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**OPERATIONS AND MAINTENANCE PLAN FOR  
THE FEMP MONITORING WELL NETWORK**

**09/10/93**

**DOE-FN/EPA  
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REPORT**

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**OPERATIONS AND MAINTENANCE PLAN  
FOR  
THE FEMP MONITORING WELL  
NETWORK**

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**AUGUST 1993**

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Prepared for

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OPERATIONS AND MAINTENANCE PLAN  
FOR  
THE FEMP MONITORING WELL  
NETWORK

## 1.0 INTRODUCTION

The Groundwater Monitoring Section (GWM) of the Fernald Environmental Restoration Management Corporation (FERMCO) has developed this plan as a guide for the operation and maintenance of the Fernald Environmental Management Project (FEMP) monitoring well network.

The FEMP is a U.S. Department of Energy (DOE) owned, contractor-operated facility. Since the initial planning and construction of the facility in the early 1950's, wells have been installed both on and off site to determine the characteristics of the local lithology and groundwater. As a result, a large number of wells have been installed and are currently in existence. The installation methods used, the extent of use, and well maintenance practices have varied over time. Programs intended to maintain the growing number of wells have been developed and implemented through the years. Yet, until the early 1990's, no single program had been developed to address the need to provide a comprehensive monitoring well management program.

In 1990, the former Environmental Monitoring Section of the Westinghouse Materials Company of Ohio (WMCO) accepted responsibility for facility ownership of all DOE-owned monitoring wells. Since that time a program has been developed to maintain the monitoring well network. This Operations and Maintenance (O&M) Plan outlines this program as it has been developed.

### 1.1 PURPOSE

This document is intended to provide guidance to groundwater monitoring and related personnel for the management of the FEMP monitoring well network. The enclosed requirements will assist in maintaining a monitoring well network capable of yielding representative groundwater samples and will help to assure compliance with the Site Wide CERCLA Quality Assurance Project Plan (SCQ).

The following regulatory requirements are deemed applicable to maintaining a monitoring well network at the FEMP:

- DOE Order 5400.1
- State of Ohio RCRA Groundwater Monitoring Administrative Codes 3745-65-90 through 3745-65-94, 3745-66-17 through 3745-66-18.

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- 40 CFR 300 Subchapter J (CERCLA) 300.415, 300.420, and 300.430.

## 1.2 SCOPE

This O&M Plan details the regulatory and site-specific requirements necessary to maintain the FEMP Monitoring Well Network. These requirements are described in the following sections:

- Well Management - Section 3.0
- Organizations and Responsibility - Section 4.0
- Quality - Section 6.0
- Field Activities and Procedures - Section 7.0
- Documentation and Control - Section 8.0

Proper well maintenance is essential to optimize the life of the wells that provide locations for the collection of representative groundwater samples and groundwater elevation data. Maintenance includes proper documentation of factors that can be used as benchmarks for comparison of data at a later date. A scheduled maintenance program must be developed before sample quality is questioned.

Detailed records of monitoring wells must be kept for any management strategy to be effective. Documentation of monitoring well construction and inspection must frequently be provided as part of a regulatory program. Files are to be kept on each monitoring well so that suspected problems can be documented and evaluated based on well history. The accuracy and completeness of the records will affect the ability of the reviewer to make decisions based on historical data.

The maintenance requirements of a well are influenced by the design and age of the well and the characteristics of the monitored zones. Water quality, transmissivity, permeability, storage capacity, boundary conditions, stratification, sorting and fracturing all can influence the need for and methods of well maintenance. Problems with monitoring wells are typically caused by poor well design, improper installation, incomplete development, borehole instability, lack of maintenance, and chemical, physical and/or biological incrustation.

## **2.0 PROJECT BACKGROUND**

During the construction of the site in 1951, five test wells were drilled to monitor the groundwater and examine the lithology. At the same time, three large diameter production wells were installed. This marked the beginning of the monitoring well network. Since 1951, over 500 wells have been installed in support of investigation and remediation activities at the FEMP.

In 1990, a down-hole monitoring well camera inspection was conducted on older wells and wells with unusually high uranium concentrations. As a result of these investigations a total of 11 wells were found to be in a degraded condition and were subsequently plugged and abandoned.

In September of 1991, above ground/surface completion inspections were conducted on approximately 140 monitoring wells at the site. The inspections consisted of examining the outer protective casing, the concrete pad, and the inner casing to determine if the well had been completed properly according to the installation procedures. Individual inspection forms were completed for each well that was inspected.

In October of 1991, a routine (annual) monitoring well inspection program was initiated. Over 450 wells were visually inspected with conditions of each well documented on individual inspection forms. This information was later used to create a well maintenance item and tracking database.

### 3.0 WELL MANAGEMENT

A monitoring well, like any other piece of equipment, must be maintained to maximize its life and to ensure that it will continue to function as intended. For this reason, a well management program was initiated. A well management program is an essential component of any groundwater monitoring program as outlined in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document. Proper well maintenance is also a compliance requirement of the Ohio Administrative Code 3745-65-91 and 40 CFR 265.91.

The intent of the management program is to maintain the monitoring wells, and to assist in both the collection of representative groundwater samples and the protection of the surrounding aquifer. This is achieved through routine well inspections, exceptions tracking, record keeping, inter-organizational communication, and information reporting.

The Manager of the Groundwater Monitoring Section (GWM) has facility ownership responsibilities for all DOE-owned monitoring wells. The GWM Section conducts baseline activities that are designed to maintain the integrity of the monitoring well network. Areas of responsibility have been subdivided into four categories:

- Field Programs
- Information Management
- Inter-organizational Communications and Reporting
- Program Development/Improvement

### 3.1 FIELD PROGRAMS

GWM conducts comprehensive interior and exterior well inspections through a variety of specific field programs. Both existing and newly installed wells are inspected for completeness under the installation requirements of the SCQ or any other controlling documents used during a specific well installation. All information gathered from these inspections is used to maintain a condition status for each well. A well found to be damaged or in need of maintenance during an inspection is identified as a "well exceptions" and the well's identification number and condition are entered into the GWM maintenance tracking system for corrective action.

GWM conducts down-hole camera inspections on new well installations and wells that have been identified as having undergone either a physical change or have exhibited uncharacteristic water quality changes. Camera inspections record the condition of the well's riser, screen, sump, relative turbidity levels, and any accumulation of sediment or debris within the well casing. As with the well exterior inspections, this information is used to maintain a condition status for each well.

GWM defines and directs all well maintenance activities based upon information obtained through well inspections, camera surveys, analytical results, and installation records. Minor maintenance activities, such as well renumbering and cap replacements, are completed by GWM technicians. Major maintenance activities are completed through either the local FEMP labor force or through an Environmental Services Subcontractor. GWM assigns each activity to an appropriate group for completion and tracks each maintenance item from initial reporting to closeout.

Wells that are either no longer used or cannot be used for quality data collection shall be plugged and abandoned. The decision to plug and abandon a well is derived through a collective effort between GWM and the CERCLA/RCRA Units (CRUs) that depend on data collected from that well. Only the Manager of GWM can direct the plugging and abandonment of FEMP monitoring wells. Prior to any plugging and abandonment field activities, a completed Well Plugging and Abandonment Request Form is transferred from the manager of GWM to the organization conducting the work.

### 3.2 INFORMATION MANAGEMENT

Information on the physical characteristics and condition of each well is controlled and maintained by GWM. This includes the type and location of all dedicated groundwater sampling equipment that has been installed and is maintained by GWM. Copies of well installation documentation are maintained in individual file folders and specific installation information is stored in a computer database file. Well maintenance information is stored in

a separate computer file which can be linked to the installation file to produce comprehensive well status and information reports.

GWM maintains all documentation on well plugging and abandonment activities conducted. The documentation is stored in individual files and maintained in the well installation computer file.

### 3.3 INTER-ORGANIZATIONAL COMMUNICATIONS AND REPORTING

In addition to maintaining the well network, GWM provides mechanisms for well information exchange to other FERMCO Departments that are actively involved with monitoring and restoration activities. Upon request, GWM conducts awareness training on the importance of maintaining wells. In addition, GWM generates and distributes well status reports to CRU Groundwater Contacts for use in project planning. The information contained in the status reports is obtained from the field activities conducted or directed by GWM.

### 3.4 PROGRAM DEVELOPMENT/IMPROVEMENT

As the well network expands, the need increases to modify this plan through procedure changes and improved work practices to accommodate growing management requirements. GWM maintains an awareness of industry developments/improvements such as research activities, industry standards implementation, and compliance requirements.

## **4.0 ORGANIZATIONS AND RESPONSIBILITIES**

### 4.1 GROUNDWATER MONITORING

The FEMP Groundwater Monitoring Well Network shall be properly maintained by GWM. Responsibility for each well begins upon acceptance of ownership from the installation subcontractor. All new wells are inspected for completeness and well integrity prior to acceptance of ownership.

GWM is responsible for conducting monthly external well inspections through the Groundwater Elevations Program. Wells are also inspected through the various groundwater sampling programs. GWM field technicians conduct these inspections concurrent with normal monitoring and sampling activities and report well maintenance and/or well integrity findings to management through the exceptions report process. The findings are then added to the maintenance database which is used to track well maintenance activities.

Wells are inspected internally by using a down-hole camera by GWM field technicians. Internal inspections are conducted on wells exhibiting uncharacteristic water quality changes, newly installed wells, or at the request of a CRU. Findings are recorded and reported to management.

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GWM shall be responsible for controlling access to all monitoring wells for data collection or maintenance activities. Prior permission must be obtained from GWM for other groups to access any FEMP well. GWM maintains information on sampling, maintenance, and other activities plus well conditions and dedicated equipment information (pumps, pressure transducers, float recorders, etc). This information must be transferred to a requesting group to avoid lost time, erroneous data collection results, and field activity conflicts.

GWM is responsible for reporting any monitoring well damage. Information about damaged wells is to be provided to the FERMCO Property Management Department (738-6367) and the FERMCO Security Department (738-9316).

4.2 CERCLA/RCRA UNITS (CRUs)

GWM activities support CRU RI/FS and removal action projects. The site is currently divided into five operable units. These units are defined as:

- Operable Unit 1 - Waste Pits 1-6, clearwell and the burn pit.
- Operable Unit 2 - Other waste units: Fly Ash Piles, Lime Sludge Ponds.
- Operable Unit 3 - Production Area and suspect areas outside of the production area (such as effluent line to the Great Miami River).
- Operable Unit 4 - Silos 1-4.
- Operable Unit 5 - All environmental media (i.e., groundwater, surface water, soils, air, flora, fauna).

A CRU (CERCLA/RCRA Unit) is a FERMCO organization created to manage an operable unit. A total of five CRUs exist to manage each of the corresponding operable units.

The CRUs are responsible for providing Project Specific Plans (PSP) and progress updates for all projects relating to the installation, use, or plugging and abandonment of all wells to GWM. The CRUs shall provide draft copies of all such PSP's for GWM review and comment.

4.3 OTHER ORGANIZATIONS

Upon completion of a monitoring well installation, the organization responsible for well installations shall initiate the FERMCO acceptance process. Once acceptance has taken place, access to that well shall be controlled by GWM. This access restriction

shall be necessary to maintain well integrity, track well maintenance, organize data and sample collection, and to ensure that all groups on site are complying with GWM procedures.

GWM shall coordinate with FERMCO's Remediation Support Operations (RSO) to conduct minor repairs on wells identified on the well maintenance list. GWM shall complete and submit Work Request/Orders to the RSO Division, track maintenance activity progress and inspect maintenance completions prior to closeout.

## 5.0 HEALTH AND SAFETY

All FEMP employees and subcontractor personnel who perform monitoring well maintenance field work are required to have completed all OSHA-mandated 1910.120 Hazardous Waste Site Worker training. The DOE requires a series of site specific training courses which are designed to augment OSHA-required training and provide additional training specific to the hazards which exist at the FEMP. All field personnel will be trained according to the FEMP SCQ and to the procedures referenced in this O&M Plan (section 7.2).

### 5.1 FIELD HEALTH AND SAFETY PLAN

Field activities will be conducted in accordance with the FEMP Site Wide Health and Safety Plan. In addition subcontractor field activities shall be conducted in accordance with the Installation/Maintenance of FEMP Monitoring Wells Health & Safety Plan, November 1992 or current revision.

### 5.2 RADIOLOGICAL MONITORING AND CONTROLS

Radiological monitoring for well maintenance will follow existing FEMP site controls. All employees entering a controlled area will wear a Thermal Luminescent Detector (TLD) to monitor for exposure to radiological contamination. Where the potential for exposure is greater, Radiation Worker Permits (RWP) will be obtained. The RWP will identify the conditions that shall be met prior to entry such as required Personnel Protection Equipment (PPE). A radiological technician will be appointed to a field crew performing activities in areas where exposures to radiation may exceed DOE limits. All personnel, equipment, and vehicles exiting a radiologically controlled area will be monitored prior to exiting to ensure that no person or object has been contaminated.

### 5.3 NONRADIOLOGICAL MONITORING AND CONTROLS

All field crews are responsible for hazard awareness. Training is designed to ensure that all field work is conducted using safe work practices. Health and safety technicians are responsible for monitoring potential health and safety problems associated with nonradiological hazards.

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## 6.0 QUALITY

### 6.1 SURVEILLANCE

GWM activities are conducted in accordance with the requirements of the SCQ. Environmental Quality Assurance (EQA) Department conducts random surveillances on the field activities of GWM to assure adherence to the SCQ requirements.

### 6.2 TRAINING

Training for GWM personnel will be in accordance with FEMP Training Department procedures. Personnel will be required to:

- Read the assigned procedure
- Attend a procedure briefing
- Pass a written examination
- Observe a demonstration of procedure tasks
- Pass a performance evaluation

## 7.0 FIELD ACTIVITIES AND PROCEDURES

### 7.1 FIELD ACTIVITIES

#### 7.1.1 Annual Inspection

GWM conducts an annual inspection on all completed and existing DOE-owned wells. All exterior components of each well is inspected and discrepancies are recorded. Wells excluded from this program are; plugged and abandoned wells, wells under construction, production wells, and wells that are privately owned.

The annual inspection is conducted during any part of the calendar year and is usually combined with other well related activities such as groundwater elevation data collection. The Well Inspection Checklist is used during the inspection to record the condition of each well. Information gathered is used to update the well maintenance list.

#### 7.1.2 Monthly Groundwater Elevation Measurements

During scheduled monthly groundwater elevation data collection, exception report forms are completed by GWM technicians for each well found in need of maintenance. Abnormalities concerning the condition of the wells or the immediate area surrounding the wells are recorded on an Exception Report form. This information is entered into the well maintenance database for corrective action, tracking and closeout.

### 7.1.3 DOE Well Inspections

By DOE request, random well inspections are conducted on monitoring wells. GWM assists DOE representatives in performing a complete evaluation of a series of selected monitoring wells. The evaluation is composed of three parts: review of monitoring well installation records, field inspection, and observation of associated sampling events. A Monitor Well Information and Inspection Form is used to record the findings of the inspection. The information gathered is used by DOE to evaluate the condition of the monitoring well network.

### 7.2 PROCEDURES

Field activities are conducted under the requirements of project procedures. These procedures include:

- Monitoring Well Acceptance, SSOP-1043
- Groundwater Monitoring Well Inspections, EP-GWM-300
- Groundwater Monitoring Exceptions Tracking, EP-GWM-301
- Down-Hole Camera Operation, EP-GWM-106
- Well Plugging and Abandonment, EP-GWM-303

### 8.0 DOCUMENTATION AND CONTROL

GWM maintains all records generated through field activities and controls the use and distribution of these records. In addition, files and databases are maintained by GWM on well installations, well plugging and abandonments, well maintenance, and other related well information.

#### 8.1 FILES

A file is maintained for each well that is or may be used for data collection. Information contained within each file include: installation data, lithology data, an installation diagram, and other well-specific information. An inventory for each file is maintained in the well installation database.

#### 8.2 FORMS

GWM uses a number of forms to document field activities in relation to well inspection and maintenance. These forms are:

Well Inspection Checklist (Appendix A) - During scheduled well inspection events, the Well Inspection Checklist is used to record observations made in the field that will require repair

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or further investigation. For each well, the identification number, well type, casing material, diameter and any discrepancies observed by the inspector are recorded.

Monitor Well Information and Inspection Form (Appendix B) - DOE requested well inspections are documented using this form which is divided into three sections: section one documents the installation records of a selected well, section two documents the field inspection of the well, and section three documents an associated sampling event conducted at the same well.

Exception Report (Appendix C) - During groundwater sampling and elevation activities, field crews are required to complete an Exception Report form to report document any abnormal observances. For each well, the identification number, reporting team, the individual reporting the observation, and a description of the observation that will require corrective action or further investigation is recorded on the form.

Exception Additions (Appendix D) - This form is used to condense information generated by the exception tracking procedure. The GWM Field Lead reviews each exception report and records substantive exceptions on the Exception Additions form. Duplicate items are screened out. This form is then forwarded to the well maintenance database controller for entry into the maintenance tracking system.

Down-Hole Camera Inspection Form (Appendix E) - This form shall be completed during each down-hole camera inspection. Information recorded on the form includes: well identification number, date, time, inspection crew, and observations.

Well Plugging and Abandonment Request Form (Appendix F) - This form is used by the Well Facility Owner to provide information about each well that is to be plugged and abandoned. It also provides authorization for the group conducting the work to proceed. This form is completed by the Well Facility Owner and a copy is transmitted to the group conducting the work.

Well Plugging and Abandonment Record (Appendix G) - This form is used by the Geologist-in-charge to report on the completion of a plugging and abandonment activity to the Well Facility Owner. It provides information on any deviations from the proposed plugging and abandonment plan described on the Well Plugging and Abandonment Request Form.

### 8.3 REPORTS

GWM uses all information gathered from monitoring wells to create a variety of reports. This is accomplished by imputing well information into either the installation or maintenance databases

and using a report generating computer code. Reports generated are both standardized or customized upon request or as needed. Standardized reports include:

Active Well Maintenance List - This list reports on each well that currently has an active well maintenance item and identifies the group that has been assigned to address the maintenance item. This information is entered into the maintenance database daily and a current report is generated monthly or as needed. GWM maintains a copy of this report on file and provides copies to other FERMCO organizations upon request.

Well Maintenance Progress Report - This report lists the maintenance items that have been corrected and closed out.

Well Status Report - This report lists all wells and information about their status, installation date, condition, and maintenance activities. This report is generated as necessary and is distributed to CRU5 Groundwater Representatives. This report provides groundwater related groups with a status on the condition of the monitoring well network on a well-by-well basis for data evaluation and project planning purposes.

#### 8.4 VIDEO CASSETTE RECORDINGS

A video recording is generated during each down-hole well inspection. All video tapes generated by the down-hole inspection program are inventoried and stored by GWM. These video tapes are used to assist groundwater related groups in assessing the integrity of each well inspected.

#### 8.5 PHOTOGRAPHS

Wells requiring maintenance due to accidental damage or other actions may be photographed by either GWM or FEMP site photographers. Each photo is used to document the condition of a well at a specific time and to assist in preparations for repair or plugging and abandonment. Photographs are, dated, labeled, and filed by GWM.

#### 8.6 DATABASES

##### 8.6.1 Well Maintenance Database

Well maintenance items are entered into the well maintenance database to be recorded, tracked during corrective action, and closed out upon completion of corrective action. Wells that have been damaged by vehicles, construction activity, etc. are reported to the Property Management Department and the Security Department. The well maintenance database consists of the following:

- Well identification number.
- Active/inactive status designation.
- Description of the maintenance item requiring corrective action.
- A well integrity/non-integrity status designation.
- Date the maintenance item was reported.
- The group assigned to provide corrective action.
- The corrective action taken.
- The date the corrective action was taken.

The well maintenance database is accessed and maintained by GWM. Information on the present condition of each well is reported through the Well Status Report.

#### 8.6.2 Installation Record Database

GWM maintains a well installation Record Database that includes both DOE-owned and privately owned wells at or near the FEMP Site. Over 750 records are currently maintained. Information such as depth, diameter, location, riser materials, wellhead protection, sampling equipment, drilling firm, ownership, plugging and abandonment, well file inventories, and more is recorded. This database is used to assist in well management requirements and to produce computer generated reports on the status and conditions of each well.

Attachment A

WELL INSPECTION CHECKLIST



Attachment B

MONITOR WELL INFORMATION AND INSPECTION FORM

MONITOR WELL INFORMATION AND INSPECTION FORM

WELL NUMBER \_\_\_\_\_ LOCATION COORDINATES \_\_\_\_\_

INSTALLATION RECORDS INSPECTED BY \_\_\_\_\_ DATE \_\_\_\_\_

RECORD	ON FILE (Y/N)	COMPLETENESS (C/IC)	CONDITION (G/F/P)
Soils classification log			
Installation drawing			
Installation Information			
Other:			

(Y)Yes; (N)No; (C)Complete; (IC)Incomplete; (G)Good; (F)Fair; (P)Poor; (NA)Not Applicable

FIELD INSPECTION INSPECTED BY \_\_\_\_\_ DATE \_\_\_\_\_

Well Type: MW__ Other _____		Casing: PVC__ Steel__ Stainless__ Galvanized__ Other__	
Completion: Above grade__ Below grade__		Diameter: 2"__ 4"__ 6"__ 8"__ Other__	
ITEM	Y/N	G/F/P	COMMENTS
The well has good structural integrity			
The protective casing is painted orange			
The well is properly identified			
A drain hole is drilled through the protective casing			
The grout seal between casings is 6" above the ground			
The well lid (or flushmount cover) opens/closes freely			
The well cap is vented (above ground)/air tight (flush)			
The well has a designated reference point			
The concrete pad is structurally sound			
The well area has no depressions or vegetation (clean)			
The well is secured with a Best brand lock			
Guard posts? The well should have guard posts?			

(MW)Monitor well; (Y)Yes; (N)No; (G)Good; (F)Fair; (P)Poor; (NA)Not Applicable

SAMPLING EVENT INSPECTED BY \_\_\_\_\_ DATE \_\_\_\_\_

Dedicated Equipment: No__ Yes__ Type _____		
PROCEDURE	Y/N	COMMENTS
Proper decontamination and contamination prevention measures taken		
Static water level and total depth of well measurements taken		
Well purged by removing 3 well volumes or pumping dry		
All required measurements taken during purging (pH, temp, cond, etc)		
Well allowed to recharge sufficiently prior to sample collection		
Samples collected in proper order with minimal agitation to water		
Samples preserved and/or filtered (0.45 micron filter) as necessary		
Proper labelling and chain-of-custody completed		

(Y)Yes; (N)No; (NA)Not Applicable

Attachment C

EXCEPTION REPORT



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Attachment D

EXCEPTION ADDITIONS

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FEMP  
ESH - EP - GWM  
EXCEPTION ADDITIONS

WELL ID:	DATE:	ACTIVE:	INTEGRITY:
EXCEPTION:			
WELL ID:	DATE:	ACTIVE:	INTEGRITY:
EXCEPTION:			
WELL ID:	DATE:	ACTIVE:	INTEGRITY:
EXCEPTION:			
WELL ID:	DATE:	ACTIVE:	INTEGRITY:
EXCEPTION:			
WELL ID:	DATE:	ACTIVE:	INTEGRITY:
EXCEPTION:			

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Attachment E

DOWN-HOLE CAMERA INSPECTION FORM

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FEMP  
ESH-EP-GROUNDWATER MONITORING  
**DOWN-HOLE CAMERA INSPECTION FORM**

WELL #	DATE:	TIME:	PAGE ____ OF ____
	RECORDED BY:		

REASON FOR INSPECTION:

DEPTH (FT)	OBSERVATIONS <i>(RECORD CONDITIONS OF RISER WALLS, COUPLINGS, SCREEN, AND BOTTOM. RECORD WATER LEVEL, SCREEN DEPTH, AND WELL BOTTOM.)</i>

Attachment F

WELL PLUGGING AND ABANDONMENT REQUEST FORM

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FEMP  
WELL PLUGGING & ABANDONMENT REQUEST FORM

WELL  LOCATION	WELL ID:	STATE PLANAR COORDINATES:		
	GEOGRAPHIC DESCRIPTION:			
REASON FOR ABANDONMENT:				
<b>WELL HISTORY</b>				
ATTACH COPIES OF VISUAL CLASSIFICATION OF SOILS, INSTALLATION DIAGRAMS, AND WATER QUALITY DATA.				
DATE OF INSTALLATION:	HYDROLOGIC SETTING:	PURPOSE OF THE WELL/BORING:		
INSTALLATION METHOD AND EQUIPMENT USED:				
CASING MATERIAL:	CASING CONDITION:	CASING DIAMETER:	QUALITY OF SEAL:	
WELL DEPTH:	WELL INTEGRITY:	DEPTH TO WATER:		
<b>PLANNED P&amp;A ACTIVITY</b>				
REMOVE CASING?: <input type="checkbox"/> PERFORATE CASING?: <input type="checkbox"/>	CASING REMOVAL AND/OR PERFORATION METHOD(S):			
GROUT TYPE TO BE USED:				
WELL VOLUME:	TYPE OF CAP TO BE INSTALLED:			
NAME AND ADDRESS OF FIRM CONDUCTING WORK:				
MATERIALS AND QUANTITIES THAT WILL BE USED TO FILL THE WELL IN SPECIFIC ZONES: (DETAIL EACH SEPARATE FORMATION FROM TOTAL DEPTH TO THE SURFACE AND DEFINE A PLUGGING MATERIAL PROFILE THAT ADDRESSES EACH DIFFERENT ROCK FORMATION.)				
HEALTH & SAFETY PLAN PREPARED OR REFERENCED:				

APPROVAL OF FEMP FACILITY OPERATOR:

NAME PRINTED

DATE

SIGNATURE

DATE

DISTRIBUTION OF COPIES: ENVIRONMENTAL QUALITY ASSURANCE, FIRM CONDUCTING WORK.

Attachment G

WELL PLUGGING AND ABANDONMENT RECORD

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FEMP  
WELL PLUGGING & ABANDONMENT RECORD

ATTACH COPIES OF FIELD ACTIVITY LOGS

TIME/DATE INITIATED:		TIME/DATE COMPLETED:	
SUBCONTRACTOR/DRILLER AND ADDRESS:			
WEATHER CONDITIONS:			
WELL LOCATION	WELL ID:	STATE PLANAR COORDINATES:	
	GEOGRAPHIC DESCRIPTION:		
WELL DESCRIPTION:			
REASON FOR ABANDONMENT:			
TOTAL DEPTH OF WELL:		CALCULATED TOTAL WELL VOLUME:	
DEPTH AND DESCRIPTION OF EACH LAYER OF SEALING AND BACKFILL MATERIAL USED INCLUDING AMOUNT USED:			
DEVIATIONS FROM THE P&A PLAN OUTLINED ON THE "WELL PLUGGING & ABANDONMENT REQUEST FORM":			
DOES INSTALLATION DIAGRAM CONCUR WITH WELL CHARACTERISTICS NOTED IN FIELD? PROVIDE DETAIL:			
DESCRIBE DISPOSITION OF MATERIALS REMOVED FROM WELL SITE:			
COMMENTS AND OBSERVATIONS:			

ON-SITE GEOLOGIST (OR DESIGNEE) :

NAME PRINTED

DATE

SIGNATURE

DATE

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