BHI-01495
Rev. 0

Work Plan for the Installation of Groundwater Monitoring Well 299-W19-43 at the 200-UP-1 Operable Unit

Prepared for the U.S. Department of Energy, Richland Operations Office
Office of Environmental Restoration

Submitted by: Bechtel Hanford, Inc.

BHI-01495
Rev. 0
OU: N/A
TSD: N/A
ERA: N/A

APPROVAL PAGE

Title: Work Plan for the Installation of Groundwater Monitoring Well 299-W19-43 at the 200-UP-1 Operable Unit

Approval: L. R. Curry, GW/VZ Integration Project Engineer

L. R. Curry — Signature

5/3/01 — Date

J. G. Woolard, GW/VZ Project Environmental Lead

J G Woolard — Signature

5/7/01 — Date

M. E. Byrnes, GW/VZ Task Lead

M E Byrnes — Signature

5/3/2001 — Date

The approval signatures on this page indicate that this document has been authorized for information release to the public through appropriate channels. No other forms or signatures are required to document this information release.

BHI-DIS JMR 5/9/01

BHI-01495
Rev. 0

Work Plan for the Installation of Groundwater Monitoring Well 299-W19-43 at the 200-UP-1 Operable Unit

Author

M. E. Byrnes
Bechtel Hanford, Inc.

Date Published

May 2001

TABLE OF CONTENTS

Table of Contents

FIGURES

TABLES

ACRONYMS

bgs	below ground surface
BHI	Bechtel Hanford, Inc.
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	*Code of Federal Regulations*
CO_2	carbon dioxide
CPT	cone penetrometer
DOW	description of work
Ecology	Washington State Department of Ecology
FY	fiscal year
gpm	gallons per minute
HASQARD	*Hanford Analytical Services Quality Assurance Requirements Document*
OU	operable unit
PPE	personal protective equipment
RAO	remedial action objective
WAC	*Washington Administrative Code*

METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
If You Know	*Multiply By*	*To Get*	*If You Know*	*Multiply By*	*To Get*
Length			**Length**		
inches	25.4	millimeters	millimeters	0.039	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.621	miles
Area			**Area**		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.093	sq. meters	sq. meters	10.76	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.6	sq. kilometers	sq. kilometers	0.4	sq. miles
acres	0.405	hectares	hectares	2.47	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.035	ounces
pounds	0.454	kilograms	kilograms	2.205	pounds
ton	0.907	metric ton	metric ton	1.102	ton
Volume			**Volume**		
teaspoons	5	milliliters	milliliters	0.033	fluid ounces
tablespoons	15	milliliters	liters	2.1	pints
fluid ounces	30	milliliters	liters	1.057	quarts
cups	0.24	liters	liters	0.264	gallons
pints	0.47	liters	cubic meters	35.315	cubic feet
quarts	0.95	liters	cubic meters	1.308	cubic yards
gallons	3.8	liters			
cubic feet	0.028	cubic meters			
cubic yards	0.765	cubic meters			
Temperature			**Temperature**		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius	Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity			**Radioactivity**		
picocuries	37	millibecquerel	millibecquerel	0.027	picocuries

1.0 INTRODUCTION/SCOPE OF WORK

This description of work (DOW) has been prepared to define the location and installation requirements for one new groundwater monitoring well to be completed within the 200-UP-1 Operable Unit (OU). In an effort to expedite the removal of uranium and technetium from the groundwater in 200-UP-1 OU, the U.S. Department of Energy, Richland Operations Office and the Washington State Department of Ecology (Ecology) agreed to convert former injection well 299-W19-36 into an extraction well. Existing monitoring wells 299-W19-28 and 299-W19-29 have recently gone dry due to the decreasing groundwater mound beneath the 200 West Area. A new monitoring well is needed proximal to well 299-W19-36 to monitor performance, hydraulic conditions, and contaminant concentration. The new well identification number is C3381 and the associated well name is 299-W19-43.

This DOW outlines the requirements pertaining to drilling, soil sampling, lithologic logging, downhole geophysical logging, well installation and development, aquifer (slug) testing, sampling pump installation, carbon dioxide (CO_2) and cone penetrometer (CPT) gas sampling, and waste management activities to be performed during and/or following drilling of the proposed new monitoring well.

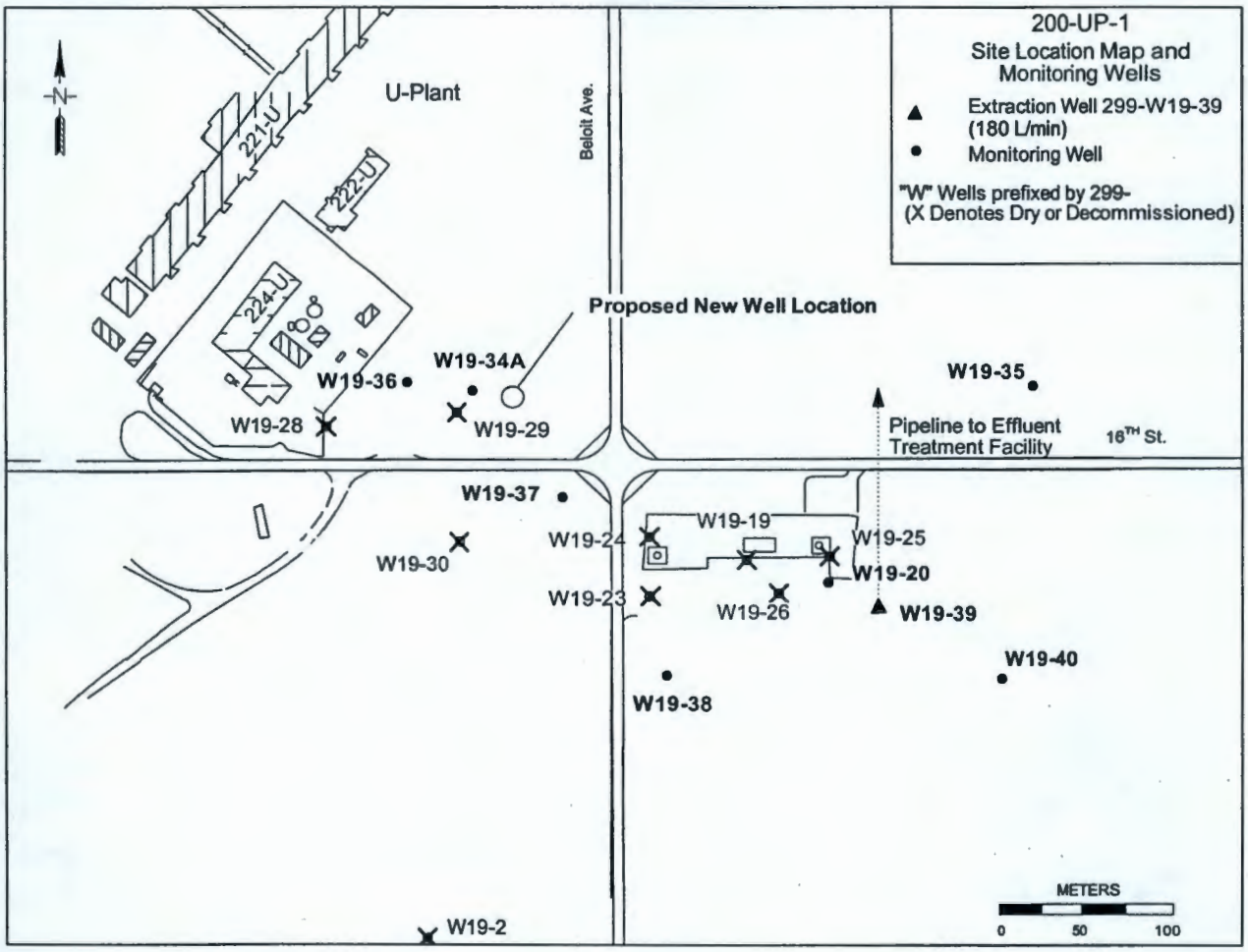
While soil sampling, downhole geophysical logging, CO_2 sampling, and CPT gas sampling are not required to resolve any decisions related to well installation, these activities are being performed to support MSE (EM-50 support contractor) in obtaining the samples and information needed to study the mobility of uranium in the saturated and unsaturated zone. Because MSE is responsible for the analyses to be performed on the soil and gas samples, these analyses are not addressed by this DOW. The only exception to this is the soil samples that are being collected and analyzed for waste disposition purposes (Section 3.10). The MSE study is funded as part of the Subsurface Contamination Focus Area Program.

2.0 BACKGROUND

Groundwater within the 200-UP-1 OU is contaminated with technetium-99, uranium, carbon tetrachloride, and nitrate. The suspected source of the technetium-99 and uranium contamination is U Plant, where process wastes were discharged to the U-1 and U-2 cribs. The carbon tetrachloride and nitrate contamination sources are suspected to have been generated from the 200-ZP-1 OU, which is located upgradient.

To address the groundwater contamination, a Phase I pump-and-treat operation was initiated in September 1995 and consisted of one extraction well (299-W19-39) and one injection well (299-W19-36) (see Figure 1). Groundwater was treated onsite using an ion-exchange medium with treated water injected upgradient from the extraction well. The system operated until February 1997, when an interim action Record of Decision was issued that initiated Phase II of the pump-and-treat operation (EPA et al. 1997).

Figure 1. Map Showing Proposed New Groundwater Monitoring Well Location.



During Phase II, groundwater was extracted from well 299-W19-39 at a rate of approximately 180 L/min and was then pumped to the Effluent Treatment Facility in the 200 East Area for removal of technetium-99, uranium, carbon tetrachloride, and nitrate. Treated water was sent to the state-approved land disposal site north of the 200 West Area for disposal (DOE-RL-2001, PNNL 2000).

The remedial action objectives (RAOs) for the interim remedial measure are to contain the high concentration area of the plume, reduce contaminant concentrations to below 10 times the maximum contaminant level, and collect data that will support a final Record of Decision. Remediation efforts have been successful in lowering technetium-99 concentrations below the RAO of 9,000 pCi/L in the area of the existing extraction well; however, technetium-99 concentrations are above the RAO in the area of the former injection well (299-W19-36). Concentrations exceeding 25,000 pCi/L were measured in samples collected in nearby wells 299-W19-28 and 299-W19-29 before the wells went dry. The concentration currently measured in well 299-W19-36 is greater than was measured in this well or nearby wells before the start of the interim action. The technetium-99 in the previous injection area is located within the capture

zone of extraction well 299-W19-39 but may take 2 years or more before it reaches the extraction well (DOE-RL-2001, PNNL 2000).

Less progress has been made in reducing uranium concentrations to the RAO of 480 pCi/L. Although the concentration of uranium in most monitoring wells is declining, the concentration in well 299-W19-36 increased from 92 µg/L in fiscal year (FY) 1999 to 170 µg/L in FY 2000. The less favorable response of uranium to remediation is attributed to its tendency to partially sorb to sediments.

3.0 DESCRIPTION OF WORK ACTIVITIES

This section of the DOW provides details on the drilling, soil sampling, lithologic logging, downhole geophysical logging, well installation and development, aquifer (slug) testing, sampling pump installation, CO_2 and CPT gas sampling, and waste management activities to be performed during and immediately following the completion of the new groundwater monitoring well (299-W19-43). The following subsections identify the activities that are being performed to support MSE investigations.

3.1 DRILLING

A non-air drilling method (e.g., cable tool) shall be used to drill and install the new groundwater monitoring well within the 200-UP-1 OU at the location shown in Figure 1. A non-air drilling method was selected because soil sampling (Section 3.2) is required to be performed throughout the depth of the borehole and because a radiological risk assessment classified the upper 50 ft of drilling and the drilling through the saturated interval (245 ft to 300 ft) as "medium" risk.

The total depth of the borehole is not expected to exceed 300 ft below ground surface (bgs). The borehole should be drilled to a depth approximately 40 ft below the water table to accommodate a 35-ft well screen and 3-ft tail pipe. The well screen and casing shall be 4 in. in diameter and should be installed in accordance with guidance provided in Section 3.5 of this DOW. The minimum diameter of the borehole shall not be less than 8 in. so the annual space meets *Washington Administrative Code* (WAC) standards, and the borehole will accommodate downhole geophysical logging (Section 3.4). If a large-diameter (12-in.) temporary conductor casing is required to meet drilling objectives, this temporary casing shall not be installed any deeper than 50 ft bgs.

3.2 MSE SOIL SAMPLING

While soil sampling is not required to resolve decisions related to well installation, the soil sampling proposed in this section is being conducted to support MSE in obtaining the samples

and information needed to study the mobility of uranium in the saturated and unsaturated zone. Soil samples will be collected using a 5-in. outside-diameter split-spoon sampler (2 ft in length) from the intervals shown in Table 1. Stainless-steel liners should be used inside the split-spoon sampler to contain the sample material. The sampler will be driven into the soil after the borehole has been cleaned out from the bottom of the borehole. Blow-count data are not required for this study. The split-spoons should not be driven more than 2.5 ft below the starting depth for the sample interval. Split-spoon sample liners should be sealed using end caps designed for that purpose. After the end caps have been secured with duct tape, the borehole number, top and bottom of sample, depth interval, and sampling date and time should be clearly marked on the outside of the liner using a permanent marker. Any deviations to the planned sampling depths shall be documented in the field logbook. It is anticipated that the water table will be encountered at a depth of approximately 257 ft bgs.

While historical split-spoon sampling from some units (e.g., Plio-Pleistocene) has resulted in incomplete recovery due to formation grain size, only one attempt shall be made to collect a soil sample from any specific depth interval. A total of 20 split-spoon samples are proposed to be collected from the intervals identified in Table 1.

Table 1. Soil Sampling Intervals.

Formation	Thickness (ft bgs)	Top of Sampling Intervals[a] (ft bgs)
H1 Hanford	0-70	30; 60
H2 Hanford	70-187	90; 120; 150; 180
Plio-Pleistocene	187-190	182; 184.5; 187; 189.5; 192; 194.5; 197; 199.5; 202; 204.5; 207; 209.5
Carbonate	190-205	Included in Plio-Pleistocene intervals
Ringold Upper Unit	205-249	225
Ringold "E"	249-TD	248

[a] All split spoon attempts will completely disturb 2.5 ft of soil column unless refusal is encountered.

3.3 BOREHOLE LITHOLOGY LOGGING

While drilling the proposed monitoring well, borehole lithology shall be logged in accordance with BHI-EE-01, *Environmental Investigations Procedures,* Procedure 7.0, "Geologic Logging."

3.4 MSE DOWNHOLE GEOPHYSICAL LOGGING

Geophysical logging is not required to resolve any decisions related to well installation. However, it is proposed to support MSE in obtaining the information needed to study the mobility of uranium in the saturated and unsaturated zone.

High-resolution spectral gamma and neutron moisture data will be acquired using Hanford Site standard borehole geophysical logging procedures and methods. The geophysical logging will be performed just prior to each drill casing downsizing event throughout the entire length of the borehole.

3.5 WELL INSTALLATION

Monitoring well 299-W19-43 shall be drilled and installed at the location shown in Figure 1. The monitoring well shall be constructed in accordance with the requirements specified in *WAC* 173-160, "Minimum Standards for Construction and Maintenance of Wells." After reaching the total drilling depth, a straightness test shall be performed in the 8-in. temporary casing by lowering a 20-ft-long section of pipe to the bottom of the borehole. The pipe shall have a maximum annular space of 1 in. less than the smallest diameter temporary casing installed. If the pipe is successfully lowered to the bottom of the borehole and retrieved, then well installation should proceed. Otherwise, the project engineer shall be consulted for direction on how to proceed.

The well shall be constructed of 4-in.-diameter, stainless-steel (SS-304, flush joint with F480 threads) screen, tailpipe/sump, and riser pipe (Figure 2). The well shall be constructed in the following manner:

1. Install 35 ft (38 ft when the required 3-ft tailpipe/sump is attached) of 4-in.-diameter stainless-steel well screen (slot size 0.020 in.) so the top of the well screen is at the same elevation as the water table (approximately 257 ft bgs) and the bottom of the well tailpipe/sump is 38 ft below the water table (approximately 295 ft bgs). Positioning the well screen in this manner will ensure water level access when the 200 West Area groundwater mound has diminished.

2. Install 4-in.-diameter stainless-steel riser pipe from the top of the well screen to 2 ft above ground surface.

3. Install 10-20 mesh silica sand filter pack from the bottom of the borehole to 10 ft above the top of the well screen.

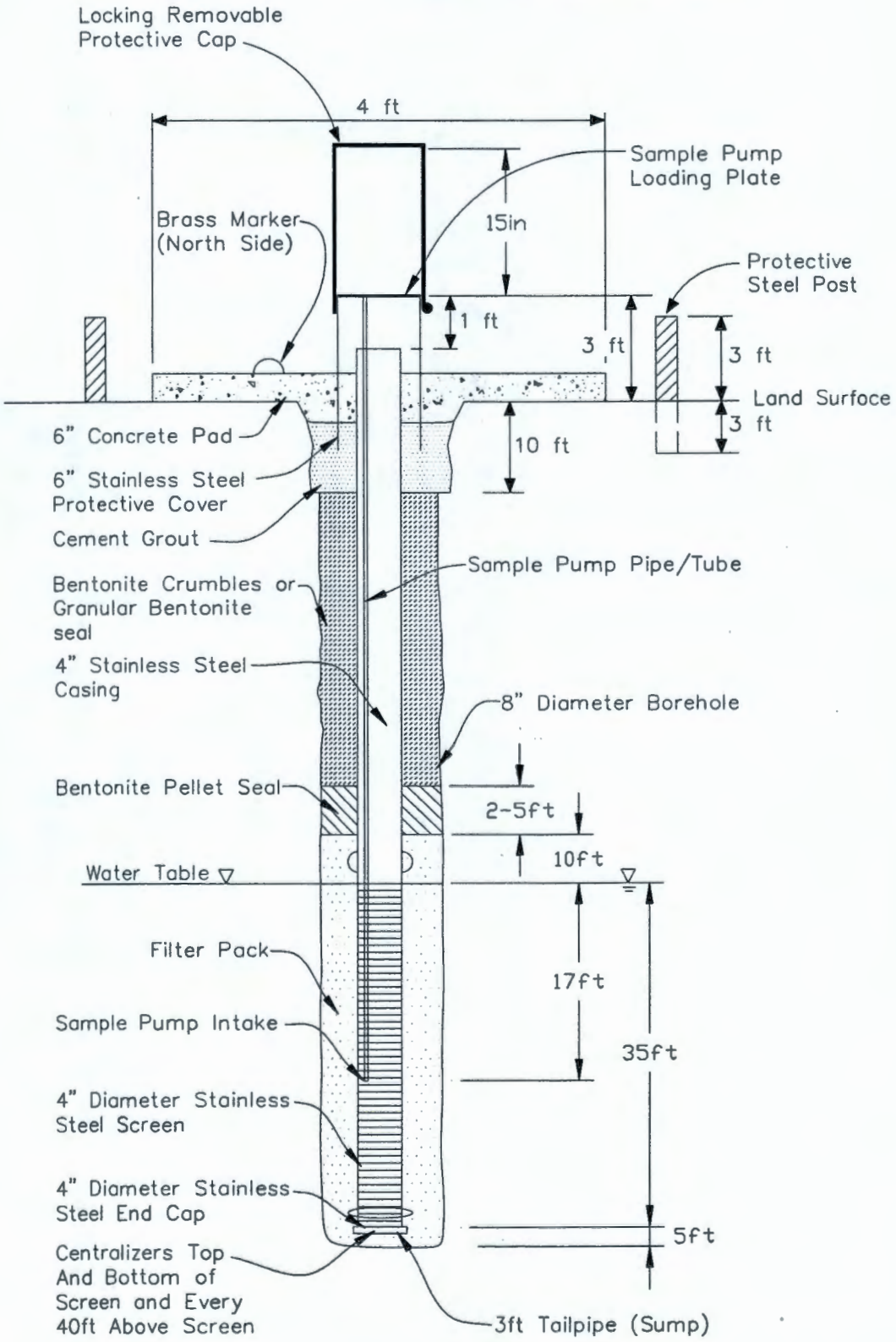
4. Settle the filter pack using a dual-surge block with a minimum of 2 ft between the blocks. Surging will be done in three stages, where no more than 15 ft of screen is exposed in any single interval.

5. Install a 2- to 5-ft-thick bentonite pellet seal above the sand pack.

6. Install bentonite granule (#8 size) seal from the top of the bentonite pellet seal to 10 ft bgs.

7. Install surface seal using neat cement from 10 ft bgs to ground surface.

Figure 2. Generalized Well Completion Diagram.



*Not To Scale

8. Install a locking, protective steel casing/cap assembly over top of the well casing, being certain to allow 1 ft of space between the top of the well casing and the top of the cap assembly.

9. Install a concrete pad, brass survey marker, and four protective guard posts around the well head (one guard post of which should be removable).

3.6 WELL DEVELOPMENT

After the groundwater monitoring well has been installed, the well shall be developed in accordance with BHI-EE-01, Procedure 6.3, "Well Development Procedure." Field conditions should determine pump selection and pumping rates. The pump should provide a drawdown of at least 50% of the saturated length of the well screen (e.g., >17.5 ft). All wastewater resulting from well development shall be contained and sent to the Purgewater Storage and Treatment Facility (which is also known as the ModuTanks™).

3.7 AQUIFER (SLUG) TESTING

After well development has been completed, an aquifer (slug) test shall be performed in the monitoring well to test the hydraulic properties of the aquifer. This test shall be performed in accordance with BHI-EE-01, Procedure 7.1, "Aquifer Testing."

3.8 SAMPLING PUMP INSTALLATION

After the well has been successfully developed and slug tested, a dedicated Redi-Flow 3 sampling pump shall be installed so the pump intake is positioned approximately 17 ft below the top of the screened interval. The specific model number (e.g., 10Redi-Flo3-220) of Redi-Flow 3 pump that is selected should allow a pumping rate of approximately 5 gallons per minute (gpm) at a depth of 280 ft, and have a flow rate control that can reduce the pumping rate for sampling. The pump discharge line shall be made of either Teflon™ (or Teflon-lined polypropylene) or stainless steel.

3.9 MSE OPTIONAL CARBON DIOXIDE AND CONE PENETROMETER GAS SAMPLING

MSE may require the collection of gas samples from the formation to measure the CO_2 content in air present in the unsaturated soils. The CO_2 measurement is critical to the MSE uranium mobility investigation because CO_2 of the formation gas, being in chemical equilibrium with CO_2 dissolved in soil moisture, is one of the main factors controlling mobility of uranium in the

™ ModuTank is a registered trademark of ModuTank Inc., Long Island City, New York.
™ Teflon is a registered trademark of E.I. du Pont de Nemours and Company, Wilmington, Delaware.

unsaturated zone. MSE estimates that as many as five formation gas samples may be needed from the borehole. The sampling interval may range from 140 ft to 210 ft bgs. In addition, gas sampling from a CPT may also be required. If performed, CO_2 sampling and CPT gas sampling would be conducted in accordance with an MSE sampling and analysis plan. For CO_2 sampling, the blower used for formation purging would be run after work hours to minimize impact to the drilling schedule.

3.10 WASTE MANAGEMENT

All waste derived from drilling, logging, well installation, development, and aquifer testing shall be managed in accordance with *Site-Specific Waste Management Instruction (SSWMI) Well Decommissioning, Maintenance, and Sampling,* WMI-GWCERCLA001, Rev. 1 (BHI-2001). This plan establishes the requirements for the management and disposal of waste generated from wells used to monitor or extract groundwater from CERCLA wells in accordance with the 200-UP-1 waste management plan (DOE-RL 2000).

Because the proposed borehole will be completed as a *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) well, the waste generated from drilling and sampling operations shall be handled as CERCLA waste. Saturated soil cuttings or other waste that has come in contact with the groundwater shall assume the groundwater listed waste codes. The listed waste codes that apply to waste that has come in contact with groundwater in the immediate area include the following:

- F001: 1, 1, 1-TCA, carbon tetrachloride
- F002: methylene chloride
- F003: acetone and methyl isobutyl ketone
- F004: o-cresol, p-cresol, and cresylic acid
- F005: methyl ethyl ketone.

Figure 3 is a process flow diagram that should be used to determine where this waste will be disposed. Note that an offsite determination by the U.S. Environmental Protection Agency per 40 *Code of Federal Regulations* (CFR) 300.40 is required for waste that has contacted contaminated media and is then subsequently shipped to the Central Waste Complex for storage or shipped offsite for disposal. Table 2 presents the preliminary list of contaminants of concern for the 200-UP-1 OU.

Soil cuttings resulting from well drilling and sampling should be handled in the following manner:

- **Vadose zone soil cuttings:** The top 50 ft of vadose zone soil cuttings shall be scanned using both hand-held radiological (e.g., Eberline E-600 with SHP 380 AB probe) and chemical (e.g., organic vapor analyzer) field screening instruments prior to being transferred into containers. One grab soil sample shall be collected using a split-spoon sampler from the depth interval 25 to 27.5 ft bgs for analytical testing. The analytical results from this sample shall be used for waste designation. The 25- to 27.5-ft depth interval was selected because a pipeline is known to be present 15 ft from the proposed drilling location, at a depth of approximately 10 ft bgs (Figure 4). This pipeline runs in a northeast-southwest direction. Assuming that

contamination migrates laterally at a 45-degree angle from the pipeline, contamination would be encountered by the borehole at a depth of approximately 25 ft.

Figure 3. Process Flow Diagram for Dispositioning CERCLA Waste.

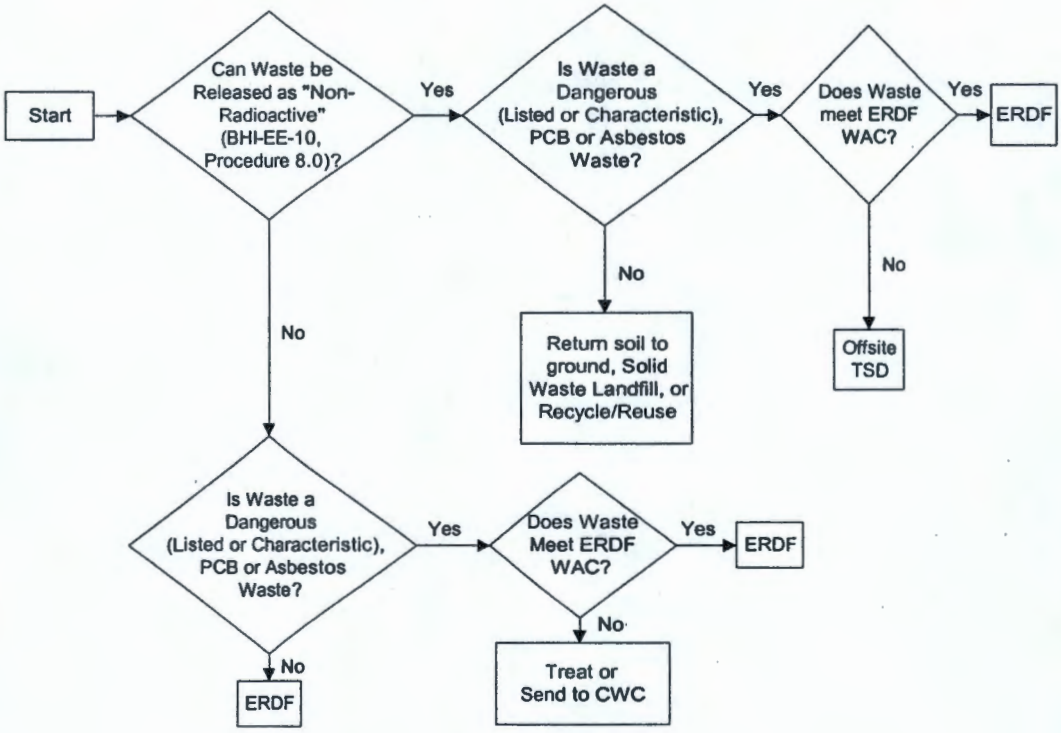
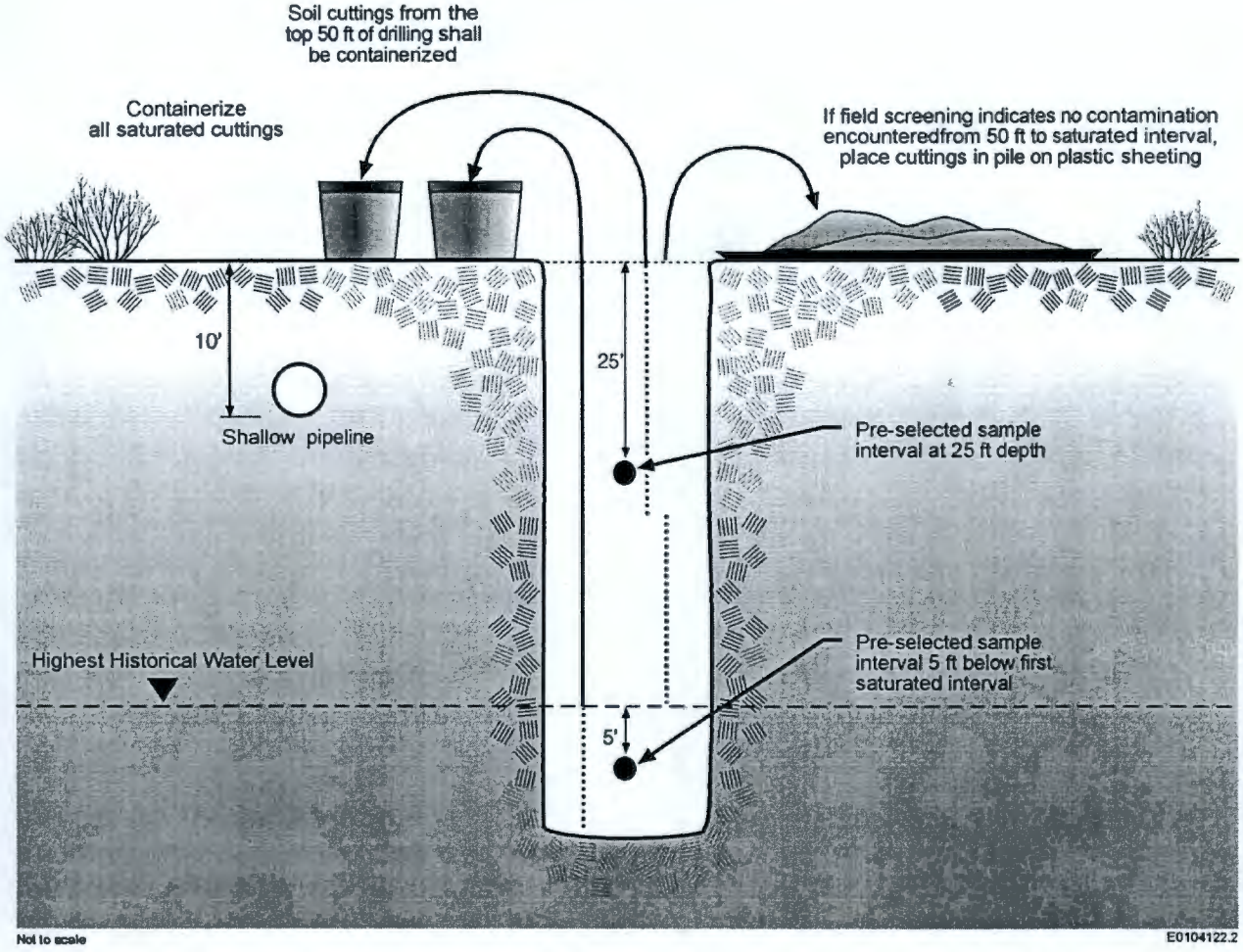


Table 2. Preliminary List of Contaminants of Concern.

Radioactive Constituents	Metals	SVOCS	Other
Americium-241	Antimony	Tributyl phosphate	Ammonia/ammonium
Carbon-14	Arsenic		Cyanide
Cesium-137	Barium		Nitrate/nitrite
Cobalt-60	Beryllium		
Europium-152	Cadmium		
Europium-154	Chromium		
Europium-155	Chromium (VI)		
Hydrogen-3 (tritium)	Copper		
Neptunium-237	Lead		
Nickel-63	Mercury		
Plutonium-238	Nickel		
Plutonium-239/240	Selenium		
Radium-226	Silver		
Radium-228			
Strontium-90			
Technetium-99			
Thorium-232			
Uranium-234			
Uranium-235			
Uranium-238			

Figure 4. Conceptual Model for Borehold Drilled Adjacent to a Shallow Source.



NOTE: If field screening measurements (or visual observations) indicate that contamination is present at another depth interval (e.g., shallow surface contamination or contamination above the Plio-Pleistocene Unit), a second vadose zone soil sample should be collected for analytical testing from the interval showing the highest readings. In the example shown in Figure 5, contaminated soil is encountered above the Plio-Pleistocene Unit. In this case, soil cuttings from the contaminated interval would be containerized, and a soil sample would be collected from the interval showing the highest readings for analytical testing.

If the results from the samples conclude that the waste is contaminated, all of the containerized soil cuttings shall be treated as contaminated and disposed in accordance with Figure 3. In contrast, if the sampling results conclude that the waste is not contaminated (as defined by BHI-EE-10, *Waste Management Plan,* Procedure 8.0; *Model Toxic Control Act,* Method B (WAC 173-340); and metals analysis), then the containerized material should be returned to the ground surface in the immediate vicinity of the well.

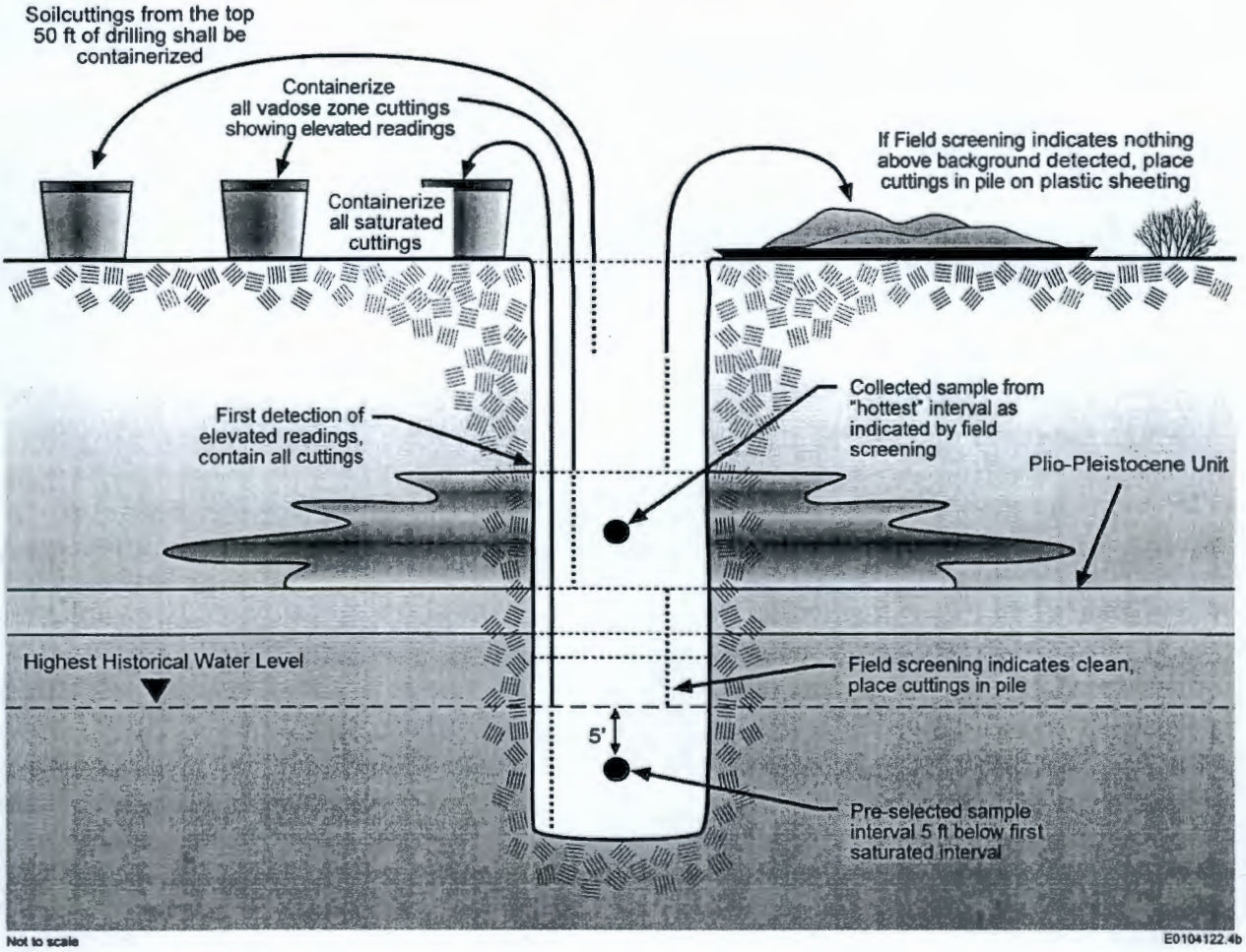
The vadose zone soil cuttings from 50 ft bgs to groundwater should be stockpiled on plastic sheeting. The soil cuttings are not expected to be contaminated but should periodically be scanned using hand-held radiological (e.g., Eberline E-600 with SHP 380 AB probe) and chemical (e.g., organic vapor analyzer) field screening instruments. If no field screening readings are observed above background, then soil cuttings should be returned to the ground surface in the immediate vicinity of the well; otherwise the waste should be sampled from the interval showing the highest readings from field screening instruments and dispositioned in a accordance with Figure 3.

- **Saturated soil cuttings:** All saturated soil cuttings from below the highest recorded water table shall be containerized and shall assume all listed waste codes identified earlier in this section. One grab soil sample shall be collected using a split-spoon sampler from 5 to 7.5 ft below the top of the saturated interval for analytical testing. Using the analytical results from this sample, the saturated soil cuttings should be dispositioned in accordance with Figure 3.

- **Decontamination fluids and well development water:** Decontamination fluids and water resulting from well development do not require sampling since they will be sent to the Purgewater Storage and Treatment Facility (which is also known as the ModuTanks) or the Effluent Treatment Facility (if waste acceptance criteria can be met).

- **Personal protective equipment and small volume miscellaneous waste:** Personal protective equipment (PPE) and small-volume miscellaneous wastes (e.g., gloves and wipes) from vadose zone drilling and sampling should be separated from those wastes resulting from saturated zone drilling and sampling. The PPE and small-volume miscellaneous wastes from vadose zone drilling should be designated based on the analytical results from the vadose zone soil sample(s). In contrast, the PPE and small-volume miscellaneous wastes from saturated zone drilling should be designated based on the analytical results from the saturated zone soil sample and should assume all of the listed waste codes that apply to the groundwater.

Figure 5. Conceptual Model Where Contamination is Encountered During Field Screening of Cuttings.



4.0 PROCEDURES

When implementing the work identified in this DOW, the following procedures should be used to ensure the safety and quality of the work performed:

- Special training or certification requirements:
  - BHI-HR-02, *ERC Training Procedures*
  - BHI-QA-03, *ERC Quality Assurance Program Plans*
    - Plan No. 5.1, "Field Sampling Quality Assurance Program Plan"
    - Plan No. 5.2, "Onsite Measurements Quality Assurance Program Plan."
- Field and sampling methods found in BHI-EE-01:
  - Procedure 1.10, "Calibration of Groundwater Field Equipment"
  - Procedure 3.1, "Sample Packaging and Shipping"
  - Procedure 3.2, "Field Decontamination of Sampling Equipment"
  - Procedure 4.0, "Soil and Sediment Sampling"
  - Procedure 6.2, "Field Cleaning and/or Decontamination of GeoProbe and Drilling Equipment"
  - Procedure 6.3, "Well Development Procedure"
  - Procedure 7.0, "Geologic Logging."
- Sample handling, shipping, and custody requirements found in BHI-EE-01:
  - Procedure 3.1, "Sample Packaging and Shipping"
  - Procedure 3.0, "Chain of Custody"
  - Procedure 4.2, "Sample Storage and Shipping Facility."
- Well drilling requirements found in BHI-EE-02, *Environmental Requirements* Section 14.0, "Drilling, Maintaining, Remediating, and Decommissioning Resource Protection Wells, Geoprobe, and Geotechnical Soil Borings"
- Instrument calibration and maintenance requirements found in BHI-QA-03, Plan No. 5.2
- Documentation requirements found in BHI-EE-01 and BHI-FS-01, Vol. 1, *Field Support Administration*:

  - BHI-EE-01, Procedure 1.5, "Field Logbooks"
  - BHI-EE-01, Procedure 1.13, "Environmental Site Identification and Information Reporting"
  - BHI-EE-01, Procedure 1.15, "Sampling Documents"
  - BHI-EE-01, Procedure 3.0, "Chain of Custody"
  - BHI-EE-01, Procedure 7.0, "Geologic Logging"
  - BHI-FS-01, Procedure 1.3, "Logkeeping Instructions."

- Assessment requirements found in BHI-MA-02, *ERC Project Procedures*, Procedure 2.7, "Self-Assessment"

- Requirements for the management of drilling waste found in *Interim Action Waste Management Plan for the 200-UP-1 Operable Unit* (DOE-RL 2000)

- Health and safety requirements:

  - BHI-SH-01, *ERC Safety and Health Program*
  - BHI-RC-01, *Radiation Protection Program Manual*
  - BHI-QA-01, *ERC Quality Program.*

5.0 QUALITY ASSURANCE

The Compliance and Quality Programs group may conduct random surveillance and assessments in accordance with BHI-MA-02, Procedure 2.7, "Self-Assessment," to verify compliance with the requirements outlined in project work packages, the Bechtel Hanford, Inc. (BHI) quality management plan, and BHI procedures and regulatory requirements.

Deficiencies identified by one of these assessments shall be evaluated in accordance with the requirements of BHI-MA-02, Procedure 2.1, "Corrective Action Requirements." When appropriate, corrective actions will be taken by the project engineer in accordance with the *Hanford Analytical Services Quality Assurance Requirements Document (HASQARD)*, Vol. 1, Section 4.0 (DOE-RL 1996), to minimize recurrence.

6.0 SAFETY

All field operations will be performed in accordance with BHI health and safety requirements outlined in BHI-SH-01 and BHI-RC-01. No non-routine steps are proposed to be taken during borehole drilling to reduce worker radiation exposure since no exposure is anticipated.

Particular cautionary measures shall be taken while drilling through the Plio-Pleistocene Unit. A radiological control technician shall be onsite during this time to survey and to ensure the control of potential radiological contamination.

The maximum annual average concentrations of uranium, technetium-99, and carbon tetrachloride detected in groundwater in FY 2000 in the vicinity of 200-UP-1 OU were 1,900 µg/L (well 299-W19-20), 25,400 pCi/L (well 299-W19-36), and 230 µg/L (well 299-W19-36) respectively.

7.0 SCHEDULE

Appendix A provides a detailed timeline that identifies the completion dates for all of the major work activities.

8.0 REFERENCES

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations,* as amended.

BHI, 2001, *Site-Specific Waste Management Instruction (SSWMI) Well Decommissioning, Maintenance, and Sampling,* WMI-GWCERCLA001, Rev. 1, Bechtel Hanford, Inc., Richland, Washington.

BHI-EE-01, *Environmental Investigations Procedures*, Bechtel Hanford, Inc., Richland, Washington.

BHI-EE-02, *Environmental Requirements*, Bechtel Hanford, Inc., Richland, Washington.

BHI-EE-10, *Waste Management Plan,* Bechtel Hanford, Inc., Richland, Washington.

BHI-FS-01, Vol. 1, *Field Support Administration*, Bechtel Hanford, Inc., Richland, Washington.

BHI-HR-02, *ERC Training Procedures*, Bechtel Hanford, Inc., Richland, Washington.

BHI-MA-02, *ERC Project Procedures*, Bechtel Hanford, Inc., Richland, Washington.

BHI-QA-01, *ERC Quality Program*, Bechtel Hanford, Inc., Richland, Washington.

BHI-QA-03, *ERC Quality Assurance Program Plans*, Bechtel Hanford, Inc., Richland, Washington.

BHI-RC-01, *Radiation Protection Program Manual*, Bechtel Hanford, Inc., Richland, Washington.

BHI-SH-01, *ERC Safety and Health Program*, Bechtel Hanford, Inc., Richland, Washington.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601, et seq.

DOE-RL, 1996, *Hanford Analytical Services Quality Assurance Requirements Document (HASQARD)*, DOE/RL-96-68, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2000, *Interim Action Waste Management Plan for the 200-UP-1 Operable Unit*, DOE/RL-2000-51, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2001, *Fiscal Year 2000 Annual Summary Report for the 200-UP-1 and 200-ZP-1 Pump-and-Treat Operations*, DOE/RL-2000-71, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, Ecology, and DOE, 1997, *Record of Decision for the 200-UP-1 Interim Remedial Measure*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington.

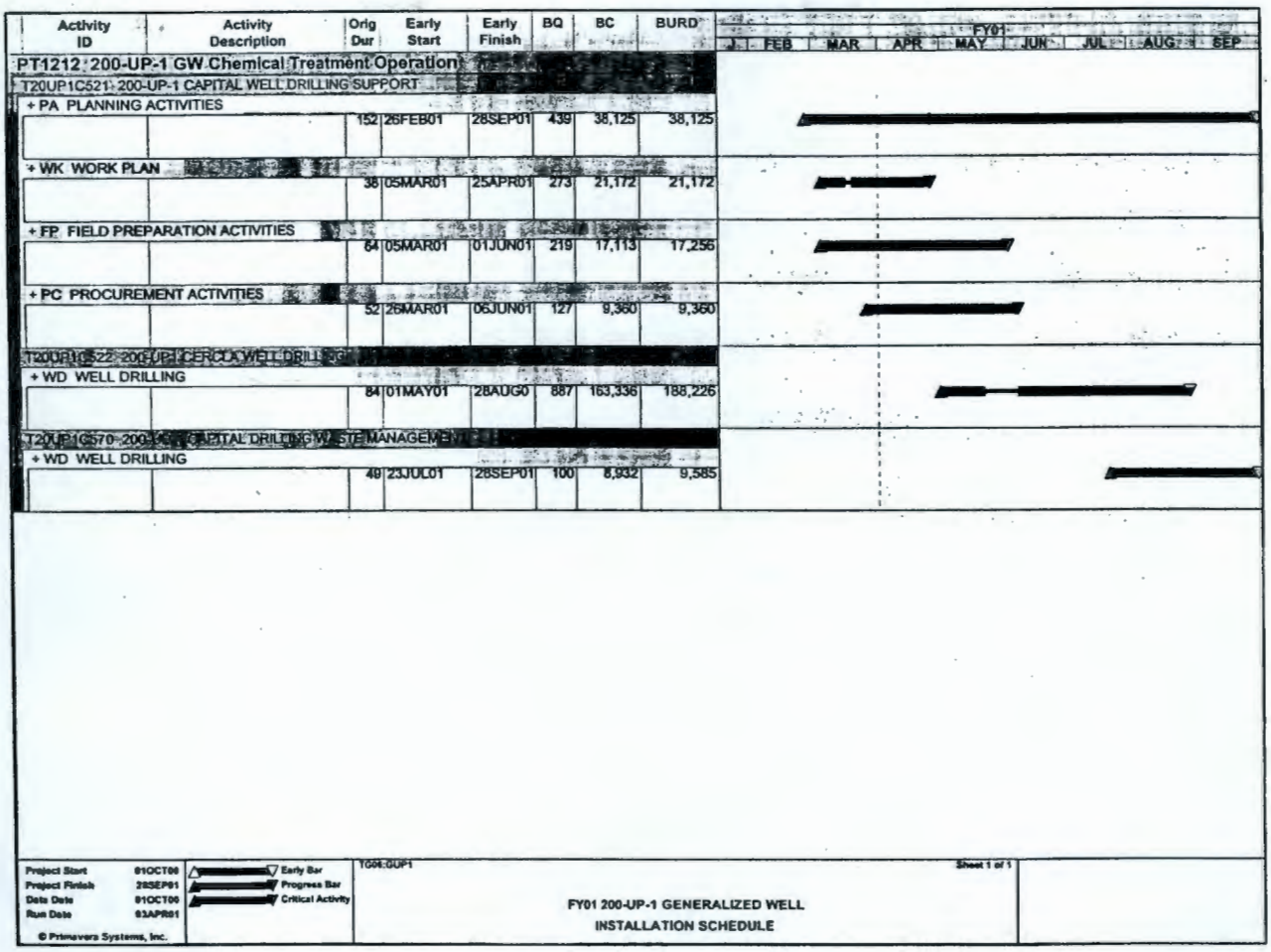
PNNL, 2000, *Hanford Site Groundwater Monitoring for fiscal Year 1999*, PNNL-13116, Pacific Northwest National Laboratory, Richland, Washington.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

WAC 173-340, "Model Toxics Control Act--Cleanup," *Washington Administrative Code*, as amended.

APPENDIX A

TIMELINE OF COMPLETION DATES FOR ALL MAJOR ACTIVITIES FOR INSTALLATION OF GROUNDWATER MONITORING WELL 299-W19-43


Activity ID
Activity Description
Orig Dur
Early Start
Early Finish
BQ
BC
BURD
FY01
J FEB MAR APR MAY JUN JUL AUG SEP
PT1212 200-UP-1 GW Chemical Treatment Operation
T20UP1C521 200-UP-1 CAPITAL WELL DRILLING SUPPORT
+ PA PLANNING ACTIVITIES
152 26FEB01 28SEP01 439 38,125 38,125
+ WK WORK PLAN
38 05MAR01 25APR01 273 21,172 21,172
+ FP FIELD PREPARATION ACTIVITIES
64 05MAR01 01JUN01 219 17,113 17,256
+ PC PROCUREMENT ACTIVITIES
52 26MAR01 06JUN01 127 9,360 9,360
T20UP1C522 200-UP-1 CERCLA WELL DRILLING
+ WD WELL DRILLING
84 01MAY01 28AUG0 887 163,336 188,226
T20UP1C570 200-UP-1 CAPITAL DRILLING WASTE MANAGEMENT
+ WD WELL DRILLING
49 23JUL01 28SEP01 100 8,932 9,585
Project Start 01OCT00
Project Finish 28SEP01
Data Date 01OCT00
Run Date 03APR01
© Primavera Systems, Inc.
Early Bar
Progress Bar
Critical Activity
T606:GUP1
Sheet 1 of 1
FY01 200-UP-1 GENERALIZED WELL INSTALLATION SCHEDULE

DISTRIBUTION

U.S. Department of Energy
Richland Operations Office

A. C. Tortoso (2)	H0-12

ERC Team

M. E. Byrnes, BHI	H0-19
L. R. Curry, BHI (letter only)	H0-19
G. A. Day, BHI	H0-19
J. A. Diebel, BHI	X5-50
T. L. Hottell, BHI	X5-50
C. J. Kemp, BHI	H0-19
G. B. Mitchem, BHI (letter only)	H0-19
W. H. Price, BHI	H0-18
Document and Information Services (3)	H0-09
DOE-RL Public Reading Room	H2-53
Hanford Technical Library	P8-33