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LONG-TERM MONITORING EVENT SPRING 2000

IOWA ARMY AMMUNITION PLANT (IAAAP)
Middletown, Iowa

WORK PLAN ADDENDUM

Prepared for:



U.S. ARMY CORPS OF ENGINEERS
Omaha District

Prepared by:

HARZA ENGINEERING COMPANY

April 2000

5421

WORK PLAN ADDENDUM

**LONG-TERM MONITORING EVENT,
SPRING 2000**

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U. S. Army Corps of Engineers
Omaha District

By

HARZA
Engineering Company

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1.0 WORK PLAN ADDENDUM

1.1 Introduction

1.1.1 Background

This Work Plan (WP) Addendum was prepared by Harza Engineering Company (Harza) for the U.S. Army Corps of Engineers, Omaha District (USACE) in accordance with Modification 001 to Delivery Order No. 0016 of Contract No. DACW45-94-D-0044.

The Addendum amends WP documents prepared previously by Harza for similar projects at IAAAP, which had been reviewed and approved by USACE and the U.S. Environmental Protection Agency, Region VII (USEPA). Field methods are incorporated by reference to the approved WP and SAP for supplemental remedial investigation at the Line 800/Pink Water Lagoon¹. Laboratory procedures are incorporated by reference to the approved WP and SAP for remedial investigation at the off-site operable unit². The detailed scope of the planned LTM program addressed herein also is provided in the Monitoring Well Management Plan (MWMP)³. This Addendum also addresses a change in the contract laboratory from Katalyst Analytical Technologies, Inc. (KAT/PDC) to Severn Trent Laboratories, Inc. (STL) of University Park, Illinois. Modifications to the SAP for the LTM groundwater monitoring as well as Off-site Groundwater Investigation and Ecological Assessment Sampling at IAAAP are provided in Appendix A.

This revised Addendum for the Spring 2000 sampling event is organized in accordance with major headings of the previously approved WP and WP Addendum⁴. It is intended to be used in conjunction with the Quality Assurance Project Plan (QAPP) Addendum (Part 2), Field Sampling Plan (FSP) Addendum (Part 2), and Site Safety and Health Plan (SSHP) Addendum (Part 3).

¹ Harza Engineering Company, Inc. 1998: Work Plan, Supplemental Remedial Investigation Line 800/Pink Water Lagoon, Iowa Army Ammunition Plant, Middletown, Iowa. July, 1998.

² Harza Engineering Company, Inc. 1999: Work Plan, Off-Site Groundwater Investigation (OU3), Iowa Army Ammunition Plant, Middletown, Iowa. June, 1999.

³ Harza Engineering Company, Inc. 1999: Monitoring Well Management Plan, Iowa Army Ammunition Plant, Middletown, Iowa. September, 1999.

⁴ Harza Engineering Company, Inc. 1999: Work Plan Addendum, Long Term Monitoring Events-Fall 1999 and Spring 2000, Iowa Army Ammunition Plant, Middletown, Iowa. November.

1.1.2 Site Location

The location and boundaries of the IAAAP are discussed in Section 1.2 of the previously approved WP and WP Addendum. Activities covered in this revised Addendum are located throughout the IAAAP property as previously detailed in the MWMP.

1.1.3 Site History And Conditions

Site History and Conditions are discussed in Section 1.3 of the approved WP.

1.2 General Requirements

Harza and its subcontractors will adhere to the general requirements for security regulations, permits and licenses, protection of existing structures and utilities, cleanup, safety, and decontamination as delineated in Section 2.0 of the approved WP. These requirements are incorporated herein in their entirety except reference to Mason and Hanger is replaced with American Ordnance.

1.3 Scope of the Project

The project addressed in this Addendum consists of the following principal tasks:

1. Preparation and submittal of this WP Addendum.
2. Drilling, construction, and development of two (2) new monitoring wells at Line 5a/5b.
3. Spring 2000 sampling of new and selected existing wells
4. Rain event surface water samples.

Following completion of the field and laboratory activities, a facility-wide LTM Plan will be prepared as the principal project deliverable. The LTM Plan will guide future LTM at the IAAAP and will be a dynamic document, subject to modification as needs evolve.

The purpose, background and general scope of each field task are outlined in the following paragraphs.

1.3.1 New Monitoring Wells

Two (2) new monitoring wells will be installed to address identified gaps in the existing monitoring networks at Line 5a/5b. New well locations and planned depths are summarized in

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Table 1. Each well will be installed to confirm the presence of groundwater contamination within a completed soil removal area. New well locations will be provided by USACE-Omaha District. Final locations will be selected in the field by the site Geologist based on access and surface conditions encountered. Final well depths will be selected in the field by the Site Geologist based on subsurface conditions encountered.

| Area | Well No. | Comment | Action | Approx. Depth |
|------------|----------|--|--------------------------|---------------|
| Line 5a/5b | 5a-MW1 | Install well in area with the potential for the highest contamination. | Install upper till well. | 20 |
| | 5b-MW1 | Install well in area with the potential for the highest contamination. | Install upper till well. | 20 |

1.3.2 Spring 2000 LTM Event

Sample quantities and parameters completed for the Fall 1999 LTM event and estimated sample parameters and quantities for the Spring 2000 LTM event are summarized in Table 2 for the different site areas.

| Area | Fall 1999 Sampling Event | | Spring 2000 Sampling Event | |
|--------------------------------------|--------------------------|--|----------------------------|---|
| | Number of Samples | Parameters | Number of Samples | Parameters |
| East Burn Pads | 13 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Gross Alpha/Beta ^a , Natural Attenuation ^a | 14 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Perchlorates ^b |
| North Burn Pads | 2 | Explosives, 8 RCRA Metals, Gross Alpha/Beta ^a , Natural Attenuation ¹ | 4 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| North Burn Pads Landfill | 3 | Explosives, 8 RCRA Metals, Gross Alpha/Beta ^a , Natural Attenuation ¹ | 3 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| West Burn Pads | 11 | Explosives, 8 RCRA Metals, Gross Alpha/Beta ^a , Natural Attenuation ¹ | 12 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| Fire Training Area | 11 | Explosives, 8 RCRA Metals, VOCs, Gross Alpha/Beta ^a , Natural Attenuation ^a , Methane-Ethane-Ethene ^a | 10 | Explosives, 8 RCRA Metals, VOCs, Perchlorates ^b |
| Ammunition Box Chipper Disposal Area | 1 | Explosives, 8 RCRA Metals, SVOCs, Natural Attenuation ^a | 0 | Fall 1999 results confirm previous results. No sampling in Spring 2000 event. |
| Line 1 | 11 | Explosives, 8 RCRA Metals, Gross Alpha/Beta ^a , Natural Attenuation ¹ | 11 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| Line 2 | 17 | Explosives, 8 RCRA Metals, Natural Attenuation ^a | 17 | Explosives, 8 RCRA Metals, Perchlorates ^b |

* Closest to IAP

Table 2. Groundwater Sample Locations, Quantities and Analytical Parameters

| Area | Fall 1999 Sampling Event | | Spring 2000 Sampling Event | |
|------------------------------|--------------------------|---|----------------------------|---|
| | Number of Samples | Parameters | Number of Samples | Parameters |
| Line 3 | 11 | Explosives, 8 RCRA Metals, SVOCs, Natural Attenuation ^a | 7 | Explosives, 8 RCRA Metals, SVOCs, Perchlorates ^b |
| Line 9 | 6 | Explosives, VOCs (incl. freon), SVOCs, Natural Attenuation ^a | 0 | Fall 1999 results confirm previous results. No sampling in Spring 2000 event. |
| Inert Disposal Area | 22 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Gross Alpha/Beta ^a | 22 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Perchlorates ^b |
| Firing Site | 5 | 8 RCRA Metals, Gross Alpha/Beta, Uranium (total), Radium 226 (JAW-32 only). | 8 | 8 RCRA Metals, Gross Alpha/Beta, Uranium (total), Radium 226 (JAW-32 only), Perchlorates ^b |
| Line 3A | 6 | Explosives, 8 RCRA Metals, Natural Attenuation ^a | 8 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| Line 4a & 4b | 2 | Explosives, 8 RCRA Metals, VOCs, SVOCs | 2 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Perchlorates ^b |
| Line 5a/5b | 0 | Explosives, 8 RCRA Metals, VOCs, SVOCs | 2 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Perchlorates ^b |
| Pesticide Pit | 0 | 8 RCRA Metals, Pest/PCBs | 1 | 8 RCRA Metals, Pest/PCBs |
| Demolition Area | 2 | Explosives, 8 RCRA Metals, Gross Alpha/Beta ^a | 7 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| Line 800/Pink Water Lagoon | 44 | Explosives, 8 RCRA Metals, VOCs ¹ , Natural Attenuation ^a | 44 | Explosives, 8 RCRA Metals, Perchlorates ^b |
| Construction Debris Landfill | 3 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Pesticides/PCBs, Natural Attenuation ^a | 3 | Explosives, 8 RCRA Metals, VOCs, SVOCs, Pesticides/PCBs, Perchlorates ^b |
| Flyash Landfill | 3 | Explosives, 8 RCRA Metals, VOCs, SVOCs ^a | 0 | Fall 1999 results confirm previous results. No sampling in Spring 2000 event. |
| Plant Boundary/General Area | 23 | Explosives, 8 RCRA Metals, Natural Attenuation ^a | 25 | Explosives, 8 RCRA Metals, Perchlorates ^b |

Some are already in plan. Some sampled are then authorized.

Handwritten note: "Fall 1999 results confirm previous results. No sampling in Spring 2000 event."

Handwritten note: "why? was being closed"

Handwritten note: "one sample is out"

a. First Round only.
b. Subject to final authorization by Army.

ACTUAL

Total

As part of the Spring 2000 LTM event, Perchlorates has been included for select areas. The collection and analysis of the Perchlorate samples is subject to final authorization by the Army and will not be undertaken if not authorized prior to mobilization. At this time, authorization has not been received.

In the Fall 1999 LTM event, several wells were found to be dry or to yield insufficiently to complete the required parameter list after well purging. Another attempt to sample these wells or obtain the additional quantities will be made in the Spring 2000 LTM event. Any samples so collected will be analyzed for the parameters listed for the Spring 2000 event, and for those parameters not analyzed during the first round, Fall 1999 LTM event. The additional parameters are as follows:

- **East Burn Pad** – JAW-04, JAW-05 and EBP-MW1 – collect additional volume for gross alpha/beta and natural attenuation parameters. ✓
- **North Burn Pad** – JAW-12 and JAW-13 – collect additional volume for gross alpha/beta and natural attenuation parameters. ✓
- **West Burn Pad** – JAW-23 and WBP996 – collect additional volume for natural attenuation parameters and gross alpha/beta (JAW-23 only). ?
- **Line 2** – L2-MW1 – collect additional volume for natural attenuation parameters.
- **Line 3A** – JAW-18 and JAW-19 – collect additional volume for natural attenuation parameters.
- **Demolition Area** – JAW-2, G-10, G-11, DA-1 and DA-2 - additional volume for gross alpha/beta and natural attenuation parameters.
- **Plant Boundary Wells** – G-12 – collect additional volume for natural attenuation parameters.

In addition to the Spring 2000 LTM parameter list, three monitoring wells, WBP-99-1, L1-MW1, and IDA-MW1, will also be analyzed for Gross Alpha/Gross Beta to confirm the Fall 1999 LTM analytical results. Both filtered and unfiltered samples will be submitted for Gross Alpha/Gross Beta analysis due to the high turbidity of the Fall 1999 LTM samples.



1.3.3 Surface Water Sampling

Twenty-four (24) rain event surface water samples from Spring and Brush Creek will be collected for analysis concurrent with the Spring 2000 LTM event. The specific timing of these events will depend on weather and will be selected by the Site Geologist. Rain event samples will be collected from three specific locations on an hourly basis over an 8-hour period to further assess contaminant loading in the stream during a rain event. The locations of the rain event surface water samples are summarized in Table 3 and illustrated on Figure 1.

| Table 3. Rain Event Surface Water Sample Locations, Quantities and Analytical Parameters. | | |
|--|---|-----------------------|
| | Sample Location | Analytical Parameters |
| Table 3 Rain Event (a) Surface Water Sample Locations, Quantities and Analytical Parameters | | |
| | Spring Creek – Upstream of bridge at “P” Road | Explosives |
| | Brush Creek – Culvert under “D” Road south of Line 1 | |
| | Brush Creek – Upstream of bridge at “H” Road upstream from treatment Plant. | |

(a) Includes hourly sampling and measurement of stream using a temporary stick gauge for 8-hr period.

1.4 Sequence of Events

The following sequence of events are estimated for the work covered in this Addendum:

- Prepare & submit WP Addendum (herein)
- Mobilization upon approval of WP Addendum
- Drill, install & develop required new monitoring wells (May 2000)

- Field sampling for Spring 2000 LTM event (May 2000)
- Laboratory analysis for Spring 2000 LTM event (May – July, 2000)
- Data Validation for Spring 2000 LTM event (August, 2000)
- Prepare & submit Data Summary Report for Spring 2000 LTM event (September, 2000)

1.5 Reporting

The primary deliverable for this project will be a LTM Plan designed as a dynamic document to guide future LTM at the site. The LTM Plan will be based on the Fall 1999 and Spring 2000 LTM results and will be organized in accordance with appropriate EPA guidance to be determined jointly with USACE, IAAAP, and USEPA. It will address sampling and laboratory activities and procedures and data reduction and reporting requirements.

Other reporting requirements will include applicable elements identified in Section 5.0 of the approved WP.

2.0 QAPP ADDENDUM

This section amends the QAPP prepared for off-site groundwater investigations at IAAAP, as approved by USEPA, to the extent applicable to the project scope. Each QAPP element is incorporated as noted, except as specifically delineated in the following paragraphs. The QAPP Addendum also incorporates a change in contract laboratories from Katalyst Analytical Technologies, Inc. (KAT/PDC) to Severn Trent Laboratories, Inc. (STL) of University Park, Illinois. Modifications to the SAP for the LTM Groundwater Monitoring as well as Off-site Groundwater Investigation and Ecological Assessment Sampling at IAAAP is provided in Appendix A.

2.1 Introduction

Section 1.0 of the approved QAPP is incorporated by reference in this QAPP Addendum.

2.2 Project Summary

Section 2.0 of the approved QAPP is hereby amended. This QAPP Addendum presents sampling, analysis, and QA/QC protocols and associated activities for the Spring 2000 LTM sampling event at IAAAP. The primary objective of this work effort is to initiate the process of comprehensive, basewide groundwater and surface water monitoring at IAAAP leading to preparation of a continuing LTM Plan.

Field Activities:

- Drill, install, and develop two (2) monitoring wells at Line 5a/5b.
- Survey the new wells.
- Conduct geotechnical testing on soil samples from the new wells.
- Collect groundwater samples during Spring 2000 LTM sampling event, in accordance with Section 3.0.
- Collect 24 rain event surface water samples concurrent with the Spring 2000 sampling event.

Data Collection Activities:

- Obtain grain size distribution and Atterberg limits of soil samples submitted for geotechnical analysis from the new well borings of till wells.
- Analyze groundwater samples from multiple wells across the IAAAP for various parameters as delineated in this Addendum.

- Analyze rain event surface water samples from locations along Brush and Spring Creeks for explosive parameters.
- Obtain the elevation and location coordinates for the two new monitoring wells.

2.3 Project Organization and Responsibility

Section 3.0 of the approved QAPP is incorporated by reference in this QAPP Addendum.

2.4 Quality Assurance Objectives

Section 4.0 of the approved QAPP is incorporated by reference in this QAPP Addendum. The fixed laboratory has been changed from Katalyst/PDC to Severn Trent Laboratories (STL), Inc. of University Park, Illinois. STL is required to produce data that meets the goals set forth in Section 4.2 of the QAPP. Modifications to the SAP are provided in Appendix A.

2.5 Sampling Locations and Procedures

Field and laboratory activities addressed in this QAPP Addendum will include sampling and analysis of environmental media including groundwater and surface water. Specific sample locations and collection procedures are discussed in Sections 3.4 and 3.5 of the FSP Addendum. Target analytes and analytical methods are discussed in Section 2.8 of this QAPP Addendum and modifications to the SAP required by the laboratory change are provided in Appendix A.

2.5.1. Soil Sampling

No soil samples for chemical analysis will be collected during this site investigation. However, in the planned new monitoring well borings, soil samples for visual field classification and selected samples for laboratory geotechnical testing will be collected as delineated in Section 3.5 of the FSP Addendum.

2.5.2. Sediment Sampling

No sediment samples will be collected for analysis during the LTM program.

2.5.3. Surface Water Sampling

Twenty-four (24) rain event surface water samples will be collected from locations on Spring and Brush Creeks. Specific locations and frequency are provided in Section 3.4.1 of the FSP

Addendum. Surface water sampling procedures are provided in Section 3.5.4 of the FSP Addendum.

2.5.4. Groundwater Sampling

New and existing monitoring wells will be sampled for chemical analysis in the Spring 2000 LTM as delineated in Section 3.4.1 of the FSP Addendum. Upon completion of the Fall 1999 sampling and analysis, requirements for the Spring 2000 event were reviewed and a QAPP Addendum was prepared addressing the new fixed laboratory (STL), delineating specific sample quantities and locations for that event. Groundwater sampling procedures are provided in Section 3.5.4 of the FSP Addendum.

2.6 Sample And Document Custody Procedures

Section 6.0 of the approved QAPP is incorporated by reference in this QAPP Addendum.

2.7 Calibration Procedures

Section 7.0 of the approved QAPP is incorporated by reference in this QAPP Addendum.

2.8 Analytical Methods and Procedures

Section 8.0 of the approved QAPP is incorporated by reference in this QAPP Addendum, except as follows:

- The analytical methods reference standard EPA methods from Test Methods for Evaluating Solid Waste, SW846 (EPA 1994) and Methods for Chemical Analysis of Water and Wastes (USEPA, 1983), except as noted. Modifications to the SAP required by the laboratory change for the Spring 2000 LTM sampling event are provided in Appendix A.

2.9 Quality Control Checks

Section 9.0 of the approved QAPP is incorporated by reference in this QAPP Addendum except as follows:

- Internal (laboratory) QC samples for target analytes for STL are the same as listed in Table 9-1 of the approved QAPP.
- Internal (laboratory) QC samples for perchlorates are provided in Appendix A.

2.10 Data Validation, Reduction, and Reporting

Section 10.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

2.11 Performance and System Audits

Section 11.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

2.12 Preventive Maintenance Procedures

Section 12.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

2.13 QA/QC Assessment of Chemical Data

Section 13.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

2.14 Corrective Actions

Section 14.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

2.15 Quality Assurance Reports to Management

Section 15.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

2.16 References

Section 16.0 or the approved QAPP is incorporated by reference in this QAPP Addendum.

3.0 FSP ADDENDUM

This Addendum amends the FSP prepared for supplemental remedial investigation at the Line 800 / Pink Water Lagoon site and the WP Addendum for the Fall 1999 sampling event at IAAAP, as previously referenced, which was prepared by Harza and approved by USEPA. Provisions of the approved FSP/WP Addendum are incorporated by reference in this Addendum to the extent applicable to the project scope and except as delineated herein.

3.1 Introduction

Section 1.0 of the approved FSP is amended as follows.

3.1.1 General

The purpose of this FSP Addendum is to describe field sampling and associated activities that will be conducted during new well installation and the second round of basewide LTM at the IAAAP.

The general types of field and laboratory activities to be performed are as follows:

- Drilling, installation, and development of new monitoring wells
- Groundwater sampling from monitoring wells
- Surface water sampling from streams to profile conditions during a rain event
- Laboratory chemical analysis of water samples
- Laboratory geotechnical testing of soil samples from new well borings
- Surveying new monitoring wells
- IDW management
- Equipment decontamination

Project objectives are to implement basewide groundwater monitoring and obtain data needed to develop a LTM Plan. The LTM Plan will be the primary deliverable from the project and will be developed as a dynamic document to guide future LTM at the IAAAP.

This FSP Addendum presents field and laboratory activities associated with the LTM project. The WP Addendum is provided in Section 1.0, the QAPP Addendum in Section 2.0 and the SSHP Addendum in Section 4.0.

3.1.2 FSP Preparation Guidelines

Section 1.2 of the approved FSP is incorporated by reference in this FSP Addendum, except for additional document references, as follows:

- *Harza Engineering Company, Inc. 1998: Work Plan, Supplemental Remedial Investigation Line 800/Pink Water Lagoon, Iowa Army Ammunition Plant, Middletown, Iowa. July.*
- *Harza Engineering Company, Inc. 1999: Work Plan, Off-Site Groundwater Investigation (OU3), Iowa Army Ammunition Plant, Middletown, Iowa. June.*
- *Harza Engineering Company, Inc. 1999: Monitoring Well Management Plan, Iowa Army Ammunition Plant, Middletown, Iowa. September.*
- *Harza Engineering Company, Inc. 1999: Work Plan Addendum, Long Term Monitoring Events – Fall 1999 and Spring 2000, Iowa Army Ammunition Plant, Middletown, Iowa. November.*

3.2 Project Description

Section 2.0 of the approved FSP is incorporated by reference in this FSP Addendum to the extent applicable to the LTM scope.

3.3 Project Organization and Responsibilities

Section 3.0 of the approved FSP is incorporated by reference in this FSP Addendum.

3.4 Task Specific Field Activities

Section 4.0 of the approved FSP is amended as indicated in this section. Project activities will include the following:

- Drilling and installation of new monitoring wells
- Groundwater sampling from monitoring wells
- Surface water sampling
- Laboratory chemical analysis of water samples
- Laboratory geotechnical testing of soil samples from new well borings
- Surveying new monitoring wells
- IDW management
- Equipment decontamination

Field procedures are discussed in Section 3.5 of this FSP Addendum. Methods for sample preservation, labeling, and chain-of-custody are provided in the QAPP Addendum. Field

decontamination, documentation of field activities, and IDW management are discussed in Sections 4.6, 4.7, and 4.8 of this FSP Addendum, respectively.

3.4.1. Field Program

Monitoring Well Locations, Depths and Construction

Two (2) new monitoring wells, 5a-MW1 and 5b-MW1, will be installed at Line 5a/5b. These shallow till wells will be permanently installed to confirm the presence of groundwater contamination within the soil removal areas of Line 5a/5b. General well locations were discussed during the March 1, 2000 meeting at IAAAP between USACE, EPA, Army and Harza. Initial location of the proposed wells will be provided on a map by USACE prior to mobilization. Final locations will be selected in the field by the Site Geologist based on access and surface conditions encountered. Wells are planned to be upper till wells with approximate depths of 20 feet below ground surface. Final well depths will be selected in the field by the Site Geologist, based on subsurface conditions encountered, to achieve the well objectives.

As defined in the approved FSP, Section 5.3.3 Well Construction, monitoring wells will be installed using 4¼-inch inside diameter (ID) hollow stem augers. The monitoring wells will be constructed inside the hollow stem augers, which will serve as a temporary casing. Both of the wells will be constructed using 2-inch ID, 10-foot total length, schedule 40, PVC V-wire, continuous wrap, screen with 0.010 inch slot size. Riser pipe sections will consist of 2-inch ID schedule 40 PVC. Joints will be flush threaded. Adhesives or solvents will not be used to join casing sections. The filter pack shall consist of washed, No. 40 silica sand and will extend from the bottom of the screen to 2 feet above the screen. A thick bentonite seal, minimum of 2 feet, shall be placed above the filter pack and hydrated before grouting. Monitoring wells will be protected by lockable steel outer casings rising 2 to 3 feet above the ground surface. The covers will be cemented into place with a 3-foot by 3-foot wide, 8 to 12 inch thick concrete pads. Well locks will be compatible with locks used elsewhere at IAAAP. Three 2-inch diameter steel bumper posts will be equally spaced around the well and cemented into place outside the concrete pad.

Groundwater Sampling

For the Spring 2000 LTM event, groundwater samples will be collected and analyzed in accordance with the MWMP, and based on results of the Fall 1999 sampling event. This FSP Addendum has been issued to delineate the specific scope of the Spring 2000 LTM activities. Appendix B contains the Spring 2000 LTM sample quantities and parameters.

Surface Water Sampling

A total of twenty-four (24) rain event surface water samples will be collected concurrent with the Spring 2000 LTM event. Samples will be collected from three specific locations along Brush and Spring Creeks on an hourly basis over an 8-hour period to further assess contaminant loading in the streams during a rain event. Sample locations and analytical parameters were summarized in Table 3. Approximate locations were shown on Figure 1 and will be finalized in the field based on conditions encountered.

Surveying

The new monitoring wells will be surveyed for location and elevation.

3.4.2. Laboratory Program

Laboratory analysis of samples will be performed by Severn Trent Laboratories, Inc. (STL) of University Park, Illinois. STL is currently certified by the USACE Chemical Quality Assurance Branch (CQAB) Laboratory. Modifications to the SAP required by the laboratory change, including reporting limit and QA/QC limits, are provided in Appendix A.

Required groundwater sample quantities and analytical parameters for the Spring 2000 LTM event are detailed in Appendix B, LTM Sample Quantities and Parameters by Site, Round 2. For comparison purposes, the completed Fall 1999 LTM Sample Quantities is provided in Appendix C. Sample quantities for the Spring 2000 sample event are summarized in Table 5 for groundwater and Table 6 for surface water, including the number and percent requirement for duplicate samples (dupes), matrix spikes/matrix spike duplicates (MS/MSDs), rinseate blanks (RBs), trip blanks (TBs) and Quality Assurance (QA) samples to be provided to the USACE Laboratory, CQAB.

| Parameters | # of Samples | CQAB (5%) | Dupes (5%) | MS/MSD (5%) | RB (5%) | TB |
|------------------------|--------------|-----------|------------|-------------|---------|----|
| Explosives | 195 | 10 | 10 | 10 | 10 | |
| 8 RCRA Metals | 204 | 11 | 11 | 11 | 11 | |
| VOCs | 53 | 3 | 3 | 3 | 3 | 10 |
| SVOCs | 54 | 3 | 3 | 3 | 3 | |
| Gross Alpha/Gross Beta | 20 | 1 | 1 | 1 | 1 | |
| Uranium (metal) | 8 | 1 | 1 | 1 | 1 | |
| Radium 226 | 1 | 1 | 1 | 1 | 1 | |
| Pesticides/PCBs | 4 | 1 | 1 | 1 | 1 | |

*Drainage
All xcel
@ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100*

| Parameters | # of Samples | CQAB (5%) | Dupes (5%) | MS/MSD (5%) | RB (5%) | TB |
|----------------------------|--------------|-----------|------------|-------------|---------|----|
| Perchlorate ^(a) | 197 | 10 | 10 | 10 | 10 | |
| Natural Attenuation | 25 | 2 | 2 | 2 | 2 | |

(a) Collection subject to authorization by the Army.

QA samples sent to CQAB will reference LIMS# 5967. Individual wells to be sampled and specific analytical parameters are detailed in Appendix B. Laboratory methods will be in accordance with the approved QAPP prepared for off-site groundwater remedial investigation, as cited previously in this Addendum, and also detailed in the MWMP.

| Parameters | # of Samples | CQAB (5%) | Dup (5%) | MS/MSD (5%) | RB (5%) | TB |
|------------|--------------|-----------|----------|-------------|---------|----|
| Explosives | 24 | 2 | 2 | 2 | 2 | 0 |

3.5 Field Methods

Applicable portions of Section 5.0 of the approved FSP are incorporated by reference in this FSP Addendum except as follows:

- Table 5-1 of the approved FSP is replaced with Table 1 of this FSP Addendum to describe new monitoring well locations and objectives.
- Section 5.4 of the approved FSP is herein amended to note many existing wells at IAAAP have dedicated QED sampling pumps. Existing dedicated pumps will be used for these wells instead of the Grundfos Redi-flo 2 pump. The QED pumps and controller will be operated in accordance with manufacturer's instructions. Other sampling procedures remain unchanged.
- Section 5.4 of the approved FSP is herein amended to note the submittal of filtered and non-filtered Gross Alpha/Gross Beta samples for monitoring wells WBP-99-1, L1-MW1 and IDA-MW1. Sample collection will be performed in accordance with Section 5.4 of the FSP referenced previously, except the filtered groundwater samples for Gross Alpha/Gross Beta collected from wells WBP-99-1, L1-MW1 and IDA-MW1. Field filtration will be used to remove any solids collected with the water sample.
 - Samples not requiring filtration will be filled directly from the pump discharge/bailer into appropriate labeled laboratory prepared sample containers.
 - Analytes that require field filtration will use a new 0.45 micron disposable filter for each sample.
 - Do not preserve the sample until after filtration has been completed.
 - Where possible, an in-line filter and pump will be used to collect the sample.

- Each sample bottle will be labeled and preserved as necessary, and packaged for shipment to the analytical laboratory.
- Non-disposable field filtration equipment will be decontaminated prior to each use by flushing with distilled water. Manufacturer's specifications for use and operation of the filtering system will be followed.
- Used disposable field filtration equipment (filters, tubing and non-preserved sample jars) will be disposed with used PPE, bagged and disposed as municipal trash.
- Section 5.4.2 of the approved FSP is amended herein to reflect the scope of this LTM project as outlined in Section 3.4.1 of this FSP Addendum.
- Table 5-2 of the approved FSP is replaced with Tables 5 and 6 of this FSP Addendum to delineate groundwater and surface water sample quantities, analytical parameters, and QA/QC samples, respectively.
- Table 5-3 of the approved FSP is supplemented by information in Section 2.8 of the QAPP Addendum to address sample preservation, containers and holding times for additional parameters.
- Rain event surface water sampling will be performed in accordance with Section 5.6.2 of the FSP approved for Off-Site Groundwater Investigations and the WP Addendum, as referenced previously, except samples will be collected on an hourly basis for eight hours during a rain event at the previously identified locations. During the collection of the surface water samples, measurement of the stream rise will be made from a temporary stick gauge.
 - The weather forecast will be monitored daily to identify rain producing storms (> 1 inch) for the area.
 - Temporary stick gauges use for water level measurement will be placed at each of the sample collection points. Initial measurements will be collected prior to any storm event.
 - Water levels in the creek will be observed to determine if surface runoff from the storm is affecting the water level of the creek. Storms may not produce enough water for surface drainage to occur. The rain may be totally absorbed into the ground with no surface drainage flowing into the creek. Therefore, the water levels will be checked during the storm and approximately 15 to 30 minutes into the storm and compared with the initial measurements.
 - If the water level is increasing, surface water samples will be collected at 1 hour intervals for a total of 8 hours at each of the specified locations in Table 3.
 - During the 8-hr sample collection activities, the water level of the creek will be measured and documented.
 - Surface water sampling will be performed in accordance with section 5.6.2 of the FSP approved for Off-site Groundwater Investigation, as referenced previously and modified in the Work Plan Addendum, LTM Events, Fall 1999.

3.6 Field Decontamination Procedures

Section 6.0 of the approved FSP is incorporated by reference in this FSP Addendum.

3.7 Documentation of Field Activities

Section 7.0 of the approved FSP is incorporated by reference in this FSP Addendum.

3.8 Investigation Derived Waste Management

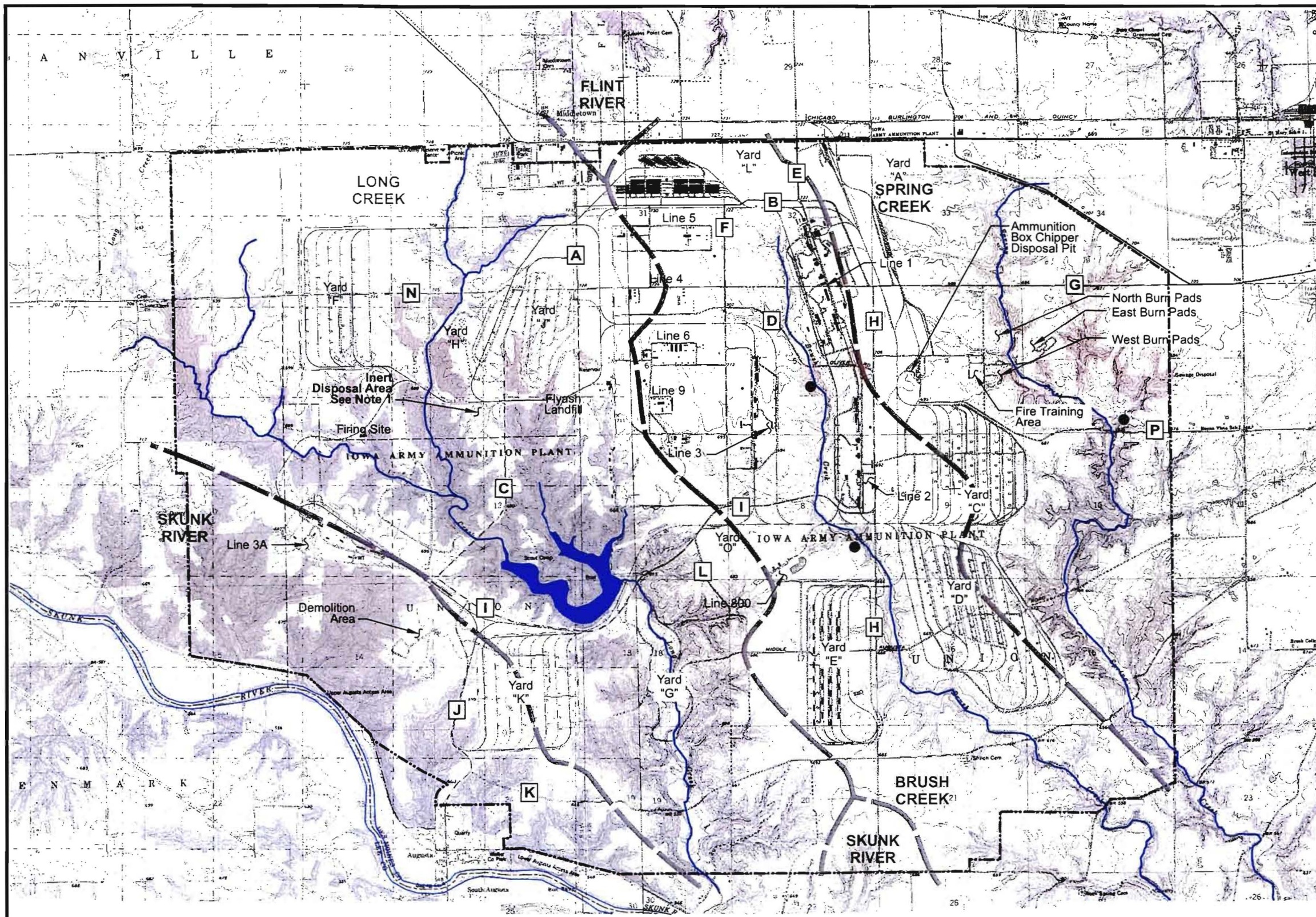
Section 8.0 of the approved FSP is incorporated by reference in this FSP Addendum.

4.0 SSHP ADDENDUM

The Site Safety and Health Plan prepared for Supplemental Remedial Investigation, Line 800/Pink Water Lagoon (Harza, 1999) and approved by USACE, USEPA and IAAAP is incorporated by reference into this SSHP Addendum to the extent applicable to the LTM scope of work and except where amended herein, as follows.

- The scope of work in Section 1.2 of the approved SSHP is amended to reflect the current scope, as delineated in the FSP Addendum.
- Section 2.1.3 of the approved SSHP is amended to incorporate site background information applicable to the LTM program as provided in the MWMP.
- Section 2.1.5 of the approved SSHP is amended to require 2-way radios or cellular telephones to be provided to the Site Manager and sampling team leaders when working in remote areas of the plant.
- Table 2-1 of Section 2.2 of the approved SSHP is replaced by information on chemicals exceeding PRGs presented in the MWMP.
- Section 2.3 of the approved SSHP is amended herein to add references and reports as provided in Section 1.0 of the WP Addendum and Section 3.1.2 of the QAPP Addendum.
- Section 5.6 of the approved SSHP is amended herein to include the use of a Geiger Mueller counter or ionization chamber that reads in mrem/hr to monitor the radiation levels during the purging and sample collection activities at three specific wells which had high Gross Alpha/Gross Beta concentrations in the groundwater samples. The work site will be continuously monitored to document levels exceeding background levels of 0.01-0.02 mrem/hr. The readings will be documented in the field logbook. The area will be evacuated if levels are above 2 mrem/hr. This level would signify that the PEL could be exceeded for a worker exposed at this level continuously during all work hours. Neither alpha nor beta particles can travel far through air. Alpha particles cannot pass through skin. High-energy beta particles can injure skin or pass through it in some circumstances. The more hazardous exposure comes from inhaling or ingesting substances that emit alpha or beta particles (i.e. breathing in dust particles during excavation). Any employee receiving a splash to an uncovered part of the body should wash the area with soap and water.
- Section 7.3 of the approved SSHP is amended herein to include the new hospital information. New name of the hospital is Great River Medical Center located at 1221 S. Gear Avenue, West Burlington. Phone number has not changed. Directions from IAAAP consist of traveling east on U.S. Highway 34. Exit at Gear Avenue (Exit 260). At the bottom of the off-ramp, turn left onto S. Gear Avenue. Travel on S. Gear Avenue to the first stop light. Turn right onto W. Agency. Proceed to the second driveway entrance to the emergency room.





LEGEND:

- A ROAD NAME
- PLANT PROPERTY BOUNDARY
- DRAINAGE BASIN BOUNDARY
- RIVER / STREAM
- INDICATES "RAIN EVENT" LOCATION

Scale 0 2000 4000 6000 8000 Feet

Figure 1
RAIN EVENT - SURFACE WATER SAMPLE LOCATIONS
 WP ADDENDUM, SPRING 2000 LTM EVENT
 IOWA ARMY AMMUNITION PLANT
 Middletown, Iowa

O:\graphics\lowa\water\monitoring\MM\site-103.cdr

APPENDIX A
SEVERN TRENT LABORATORIES, INC.
MODIFICATION TO THE SAMPLING
AND ANALYSIS PLAN

MODIFICATIONS TO THE SAMPLING AND ANALYSIS PLAN FOR LONG-TERM GROUNDWATER MONITORING, OFF-SITE GROUNDWATER INVESTIGATIONS, AND ECOLOGICAL INVESTIGATIONS AT IOWA ARMY AMMUNITION PLANT (IAAAP), MIDDLETOWN, IOWA

Harza Engineering Company (Harza) is collecting water and sediment samples at the Iowa Army Ammunition Plant (IAAAP) as part of Long Term Groundwater Monitoring (LTM), Off-site Groundwater Investigations, and Ecological Assessment Investigations. The sampling and analysis plans (SAP) for these activities were submitted earlier (Harza 1999a and 1999b, and Kewer 2000)¹²³. The SAPs were developed specifically with Katalyst Analytical Technologies, Inc. as the designated analytical laboratory. The SAPs are being revised to reflect a change in the analytical laboratory selected for IAAAP work. Harza has selected Severn Trent Laboratories, Inc. (STL) of University Park, Illinois as the analytical laboratory for analyzing further samples to be collected under this project.

The change in designated laboratory required certain modifications to the SAPs. STL will follow the same analytical methods as listed in Harza (1999a). The modifications include different method detection limits (MDL), reporting limits (RL), matrix spike (MS)/MS duplicate (MSD) percent recovery (%R) and relative percent difference (RPD) values, and surrogate recovery limits. In general, STL,s MDLs, RLs, and QC limits are comparable to those of Katalyst. Data generated using STL as the analytical laboratory are expected to meet data quality objectives for the LTM, Off-site, and ecological investigations.

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- 1 Harza Engineering Company, 1999b. Work Plan Addendum, Long-Term Monitoring Events, Fall 1999 and Spring 2000. Iowa Army Ammunition Plant (IAAAP), Middleton, Iowa. June.
 - 2 Harza Engineering Company, 1999a. Groundwater Investigation: Off-Site Groundwater Investigation (OU3), Work Plan/Sampling and Analysis Plan, Iowa Army Ammunition Plant (IAAAP), Middleton, Iowa. June.
 - 3 Mr. Robert Kewer, Harza Engineering Company, letter to Mr. Alvin Kam, dated April 17, 2000 Regarding Modifications to the SAP, Revised: Investigations Related to the Ecological Assessment. Iowa Army Ammunition Plant (IAAAP), Middleton, Iowa.

TABLE 1

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits for Volatiles
in Water**

| PARAMETER | CAS # | RL ug/L | MDL ug/L | MS/MSD | |
|----------------------------|------------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 0.5 | 0.23 | 82-123 | 20 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.5 | 0.29 | 68-131 | 21 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.5 | 0.23 | 72-126 | 24 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.5 | 0.35 | 68-136 | 28 |
| 1,1-Dichloroethane | 75-34-3 | 0.5 | 0.29 | 58-140 | 29 |
| 1,1-Dichloroethene | 75-35-4 | 0.5 | 0.34 | 53-136 | 28 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.5 | 0.31 | 74-124 | 20 |
| 1,2-Dibromoethane | 106-93-4 | 0.5 | 0.26 | 71-130 | 20 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.5 | 0.26 | 82-123 | 20 |
| 1,2-Dichloroethane | 107-06-2 | 0.5 | 0.23 | 70-128 | 23 |
| 1,2-Dichloroethene (total) | 540-59-0 | 0.5 | 0.63 | 60-140 | 20 |
| 1,2-Dichloropropane | 78-87-5 | 0.5 | 0.21 | 71-128 | 20 |
| 1,3-Dichlorobenzene | 541-73-1 | 0.5 | 0.26 | 81-123 | 20 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.5 | 0.23 | 80-124 | 20 |
| 2-Butanone | 78-93-3 | 2.0 | 1.73 | 38-132 | 27 |
| 2-Hexanone | 591-78-6 | 2.0 | 0.95 | 54-124 | 28 |
| 4-Methyl-2-pentanone | 108-10-1 | 2.0 | 0.87 | 53-128 | 27 |
| Acetone | 67-64-1 | 2.0 | 1.66 | 11-155 | 34 |
| Benzene | 71-43-2 | 0.5 | 0.21 | 71-122 | 19 |
| Bromodichloromethane | 75-27-4 | 0.5 | 0.24 | 76-129 | 22 |
| Bromoform | 75-25-2 | 0.5 | 0.25 | 57-154 | 20 |
| Bromomethane | 74-83-9 | 0.5 | 0.39 | 68-140 | 20 |
| Carbon Disulfide | 75-15-0 | 2.0 | 0.49 | 24-137 | 37 |
| Carbon Tetrachloride | 56-23-5 | 0.5 | 0.31 | 69-133 | 15 |
| Chlorobenzene | 108-90-7 | 0.5 | 0.23 | 83-123 | 16 |
| Chloroethane | 75-00-3 | 0.5 | 0.33 | 58-141 | 21 |
| Chloroform | 67-66-3 | 0.5 | 0.29 | 71-132 | 27 |
| Chloromethane | 74-87-3 | 0.5 | 0.44 | 39-136 | 18 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.5 | 0.33 | 67-129 | 24 |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.5 | 0.26 | 69-122 | 21 |
| Dibromochloromethane | 124-48-1 | 0.5 | 0.24 | 75-131 | 19 |
| Dibromomethane | 74-95-3 | 0.5 | 0.23 | 72-127 | 20 |
| Dichlorodifluoromethane | 75-71-8 | 0.5 | 0.43 | 18-138 | 20 |
| Ethylbenzene | 100-41-4 | 0.5 | 0.22 | 78-123 | 17 |
| Methylene Chloride | 75-09-2 | 0.5 | 0.32 | 59-130 | 28 |
| Styrene | 100-42-5 | 0.5 | 0.23 | 82-123 | 19 |
| Tetrachloroethene | 127-18-4 | 0.5 | 0.28 | 74-132 | 21 |
| Toluene | 108-88-3 | 0.5 | 0.22 | 77-122 | 21 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.5 | 0.31 | 60-140 | 20 |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.5 | 0.25 | 69-132 | 26 |
| Trichloroethene | 79-01-6 | 0.5 | 0.26 | 78-126 | 20 |
| Trichlorofluoromethane | 75-69-4 | 0.5 | 0.44 | 46-162 | 20 |
| Vinyl chloride | 75-01-4 | 0.5 | 0.31 | 51-138 | 19 |
| Xylene (total) | 1330-20-7 | 0.5 | 0.69 | 82-130 | 20 |

TABLE 2

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits for Volatiles
in Soil**

| PARAMETER | CAS # | RL ug/kg | MDL ug/kg | MS/MSD | |
|----------------------------|------------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 5 | 0.78 | 69-119 | 20 |
| 1,1,1-Trichloroethane | 71-55-6 | 5 | 1.4 | 57-132 | 20 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 5 | 1.2 | 63-131 | 28 |
| 1,1,2-Trichloroethane | 79-00-5 | 5 | 0.92 | 70-136 | 24 |
| 1,1-Dichloroethane | 75-34-3 | 5 | 0.88 | 63-135 | 29 |
| 1,1-Dichloroethene | 75-35-4 | 5 | 1.4 | 47-139 | 34 |
| 1,2,3-Trichloropropane | 96-18-4 | 5 | 1.6 | 57-135 | 20 |
| 1,2-Dibromoethane | 106-93-4 | 5 | 0.88 | 66-129 | 20 |
| 1,2-Dichlorobenzene | 95-50-1 | 5 | 1.2 | 74-120 | 20 |
| 1,2-Dichloroethane | 107-06-2 | 5 | 0.74 | 52-137 | 20 |
| 1,2-Dichloroethene (total) | 540-59-0 | 5 | 2.0 | 63-132 | 20 |
| 1,2-Dichloropropane | 78-87-5 | 5 | 0.94 | 72-129 | 21 |
| 1,3-Dichlorobenzene | 541-73-1 | 5 | 1.4 | 73-118 | 20 |
| 1,4-Dichlorobenzene | 106-46-7 | 5 | 1.5 | 73-118 | 20 |
| 2-Butanone | 78-93-3 | 5 | 5.0 | 32-155 | 29 |
| 2-Hexanone | 591-78-6 | 5 | 4.9 | 38-154 | 46 |
| 4-Methyl-2-pentanone | 108-10-1 | 5 | 3.7 | 44-147 | 34 |
| Acetone | 67-64-1 | 5 | 4.7 | 25-188 | 42 |
| Benzene | 71-43-2 | 5 | 0.96 | 69-122 | 21 |
| Bromodichloromethane | 75-27-4 | 5 | 0.72 | 66-130 | 20 |
| Bromoform | 75-25-2 | 5 | 0.80 | 57-137 | 25 |
| Bromomethane | 74-83-9 | 5 | 1.2 | 64-139 | 18 |
| Carbon Disulfide | 75-15-0 | 5 | 1.0 | 17-167 | 45 |
| Carbon Tetrachloride | 56-23-5 | 5 | 0.81 | 48-133 | 19 |
| Chlorobenzene | 108-90-7 | 5 | 0.76 | 75-121 | 21 |
| Chloroethane | 75-00-3 | 5 | 2.5 | 60-136 | 17 |
| Chloroform | 67-66-3 | 5 | 0.78 | 69-129 | 18 |
| Chloromethane | 74-87-3 | 5 | 1.8 | 44-132 | 18 |
| cis-1,2-Dichloroethene | 156-59-2 | 5 | 0.96 | 69-127 | 20 |
| cis-1,3-Dichloropropene | 10061-01-5 | 5 | 0.86 | 63-122 | 20 |
| Dibromochloromethane | 124-48-1 | 5 | 0.52 | 59-132 | 25 |
| Dibromomethane | 74-95-3 | 5 | 0.74 | 64-128 | 20 |
| Dichlorodifluoromethane | 75-71-8 | 5 | 1.4 | 15-128 | 20 |
| Ethylbenzene | 100-41-4 | 5 | 1.2 | 71-123 | 21 |
| Methylene Chloride | 75-09-2 | 5 | 1.1 | 62-131 | 22 |
| Styrene | 100-42-5 | 5 | 1.0 | 74-127 | 20 |
| Tetrachloroethene | 127-18-4 | 5 | 3.6 | 69-122 | 22 |
| Toluene | 108-88-3 | 5 | 0.88 | 70-124 | 20 |
| trans-1,2-Dichloroethene | 156-60-5 | 5 | 1.1 | 63-132 | 20 |
| trans-1,3-Dichloropropene | 10061-02-6 | 5 | 0.90 | 67-128 | 21 |
| Trichloroethene | 79-01-6 | 5 | 0.93 | 69-123 | 20 |
| Trichlorofluoromethane | 75-69-4 | 5 | 1.5 | 52-129 | 20 |
| Vinyl chloride | 75-01-4 | 5 | 1.3 | 54-134 | 17 |
| Xylene (total) | 1330-20-7 | 5 | 2.5 | 73-126 | 21 |

TABLE 3

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits
for Semivolatiles in Water**

| PARAMETER | CAS # | RL ug/L | MDL ug/L | MS/MSD | |
|-----------------------------------|-----------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| 1,2,4-Trichlorobenzene | 120-82-1 | 10 | 3.4 | 43-106 | 34 |
| 1,2-Dichlorobenzene | 95-50-1 | 10 | 4.2 | 39-95 | 29 |
| 1,3-Dichlorobenzene | 541-73-1 | 10 | 4.0 | 38-91 | 34 |
| 1,4-Dichlorobenzene | 106-46-7 | 10 | 3.4 | 34-99 | 20 |
| 2,4,5-Trichlorophenol | 95-95-4 | 50 | 3.7 | 64-110 | 10 |
| 2,4,6-Trichlorophenol | 88-06-2 | 10 | 3.1 | 63-103 | 21 |
| 2,4-Dichlorophenol | 120-83-2 | 10 | 3.5 | 60-96 | 29 |
| 2,4-Dimethylphenol | 105-67-9 | 10 | 6.1 | 47-86 | 28 |
| 2,4-Dinitrophenol | 51-28-5 | 50 | 4.8 | 32-137 | 29 |
| 2,4-Dinitrotoluene | 121-14-2 | 10 | 4.2 | 64-118 | 16 |
| 2,6-Dinitrotoluene | 606-20-2 | 10 | 4.3 | 63-114 | 15 |
| 2-Chloronaphthalene | 91-58-7 | 10 | 3.8 | 60-102 | 12 |
| 2-Chlorophenol | 95-57-8 | 10 | 3.4 | 48-98 | 20 |
| 2-Methylnaphthalene | 91-57-6 | 10 | 3.5 | 52-107 | 21 |
| 2-Methylphenol | 95-48-7 | 10 | 4.2 | 50-95 | 30 |
| 2-Nitroaniline | 88-74-4 | 50 | 4.4 | 63-114 | 15 |
| 2-Nitrophenol | 88-75-5 | 10 | 3.7 | 57-98 | 34 |
| 3,3'-Dichlorobenzidine | 91-94-1 | 20 | 3.5 | 25-109 | 21 |
| 3-Nitroaniline | 99-09-2 | 50 | 5.1 | 47-124 | 20 |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | 50 | 4.9 | 57-124 | 21 |
| 4-Bromophenyl-phenylether | 101-55-3 | 10 | 2.8 | 65-108 | 16 |
| 4-chloro-3-methylphenol | 59-50-7 | 10 | 3.1 | 57-108 | 12 |
| 4-Chloroaniline | 106-47-8 | 10 | 4.4 | 38-104 | 35 |
| 4-Chlorophenyl-phenylether | 7005-72-3 | 10 | 4.3 | 67-100 | 12 |
| 4-Methylphenol (meta¶ cresol) | 106-44-5 | 10 | 4.1 | 49-96 | 20 |
| 4-Nitroaniline | 100-01-6 | 50 | 6.4 | 52-115 | 13 |
| 4-Nitrophenol | 100-02-7 | 50 | 6.4 | 30-121 | 33 |
| Acenaphthene | 83-32-9 | 10 | 4.5 | 62-101 | 15 |
| Acenaphthylene | 208-96-8 | 10 | 4.1 | 63-99 | 16 |
| Anthracene | 120-12-7 | 10 | 2.7 | 67-102 | 20 |
| Benzo(a)anthracene | 56-55-3 | 10 | 3.7 | 71-109 | 12 |
| Benzo(a)pyrene | 50-32-8 | 10 | 3.1 | 68-103 | 20 |
| Benzo(b)fluoranthene | 205-99-2 | 10 | 4.8 | 64-115 | 12 |
| Benzo(g,h,i)perylene | 191-24-2 | 10 | 5.1 | 57-127 | 20 |
| Benzo(k)fluoranthene | 207-08-9 | 10 | 4.5 | 62-112 | 11 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 10 | 3.0 | 60-103 | 24 |
| Bis(2-chloroethyl)ether | 111-44-4 | 10 | 3.8 | 51-102 | 20 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 10 | 5.6 | 57-128 | 18 |
| Butylbenzylphthalate | 85-68-7 | 10 | 3.6 | 65-115 | 12 |
| Chrysene | 218-01-9 | 10 | 3.7 | 70-108 | 20 |
| Dibenzo(a,h)anthracene | 53-70-3 | 10 | 4.2 | 64-120 | 17 |
| Dibenzofuran | 132-64-9 | 10 | 3.9 | 67-100 | 20 |
| Di-n-butylphthalate | 84-74-2 | 10 | 3.2 | 60-116 | 12 |
| Di-n-octylphthalate | 117-84-0 | 10 | 6.0 | 54-125 | 19 |
| Fluoranthene | 206-44-0 | 10 | 3.8 | 53-122 | 19 |

TABLE 3

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits
for Semivolatiles in Water**

| PARAMETER | CAS # | RL ug/L | MDL ug/L | MS/MSD | |
|----------------------------|----------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| Fluorene | 86-73-7 | 10 | 3.5 | 67-99 | 20 |
| Hexachlorobenzene | 118-74-1 | 10 | 2.8 | 66-109 | 20 |
| Hexachlorobutadiene | 87-68-3 | 10 | 5.6 | 37-108 | 20 |
| Hexachlorocyclopentadiene | 77-47-4 | 10 | 4.6 | 10-47 | 67 |
| Hexachloroethane | 67-72-1 | 10 | 6.0 | 31-94 | 32 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 10 | 4.3 | 62-122 | 17 |
| Isophorone | 78-59-1 | 10 | 3.5 | 63-110 | 17 |
| Naphthalene | 91-20-3 | 10 | 2.7 | 51-97 | 40 |
| Nitrobenzene | 98-95-3 | 10 | 4.1 | 56-105 | 48 |
| n-nitroso-di-n-propylamine | 621-64-7 | 10 | 3.8 | 51-107 | 18 |
| n-nitrosodiphenylamine | 86-30-6 | 10 | 3.2 | 56-111 | 20 |
| Pentachlorophenol | 87-86-5 | 50 | 4.0 | 54-125 | 16 |
| Phenanthrene | 85-01-8 | 10 | 2.7 | 69-104 | 20 |
| Phenol | 108-95-2 | 10 | 4.4 | 27-102 | 35 |
| Pyrene | 129-00-0 | 10 | 4.4 | 58-125 | 23 |

TABLE 4

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits
for Semivolatiles in Soil**

| PARAMETER | CAS # | RL ug/kg | MDL ug/kg | MS/MSD | |
|-----------------------------------|-----------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| 1,2,4-Trichlorobenzene | 120-82-1 | 330 | 91 | 54-111 | 20 |
| 1,2-Dichlorobenzene | 95-50-1 | 330 | 84 | 54-96 | 20 |
| 1,3-Dichlorobenzene | 541-73-1 | 330 | 82 | 52-93 | 20 |
| 1,4-Dichlorobenzene | 106-46-7 | 330 | 74 | 21-104 | 20 |
| 2,4,5-Trichlorophenol | 95-95-4 | 1700 | 85 | 69-115 | 20 |
| 2,4,6-Trichlorophenol | 88-06-2 | 330 | 117 | 66-107 | 20 |
| 2,4-Dichlorophenol | 120-83-2 | 330 | 116 | 63-104 | 20 |
| 2,4-Dimethylphenol | 105-67-9 | 330 | 157 | 60-102 | 20 |
| 2,4-Dinitrophenol | 51-28-5 | 1700 | 207 | 42-127 | 20 |
| 2,4-Dinitrotoluene | 121-14-2 | 330 | 141 | 61-127 | 20 |
| 2,6-Dinitrotoluene | 606-20-2 | 330 | 91 | 65-113 | 20 |
| 2-Chloronaphthalene | 91-58-7 | 330 | 88 | 62-103 | 20 |
| 2-Chlorophenol | 95-57-8 | 330 | 92 | 55-100 | 20 |
| 2-Methylnaphthalene | 91-57-6 | 330 | 141 | 60-111 | 20 |
| 2-Methylphenol | 95-48-7 | 330 | 137 | 59-101 | 20 |
| 2-Nitroaniline | 88-74-4 | 1700 | 97 | 67-110 | 20 |
| 2-Nitrophenol | 88-75-5 | 330 | 87 | 62-100 | 20 |
| 3,3'-Dichlorobenzidine | 91-94-1 | 670 | 202 | 16-96 | 20 |
| 3-Nitroaniline | 99-09-2 | 1700 | 155 | 31-87 | 20 |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | 1700 | 199 | 60-123 | 20 |
| 4-Bromophenyl-phenylether | 101-55-3 | 330 | 87 | 63-117 | 20 |
| 4-chloro-3-methylphenol | 59-50-7 | 330 | 106 | 57-122 | 20 |
| 4-Chloroaniline | 106-47-8 | 330 | 128 | 10-79 | 20 |
| 4-Chlorophenyl-phenylether | 7005-72-3 | 330 | 86 | 66-106 | 20 |
| 4-Methylphenol (meta¶ cresol) | 106-44-5 | 330 | 121 | 58-107 | 20 |
| 4-Nitroaniline | 100-01-6 | 1700 | 130 | 32-108 | 20 |
| 4-Nitrophenol | 100-02-7 | 1700 | 173 | 52-140 | 20 |
| Acenaphthene | 83-32-9 | 330 | 88 | 58-112 | 20 |
| Acenaphthylene | 208-96-8 | 330 | 82 | 63-102 | 20 |
| Anthracene | 120-12-7 | 330 | 100 | 65-105 | 20 |
| Benzo(a)anthracene | 56-55-3 | 330 | 92 | 70-111 | 20 |
| Benzo(a)pyrene | 50-32-8 | 330 | 92 | 71-106 | 20 |
| Benzo(b)fluoranthene | 205-99-2 | 330 | 121 | 67-114 | 20 |
| Benzo(g,h,i)perylene | 191-24-2 | 330 | 129 | 53-128 | 20 |
| Benzo(k)fluoranthene | 207-08-9 | 330 | 104 | 68-109 | 20 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 330 | 122 | 60-102 | 20 |
| Bis(2-chloroethyl)ether | 111-44-4 | 330 | 83 | 54-98 | 20 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 330 | 137 | 63-120 | 20 |
| Butylbenzylphthalate | 85-68-7 | 330 | 169 | 66-116 | 20 |
| Chrysene | 218-01-9 | 330 | 102 | 69-108 | 20 |
| Dibenzo(a,h)anthracene | 53-70-3 | 330 | 118 | 56-124 | 20 |
| Dibenzofuran | 132-64-9 | 330 | 103 | 68-103 | 20 |
| Di-n-butylphthalate | 84-74-2 | 330 | 110 | 63-115 | 20 |
| Di-n-octylphthalate | 117-84-0 | 330 | 209 | 55-129 | 20 |
| Fluoranthene | 206-44-0 | 330 | 115 | 62-114 | 20 |

TABLE 4

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits
for Semivolatiles in Soil**

| PARAMETER | CAS # | RL ug/kg | MDL ug/kg | MS/MSD | |
|----------------------------|----------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| Fluorene | 86-73-7 | 330 | 72 | 65-103 | 20 |
| Hexachlorobenzene | 118-74-1 | 330 | 92 | 64-116 | 20 |
| Hexachlorobutadiene | 87-68-3 | 330 | 95 | 58-110 | 20 |
| Hexachlorocyclopentadiene | 77-47-4 | 330 | 150 | 42-127 | 20 |
| Hexachloroethane | 67-72-1 | 330 | 79 | 53-96 | 20 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 330 | 127 | 62-124 | 20 |
| Isophorone | 78-59-1 | 330 | 84 | 63-110 | 20 |
| Naphthalene | 91-20-3 | 330 | 73 | 59-97 | 20 |
| Nitrobenzene | 98-95-3 | 330 | 111 | 58-102 | 20 |
| n-nitroso-di-n-propylamine | 621-64-7 | 330 | 113 | 52-108 | 20 |
| n-nitrosodiphenylamine | 86-30-6 | 330 | 123 | 65-111 | 20 |
| Pentachlorophenol | 87-86-5 | 1700 | 177 | 55-131 | 20 |
| Phenanthrene | 85-01-8 | 330 | 94 | 70-106 | 20 |
| Phenol | 108-95-2 | 330 | 101 | 52-107 | 20 |
| Pyrene | 129-00-0 | 330 | 254 | 54-135 | 20 |

TABLE 5

Method Detection limits, Reporting Limits, and MS/MSD QC Limits for Explosives in Water

| Parameter | CAS # | RL ug/L | MDL Ug/L | MS/MSD | |
|----------------------------|------------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| HMX | 2691-41-0 | 0.390 | 0.225 | 50-150 | 20 |
| RDX | 121-82-4 | 0.156 | 0.133 | 50-150 | 20 |
| 1,3,5-Trinitrobenzene | 99-35-4 | 0.156 | 0.080 | 50-150 | 20 |
| 1,3-Dinitrobenzene | 99-65-0 | 0.156 | 0.053 | 50-150 | 20 |
| Nitrobenzene | 98-95-3 | 0.156 | 0.092 | 50-150 | 20 |
| 2,4,6-TNT | 118-96-7 | 0.156 | 0.068 | 50-150 | 20 |
| Tetryl | 479-45-8 | 0.312 | 0.218 | 50-150 | 20 |
| 2,4-Dinitrotoluene | 121-14-2 | 0.156 | 0.042 | 50-150 | 20 |
| 2-Amino-4,6-Dinitrotoluene | 35572-78-2 | 0.312 | 0.082 | 50-150 | 20 |
| 2,6-Dinitrotoluene | 606-20-2 | 0.312 | 0.207 | 50-150 | 20 |
| 4-Amino-2,6-Dinitrotoluene | 19406-51-0 | 0.312 | 0.138 | 50-150 | 20 |
| 2-Nitrotoluene | 88-72-2 | 0.312 | 0.163 | 50-150 | 20 |
| 4-Nitrotoluene | 99-99-0 | 0.780 | 0.337 | 50-150 | 20 |
| 3-Nitrotoluene | 99-08-1 | 0.312 | 0.102 | 50-150 | 20 |

TABLE 6

Method Detection limits, Reporting Limits, and MS/MSD QC Limits for Explosives in Soil

| Parameter | CAS # | RL ug/kg | MDL ug/kg | MS/MSD | |
|----------------------------|------------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| HMX | 2691-41-0 | 250 | 113 | 50-150 | 30 |
| RDX | 121-82-4 | 100 | 58.6 | 50-150 | 30 |
| 1,3,5-Trinitrobenzene | 99-35-4 | 100 | 17.5 | 50-150 | 30 |
| 1,3-Dinitrobenzene | 99-65-0 | 100 | 17.8 | 50-150 | 30 |
| Nitrobenzene | 98-95-3 | 100 | 22.2 | 50-150 | 30 |
| 2,4,6-TNT | 118-96-7 | 100 | 33.8 | 50-150 | 30 |
| Tetryl | 479-45-8 | 200 | 43.4 | 50-150 | 30 |
| 2,4-Dinitrotoluene | 121-14-2 | 100 | 35.6 | 50-150 | 30 |
| 2-Amino-4,6-Dinitrotoluene | 35572-78-2 | 200 | 36.0 | 50-150 | 30 |
| 2,6-Dinitrotoluene | 606-20-2 | 200 | 47.5 | 50-150 | 30 |
| 4-Amino-2,6-Dinitrotoluene | 19406-51-0 | 200 | 97.2 | 50-150 | 30 |
| 2-Nitrotoluene | 88-72-2 | 200 | 33.2 | 50-150 | 30 |
| 4-Nitrotoluene | 99-99-0 | 500 | 46.6 | 50-150 | 30 |
| 3-Nitrotoluene | 99-08-1 | 200 | 50.0 | 50-150 | 30 |

TABLE 7

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits for
Metals in Water**

| Parameter | Symbol | RL ug/L | MDL ug/L | MS/MSD | |
|-----------|--------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| Aluminum | Al | 200 | 21.0 | 85-109 | 10 |
| Antimony | Sb | 100 | 20.3 | 81-112 | 10 |
| Arsenic | As | 100 | 20.0 | 69-111 | 13 |
| Barium | Ba | 50 | 1.2 | 83-111 | 10 |
| Beryllium | Be | 5 | 0.42 | 74-115 | 10 |
| Cadmium | Cd | 10 | 2.2 | 75-108 | 10 |
| Calcium | Ca | 100 | 17.8 | 78-111 | 10 |
| Chromium | Cr | 20 | 4.7 | 85-112 | 10 |
| Cobalt | Co | 20 | 3.1 | 80-110 | 10 |
| Copper | Cu | 20 | 3.1 | 84-110 | 10 |
| Iron | Fe | 50 | 4.7 | 79-110 | 10 |
| Lead | Pb | 50 | 10.4 | 74-136 | 17 |
| Magnesium | Mg | 200 | 21.4 | 79-106 | 10 |
| Manganese | Mn | 10 | 1.3 | 84-114 | 10 |
| Nickel | Ni | 20 | 8.7 | 82-113 | 10 |
| Potassium | K | 2000 | 968 | 75-112 | 10 |
| Selenium | Se | 100 | 27.8 | 67-113 | 25 |
| Silver | Ag | 10 | 2.5 | 63-131 | 10 |
| Sodium | Na | 200 | 67 | 76-111 | 10 |
| Thallium | Tl | 500 | 51.2 | 75-120 | 20 |
| Vanadium | V | 10 | 2.7 | 83-115 | 10 |
| Zinc | Zn | 10 | 2.9 | 80-110 | 13 |
| Mercury | Hg | 0.20 | 0.15 | 86-115 | 10 |

TABLE 8

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits
for Metals in Soil**

| Parameter | Symbol | RL mg/kg | MDL mg/kg | MS/MSD | |
|-----------|--------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| Aluminum | Al | 20 | 5.2 | 87-106 | 10 |
| Antimony | Sb | 10 | 1.9 | 82-105 | 10 |
| Arsenic | As | 10 | 2.1 | 65-106 | 20 |
| Barium | Ba | 5 | 0.47 | 89-107 | 10 |
| Beryllium | Be | 0.5 | 0.04 | 78-104 | 10 |
| Cadmium | Cd | 1 | 0.20 | 74-105 | 10 |
| Calcium | Ca | 10 | 4.3 | 82-106 | 10 |
| Chromium | Cr | 2 | 0.19 | 90-107 | 10 |
| Cobalt | Co | 2 | 0.25 | 83-104 | 10 |
| Copper | Cu | 2 | 0.34 | 88-107 | 10 |
| Iron | Fe | 5 | 2.8 | 80-113 | 22 |
| Lead | Pb | 5 | 1.5 | 74-138 | 18 |
| Magnesium | Mg | 20 | 1.7 | 82-100 | 10 |
| Manganese | Mn | 1 | 0.19 | 90-107 | 10 |
| Nickel | Ni | 2 | 0.63 | 87-105 | 10 |
| Selenium | Se | 10 | 3.3 | 61-107 | 20 |
| Silver | Ag | 1 | 0.31 | 64-124 | 10 |
| Sodium | Na | 20 | 15.8 | 75-109 | 10 |
| Thallium | Tl | 50 | 3.1 | 69-120 | 13 |
| Vanadium | V | 1 | 0.34 | 91-106 | 10 |
| Zinc | Zn | 1 | 0.43 | 80-106 | 10 |
| Mercury | Hg | 0.033 | 0.023 | 88-113 | 10 |

TABLE 9

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits for
Pesticide/PCBs in Water**

| Parameter | CAS # | RL Ug/L | MDL ug/L | MS/MSD | |
|---------------------|------------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| 4,4-DDD | 72-54-8 | 0.05 | 0.035 | 69-117 | 12 |
| 4,4-DDE | 72-55-9 | 0.05 | 0.023 | 66-122 | 10 |
| 4,4-DDT | 50-29-3 | 0.05 | 0.043 | 54-141 | 21 |
| a-Chlordane | 5103-71-9 | 0.025 | 0.013 | 29-133 | 20 |
| Aldrin | 309-00-2 | 0.025 | 0.020 | 37-133 | 22 |
| alpha-BHC | 319-84-6 | 0.025 | 0.021 | 64-118 | 14 |
| beta-BHC | 319-85-7 | 0.025 | 0.021 | 56-118 | 14 |
| Chlordane | 12789-03-6 | 0.10 | 0.058 | 68-118 | NA |
| delta-BHC | 319-86-8 | 0.025 | 0.013 | 68-131 | 13 |
| Dieldrin | 60-57-1 | 0.05 | 0.013 | 46-153 | 20 |
| Endosulfan I | 959-98-8 | 0.025 | 0.0053 | 44-143 | 25 |
| Endosulfan II | 33213-65-9 | 0.05 | 0.020 | 21-147 | 20 |
| Endosulfan Sulfate | 1031-07-8 | 0.05 | 0.016 | 66-119 | 19 |
| Endrin | 72-20-8 | 0.05 | 0.019 | 30-154 | 33 |
| Endrin Aldehyde | 7421-93-4 | 0.05 | 0.037 | 18-136 | 31 |
| Endrin Ketone | 53494-70-5 | 0.05 | 0.018 | 56-145 | 37 |
| Gamma-BHC (Lindane) | 58-89-9 | 0.025 | 0.014 | 56-125 | 21 |
| Gamma-Chlordane | 5103-74-2 | 0.025 | 0.011 | 32-129 | 20 |
| Heptachlor | 76-44-8 | 0.025 | 0.017 | 50-129 | 21 |
| Heptachlor Epoxide | 1024-57-3 | 0.025 | 0.032 | 59-126 | 22 |
| Methoxychlor | 72-43-5 | 0.25 | 0.045 | 38-149 | 23 |
| Toxaphene * | 8001-35-2 | 0.50 | 0.53 | 65-138 | NA |
| Aroclor 1016 | 12674-11-2 | 0.25 | 0.16 | 61-112 | 15 |
| Aroclor 1221 | 11104-28-2 | 0.25 | 0.19 | NA | NA |
| Aroclor 1232 | 11141-16-5 | 0.25 | 0.12 | NA | NA |
| Aroclor 1242 | 53469-21-9 | 0.25 | 0.19 | NA | NA |
| Aroclor 1248 | 12672-29-6 | 0.25 | 0.20 | NA | NA |
| Aroclor 1254 | 11097-69-1 | 0.25 | 0.15 | NA | NA |
| Aroclor 1260 | 11096-82-5 | 0.25 | 0.17 | 61-104 | 17 |

TABLE 10

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits for
Pesticide/PCBs in Soil**

| Parameter | CAS # | RL ug/kg | MDL Ug/kg | MS/MSD | |
|---------------------|------------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| 4,4-DDD | 72-54-8 | 1.7 | 0.34 | 59-126 | 19 |
| 4,4-DDE | 72-55-9 | 1.7 | 1.37 | 66-132 | 24 |
| 4,4-DDT | 50-29-3 | 1.7 | 0.4 | 56-137 | 17 |
| a-Chlordane | 5103-71-9 | 0.83 | 0.72 | 68-148 | 20 |
| Aldrin | 309-00-2 | 0.83 | 0.50 | 49-130 | 27 |
| alpha-BHC | 319-84-6 | 0.83 | 0.25 | 58-131 | 22 |
| beta-BHC | 319-85-7 | 0.83 | 0.61 | 23-134 | 21 |
| delta-BHC | 319-86-8 | 0.83 | 0.63 | 40-156 | 19 |
| Dieldrin | 60-57-1 | 1.7 | 0.34 | 66-138 | 15 |
| Endosulfan I | 959-98-8 | 0.83 | 0.14 | 66-121 | 20 |
| Endosulfan II | 33213-65-9 | 1.7 | 1.24 | 63-114 | 20 |
| Endosulfan Sulfate | 1031-07-8 | 1.7 | 1.43 | 38-136 | 20 |
| Endrin | 72-20-8 | 1.7 | 0.71 | 32-145 | 30 |
| Endrin Aldehyde | 7421-93-4 | 1.7 | 1.10 | 40-168 | 20 |
| Endrin Ketone | 53494-70-5 | 1.7 | 1.44 | 59-140 | 20 |
| gamma-BHC (Lindane) | 58-89-9 | 0.83 | 0.26 | 46-131 | 24 |
| g-Chlordane | 5103-74-2 | 0.83 | 0.58 | 72-111 | 20 |
| Heptachlor | 76-44-8 | 0.83 | 0.19 | 39-150 | 20 |
| Heptachlor Epoxide | 1024-57-3 | 0.83 | 0.59 | 69-125 | 20 |
| Methoxychlor | 72-43-5 | 8.3 | 2.1 | 45-167 | 17 |
| Toxaphene | 8001-35-2 | 16.7 | 2.9 | NA | NA |
| Aroclor 1016 | 12674-11-2 | 8.3 | 2.4 | 66-112 | 20 |
| Aroclor 1221 | 11104-28-2 | 8.3 | 6.9 | NA | NA |
| Aroclor 1232 | 11141-16-5 | 8.3 | 3.9 | NA | NA |
| Aroclor 1242 | 53469-21-9 | 8.3 | 5.7 | NA | NA |
| Aroclor 1248 | 12672-29-6 | 8.3 | 3.9 | NA | NA |
| Aroclor 1254 | 11097-69-1 | 8.3 | 2.0 | NA | NA |
| Aroclor 1260 | 11096-82-5 | 8.3 | 1.6 | 65-109 | 20 |

TABLE 11

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits
for Herbicides in Water**

| Parameter | CAS # | RL ug/L | MDL Ug/L | MS/MSD | |
|---------------|------------|------------|-------------|--------|-------|
| | | | | % R | RPD % |
| 2,4,5-T | 72-54-8 | 0.10 | 0.060 | 58-116 | 20 |
| 2,4,5-TP | 72-55-9 | 0.10 | 0.050 | 53-133 | 20 |
| 2,4-D | 50-29-3 | 1.0 | 0.38 | 48-131 | 20 |
| 2,4-DB | 5103-71-9 | 1.0 | 0.43 | 51-120 | 20 |
| 4-Nitrophenol | 309-00-2 | 2.0 | 0.39 | 62-145 | 20 |
| Dalapon | 319-84-6 | 3.0 | 2.1 | 10-89 | 20 |
| Dicamba | 319-85-7 | 0.10 | 0.022 | 57-121 | 20 |
| Dichloroprop | 319-86-8 | 1.0 | 0.19 | 47-138 | 20 |
| Dinoseb | 60-57-1 | 0.10 | 0.087 | 10-84 | 20 |
| MCPP | 959-98-8 | 526 | 526 | NA | NA |
| MCPA | 33213-65-9 | 526 | 526 | NA | NA |

TABLE 12

**Method Detection limits, Reporting Limits, and MS/MSD QC Limits for
Herbicides in Soil**

| Parameter | CAS # | RL ug/kg | MDL ug/kg | MS/MSD | |
|---------------|------------|-------------|--------------|--------|-------|
| | | | | % R | RPD % |
| 2,4,5-T | 72-54-8 | 33.3 | 17.4 | 48-126 | 15 |
| 2,4,5-TP | 72-55-9 | 33.3 | 10.4 | 38-144 | 16 |
| 2,4-D | 50-29-3 | 333 | 83 | 50-127 | 17 |
| 2,4-DB | 5103-71-9 | 333 | 227 | 45-137 | 20 |
| 4-Nitrophenol | 309-00-2 | 667 | 53 | 10-150 | 20 |
| Dalapon | 319-84-6 | 333 | 130 | 10-154 | 20 |
| Dicamba | 319-85-7 | 33.3 | 9.9 | 56-149 | 20 |
| Dichloroprop | 319-86-8 | 333 | 57 | 78-126 | 20 |
| Dinoseb | 60-57-1 | 33.3 | 25.6 | 10-111 | 20 |
| MCPP | 959-98-8 | 167000 | 167000 | NA | NA |
| MCPA | 33213-65-9 | 167000 | 167000 | NA | NA |

TABLE 13

Method Detection Limits for Water Quality Parameters

| Compound | MDL, mg/L |
|-------------------------|------------------|
| Ammonia | 0.018 |
| Orthophosphate | 0.1 |
| Alkalinity | 1.79 |
| Nitrate | 0.0051 |
| Carbon Dioxide | 32 |
| Total Kjeldahl Nitrogen | 0.12 |
| Methane | 0.04 |
| Total Organic Carbon | 0.11 |
| Sulfate | 1 |
| Sulfide | 1 |

TABLE 14

QC Criteria for Surrogates

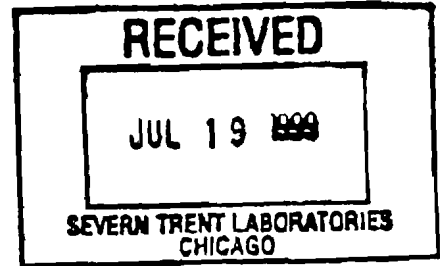
| Analysis | Surrogate Compound | Percent recovery | |
|-----------------|---------------------------|-------------------------|--------------|
| | | Soil | Water |
| Volatiles | 1,2-Dichloroethane-d4 | 43-139 | 66-132 |
| | 4-Bromofluorobenzene | 57-124 | 79-122 |
| | Toluene-d8 | 70-128 | 78-128 |
| | Dibromofluoromethane | 64-132 | 66-132 |
| Semivolatiles | Nitrobenzene-d5 | 25-120 | 38-113 |
| | 2-Fluorobiphenyl | 32-131 | 34-112 |
| | Terphenyl-d14 | 35-140 | 10-119 |
| | Phenol-d5 | 27-122 | 18-97 |
| | 2,4,6-Tribromophenol | 24-150 | 29-126 |
| | 2-Fluorophenol | 25-113 | 21-97 |
| Explosives | 1,2-Dinitrobenzene | 50-150 | 50-150 |
| Pesticide/PCBs | DCB | 10-158 | 10-117 |
| | TCX | 21-135 | 15-130 |



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
HTRW CENTER OF EXPERTISE
12565 WEST CENTER ROAD
OMAHA, NEBRASKA 68144-3869

July 14, 1999



Hazardous, Toxic and Radioactive Waste
Center of Expertise

Severn Trent Laboratories
2417 Bond Street
University Park, IL 60466-3182

Gentlemen:

This correspondence addresses the ongoing validation status of Severn Trent Laboratories, University Park, IL for the U.S. Army Corps of Engineers (USACE) for chemical analysis in support of the USACE Hazardous, Toxic and Radioactive Waste Program.

Severn Trent Laboratories is now validated for the parameters listed below:

| METHOD | PARAMETERS | MATRIX ⁽¹⁾ |
|-------------|-----------------------------------|-----------------------|
| 300s | Anions ⁽⁴⁾ | Water ⁽³⁾ |
| 8021B | Aromatic Volatile Organics | Water ⁽³⁾ |
| 8021B | Aromatic Volatile Organics | Solids |
| 9010B/9012A | Cyanide | Water ⁽³⁾ |
| 9013 | Cyanide | Solids |
| 7196 | Cr(VI) | Water ⁽³⁾ |
| 3060A/7196 | Cr(VI) | Solids ⁽⁵⁾ |
| 8330 | Explosives | Solids ⁽³⁾ |
| 8330 | Explosives | Water ⁽³⁾ |
| 8151A | Herbicides | Water ⁽³⁾ |
| 8151A | Herbicides | Solids |
| 413.1 | Oil and Grease | Water ⁽³⁾ |
| 8081A | Organochlorine Pesticides | Water ⁽³⁾ |
| 8081A | Organochlorine Pesticides | Solids |
| 8082 | Polychlorinated Biphenyls | Water ⁽³⁾ |
| 8082 | Polychlorinated Biphenyls | Solids ⁽³⁾ |
| 8310 | Polynuclear Aromatic Hydrocarbons | Water ⁽³⁾ |
| 8310 | Polynuclear Aromatic Hydrocarbons | Solids |
| 8270C | Semivolatile Organics | Water ⁽³⁾ |
| 8270C | Semivolatile Organics | Solids ⁽³⁾ |
| SW-846 | TAL Metals ⁽²⁾ | Water ⁽³⁾ |
| SW-846 | TAL Metals ⁽²⁾ | Solids ⁽³⁾ |
| 9060 | Total Organic Carbon | Water ⁽³⁾ |
| Mod 8015 | TPH - GRO/DRO | Water ⁽⁵⁾ |
| Mod 8015 | TPH - GRO/DRO | Solids ⁽⁵⁾ |
| 418.1 | TRPH | Water ⁽³⁾ |
| 9071/418.1 | TRPH | Solids ⁽⁵⁾ |
| 8260B | Volatile Organics | Water ⁽³⁾ |
| 8260B | Volatile Organics | Solids |

- Remarks:
- 1) "Solids" includes soils, sediments, and solid waste.
 - 2) TAL Metals: Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.
 - 3) The laboratory has successfully analyzed a performance evaluation sample for this method/matrix.
 - 4) Anions: Chloride, fluoride, sulfate, nitrate, nitrite, ortho-phosphate.
 - 5) Validation for this parameter is based on review of SOPs only.

Based on the recent successful analysis for Explosives in soil and water, your laboratory will continue to be validated for sample analysis by the methods listed above. The period of validation for all parameters has been previously established and expires on April 26, 2001.

The USACE reserves the right to conduct additional laboratory inspections or to suspend validation status for any or all of the listed parameters if deemed necessary. It should be noted that your laboratory may not subcontract USACE analytical work to any other laboratory location without the approval of this office. This laboratory validation does not guarantee the delivery of any analytical samples from a USACE Contracting Officer Representative.

Any questions or comments can be directed to Jim Cheney at (404) 697-2565. General questions regarding laboratory validation may be directed to the Laboratory Validation Coordinator at (402) 697-2574.

Sincerely,

Marcia C. Davies
 Marcia C. Davies, Ph.D.
 Director, USACE Hazardous,
 Toxic and Radioactive Waste
 Center of Expertise

APPENDIX B
LTM SAMPLE QUANTITIES
AND PARAMETERS,
SPRING 2000 LTM EVENT

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 2

| Site/Well No. | Analytical Parameters | | | | | | | | | | | | | | | Comment |
|---------------------------------|---------------------------------|-------------------------|-------------------------|------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|---------------------------|---------------------|-------------------------|--|---------|
| | Included in Previous Monitoring | Included in Round 1 LTM | Included in Round 2 LTM | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates ¹ | Natural Attenuation | Methane, Ethane, Ethene | | |
| EAST BURN PADS | | | | | | | | | | | | | | | | |
| EDA-1 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| EDA-2 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| EDA-3 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| EDA-4 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| G-29 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| JAW-4 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | Yes ^a | No | No | No | 1 | Yes ^a | No | Round 1 low water recovery. Sample for Gross Alpha and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-5 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross Alpha/Beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-6 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| JAW-7 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| JAW-64 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| JAW-614 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| EBP-MW1 | NA | Yes | Yes | 1 | 1 | 1 | 1 | Yes ^a | No | No | No | 1 | Yes ^a | No | Round 1 low water recovery. Sample for Gross Alpha and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| EBP-MW2 | NA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| EBP-MW3 | NA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | | |
| NORTH BURN PADS | | | | | | | | | | | | | | | | |
| JAW-11 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-12 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross Alpha/Beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-13 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross Alpha/Beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-14 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| NORTH BURN PADS LANDFILL | | | | | | | | | | | | | | | | |
| JAW-625 | Yes | No | Yes | NA | | | | | | | | | | | Abandon. Replaced with NBPLF-MW-1. WELL WAS DRY. | |
| JAW-626 | Yes | Yes | No | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-627 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| MW-1-92 | No | No | No | NA | | | | | | | | | | | Abandon if still in place. Update well inventory. | |
| MW-3-92 | No | No | No | NA | | | | | | | | | | | Abandon if still in place. Update well inventory. | |
| NBPLF-MW1 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| WEST BURN PADS | | | | | | | | | | | | | | | | |
| JAW-23 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross Alpha/Beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-24 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-25 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-68 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-30 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| WBP-99-1 | NA | Yes | Yes | 1 | 1 | No | No | 1 | No | No | No | 1 | No | No | Filtered and non-filtered Gross Alpha/Beta samples. | |
| WBP-99-2 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| WBP-99-3 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| WBP-99-4 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| WBP-99-5 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| WBP-99-6 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | Yes ^a | No | Round 1 low water recovery. Sample for Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| WBP-99-7 | NA | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| FIRE TRAINING AREA | | | | | | | | | | | | | | | | |
| JAW-58 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | |
| JAW-59 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | |
| JAW-60 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | |
| JAW-61 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | |
| JAW-62 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | |
| JAW-63 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | |

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 2

| Site/Well No. | Included in Previous Monitoring | Included in Round 1 LTM | Include in Round 2 LTM | Analytical Parameters | | | | | | | | | | | | | Comment |
|------------------------------|---------------------------------|-------------------------|------------------------|-----------------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|---------------------------|---------------------|-------------------------|--|---|---------------------------------------|
| | | | | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates ¹ | Natural Attenuation | Methane, Ethane, Ethene | | | |
| JAW-69 | Yes | No | NA | NA | | | | | | | | | | | | | Well removed. |
| JAW-80 | Yes | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. | | |
| M-01 | No | Yes | No | NA | | | | | | | | | | | | | |
| SA-99-1 | NA | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | | |
| FTA-99-1 | NA | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | | |
| FTA-99-2 | NA | Yes | Yes | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | | | |
| AMMO BOX CHIPPER AREA | | | | | | | | | | | | | | | | | |
| JAW-620 | Yes | Yes | No | No | No | No | No | No | No | No | No | No | No | No | No | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. | |
| JAW-621 | Yes | No | No | NA | | | | | | | | | | | | | |
| JAW-622 | Yes | No | No | NA | | | | | | | | | | | | | |
| LINE 1 | | | | | | | | | | | | | | | | | |
| G-14 | No | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-38 | No | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-39 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-40 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-41 | No | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-42 | No | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-43 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-44 | Yes | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-45 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-46 | Yes | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-47 | Yes | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-48 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-50 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-51 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-52 | Yes | No | No | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-601 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-602 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-603 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| SL-81 | No | No | No | NA | | | | | | | | | | | | | Did not locate well during Fall 1999. |
| L1-MW1 | Yes | Yes | Yes | 1 | 1 | No | No | 1 | No | No | No | 1 | No | No | Filtered and non-filtered Gross Alpha/Beta samples. | | |
| LINE 2 | | | | | | | | | | | | | | | | | |
| G-15 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H10-A | No | No | No | NA | | | | | | | | | | | | | |
| H10-B | No | No | No | NA | | | | | | | | | | | | | |
| H12-A | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H12-B | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H12-C | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H12-D | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H12-E | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H12-F | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| H12-G | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-70 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-71 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-72 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-73 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-74 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| JAW-75 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| R02PZ-29 | No | No | No | NA | | | | | | | | | | | | | |
| L2-MW1 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | Yes | No | Round 1 low water recovery. Sample for Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | | |
| L2-MW2 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |
| L2-MW3 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | | |

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 2

| Site/Well No. | Analytical Parameters | | | | | | | | | | | | | | Comment |
|----------------------------|---------------------------------|-------------------------|-------------------------|------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|---------------------------|---------------------|-------------------------|---|
| | Included in Previous Monitoring | Included in Round 1 LTM | Included in Round 2 LTM | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates ¹ | Natural Attenuation | Methane, Ethane, Ethene | |
| LINE 3 | | | | | | | | | | | | | | | |
| H16-A | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| H16-B | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| H16-C | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| H16-D | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| H16-E | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-53 | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | |
| JAW-54 | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | PUMP IS MALFUNCTIONING. |
| JAW-55 | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | WELL NEEDS MAINTENANCE. |
| JAW-56 | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | |
| JAW-57 | Yes | Yes | Yes | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-77 | Yes | Yes | Yes | 1 | 1 | No | 1 | No | No | No | No | 1 | No | No | WELL HEAD WAS DIRTY. PLASTIC BAG WAS TORN. WASP HIVE. |
| LINE 9 | | | | | | | | | | | | | | | |
| JAW-29 | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-30 | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-31 | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-610 | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-611 | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| JAW-612 | Yes | Yes | No | NA | | | | | | | | | | | Confirms previous results. No sampling in round 2. LTM needs will be addressed in LTM Plan. |
| R10PZ-1 | No | Yes | No | NA | | | | | | | | | | | Piezometer. Abandon. |
| INERT DISPOSAL AREA | | | | | | | | | | | | | | | |
| G-4 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| G-5 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| G-6 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | PROTECTIVE POST LEANING TO SIDE. |
| G-7 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| ET-3 | RCRA | No | No | NA | | | | | | | | | | | Retain in RCRA monitoring program. |
| JAW-26 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | NO COMPRESSION ELBOW, WASP HIVE. |
| JAW-27 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | LID DOES NOT CLOSE. PLASTIC BAG COVERING WELL HEAD SEALED WITH TAPE. |
| JAW-28 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| JAW-65 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| T-1 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| T-4 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| T-5 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | WELL BOX IS RUSTED. |
| T-6 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| T-9 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | No compression sleeve, lock difficult to open. |
| C59-1 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| C95-2 | RCRA | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| CAMU-99-1S | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| CAMU-99-1D | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| CAMU-99-2S | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| CAMU-99-2D | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| CAMU-99-3S | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| IDA-MW1 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | Filtered and non-filtered Gross Alpha/Beta samples. |
| IDA-MW2 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | |
| FIRING SITE | | | | | | | | | | | | | | | |
| JAW-32 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | 1 | No | 1 | No | No | Well was dry in round 1. |
| JAW-33 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | Well was dry in round 1. |
| JAW-34 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | CASING RUSTED AND POST BENT. |
| JAW-35 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | |
| JAW-36 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | |

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 2

| Site/Well No. | Analytical Parameters | | | | | | | | | | | | | | | Comment |
|----------------------------|---------------------------------|-------------------------|-------------------------|------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|---------------------------|---------------------|-------------------------|--|---------|
| | Included in Previous Monitoring | Included in Round 1 LTM | Included in Round 2 LTM | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates ¹ | Natural Attenuation | Methane, Ethane, Ethene | | |
| JAW-37 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | Well was dry in round 1. | |
| JAW-618 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | | |
| JAW-619 | Yes | Yes | Yes | No | 1 | No | No | 1 | 1 | No | No | 1 | No | No | | |
| LINE 3A | | | | | | | | | | | | | | | | |
| JAW-15 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-16 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | NO PROTECTIVE POSTS. | |
| JAW-17 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | CAP IS BROKEN. | |
| JAW-18 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-19 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| JAW-20 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | CASING AND POSTS ARE RUSTED | |
| JAW-21 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | WELL BOX IS RUSTED. | |
| JAW-22 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | ONE PROTECTIVE POST IS MISSING | |
| LINES 4a & 4b | | | | | | | | | | | | | | | | |
| JAW-604 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | Explosives detected. Sample in Spring 2000 to confirm. | |
| JAW-605 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | No | Sample in Spring 2000 to confirm results | |
| LINES 5a & 5b | | | | | | | | | | | | | | | | |
| JAW-606 | No | No | No | NA | | | | | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use. | |
| JAW-607 | No | No | No | NA | | | | | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use. | |
| JAW-608 | No | No | No | NA | | | | | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use. | |
| JAW-609 | No | No | No | NA | | | | | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use. | |
| 5a-MW1 | NA | No | Yes | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | Shallow till well at 5a source, pending soil remediation. 2nd round. | |
| 5b-MW1 | NA | No | Yes | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | Shallow till well at 5b source, pending soil remediation. 2nd round. | |
| DEMOLITION AREA | | | | | | | | | | | | | | | | |
| JAW-1 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-2 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross alpha/beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| G-9 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | LID IS RUSTED. HINGE IS ALMOST RUSTED THROUGH. | |
| G-10 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross alpha/beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| G-11 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross alpha/beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| DA-1 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross alpha/beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| DA-2 | Yes | Yes | Yes | 1 | 1 | No | No | Yes ^a | No | No | No | 1 | Yes ^a | No | Well was dry in round 1. Sample for Gross alpha/beta and Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| LINE 800/ PW LAGOON | | | | | | | | | | | | | | | | |
| G-17 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-18 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-19 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-20 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | PVC CAP BROKEN. SEEN RESTING BETWEEN PROTECTIVE CASING AND RISER PIPE. | |
| G-40 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-41 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-42 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-43 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-44 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-45 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | PAINT ON CASING FADED. | |
| G-46 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-47 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-48 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-56 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | WELL COVER IS RUSTED, PVC CAP HAD TO BE REMOVED AND REPLACED, ONLY 2 PROTECTIVE POSTS. | |

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 2

| Site/Well No. | Analytical Parameters | | | | | | | | | | | | | | | Comment |
|-------------------------------|---------------------------------|-------------------------|-------------------------|------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|---------------------------|---------------------|-------------------------|---|---------|
| | Included In Previous Monitoring | Included In Round 1 LTM | Included In Round 2 LTM | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates ¹ | Natural Attenuation | Methane, Ethane, Ethene | | |
| G-57 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | MISSING PROTECTIVE POST. RUSTED CASING COVER. CAP BROKEN ALONG WELDED SECTION. | |
| G-58 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | RUSTED CASING. CAP BROKEN AT WELDED SECTION. | |
| JAW-78 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| JAW-79 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-01 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-02 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-03 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-04 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-05 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-06 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-07 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-08 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-09 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-10 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-11 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-12 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-13 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-14 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-15 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-16 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-17 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-18 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-19 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-20 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-21 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-22 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-23 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-24 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-25 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| L800-MW-26 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| PESTICIDE PIT | | | | | | | | | | | | | | | | |
| Sump | No | Yes | Yes | No | 1 | No | No | No | No | No | 1 | No | No | No | Well was dry in round 1. Sample for Metals and Pesticides/PCBs in round 2. | |
| JAW-615 | Yes | No | No | | | | | | | | | | | | Evaluate based on sump data. Maintain for use if needed. | |
| JAW-616 | Yes | No | No | | | | | | | | | | | | Evaluate based on sump data. Maintain for use if needed. | |
| JAW-617 | Yes | No | No | | | | | | | | | | | | Evaluate based on sump data. Maintain for use if needed. | |
| CONSTR. DEBRIS LF | | | | | | | | | | | | | | | | |
| JAW-8 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | 1 | 1 | No | No | LTM evaluation pending additional investigation. CASING RUSTED. WATER INSIDE PROTECTIVE CASING. | |
| JAW-9 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | 1 | 1 | No | No | LTM evaluation pending additional investigation. PUMP MALFUNCTIONING. CASING RUSTED. | |
| JAW-10 | Yes | Yes | Yes | 1 | 1 | 1 | 1 | No | No | No | 1 | 1 | No | No | LTM evaluation pending additional investigation. PID READING 210 PPM. SOIL UNDER PAD ERODED. CASING RUSTED. | |
| BLDG 600-86 SPTC SYST. | | | | | | | | | | | | | | | | |
| JAW-623 | Yes | No | No | | | | | | | | | | | | Maintain for use if needed. | |
| JAW-624 | Yes | No | No | | | | | | | | | | | | Maintain for use if needed. | |
| FLYASH LANDFILL | | | | | | | | | | | | | | | | |
| MW-1-91 | No | Yes | No | | | | | | | | | | | | Evaluation of LTM needs will be addressed in LTM Plan. | |
| MW-3-91 | No | Yes | No | | | | | | | | | | | | Evaluation of LTM needs will be addressed in LTM Plan. | |
| MW-4-91 | No | Yes | No | | | | | | | | | | | | Evaluation of LTM needs will be addressed in LTM Plan. | |
| MW-6-91 | No | Yes | No | | | | | | | | | | | | Evaluation of LTM needs will be addressed in LTM Plan. | |
| PLANT BOUNDARY | | | | | | | | | | | | | | | | |
| G-1 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | BLUE DRUM AT WELL. | |
| G-2 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | NO PUMP IN WELL. | |
| G-3 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 2

| Site/Well No. | Analytical Parameters | | | | | | | | | | | | | | | Comment |
|---------------|---------------------------------|-------------------------|-------------------------|------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|---------------------------|---------------------|-------------------------|--|---------|
| | Included in Previous Monitoring | Included in Round 1 LTM | Included in Round 2 LTM | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates ¹ | Natural Attenuation | Methane, Ethane, Ethene | | |
| G-12 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | Yes ^a | No | Round 1 low water recovery. Sample for Natural Attenuation of round 1 parameters if water recovery in round 2 is sufficient. | |
| G-13 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | ORGANIC MATERIAL ON WATER LEVEL PROBE. DRY. POOR ACCESS TO WELL. | |
| G-21 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | Replace or repair if blocked. | |
| G-22 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-23 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-24 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-25 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-26 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-27 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-28 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-31 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-49 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-51 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | FALLEN TREE OVER WELL. | |
| G-52 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | ACCESS TO WELL IS POOR. | |
| G-53 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-54 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| G-55 | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | WELL HAD NO LOCK. | |
| H13-B | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK. | |
| H13-D | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK. | |
| H13-E | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK | |
| H13-F | No | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK | |
| JAW-76 | Yes | Yes | Yes | 1 | 1 | No | No | No | No | No | No | 1 | No | No | | |
| New Well | NA | | No | 0 | 0 | No | No | No | No | No | No | 1 | 0 | No | Location and depth to be determined. 2nd Round if needed. | |
| New Well | NA | | No | 0 | 0 | No | No | No | No | No | No | 1 | 0 | No | Location and depth to be determined. 2nd Round if needed. | |
| New Well | NA | | No | 0 | 0 | No | No | No | No | No | No | 1 | 0 | No | Location and depth to be determined. 2nd Round if needed. | |
| New Well | NA | | No | 0 | 0 | No | No | No | No | No | No | 1 | 0 | No | Location and depth to be determined. 2nd Round if needed. | |
| New Well | NA | | No | 0 | 0 | No | No | No | No | No | No | 1 | 0 | No | Location and depth to be determined. 2nd Round if needed. | |
| New Well | NA | | No | 0 | 0 | No | No | No | No | No | No | 1 | 0 | No | Location and depth to be determined. 2nd Round if needed. | |

a) Parameters not analyzed during the Fall 1999 sampling event due to inefficient yield of water or dry well.

1 Subject to final authorization by Army.

APPENDIX C
LTM SAMPLE QUANTITIES
AND PARAMETERS,
FALL 1999 LTM EVENT

IOWA ARMY AMMUNITION PLANT, LTM SAMPLE QUANTITIES AND PARAMETERS BY SITE, ROUND 1

| Site/Well No. | Included In Previous Monitoring | | Include In Round 1 LTM | Review After: | Analytical Parameters | | | | | | | | | | | | | Comment |
|---------------------------------|---------------------------------|-----|------------------------|---------------|-----------------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|--------------|--|---|--|--|---------|
| | | | | | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates | Natural Attenuation | Methane - Ethane, Ethene | | | |
| EAST BURN PADS | | | | | | | | | | | | | | | | | | |
| EDA-1 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | | | | |
| EDA-2 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | | | | |
| EDA-3 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | WELL APPEARS TO BE IN SAME AQUIFER AS JAW614 | | | |
| EDA-4 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | | | | |
| G-29 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | NO PADLOCK ON WELL | | | |
| JAW-4 | Yes | Yes | 5 yrs | NA | NA | 1 | NA | NA | No | No | No | No | NA | No | Blue drum adjacent to well. LOW RECOVERY - Only VOCs and Na, Ca, and Mg were analyzed. | | | |
| JAW-5 | Yes | Yes | 5 yrs | NA | NA | NA | NA | NA | No | No | No | No | NA | No | Well was dry. NO SAMPLE COLLECTED. | | | |
| JAW-6 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | | | | |
| JAW-7 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | | | | |
| JAW-84 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | ONE BENT PROTECTIVE POST. | | | |
| JAW-614 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | WELL APPEARS TO BE IN SAME AQUIFER AS EDA-03 | | | |
| EBP-MW1 | No | Yes | 5 yrs | 1 | NA | 1 | 1 | NA | No | No | No | No | NA | No | New well installed by Harza/USACE. Dev. 12/16/99 LOW RECOVERY, ONLY ABLE TO FILL 4 AMBER AND 2 VOA BOTTLES (Explosives, SVOCs, and VOCs). | | | |
| EBP-MW2 | No | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | New well installed by Harza/USACE. Dev. 12/8/99 | | | |
| EBP-MW3 | No | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | 1 | No | New well installed by Harza/USACE. Dev. 11/99 | | | |
| NORTH BURN PADS | | | | | | | | | | | | | | | | | | |
| JAW-11 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | | |
| JAW-12 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | NA | No | Sample if water is present. WELL WAS DRY. NO SAMPLE COLLECTED. | | | |
| JAW-13 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | NA | No | WELL WAS DRY. NO SAMPLE COLLECTED | | | |
| JAW-14 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | | |
| NORTH BURN PADS LANDFILL | | | | | | | | | | | | | | | | | | |
| JAW-625 | Yes | Yes | NA | NA | | | | | | | | | | Abandon. Replaced with NBPLF-MW-1. WELL WAS DRY | | | | |
| JAW-626 | Yes | No | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | | |
| JAW-627 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | PROTECTIVE CASING IS RUSTY | | | |
| MW-1-92 | No | No | NA | NA | | | | | | | | | | Abandon if still in place. Update well inventory | | | | |
| MW-3-92 | No | No | NA | NA | | | | | | | | | | Abandon if still in place. Update well inventory | | | | |
| NBPLF-MW1 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by Harza/USACE. Dev. 12/28 | | | |
| WEST BURN PADS | | | | | | | | | | | | | | | | | | |
| JAW-23 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | NA | No | Dry. | | | |
| JAW-24 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | | |
| JAW-25 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | | |
| JAW-68 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | WELL HAS ONLY TWO PROTECTIVE POSTS. | | | |
| G-30 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | | |
| WBP-99-1 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by ECC/USACE | | | |
| WBP-99-2 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by ECC/USACE | | | |
| WBP-99-3 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by ECC/USACE | | | |
| WBP-99-4 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by ECC/USACE | | | |
| WBP-99-5 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by ECC/USACE | | | |
| WBP-99-6 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | NA | No | New well installed by ECC/USACE. POOR RECOVERY. LIMITED NAT. ATTEN PARAMETERS COLLECTED | | | |
| WBP-99-7 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | New well installed by ECC/USACE | | | |
| FIRE TRAINING AREA | | | | | | | | | | | | | | | | | | |
| JAW-58 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| JAW-59 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| JAW-60 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| JAW-61 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| JAW-62 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| JAW-63 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| JAW-69 | Yes | NA | NA | NA | | | | | | | | | | Well removed. | | | | |
| JAW-80 | Yes | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | | | | |
| M-01 | No | Yes | NA | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | Reevaluate after 1 round. | | | |
| SA-99-1 | NA | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | Sump in RA excavation. | | | |
| FTA-99-1 | NA | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | New well installed by ECC/USACE | | | |
| FTA-99-2 | NA | Yes | 5 yrs | 1 | 1 | 1 | No | 1 | No | No | No | No | 1 | 1 | New well installed by ECC/USACE. MS/MSD FOR METHANE, ETHANE, ETHENE ONLY | | | |
| AMMO BOX CHIPPER AREA | | | | | | | | | | | | | | | | | | |
| JAW-620 | Yes | Yes | 1 Round | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | Reevaluate need for LTM. | | | |
| JAW-621 | Yes | No | NA | NA | | | | | | | | | | Reevaluate based on 1 round in JAW-620 | | | | |
| JAW-622 | Yes | No | NA | NA | | | | | | | | | | Reevaluate based on 1 round in JAW-620 | | | | |
| LINE 1 | | | | | | | | | | | | | | | | | | |
| G-14 | No | No | NA | NA | | | | | | | | | | Needs maintenance. Maintain for use if needed | | | | |
| JAW-38 | No | No | NA | NA | | | | | | | | | | Maintain for use if needed. | | | | |

| Site/Well No. | Included in Previous Monitoring | Include in Round 1 LTM | Review After: | Analytical Parameters | | | | | | | | | | | | | Comment |
|----------------------------|---------------------------------|------------------------|---------------|-----------------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|--------------|---------------------|-------------------------|----|--|--------------------------------------|
| | | | | Explosives | 6 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates | Natural Attenuation | Methane, Ethane, Ethene | | | |
| | | | | | | | | | | | | | | | | | |
| JAW-39 | No | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | No | 1 | No | PVC CASING IS APPROX 7 INCHES ABOVE PROTECTIVE CASING | |
| JAW-40 | No | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | No | 1 | No | | |
| JAW-41 | No | No | NA | NA | | | | | | | | | | | | | Maintain for use if needed |
| JAW-42 | No | No | NA | NA | | | | | | | | | | | | | Maintain for use if needed |
| JAW-43 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-44 | Yes | No | NA | NA | | | | | | | | | | | | | Maintain for use if needed. |
| JAW-45 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-46 | Yes | No | NA | NA | | | | | | | | | | | | | Maintain for use if needed |
| JAW-47 | Yes | No | NA | NA | | | | | | | | | | | | | Maintain for use if needed |
| JAW-48 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-50 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-51 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-52 | Yes | No | NA | NA | | | | | | | | | | | | | Maintain for use if needed |
| JAW-801 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-802 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | | |
| JAW-803 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | HINGE ON WELL BOX IS COMING OFF. | |
| SL-81 | No | Yes | 1 Round | NA | NA | No | No | NA | No | No | No | No | NA | No | | If present, sample once and reevaluate. LOOKED FOR WELL, COULD NOT FIND | |
| L1-MW1 | NA | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | 1 | No | | Shallow till well east of plume Dev. Dec. 16. | |
| LINE 2 | | | | | | | | | | | | | | | | | |
| G-15 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | | |
| H10-A | No | No | NA | NA | | | | | | | | | | | | | installed for pumping tests. Abandon |
| H10-B | No | No | NA | NA | | | | | | | | | | | | | installed for pumping tests Abandon |
| H12-A | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | INSTALLED NEW MASTERLOCK. | |
| H12-B | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | INSTALLED NEW MASTERLOCK. | |
| H12-C | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | INSTALLED NEW MASTERLOCK. | |
| H12-D | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | INSTALLED NEW MASTERLOCK. | |
| H12-E | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | INSTALLED NEW MASTERLOCK. | |
| H12-F | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | Sample if water is present. INSTALLED NEW MASTERLOCK. | |
| H12-G | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | INSTALLED NEW MASTERLOCK. | |
| JAW-70 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | | |
| JAW-71 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | | |
| JAW-72 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | | |
| JAW-73 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | | |
| JAW-74 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | | |
| JAW-75 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | WELL BOX SUNKEN, WELL COVER OFF, PLASTIC IS CRACKED AND DETERIORATED. | |
| R02PZ-29 | No | No | NA | NA | | | | | | | | | | | | | Piezometer. Abandon if present. |
| L2-MW1 | NA | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | NA | No | | Shallow till well north of north plume DUE TO LOW WATER RECOVERY, ONLY EXPLOSIVES AND METALS COLLECTED. | |
| L2-MW2 | NA | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | Shallow till well north of north plume Dev. 12/17/99 | |
| L2-MW3 | NA | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | Shallow till well south of south plume Dev. 12/17/99 | |
| LINE 3 | | | | | | | | | | | | | | | | | |
| H16-A | No | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | | |
| H16-B | No | Yes | 1 Round | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | Discontinue LTM if results consistent with past. | |
| H16-C | No | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | | |
| H16-D | No | Yes | 1 Round | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | Discontinue LTM if results consistent with past. | |
| H16-E | No | Yes | 1 Round | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | Discontinue LTM if results consistent with past. | |
| JAW-53 | Yes | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | | |
| JAW-54 | Yes | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | PUMP IS MALFUNCTIONING | |
| JAW-55 | Yes | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | WELL NEEDS MAINTENANCE. | |
| JAW-56 | Yes | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | | |
| JAW-57 | Yes | Yes | 1 Round | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | Discontinue LTM if results consistent with past. DEBRIS IN WELL HEAD. DISCHARGE MISSING COMPRESSION SLEEVE | |
| JAW-77 | Yes | Yes | 5 yrs | 1 | 1 | No | 1 | No | No | No | No | No | 1 | No | | WELL HEAD WAS DIRTY PLASTIC BAG WAS TORN WASP HIVE | |
| LINE 9 | | | | | | | | | | | | | | | | | |
| JAW-29 | Yes | Yes | 1 Round | 1 | No | 1 | 1 | No | No | No | No | No | 1 | No | | VOCs to specifically include Freon | |
| JAW-30 | Yes | Yes | 1 Round | 1 | No | 1 | 1 | No | No | No | No | No | 1 | No | | VOCs to specifically include Freon | |
| JAW-31 | Yes | Yes | 1 Round | 1 | No | 1 | 1 | No | No | No | No | No | 1 | No | | VOCs to specifically include Freon | |
| JAW-810 | Yes | Yes | 1 Round | 1 | No | 1 | 1 | No | No | No | No | No | 1 | No | | VOCs to specifically include Freon. | |
| JAW-611 | Yes | Yes | 1 Round | 1 | No | 1 | 1 | No | No | No | No | No | 1 | No | | VOCs to specifically include Freon. MS/MSD FOR VOCS-FREON | |
| JAW-612 | Yes | Yes | 1 Round | 1 | No | 1 | 1 | No | No | No | No | No | 1 | No | | VOCs to specifically include Freon. | |
| R10PZ-1 | No | No | NA | NA | | | | | | | | | | | | | Piezometer. Abandon. |
| INERT DISPOSAL AREA | | | | | | | | | | | | | | | | | |
| G-4 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | | | |
| G-5 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | | | |
| G-6 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | | PROTECTIVE POST LEANING TO SIDE. | |

| Site/Well No. | Included in Previous Monitoring | Include in Round 1 LTM | Review After: | Analytical Parameters | | | | | | | | | | | | Comment |
|----------------------------|---------------------------------|------------------------|---------------|-----------------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|--------------|---------------------|-------------------------|----|--|
| | | | | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates | Natural Attenuation | Methane, Ethane, Ethene | | |
| | | | | | | | | | | | | | | | | |
| G-7 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| ET-3 | RCRA | No | NA | | | | | | NA | | | | | | | Retain in RCRA monitoring program |
| JAW-26 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | NO COMPRESSION ELBOW, WASP HIVE LID DOES NOT CLOSE. PLASTIC BAG COVERING WELL HEAD SEALED WITH TAPE. |
| JAW-27 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| JAW-28 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| JAW-65 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| T-1 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| T-4 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| T-5 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | WELL BOX IS RUSTED. |
| T-6 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| T-9 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No compression sleeve, lock difficult to open |
| C59-1 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| C95-2 | RCRA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | |
| CAMU-99-1S | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by ECC/USACE. |
| CAMU-99-1D | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by ECC/USACE. |
| CAMU-99-2S | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by ECC/USACE. |
| CAMU-99-2D | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by ECC/USACE. |
| CAMU-99-3S | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by ECC/USACE. |
| IDA-MW1 | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by Harza/USACE. DEV. 12/19/99 |
| IDA-MW2 | NA | Yes | 5 yrs | 1 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | New well installed by Harza/USACE. DEV. 12/13/99 |
| FIRING SITE | | | | | | | | | | | | | | | | |
| JAW-32 | Yes | Yes | 5 yrs | No | NA | No | No | NA | NA | No | No | No | No | No | No | WELL WAS DRY. 1 POST MISSING |
| JAW-33 | Yes | Yes | 5 yrs | No | NA | No | No | NA | NA | No | No | No | No | No | No | Sample if water is present. DRY |
| JAW-34 | Yes | Yes | 5 yrs | No | 1 | No | No | 1 | 1 | No | No | No | No | No | No | CASING RUSTED AND POST BENT. |
| JAW-35 | Yes | Yes | 5 yrs | No | 1 | No | No | 1 | 1 | No | No | No | No | No | No | |
| JAW-36 | Yes | Yes | 5 yrs | No | 1 | No | No | 1 | 1 | No | No | No | No | No | No | |
| JAW-37 | Yes | Yes | 5 yrs | No | NA | No | No | NA | NA | No | No | No | No | No | No | DRY |
| JAW-618 | Yes | Yes | 5 yrs | No | 1 | No | No | 1 | 1 | No | No | No | No | No | No | |
| JAW-619 | Yes | Yes | 5 yrs | No | 1 | No | No | 1 | 1 | No | No | No | No | No | No | |
| LINE 3A | | | | | | | | | | | | | | | | |
| JAW-15 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| JAW-16 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | NO PROTECTIVE POSTS |
| JAW-17 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | CAP IS BROKEN. |
| JAW-18 | Yes | Yes | 5 yrs | NA | NA | No | No | No | No | No | No | No | NA | No | No | DRY WHITE CHUNKY MATERIAL IN BOTTOM OF WELL DRY RISER IS APPROXIMATELY 4 INCHES ABOVE CASING WELL IS MISSING ONE PROTECTIVE POST |
| JAW-19 | Yes | Yes | 5 yrs | NA | NA | No | No | No | No | No | No | No | NA | No | No | CASING AND POSTS ARE RUSTED |
| JAW-20 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | WELL BOX IS RUSTED. |
| JAW-21 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | WELL BOX IS RUSTED. |
| JAW-22 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | ONE PROTECTIVE POST IS MISSING |
| LINES 4a & 4b | | | | | | | | | | | | | | | | |
| JAW-604 | Yes | Yes | 1 Round | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No | Discontinue LTM if results consistent with past. Reevaluate based on soils FFS. PAINTED WELL NUMBER ALMOST |
| JAW-605 | Yes | Yes | 1 Round | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No | Discontinue LTM if results consistent with past. Reevaluate based on soils FFS. PUMP MALFUNCTIONING |
| LINES 5a & 5b | | | | | | | | | | | | | | | | |
| JAW-606 | Yes | No | Soils RA | | | | | | NA | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use |
| JAW-607 | Yes | No | Soils RA | | | | | | NA | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use. |
| JAW-608 | Yes | No | Soils RA | | | | | | NA | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use. |
| JAW-609 | Yes | No | Soils RA | | | | | | NA | | | | | | | Defer monitoring pending additional soils data. Maintain for groundwater levels and future use |
| New Well | NA | No | 1 Round | 0 | 0 | 0 | 0 | No | No | No | No | No | No | No | No | Shallow till well at 5a source, pending soil remediation. 2nd round |
| New Well | NA | No | 1 Round | 0 | 0 | 0 | 0 | No | No | No | No | No | No | No | No | Shallow till well at 5b source, pending soil remediation. 2nd round |
| DEMOLITION AREA | | | | | | | | | | | | | | | | |
| JAW-1 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | No | No | No | WENT DRY AFTER FILLING 4-1 LITER BOTTLES. |
| JAW-2 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | No | No | No | DRY |
| G-9 | Yes | Yes | 5 yrs | 1 | 1 | No | No | 1 | No | No | No | No | No | No | No | LID IS RUSTED. HINGE IS ALMOST RUSTED THROUGH. |
| G-10 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | No | No | No | LID MODIFIED. NO LOCK. CASING RUSTED. DRY. WELL NUMBER SIGN IS DOWN |
| G-11 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | No | No | No | DRY. WELL COVER OFF. TRIED PUMPING WELL. |
| DA-1 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | No | No | No | PUMP IS NOT WORKING. CRACKED PAD. PROTECTIVE CASING APPEARS TO HAVE SUNK 6 INCHES. DIFFICULT TO GET TUBING INTO WELL. |
| DA-2 | Yes | Yes | 5 yrs | NA | NA | No | No | NA | No | No | No | No | No | No | No | PUMP IS NOT WORKING. LATCH MISSING. WELL COVER WAS OPEN |
| LINE 800/ PW LAGOON | | | | | | | | | | | | | | | | |
| G-17 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-18 | No | Yes | 2 Rounds | 1 | 1 | 1 | 1 | No | No | No | No | No | 1 | No | No | Review VOCs after 1 round. |
| G-19 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |

| Site/Well No. | Included in Previous Monitoring | Include in Round 1 LTM | Review After: | Analytical Parameters | | | | | | | | | | | | Comment |
|-------------------------------|---------------------------------|------------------------|---------------|-----------------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|--------------|---------------------|-------------------------|----|---|
| | | | | Explosives | 8 RCRA Metals | VOCs | SVOCs | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates | Natural Attenuation | Methane, Ethane, Ethene | | |
| | | | | | | | | | | | | | | | | |
| G-20 | No | Yes | 2 Rounds | 1 | 1 | 1 | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round PVC CAP BROKEN. SEEN RESTING BETWEEN PROTECTIVE CASING AND RISER PIPE |
| G-40 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-41 | No | Yes | 2 Rounds | 1 | 1 | 1 | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round |
| G-42 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-43 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-44 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-45 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | PAINT ON CASING FADED. |
| G-46 | No | Yes | 2 Rounds | 1 | 1 | 1 | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round |
| G-47 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-48 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-56 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | WELL COVER IS RUSTED, PVC CAP HAD TO BE REMOVED AND REPLACED, ONLY 2 PROTECTIVE POSTS |
| G-57 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | MISSING PROTECTIVE POST RUSTED CASING COVER CAP BROKEN ALONG WELDED SECTION |
| G-58 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | RUSTED CASING. CAP BROKEN AT WELDED SECTION |
| JAW-78 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| JAW-79 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round NO VOCs COLLECTED. |
| L800-MW-01 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-02 | No | Yes | 2 Rounds | 1 | 1 | 1 | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round |
| L800-MW-03 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-04 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-05 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-06 | No | Yes | 2 Rounds | 1 | 1 | 1 | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round |
| L800-MW-07 | No | Yes | 2 Rounds | 1 | 1 | 1 | No | No | No | No | No | No | No | 1 | No | Review VOCs after 1 round |
| L800-MW-08 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-09 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-10 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-11 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-12 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-13 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-14 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-15 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-16 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-17 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-18 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-19 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-20 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-21 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| L800-MW-22 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | New well installed by Harza/USACE |
| L800-MW-23 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | New well installed by Harza/USACE |
| L800-MW-24 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | New well installed by Harza/USACE. |
| L800-MW-25 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | New well installed by Harza/USACE. |
| L800-MW-26 | No | Yes | 2 Rounds | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | New well installed by Harza/USACE. |
| PESTICIDE PIT | | | | | | | | | | | | | | | | |
| Sump | No | Yes | 1 Round | No | NA | No | No | No | No | No | NA | No | No | No | No | DRY. NEW MASTERLOCK INSTALLED |
| JAW-615 | Yes | No | 1 Round | NA | | | | | | | | | | | | Evaluate based on sump data. Maintain for use if needed. |
| JAW-616 | Yes | No | 1 Round | NA | | | | | | | | | | | | Evaluate based on sump data. Maintain for use if needed. |
| JAW-617 | Yes | No | 1 Round | NA | | | | | | | | | | | | Evaluate based on sump data. Maintain for use if needed. |
| CONSTR. DEBRIS LF | | | | | | | | | | | | | | | | |
| JAW-8 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | No | No | No | 1 | No | 1 | No | No | LTM evaluation pending additional investigation. CASING RUSTED. WATER INSIDE PROTECTIVE CASING. |
| JAW-9 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | No | No | No | 1 | No | 1 | No | No | LTM evaluation pending additional investigation. PUMP MALFUNCTIONING. CASING RUSTED. |
| JAW-10 | Yes | Yes | 5 yrs | 1 | 1 | 1 | 1 | No | No | No | 1 | No | 1 | No | No | LTM evaluation pending additional investigation. PID READING 210 PPM. SOIL UNDER PAD ERODED. CASING RUSTED. |
| BLDG 600-86 SPTC SYST. | | | | | | | | | | | | | | | | |
| JAW-623 | Yes | No | NA | NA | | | | | | | | | | | | Maintain for use if needed. |
| JAW-624 | Yes | No | NA | NA | | | | | | | | | | | | Maintain for use if needed. |
| FLYASH LANDFILL | | | | | | | | | | | | | | | | |
| MW-1-91 | No | Yes | 1 Round | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No | Sample 1 round and evaluate LTM needs. 48 DRUMS ARE PRESENT SURROUNDING WELLS. |
| MW-3-91 | No | Yes | 1 Round | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No | Sample 1 round and evaluate LTM needs. DRUM IS PRESENT |
| MW-4-91 | No | Yes | 1 Round | NA | NA | NA | NA | No | No | No | No | No | No | No | No | Sample 1 round and evaluate LTM needs. HOSE FROZEN SEVERAL ATTEMPTS WERE MADE TO SAMPLE WELL. NO SAMPLE COLLECTED. TRIED AGAIN ON 1/18/00, PUMP MALFUNCTIONING. 18 POLY AND METAL DRUMS IN AREA |
| MW-6-91 | No | Yes | 1 Round | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No | Sample 1 round and evaluate LTM needs. DRUM IS PRESENT |
| PLANT BOUNDARY | | | | | | | | | | | | | | | | |
| G-1 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | BLUE DRUM AT WELL. |

| Site/Well No. | Included in Previous Monitoring | Include in Round 1 LTM | Review After: | Analytical Parameters | | | | | | | | | | | | Comment |
|---------------|---------------------------------|------------------------|---------------|-----------------------|---------------|------|-------|------------------------|-----------------|------------|-----------------|--------------|---------------------|-------------------------|----|--|
| | | | | Explosives | 6 RCRA Metals | VOCs | SVOCS | Gross alpha/Gross beta | Uranium (total) | Radium 226 | Pesticides/PCBs | Perchlorates | Natural Attenuation | Methane, Ethane, Ethene | | |
| | | | | 1 | 1 | No | No | No | No | No | No | No | 1 | No | | |
| G-2 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | NO PUMP IN WELL |
| G-3 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | No | 1 | No | |
| G-12 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | NA | No | No | PUMP IS NOT WORKING NOT ENOUGH WATER TO PUMP COULD ONLY FILL 3-1 LITER BOTTLES. |
| G-13 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | ORGANIC MATERIAL ON WATER LEVEL PROBE. DRY POOR ACCESS TO WELL. |
| G-21 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | Replace or repair if blocked |
| G-22 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-23 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-24 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-25 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-26 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-27 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-28 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-31 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-49 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-51 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | FALLEN TREE OVER WELL |
| G-52 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | ACCESS TO WELL IS POOR. |
| G-53 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| G-54 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | HEADSPACE READING=56PPM |
| G-55 | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | WELL HAD NO LOCK. HEADSPACE READING = 127PPM |
| H13-B | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK. DARK PARTICLES FLOATING IN PURGED WATER. MS/MSD FOR PESTS/PCBS ONLY |
| H13-D | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK. DARK PARTICLES FLOATING IN PURGED WATER AND OILY SHEEN |
| H13-E | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK |
| H13-F | No | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | REPLACED MASTER LOCK |
| JAW-76 | Yes | Yes | 5 yrs | 1 | 1 | No | No | No | No | No | No | No | 1 | No | No | |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |
| New Well | NA | No | 5 yrs | 0 | 0 | No | No | No | No | No | No | No | 0 | No | No | Location and depth to be determined. 2nd Round if needed. |

NA Parameter was not collected due to dry well or inefficient water recovery of well.

From: Rodger Allison
To: Fred Taylor
Date: 4/26/00 4:58PM
Subject: Fwd: RE: Work Plan Addendum for Long Term Monitoring Event - Spring2000

I spoke with Kevin Howe and Al Kam of USACE regarding their response to my comments. They have clarified their comments below:

1. Table 2, Page 3: Why have the number of samples increased at most sites?

Response: The difference is that some wells were dry and a sample was not obtained in the fall of 1999. The Fall round is showing the actual samples taken and the Spring round shows the samples that are planned.

2. Table 2, Page 3: Ammo Box Chipper Disposal Area - If sampling is to stop, are we ready to submit this site for closure?

Response: We may not be ready to submit for closure. The future of the monitoring at this site is currently being evaluated. Until this evaluation and necessary discussions between all parties take place no further monitoring is planned at this site.

3. Table 2, Page 4: Line 9 - If we have confirmed freon, why aren't we continuing to sample?

Response: See answer to comment 2.

4. Table 2, Page 4: Pesticide Pit - USACHPPM may be sampling this during their closure review. We need to coordinate this sampling so we don't have a duplication of effort.

Response: Iowa AAP will coordinate with CHPPM to determine who should perform this sampling. No change to the Work Plan will take place until this is worked out with CHPPM.

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CC: Al Kam; coord list; Kevin Howe