3-2-P			
	11-4A	0"-12"	A9P1-C-11-4-2-V	ARCHIVE	1352039.9	481189.67
		12"-36"	A9P1-C-11-4-3-RM	TAL A		
		12"-36"	A9P1-C-11-4-3-R			
		12"-36"	A9P1-C-11-4-3-P			
	11-5	0"-12"	A9P1-C-11-5-2-RM	TAL A	1351853.97	481139.81
		0"-12"	A9P1-C-11-5-2-R			
		0"-12"	A9P1-C-11-5-2-P			

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
11 (cont.)	11-6A	0"-12"	A9P1-C-11-6-2-V	ARCHIVE	1351912.67	481146.82
		12"-36"	A9P1-C-11-6-3-RM	TAL A		
		12"-36"	A9P1-C-11-6-3-R			
		12"-36"	A9P1-C-11-6-3-P			
	11-7	0"-12"	A9P1-C-11-7-2-RM	TAL A	1352001.59	481126.05
		0"-12"	A9P1-C-11-7-2-R			
		0"-12"	A9P1-C-11-7-2-P			
	11-8	0"-12"	A9P1-C-11-8-2-RM	TAL A	1352082.66	481118.46
		0"-12"	A9P1-C-11-8-2-R			
		0"-12"	A9P1-C-11-8-2-P			
	11-9A	0"-12"	A9P1-C-11-9-2-V	ARCHIVE	1351871.25	481077.46
		12"-36"	A9P1-C-11-9-3-RM	TAL A		
		12"-36"	A9P1-C-11-9-3-R			
		12"-36"	A9P1-C-11-9-3-P			
	11-10	0"-12"	A9P1-C-11-10-2-RM	TAL A	1351927.63	481065.52
		0"-12"	A9P1-C-11-10-2-R			
		0"-12"	A9P1-C-11-10-2-P			
	11-11	0"-12"	A9P1-C-11-11-2-RM	TAL A	1352019.2	481088.8
		0"-12"	A9P1-C-11-11-2-R			
		0"-12"	A9P1-C-11-11-2-P			
	11-12	0"-12"	A9P1-C-11-12-2-RM	TAL A	1352070.8	481092.52
		0"-12"	A9P1-C-11-12-2-R			
		0"-12"	A9P1-C-11-12-2-P			
	11-13	0"-12"	A9P1-C-11-13-2-RM	TAL A	1351881.36	481018.06
		0"-12"	A9P1-C-11-13-2-R			
		0"-12"	A9P1-C-11-13-2-P			
	11-14A	0"-12"	A9P1-C-11-14-2-V	ARCHIVE	1351957.5	481042.4
		12"-36"	A9P1-C-11-14-3-RM	TAL A		
		12"-36"	A9P1-C-11-14-3-R			
		12"-36"	A9P1-C-11-14-3-P			
	11-15	0"-12"	A9P1-C-11-15-2-RM	TAL A	1352011.23	481045.98
		0"-12"	A9P1-C-11-15-2-R			
		0"-12"	A9P1-C-11-15-2-P			
	11-16D	0"-12"	A9P1-C-11-16-2-RM	TAL A	1352037.58	481019.63
		0"-12"	A9P1-C-11-16-2-R			
		0"-12"	A9P1-C-11-16-2-P			
		0"-12"	A9P1-C-11-16-2-RM-D	TAL A	1352037.58	481019.63
		0"-12"	A9P1-C-11-16-2-R-D			
		0"-12"	A9P1-C-11-16-2-P-D			
12	12-1	0"-12"	A9P1-C-12-1-2-RM	TAL A	1351904.09	481404.97
		0"-12"	A9P1-C-12-1-2-R			
		0"-12"	A9P1-C-12-1-2-P			
	12-2	0"-12"	A9P1-C-12-2-2-RM	TAL A	1351947.36	481428.66
		0"-12"	A9P1-C-12-2-2-R			
		0"-12"	A9P1-C-12-2-2-P			
	12-3A	0"-12"	A9P1-C-12-3-2-V	ARCHIVE	1351982.73	481432.78
		12"-36"	A9P1-C-12-3-3-RM	TAL A		
		12"-36"	A9P1-C-12-3-3-R			
		12"-36"	A9P1-C-12-3-3-P			

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CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
12 (cont.)	12-4	0"-12"	A9P1-C-12-4-2-RM	TAL A	1352041.83	481417.36
		0"-12"	A9P1-C-12-4-2-R			
		0"-12"	A9P1-C-12-4-2-P			
	12-5A	0"-12"	A9P1-C-12-5-2-V	ARCHIVE	1351875.09	481379.85
		12"-36"	A9P1-C-12-5-3-RM	TAL A		
		12"-36"	A9P1-C-12-5-3-R			
		12"-36"	A9P1-C-12-5-3-P			
	12-6D	0"-12"	A9P1-C-12-6-2-RM	TAL A	1351927.85	481351.04
		0"-12"	A9P1-C-12-6-2-R			
		0"-12"	A9P1-C-12-6-2-P			
		0"-12"	A9P1-C-12-6-2-RM-D	TAL A	1351927.85	481351.04
		0"-12"	A9P1-C-12-6-2-R-D			
		0"-12"	A9P1-C-12-6-2-P-D			
	12-7	0"-12"	A9P1-C-12-7-2-RM	TAL A	1351991.57	481356.62
		0"-12"	A9P1-C-12-7-2-R			
		0"-12"	A9P1-C-12-7-2-P			
	12-8	0"-12"	A9P1-C-12-8-2-RM	TAL A	1352052.49	481351.07
		0"-12"	A9P1-C-12-8-2-R			
		0"-12"	A9P1-C-12-8-2-P			
	12-9	0"-12"	A9P1-C-12-9-2-RM	TAL A	1351893.22	481287.42
		0"-12"	A9P1-C-12-9-2-R			
		0"-12"	A9P1-C-12-9-2-P			
	12-10	0"-12"	A9P1-C-12-10-2-RM	TAL A	1351942.44	481274.05
		0"-12"	A9P1-C-12-10-2-R			
		0"-12"	A9P1-C-12-10-2-P			
	12-11A	0"-12"	A9P1-C-12-11-2-V	ARCHIVE	1352007.1	1352007.1
		12"-36"	A9P1-C-12-11-3-R	TAL A		
		12"-36"	A9P1-C-12-11-3-P			
		12"-36"	A9P1-C-12-11-3-P			
	12-12	0"-12"	A9P1-C-12-12-2-RM	TAL A	1352040.51	481292.61
		0"-12"	A9P1-C-12-12-2-R			
		0"-12"	A9P1-C-12-12-2-P			
	12-13	0"-12"	A9P1-C-12-13-2-RM	TAL A	1351873.69	481233.09
		0"-12"	A9P1-C-12-13-2-R			
		0"-12"	A9P1-C-12-13-2-P			
	12-14	0"-12"	A9P1-C-12-14-2-RM	TAL A	1351951.83	481229.38
		0"-12"	A9P1-C-12-14-2-R			
		0"-12"	A9P1-C-12-14-2-P			
	12-15	0"-12"	A9P1-C-12-15-2-RM	TAL A	1351998.75	481226.92
		0"-12"	A9P1-C-12-15-2-R			
		0"-12"	A9P1-C-12-15-2-P			
	12-16A	0"-12"	A9P1-C-12-16-2-V	ARCHIVE	1352049.08	481218.91
		12"-36"	A9P1-C-12-16-3-RM	TAL A		
		12"-36"	A9P1-C-12-16-3-R			
		12"-36"	A9P1-C-12-16-3-P			
13	13-1A	0"-12"	A9P1-C-13-1-2-V	ARCHIVE	1351880.79	481669.91
		12"-36"	A9P1-C-13-1-3-RM	TAL A		
		12"-36"	A9P1-C-13-1-3-R			
		12"-36"	A9P1-C-13-1-3-P			

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
13 (cont.)	13-2	0"-12"	A9P1-C-13-2-2-RM	TAL A	1351917.65	481642.54
		0"-12"	A9P1-C-13-2-2-R			
		0"-12"	A9P1-C-13-2-2-P			
	13-3	0"-12"	A9P1-C-13-3-2-RM	TAL A	1352009.04	481683.74
		0"-12"	A9P1-C-13-3-2-R			
		0"-12"	A9P1-C-13-3-2-P			
	13-4	0"-12"	A9P1-C-13-4-2-RM	TAL A	1352044.68	481661.72
		0"-12"	A9P1-C-13-4-2-R			
		0"-12"	A9P1-C-13-4-2-P			
	13-5	0"-12"	A9P1-C-13-5-2-RM	TAL A	1351856.3	481582.82
		0"-12"	A9P1-C-13-5-2-R			
		0"-12"	A9P1-C-13-5-2-P			
	13-6A	0"-12"	A9P1-C-13-6-2-V	ARCHIVE	1351922.48	481599.52
		12"-36"	A9P1-C-13-6-3-RM	TAL A		
		12"-36"	A9P1-C-13-6-3-R			
		12"-36"	A9P1-C-13-6-3-P			
	13-7	0"-12"	A9P1-C-13-7-2-RM	TAL A	1352008.37	481602.21
		0"-12"	A9P1-C-13-7-2-R			
		0"-12"	A9P1-C-13-7-2-P			
	13-8	0"-12"	A9P1-C-13-8-2-RM	TAL A	1352085.63	481595.03
		0"-12"	A9P1-C-13-8-2-R			
		0"-12"	A9P1-C-13-8-2-P			
	13-9D	0"-12"	A9P1-C-13-9-2-RM	TAL A	1351859.71	481563.68
		0"-12"	A9P1-C-13-9-2-R			
		0"-12"	A9P1-C-13-9-2-P			
		0"-12"	A9P1-C-13-9-2-RM-D	TAL A	1351859.71	481563.68
		0"-12"	A9P1-C-13-9-2-R-D			
		0"-12"	A9P1-C-13-9-2-P-D			
	13-10	0"-12"	A9P1-C-13-10-2-RM	TAL A	1351957.75	481549.29
		0"-12"	A9P1-C-13-10-2-R			
		0"-12"	A9P1-C-13-10-2-P			
	13-11A	0"-12"	A9P1-C-13-11-2-V	ARCHIVE	1352010.05	481552.4
		12"-36"	A9P1-C-13-11-3-RM	TAL A		
		12"-36"	A9P1-C-13-11-3-R			
		12"-36"	A9P1-C-13-11-3-P			
	13-12	0"-12"	A9P1-C-13-12-2-RM	TAL A	1352055.19	481565.17
		0"-12"	A9P1-C-13-12-2-R			
		0"-12"	A9P1-C-13-12-2-P			
	13-13A	0"-12"	A9P1-C-13-13-2-V	ARCHIVE	1351856.1	481458.07
		12"-36"	A9P1-C-13-13-3-RM	TAL A		
		12"-36"	A9P1-C-13-13-3-R			
		12"-36"	A9P1-C-13-13-3-P			
	13-14	0"-12"	A9P1-C-13-14-2-RM	TAL A	1351944.52	481486.29
		0"-12"	A9P1-C-13-14-2-R			
		0"-12"	A9P1-C-13-14-2-P			
	13-15	0"-12"	A9P1-C-13-15-2-RM	TAL A	1352014.9	481491.76
		0"-12"	A9P1-C-13-15-2-R			
		0"-12"	A9P1-C-13-15-2-P			

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CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
13 (cont.)	13-16	0"-12"	A9P1-C-13-16-2-RM	TAL A	1352067.53	481475.84
		0"-12"	A9P1-C-13-16-2-R			
		0"-12"	A9P1-C-13-16-2-P			
14	14-1	0"-12"	A9P1-C-14-1-2-RM	TAL A	1351866.4	481910.35
		0"-12"	A9P1-C-14-1-2-R			
		0"-12"	A9P1-C-14-1-2-P			
	14-2A	0"-12"	A9P1-C-14-2-2-V	ARCHIVE	1351925.13	481877.85
		12"-36"	A9P1-C-14-2-3-RM	TAL A		
		12"-36"	A9P1-C-14-2-3-R			
		12"-36"	A9P1-C-14-2-3-P			
	14-3	0"-12"	A9P1-C-14-3-2-RM	TAL A	1351984.46	481877.65
		0"-12"	A9P1-C-14-3-2-R			
		0"-12"	A9P1-C-14-3-2-P			
	14-4	0"-12"	A9P1-C-14-4-2-RM	TAL A	1352054.75	481887.65
		0"-12"	A9P1-C-14-4-2-R			
		0"-12"	A9P1-C-14-4-2-P			
	14-5	0"-12"	A9P1-C-14-5-2-RM	TAL A	1351895.79	481840.57
		0"-12"	A9P1-C-14-5-2-R			
		0"-12"	A9P1-C-14-5-2-P			
	14-6	0"-12"	A9P1-C-14-6-2-RM	TAL A	1351947.73	481850.88
		0"-12"	A9P1-C-14-6-2-R			
		0"-12"	A9P1-C-14-6-2-P			
	14-7	0"-12"	A9P1-C-14-7-2-RM	TAL A	1351995.94	481843.07
		0"-12"	A9P1-C-14-7-2-R			
		0"-12"	A9P1-C-14-7-2-P			
	14-8A	0"-12"	A9P1-C-14-8-2-V	ARCHIVE	1352063.58	481828.26
		12"-36"	A9P1-C-14-8-3-RM	TAL A		
		12"-36"	A9P1-C-14-8-3-R			
		12"-36"	A9P1-C-14-8-3-P			
	14-9	0"-12"	A9P1-C-14-9-2-RM	TAL A	1351896.58	481757.83
		0"-12"	A9P1-C-14-9-2-R			
		0"-12"	A9P1-C-14-9-2-P			
	14-10A	0"-12"	A9P1-C-14-10-2-V	ARCHIVE	1351934.56	481774.3
		12"-36"	A9P1-C-14-10-3-RM	TAL A		
		12"-36"	A9P1-C-14-10-3-R			
		12"-36"	A9P1-C-14-10-3-P			
	14-11	0"-12"	A9P1-C-14-11-2-RM	TAL A	1351983.37	481792.01
		0"-12"	A9P1-C-14-11-2-R			
		0"-12"	A9P1-C-14-11-2-P			
	14-12	0"-12"	A9P1-C-14-12-2-RM	TAL A	1352085.18	481774.95
		0"-12"	A9P1-C-14-12-2-R			
		0"-12"	A9P1-C-14-12-2-P			
	14-13	0"-12"	A9P1-C-14-13-2-RM	TAL A	1351854.78	481705.52
		0"-12"	A9P1-C-14-13-2-R			
		0"-12"	A9P1-C-14-13-2-P			
	14-14A	0"-12"	A9P1-C-14-14-2-V	ARCHIVE	1351951.25	481745.48
		12"-36"	A9P1-C-14-14-3-RM	TAL A		
		12"-36"	A9P1-C-14-14-3-R			
		12"-36"	A9P1-C-14-14-3-P			

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CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
14 (cont.)	14-15D	0"-12"	A9P1-C-14-15-2-RM	TAL A	1351988.18	481727.99
		0"-12"	A9P1-C-14-15-2-R			
		0"-12"	A9P1-C-14-15-2-P			
		0"-12"	A9P1-C-14-15-2-RM-D	TAL A	1351988.18	481727.99
		0"-12"	A9P1-C-14-15-2-R-D			
		0"-12"	A9P1-C-14-15-2-P-D			
	14-16	0"-12"	A9P1-C-14-16-2-RM	TAL A	1352056.8	481725.95
		0"-12"	A9P1-C-14-16-2-R			
		0"-12"	A9P1-C-14-16-2-P			
15	15-1A	0"-12"	A9P1-C-15-1-2-V	ARCHIVE	1351906.02	482100.99
		12"-36"	A9P1-C-15-1-3-RM	TAL A		
		12"-36"	A9P1-C-15-1-3-R			
		12"-36"	A9P1-C-15-1-3-P			
	15-2	0"-12"	A9P1-C-15-2-2-RM	TAL A	1351930.36	482133.17
		0"-12"	A9P1-C-15-2-2-R			
		0"-12"	A9P1-C-15-2-2-P			
	15-3	0"-12"	A9P1-C-15-3-2-RM	TAL A	1351982.43	482106.16
		0"-12"	A9P1-C-15-3-2-R			
		0"-12"	A9P1-C-15-3-2-P			
	15-4	0"-12"	A9P1-C-15-4-2-RM	TAL A	1352069.44	482100.62
		0"-12"	A9P1-C-15-4-2-R			
		0"-12"	A9P1-C-15-4-2-P			
	15-5	0"-12"	A9P1-C-15-5-2-RM	TAL A	1351899.15	482045.41
		0"-12"	A9P1-C-15-5-2-R			
		0"-12"	A9P1-C-15-5-2-P			
	15-6A	0"-12"	A9P1-C-15-6-2-V	ARCHIVE	1351934.5	482056.74
		12"-36"	A9P1-C-15-6-3-RM	TAL A		
		12"-36"	A9P1-C-15-6-3-R			
		12"-36"	A9P1-C-15-6-3-P			
	15-7	0"-12"	A9P1-C-15-7-2-RM	TAL A	1352009.36	482070.08
		0"-12"	A9P1-C-15-7-2-R			
		0"-12"	A9P1-C-15-7-2-P			
	15-8	0"-12"	A9P1-C-15-8-2-RM	TAL A	1352050.32	482065.79
		0"-12"	A9P1-C-15-8-2-R			
		0"-12"	A9P1-C-15-8-2-P			
	15-9A	0"-12"	A9P1-C-15-9-2-V	ARCHIVE	1351870.25	481990.45
		12"36"	A9P1-C-15-9-3-RM	TAL A		
		12"36"	A9P1-C-15-9-3-R			
		12"36"	A9P1-C-15-9-3-P			
	15-10	0"-12"	A9P1-C-15-10-2-RM	TAL A	1351954.31	481991.9
		0"-12"	A9P1-C-15-10-2-R			
		0"-12"	A9P1-C-15-10-2-P			
	15-11	0"-12"	A9P1-C-15-11-2-RM	TAL A	1351999.22	482020.32
		0"-12"	A9P1-C-15-11-2-R			
		0"-12"	A9P1-C-15-11-2-P			

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SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
15 (cont.)	15-12D	0"-12"	A9P1-C-15-12-2-RM	TAL A	1352061.56	482015.8
		0"-12"	A9P1-C-15-12-2-R			
		0"-12"	A9P1-C-15-12-2-P			
		0"-12"	A9P1-C-15-12-2-RM-D	TAL A	1352061.56	482015.8
		0"-12"	A9P1-C-15-12-2-R-D			
		0"-12"	A9P1-C-15-12-2-P-D			
	15-13	0"-12"	A9P1-C-15-13-2-RM	TAL A	1351883.5	481948.66
		0"-12"	A9P1-C-15-13-2-R			
		0"-12"	A9P1-C-15-13-2-P			
	15-14	0"-12"	A9P1-C-15-14-2-RM	TAL A	1351936.1	481942.28
		0"-12"	A9P1-C-15-14-2-R			
		0"-12"	A9P1-C-15-14-2-P			
	15-15	0"-12"	A9P1-C-15-15-2-RM	TAL A	1352002.78	481930.36
		0"-12"	A9P1-C-15-15-2-R			
		0"-12"	A9P1-C-15-15-2-P			
	15-16A	0"-12"	A9P1-C-15-16-2-V	ARCHIVE	1352041.68	481949.92
		12"-36"	A9P1-C-15-16-3-RM	TAL A		
		12"-36"	A9P1-C-15-16-3-R			
		12"-36"	A9P1-C-15-16-3-P			
16	16-1A	0"-12"	A9P1-C-16-1-2-V	ARCHIVE	1351894.32	482374.37
		12"-36"	A9P1-C-16-1-3-RM	TAL A		
		12"-36"	A9P1-C-16-1-3-R			
		12"-36"	A9P1-C-16-1-3-P			
	16-2	0"-12"	A9P1-C-16-2-2-RM	TAL A	1351961.33	482376.45
		0"-12"	A9P1-C-16-2-2-R			
		0"-12"	A9P1-C-16-2-2-P			
	16-3	0"-12"	A9P1-C-16-3-2-RM	TAL A	1352011.67	482363.49
		0"-12"	A9P1-C-16-3-2-R			
		0"-12"	A9P1-C-16-3-2-P			
	16-4	0"-12"	A9P1-C-16-4-2-RM	TAL A	1352041.86	482339.83
		0"-12"	A9P1-C-16-4-2-R			
		0"-12"	A9P1-C-16-4-2-P			
	16-5D	0"-12"	A9P1-C-16-5-2-RM	TAL A	1351887.96	482280.91
		0"-12"	A9P1-C-16-5-2-R			
		0"-12"	A9P1-C-16-5-2-P			
		0"-12"	A9P1-C-16-5-2-RM-D	TAL A	1351887.96	482280.91
		0"-12"	A9P1-C-16-5-2-R-D			
		0"-12"	A9P1-C-16-5-2-P-D			
	16-6A	0"-12"	A9P1-C-16-6-2-V	ARCHIVE	1351958.73	482286.49
		12"-36"	A9P1-C-16-6-3-RM	TAL A		
		12"-36"	A9P1-C-16-6-3-R			
		12"-36"	A9P1-C-16-6-3-P			
	16-7	0"-12"	A9P1-C-16-7-2-RM	TAL A	1352010.94	482323.55
		0"-12"	A9P1-C-16-7-2-R			
		0"-12"	A9P1-C-16-7-2-P	TAL A		
	16-8	0"-12"	A9P1-C-16-8-2-RM	TAL A	1352068.52	482297.01
		0"-12"	A9P1-C-16-8-2-R			
		0"-12"	A9P1-C-16-8-2-P			

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CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
16 (cont.)	16-9A	0"-12"	A9P1-C-16-9-2-V	ARCHIVE	1351878.37	482249.41
		12"-36"	A9P1-C-16-9-3-RM	TAL A		
		12"-36"	A9P1-C-16-9-3-R			
		12"-36"	A9P1-C-16-9-3-P			
	16-10	0"-12"	A9P1-C-16-10-2-RM	TAL A	1351961.82	482211.55
		0"-12"	A9P1-C-16-10-2-R			
		0"-12"	A9P1-C-16-10-2-P			
	16-11	0"-12"	A9P1-C-16-11-2-RM	TAL A	1352006.77	482254.59
		0"-12"	A9P1-C-16-11-2-R			
		0"-12"	A9P1-C-16-11-2-P			
	16-12	0"-12"	A9P1-C-16-12-2-RM	TAL A	1352076.52	482230.93
		0"-12"	A9P1-C-16-12-2-R			
		0"-12"	A9P1-C-16-12-2-P			
	16-13A	0"-12"	A9P1-C-16-13-2-V	ARCHIVE	1351896.95	482161.74
		12"-36"	A9P1-C-16-13-3-RM	TAL A		
		12"-36"	A9P1-C-16-13-3-R			
		12"-36"	A9P1-C-16-13-3-P			
	16-14	0"-12"	A9P1-C-16-14-2-RM	TAL A	1351947.72	482173.26
		0"-12"	A9P1-C-16-14-2-R			
		0"-12"	A9P1-C-16-14-2-P			
	16-15	0"-12"	A9P1-C-16-15-2-RM	TAL A	1352008.57	482157.84
		0"-12"	A9P1-C-16-15-2-R			
		0"-12"	A9P1-C-16-15-2-P			
	16-16	0"-12"	A9P1-C-16-16-2-RM	TAL A	1352062.46	482197.99
		0"-12"	A9P1-C-16-16-2-R			
		0"-12"	A9P1-C-16-16-2-P			
17	17-1	0"-12"	A9P1-C-17-1-2-RM	TAL A	1351865.54	482640.96
		0"-12"	A9P1-C-17-1-2-R			
		0"-12"	A9P1-C-17-1-2-P			
	17-2D	0"-12"	A9P1-C-17-2-2-RM	TAL A	1351951.43	482603.31
		0"-12"	A9P1-C-17-2-2-R			
		0"-12"	A9P1-C-17-2-2-P			
		0"-12"	A9P1-C-17-2-2-RM-D	TAL A	1351951.43	482603.31
		0"-12"	A9P1-C-17-2-2-R-D			
		0"-12"	A9P1-C-17-2-2-P-D			
	17-3A	0"-12"	A9P1-C-17-3-2-V	ARCHIVE	1352012.48	482588.09
		12"-36"	A9P1-C-17-3-3-RM	TAL A		
		12"-36"	A9P1-C-17-3-3-R			
		12"-36"	A9P1-C-17-3-3-P			
	17-4	0"-12"	A9P1-C-17-4-2-RM	TAL A	1352090.7	482584.81
		0"-12"	A9P1-C-17-4-2-R			
		0"-12"	A9P1-C-17-4-2-P			
	17-5	0"-12"	A9P1-C-17-5-2-RM	TAL A	1351873.32	482568.58
		0"-12"	A9P1-C-17-5-2-R			
		0"-12"	A9P1-C-17-5-2-P			
	17-6A	0"-12"	A9P1-C-17-6-2-V	ARCHIVE	1351932.05	482524.87
		12"-36"	A9P1-C-17-6-3-RM	TAL A		
		12"-36"	A9P1-C-17-6-3-R			
		12"-36"	A9P1-C-17-6-3-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
17 (cont.)	17-7	0"-12"	A9P1-C-17-7-2-RM	TAL A	1351997.71	482528.59
		0"-12"	A9P1-C-17-7-2-R			
		0"-12"	A9P1-C-17-7-2-P			
	17-8	0"-12"	A9P1-C-17-8-2-RM	TAL A	1352077.86	482535.4
		0"-12"	A9P1-C-17-8-2-R			
		0"-12"	A9P1-C-17-8-2-P			
	17-9	0"-12"	A9P1-C-17-9-2-RM	TAL A	1351881.41	482483.06
		0"-12"	A9P1-C-17-9-2-R			
		0"-12"	A9P1-C-17-9-2-P			
	17-10	0"-12"	A9P1-C-17-10-2-RM	TAL A	1351951.4	482461.26
		0"-12"	A9P1-C-17-10-2-R			
		0"-12"	A9P1-C-17-10-2-P			
	17-11A	0"-12"	A9P1-C-17-11-2-V	ARCHIVE	1352009.93	482464.16
		12"-36"	A9P1-C-17-11-3-RM	TAL A		
		12"-36"	A9P1-C-17-11-3-R			
		12"-36"	A9P1-C-17-11-3-P			
	17-12	0"-12"	A9P1-C-17-12-2-RM	TAL A	1352046.16	482498.96
		0"-12"	A9P1-C-17-12-2-R			
		0"-12"	A9P1-C-17-12-2-P			
	17-13A	0"-12"	A9P1-C-17-13-2-V	ARCHIVE	1351888.53	482436.33
		12"-36"	A9P1-C-17-13-3-RM	TAL A		
		12"-36"	A9P1-C-17-13-3-R			
		12"-36"	A9P1-C-17-13-3-P			
	17-14	0"-12"	A9P1-C-17-14-2-RM	TAL A	1351943.23	482413.09
		0"-12"	A9P1-C-17-14-2-R			
		0"-12"	A9P1-C-17-14-2-P			
	17-15	0"-12"	A9P1-C-17-15-2-RM	TAL A	1351981.92	482410.01
		0"-12"	A9P1-C-17-15-2-R			
		0"-12"	A9P1-C-17-15-2-P			
	17-16	0"-12"	A9P1-C-17-16-2-RM	TAL A	1352041.02	482420.94
		0"-12"	A9P1-C-17-16-2-R			
		0"-12"	A9P1-C-17-16-2-P			
18	18-1	0"-12"	A9P1-C-18-1-2-RM	TAL A	1352067.52	482827.95
		0"-12"	A9P1-C-18-1-2-R			
		0"-12"	A9P1-C-18-1-2-P			
	18-2	0"-12"	A9P1-C-18-2-2-RM	TAL A	1352128.29	482795.2
		0"-12"	A9P1-C-18-2-2-R			
		0"-12"	A9P1-C-18-2-2-P			
	18-3	0"-12"	A9P1-C-18-3-2-RM	TAL A	1352189.97	482832.74
		0"-12"	A9P1-C-18-3-2-R			
		0"-12"	A9P1-C-18-3-2-P			
	18-4A	0"-12"	A9P1-C-18-4-2-V	ARCHIVE	1352232.13	482790.89
		12"-36"	A9P1-C-18-4-3-RM	TAL A		
		12"-36"	A9P1-C-18-4-3-R			
		12"-36"	A9P1-C-18-4-3-P			
	18-5	0"-12"	A9P1-C-18-5-2-RM	TAL A	1352056.32	482741.28
		0"-12"	A9P1-C-18-5-2-R			
		0"-12"	A9P1-C-18-5-2-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
18 (cont.)	18-6A	0"-12"	A9P1-C-18-6-2-V	ARCHIVE	1352114.98	482763.47
		12"-36"	A9P1-C-18-6-3-RM	TAL A		
		12"-36"	A9P1-C-18-6-3-R			
		12"-36"	A9P1-C-18-6-3-P			
	18-7	0"-12"	A9P1-C-18-7-2-RM	TAL A	1352152.33	482737.31
		0"-12"	A9P1-C-18-7-2-R			
		0"-12"	A9P1-C-18-7-2-P			
	18-8	0"-12"	A9P1-C-18-8-2-RM	TAL A	1352219.54	482754.95
		0"-12"	A9P1-C-18-8-2-R			
		0"-12"	A9P1-C-18-8-2-P			
	18-9	0"-12"	A9P1-C-18-9-2-RM	TAL A	1352051.19	482704.2
		0"-12"	A9P1-C-18-9-2-R			
		0"-12"	A9P1-C-18-9-2-P			
	18-10	0"-12"	A9P1-C-18-10-2-RM	TAL A	1352113.95	482703.08
		0"-12"	A9P1-C-18-10-2-R			
		0"-12"	A9P1-C-18-10-2-P			
	18-11A	0"-12"	A9P1-C-18-11-2-V	ARCHIVE	1352187.86	482726.17
		12"-36"	A9P1-C-18-11-3-RM	TAL A		
		12"-36"	A9P1-C-18-11-3-R			
		12"-36"	A9P1-C-18-11-3-P			
	18-12	0"-12"	A9P1-C-18-12-2-RM	TAL A	1352228.58	482693.64
		0"-12"	A9P1-C-18-12-2-R			
		0"-12"	A9P1-C-18-12-2-P			
	18-13D	0"-12"	A9P1-C-18-13-2-RM	TAL A	1352025.23	482661.55
		0"-12"	A9P1-C-18-13-2-R			
		0"-12"	A9P1-C-18-13-2-P			
		0"-12"	A9P1-C-18-13-2-RM-D	TAL A	1352025.23	482661.55
		0"-12"	A9P1-C-18-13-2-R-D			
		0"-12"	A9P1-C-18-13-2-P-D			
	18-14	0"-12"	A9P1-C-18-14-2-RM	TAL A	1352133.05	482670.78
		0"-12"	A9P1-C-18-14-2-R			
		0"-12"	A9P1-C-18-14-2-P			
	18-15A	0"-12"	A9P1-C-18-15-2-V	ARCHIVE	1352169.14	482647.47
		12"-36"	A9P1-C-18-15-3-RM	TAL A		
		12"-36"	A9P1-C-18-15-3-R			
		12"-36"	A9P1-C-18-15-3-P			
	18-16	0"-12"	A9P1-C-18-16-2-RM	TAL A	1352259.1	482647.02
		0"-12"	A9P1-C-18-16-2-R			
		0"-12"	A9P1-C-18-16-2-P			
19	19-1A	0"-12"	A9P1-C-19-1-2-V	ARCHIVE	1352087.16	483018.01
		12"-36"	A9P1-C-19-1-3-RM	TAL A		
		12"-36"	A9P1-C-19-1-3-R			
		12"-36"	A9P1-C-19-1-3-P			
	19-2D	0"-12"	A9P1-C-19-2-2-RM	TAL A	1352142.07	483022.22
		0"-12"	A9P1-C-19-2-2-R			
		0"-12"	A9P1-C-19-2-2-P			
		0"-12"	A9P1-C-19-2-2-RM-D	TAL A	1352142.07	483022.22
		0"-12"	A9P1-C-19-2-2-R-D			
		0"-12"	A9P1-C-19-2-2-P-D			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
19 (cont.)	19-3	0"-12"	A9P1-C-19-3-2-RM	TAL A	1352184.32	483010.4
		0"-12"	A9P1-C-19-3-2-R			
		0"-12"	A9P1-C-19-3-2-P			
	19-4	0"-12"	A9P1-C-19-4-2-RM	TAL A	1352273.84	483002.68
		0"-12"	A9P1-C-19-4-2-R			
		0"-12"	A9P1-C-19-4-2-P			
	19-5	0"-12"	A9P1-C-19-5-2-RM	TAL A	1352053.96	482947.49
		0"-12"	A9P1-C-19-5-2-R			
		0"-12"	A9P1-C-19-5-2-P			
	19-6	0"-12"	A9P1-C-19-6-2-RM	TAL A	1352121.97	482964.9
		0"-12"	A9P1-C-19-6-2-R			
		0"-12"	A9P1-C-19-6-2-P			
	19-7A	0"-12"	A9P1-C-19-7-2-V	ARCHIVE	1352212.24	482982.88
		12"-36"	A9P1-C-19-7-3-RM	TAL A		
		12"-36"	A9P1-C-19-7-3-R			
		12"-36"	A9P1-C-19-7-3-P			
	19-8	0"-12"	A9P1-C-19-8-2-RM	TAL A	1352295.94	482974.02
		0"-12"	A9P1-C-19-8-2-R			
		0"-12"	A9P1-C-19-8-2-P			
	19-9	0"-12"	A9P1-C-19-9-2-RM	TAL A	1352035.79	482896.64
		0"-12"	A9P1-C-19-9-2-R			
		0"-12"	A9P1-C-19-9-2-P			
	19-10	0"-12"	A9P1-C-19-10-2-RM	TAL A	1352116.97	482917.47
		0"-12"	A9P1-C-19-10-2-R			
		0"-12"	A9P1-C-19-10-2-P			
	19-11A	0"-12"	A9P1-C-19-11-2-V	ARCHIVE	1352203.89	482916.11
		12"-36"	A9P1-C-19-11-3-RM	TAL A		
		12"-36"	A9P1-C-19-11-3-R			
		12"-36"	A9P1-C-19-11-3-P			
	19-12	0"-12"	A9P1-C-19-12-2-RM	TAL A	1352251.97	482926.7
		0"-12"	A9P1-C-19-12-2-R			
		0"-12"	A9P1-C-19-12-2-P			
	19-13	0"-12"	A9P1-C-19-13-2-RM	TAL A	1352030.69	482862.64
		0"-12"	A9P1-C-19-13-2-R			
		0"-12"	A9P1-C-19-13-2-P			
	19-14A	0"-12"	A9P1-C-19-14-2-V	ARCHIVE	1352115.02	482850.25
		12"-36"	A9P1-C-19-14-3-RM	TAL A		
		12"-36"	A9P1-C-19-14-3-R			
		12"-36"	A9P1-C-19-14-3-P			
	19-15	0"-12"	A9P1-C-19-15-2-RM	TAL A	1352163.09	482872.09
		0"-12"	A9P1-C-19-15-2-R			
		0"-12"	A9P1-C-19-15-2-P			
	19-16	0"-12"	A9P1-C-19-16-2-RM	TAL A	1352277.62	482879.84
		0"-12"	A9P1-C-19-16-2-R			
		0"-12"	A9P1-C-19-16-2-P			

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CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
20	20-1D	0"-12"	A9P1-C-20-1-2-RM	TAL A	1352064.76	483273.45
		0"-12"	A9P1-C-20-1-2-R			
		0"-12"	A9P1-C-20-1-2-P			
		12"-36"	A9P1-C-20-1-3-RM-D	TAL A	1352064.76	483273.45
		12"-36"	A9P1-C-20-1-3-R-D			
		12"-36"	A9P1-C-20-1-3-P-D			
	20-2	0"-12"	A9P1-C-20-2-2-RM	TAL A	1352171.35	483230.25
		0"-12"	A9P1-C-20-2-2-R			
		0"-12"	A9P1-C-20-2-2-P			
	20-3	0"-12"	A9P1-C-20-3-2-RM	TAL A	1352225.99	483244.47
		0"-12"	A9P1-C-20-3-2-R			
		0"-12"	A9P1-C-20-3-2-P			
	20-4A	0"-12"	A9P1-C-20-4-2-V	ARCHIVE	1352297.19	483220.14
		12"-36"	A9P1-C-20-4-3-RM	TAL A		
		12"-36"	A9P1-C-20-4-3-R			
		12"-36"	A9P1-C-20-4-3-P			
	20-5	0"-12"	A9P1-C-20-5-2-RM	TAL A	1352089.24	483206.58
		0"-12"	A9P1-C-20-5-2-R			
		0"-12"	A9P1-C-20-5-2-P			
	20-6A	0"-12"	A9P1-C-20-6-2-V	ARCHIVE	1352140.33	483188.73
		12"-36"	A9P1-C-20-6-3-RM	TAL A		
		12"-36"	A9P1-C-20-6-3-R			
		12"-36"	A9P1-C-20-6-3-P			
	20-7	0"-12"	A9P1-C-20-7-2-RM	TAL A	1352243.77	483194.2
		0"-12"	A9P1-C-20-7-2-R			
		0"-12"	A9P1-C-20-7-2-P			
	20-8	0"-12"	A9P1-C-20-8-2-RM	TAL A	1352297.45	483161.8
		0"-12"	A9P1-C-20-8-2-R			
		0"-12"	A9P1-C-20-8-2-P			
	20-9	0"-12"	A9P1-C-20-9-2-RM	TAL A	1352062.85	483118.2
		0"-12"	A9P1-C-20-9-2-R			
		0"-12"	A9P1-C-20-9-2-P			
	20-10	0"-12"	A9P1-C-20-10-2-RM	TAL A	1352149.23	483129.36
		0"-12"	A9P1-C-20-10-2-R			
		0"-12"	A9P1-C-20-10-2-P			
	20-11	0"-12"	A9P1-C-20-11-2-RM	TAL A	1352220.79	483123.46
		0"-12"	A9P1-C-20-11-2-R			
		0"-12"	A9P1-C-20-11-2-P			
	20-12A	0"-12"	A9P1-C-20-12-2-V	ARCHIVE	1352267.18	483099.58
		12"-36"	A9P1-C-20-12-3-RM	TAL A		
		12"-36"	A9P1-C-20-12-3-R			
		12"-36"	A9P1-C-20-12-3-P			
	20-13	0"-12"	A9P1-C-20-13-2-RM	TAL A	1352050.95	483069.18
		0"-12"	A9P1-C-20-13-2-R			
		0"-12"	A9P1-C-20-13-2-P			
	20-14A	0"-12"	A9P1-C-20-14-2-V	ARCHIVE	1352163.12	483069.99
		12"-36"	A9P1-C-20-14-3-RM	TAL A		
		12"-36"	A9P1-C-20-14-3-R			
		12"-36"	A9P1-C-20-14-3-P			

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION ID	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
20 (cont.)	20-15	0"-12"	A9P1-C-20-15-2-RM	TAL A	1352218.94	483050.89
		0"-12"	A9P1-C-20-15-2-R			
		0"-12"	A9P1-C-20-15-2-P			
	20-16	0"-12"	A9P1-C-20-16-2-RM	TAL A	1352266.04	483056.47
		0"-12"	A9P1-C-20-16-2-R			
		0"-12"	A9P1-C-20-16-2-P			

v:*2fm12*dgn*bmp*offsite_cu3.dgn

1351500 1352000 1352500 1353000

483500 483000 482500 482000 481500 481000

N

3451

Note: A = Archive Sample
D = Duplicate Sample

LEGEND:

A9P1 CU BOUNDARIES

A9P1 SUB CU BOUNDARIES

CU # / SAMPLE # — SAMPLE LOCATION

DRAFT

SCALE
150 75 0 150 FEET

000058

3451

STATE PLANAR COORDINATE SYSTEM 1983

18-JAN-2001

FIGURE 2-1. A9P1 CU & SUB CU BOUNDARIES & CERTIFICATION SAMPLING LOCATIONS