A. K. Lee
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Y-12

OAK RIDGE Y-12 PLANT

MARTIN MARIETTA

FISCAL YEAR 1994 WELL PLUGGING AND ABANDONMENT PROGRAM SUMMARY REPORT Y-12 PLANT, OAK RIDGE, TENNESSEE

September 1994

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HEALTH, SAFETY, ENVIRONMENT, AND ACCOUNTABILITY ORGANIZATION

Prepared by

Science Applications International Corporation
P.O. Box 2501, 800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830

Under Purchase Order 30B-99069C-Y13

for the

Oak Ridge Y-12 Plant
Oak Ridge, Tennessee

Managed by

Martin Marietta Energy Systems, Inc.
for the
U.S. Department of Energy

Under Contract Number DE-AC05-84OR21400

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SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

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ACRONYMS

API	American Petroleum Institute
BGS	below ground surface
DOT	Department of Transportation
Energy Systems	Martin Marietta Energy Systems, Inc.
FID	flame ionization detector
FY	fiscal year
GWPP	Groundwater Protection Program
Highland	Highland Drilling Company
HSEA	Health, Safety, Environment, and Accountability Organization
ID	inside diameter
OD	outside diameter
ORR	Oak Ridge Reservation
OVA	organic vapor analyzer
P&A	plugging and abandonment
PID	photoionization detector
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
SAIC	Science Applications International Corporation
SOP	standard operating procedure
SPAD	Steam Plant Ash Disposal
TD	total depth
TOWR	top of weathered rock
TOFR	top of fresh rock

EXECUTIVE SUMMARY

This report is a synopsis of the progress of the well plugging and abandonment program at the Y-12 Plant, Oak Ridge, Tennessee, from October 1993 through August 1994. A total of 57 wells and borings were plugged and abandoned during the period of time covered in this report. All wells and borings were plugged and abandoned in accordance with the *Monitoring Well Plugging and Abandonment Plan for the U.S. Department of Energy, Y-12 Plant, Oak Ridge, Tennessee* (HSW, Inc. 1991).

1. INTRODUCTION

In late September 1993, Science Applications International Corporation (SAIC) was authorized by Martin Marietta Energy Systems, Inc. (Energy Systems) to provide technical oversight for the plugging and abandonment of obsolete, damaged, and obstructing groundwater monitoring wells, piezometers, and core holes in the vicinity of the Y-12 Plant at Oak Ridge, Tennessee from October 1, 1993 through September 30, 1994. The scope of the authorized oversight was to supervise drilling activities and to provide health and safety monitoring during those activities. Energy Systems provided procedures and guidelines for plugging and abandonment, waste disposal, and health and safety monitoring requirements.

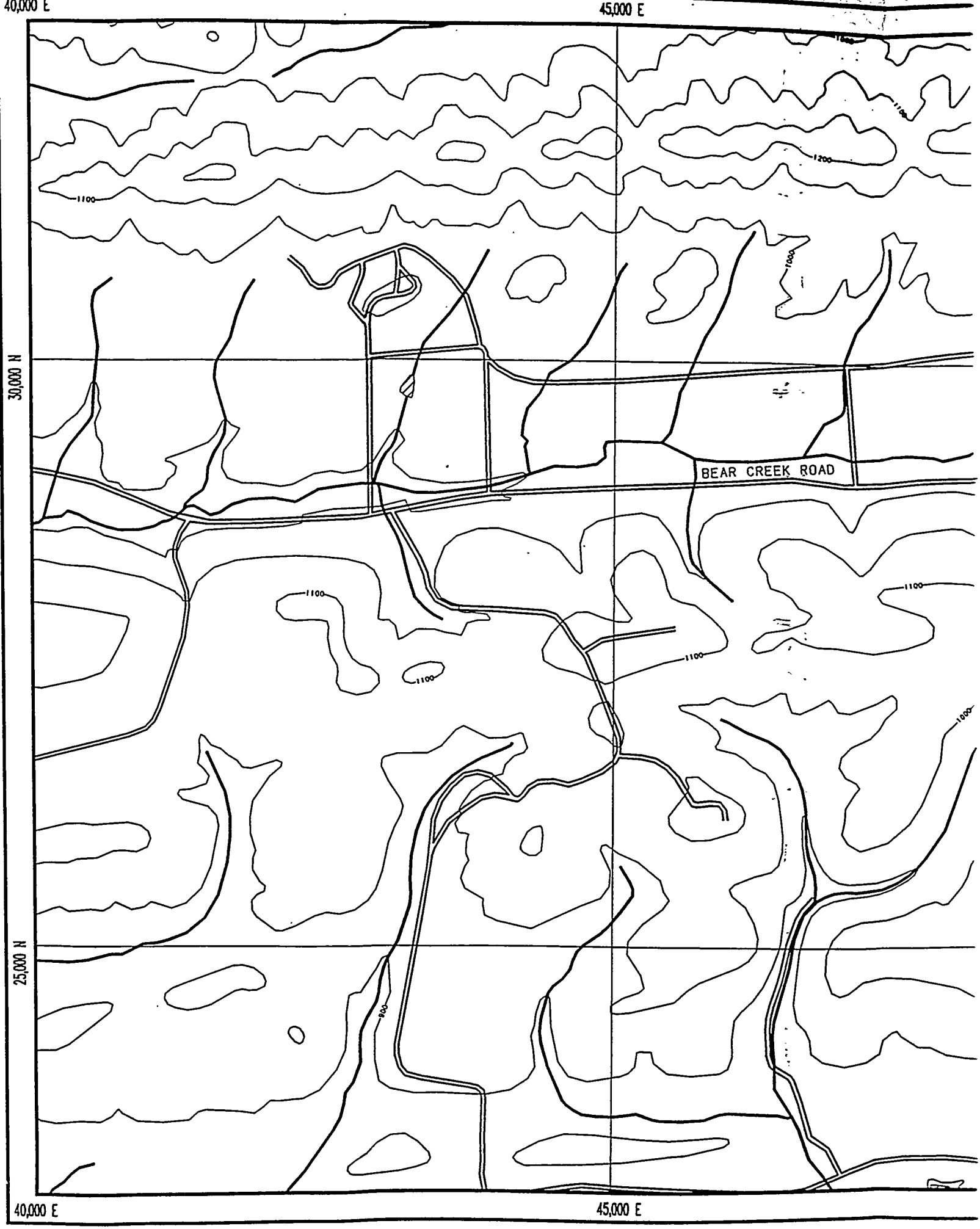
The criteria for determining the need for plugging and abandonment of monitoring wells, piezometers, and core holes were stated in the plugging and abandonment plan (HSW, Inc. 1991). Plugging and abandonment of a well, piezometer, or boring occurred if (1) its construction did not meet current standards (substandard construction); (2) it was irreparably damaged or had deteriorated beyond practical repair; (3) its location interfered with or otherwise impeded site operations, construction, or closure activities; or (4) special circumstances existed as defined on a case-by-case basis and approved by the Y-12 Plant Groundwater Protection Program (GWPP) Manager.

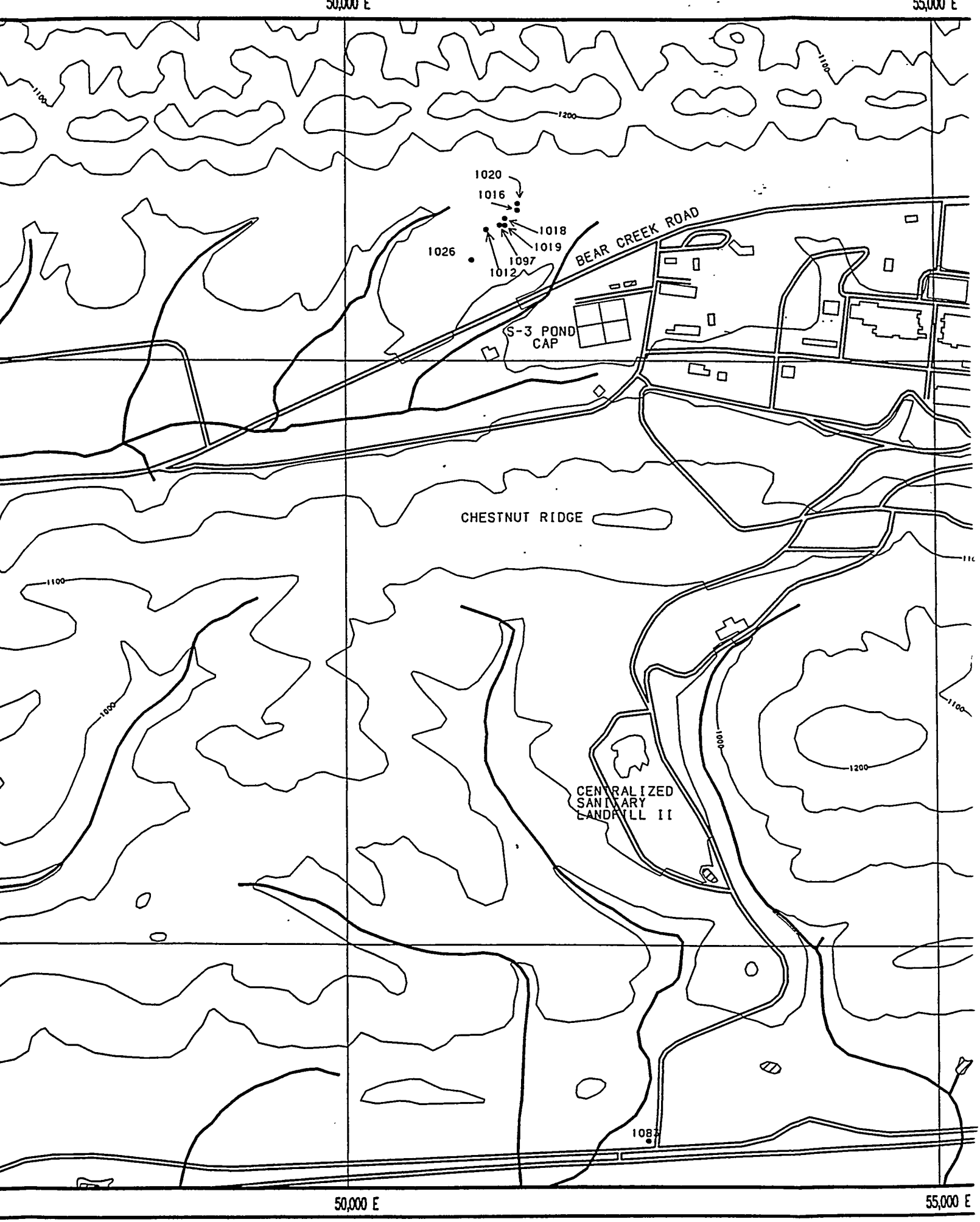
A total of 57 monitoring wells, piezometers, and borings were plugged and abandoned in fiscal year (FY) 1994 (Plates 1.1 and 1.2). This report presents a summary of the activities performed during the FY 1994 Plugging and Abandonment Program, and includes those wells decommissioned between August 20, 1993 and June 23, 1994. Note: The wells plugged and abandoned from August 20, 1993 to September 30, 1993 (part of the Federal FY 1993) are included in this summary report because no provisions were made to extend the task for preparations to the FY 1993 Summary Report to include all wells decommissioned during FY 1993. Subsequent sections of this report will contain:

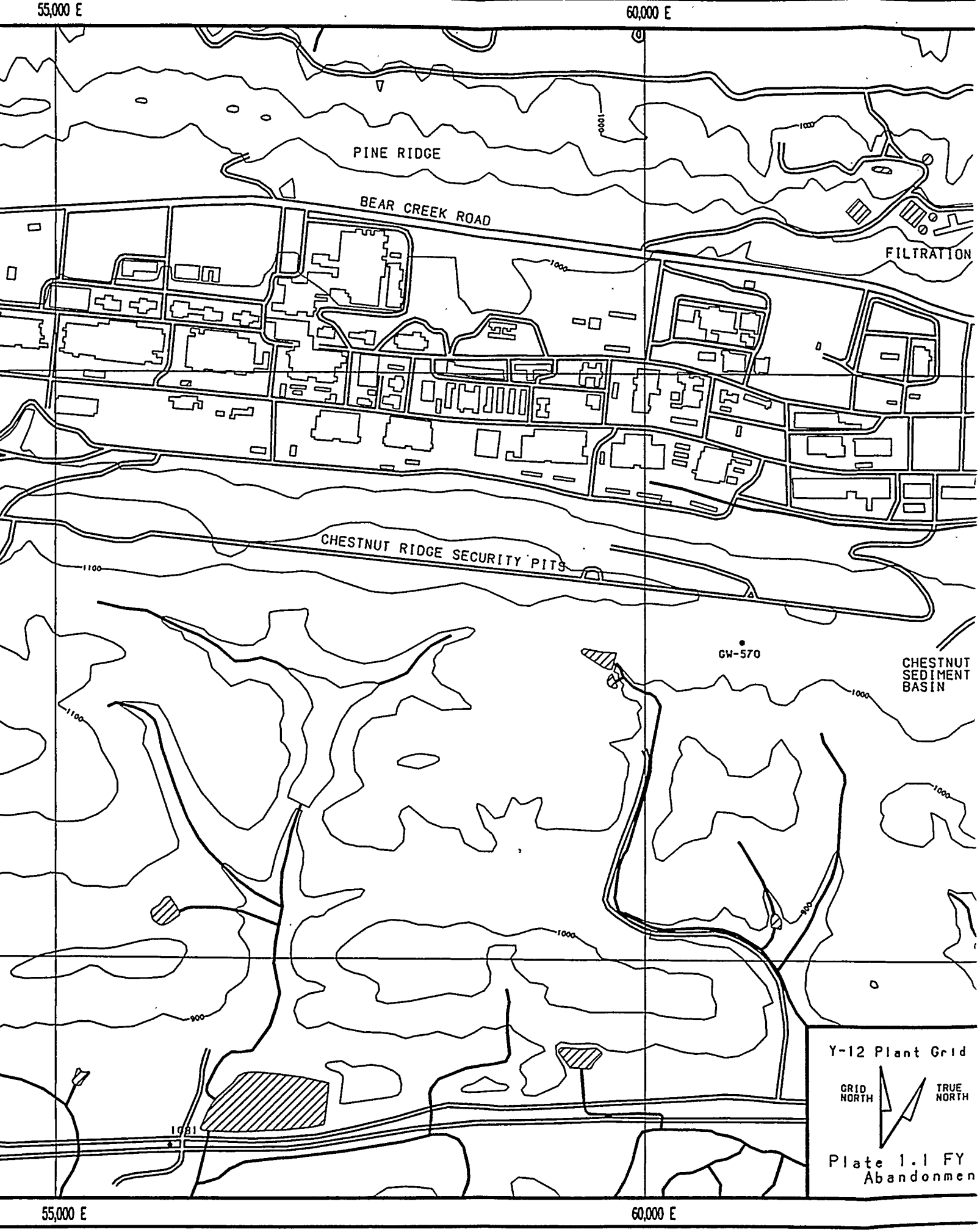
- general geologic setting of the Y-12 Plant and vicinity;
- discussion of well plugging and abandonment methods, grouting procedures, and waste management practices (a Waste Management Plan for Drilling Activities is included in Appendix C);
- summaries of plugging and abandonment activities at each site; and
- quality assurance/quality control (QA/QC) and health and safety protocols used during the FY 1994 Plugging and Abandonment Program.

Copies of the well activity/progress reports, plugging and abandonment diagrams, well cuttings field screening/disposal sheets, and equipment decontamination summaries are included in Appendices A, B, D, and E, respectively.

This report includes wells on all lands administered by the Y-12 Plant Groundwater Protection Program, which includes Bear Creek Valley, the southern flank of Pine Ridge, Chestnut Ridge, and parts of Bethel Valley from Y-12 Plant proper to the area immediately west of U.S. Highway 95.


40,000 E
45,000 E
30,000 N
25,000 N
BEAR CREEK ROAD
1100
1200
1000
800


50,000 E
55,000 E
1020
1016
1018
1019
1026
1097
1012
BEAR CREEK ROAD
S-3 POND
CAP
CHESTNUT RIDGE
CENTRALIZED
SANITARY
LANDFILL II
1083
1100
1200
1000


55,000 E
60,000 E
PINE RIDGE
BEAR CREEK ROAD
FILTRATION
CHESTNUT RIDGE SECURITY PITS
GW-570
CHESTNUT
SEDIMENT
BASIN
1000
1100
900
1081
Y-12 Plant Grid
GRID
NORTH
TRUE
NORTH
Plate 1.1 FY
Abandonmen
55,000 E
60,000 E

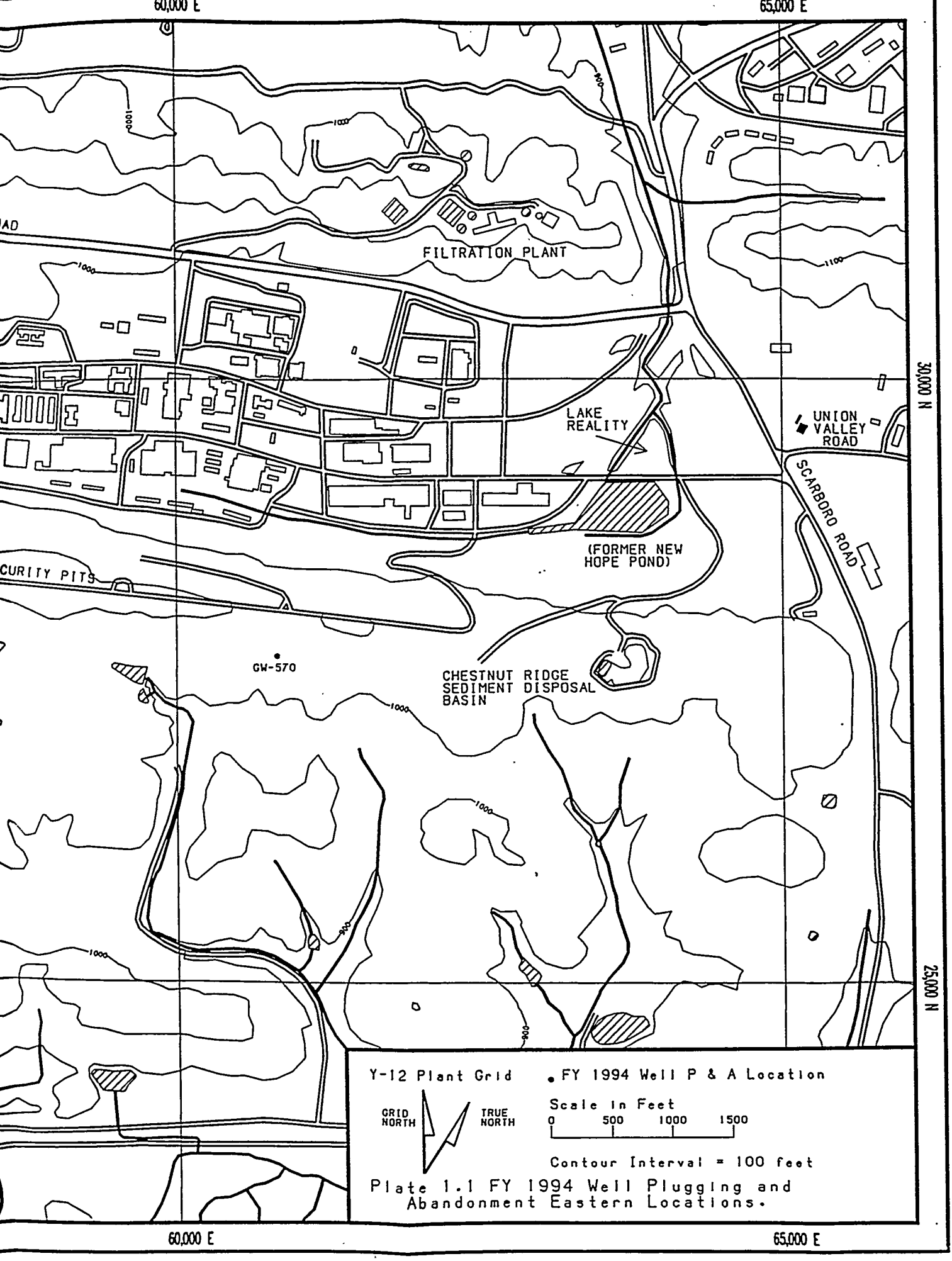
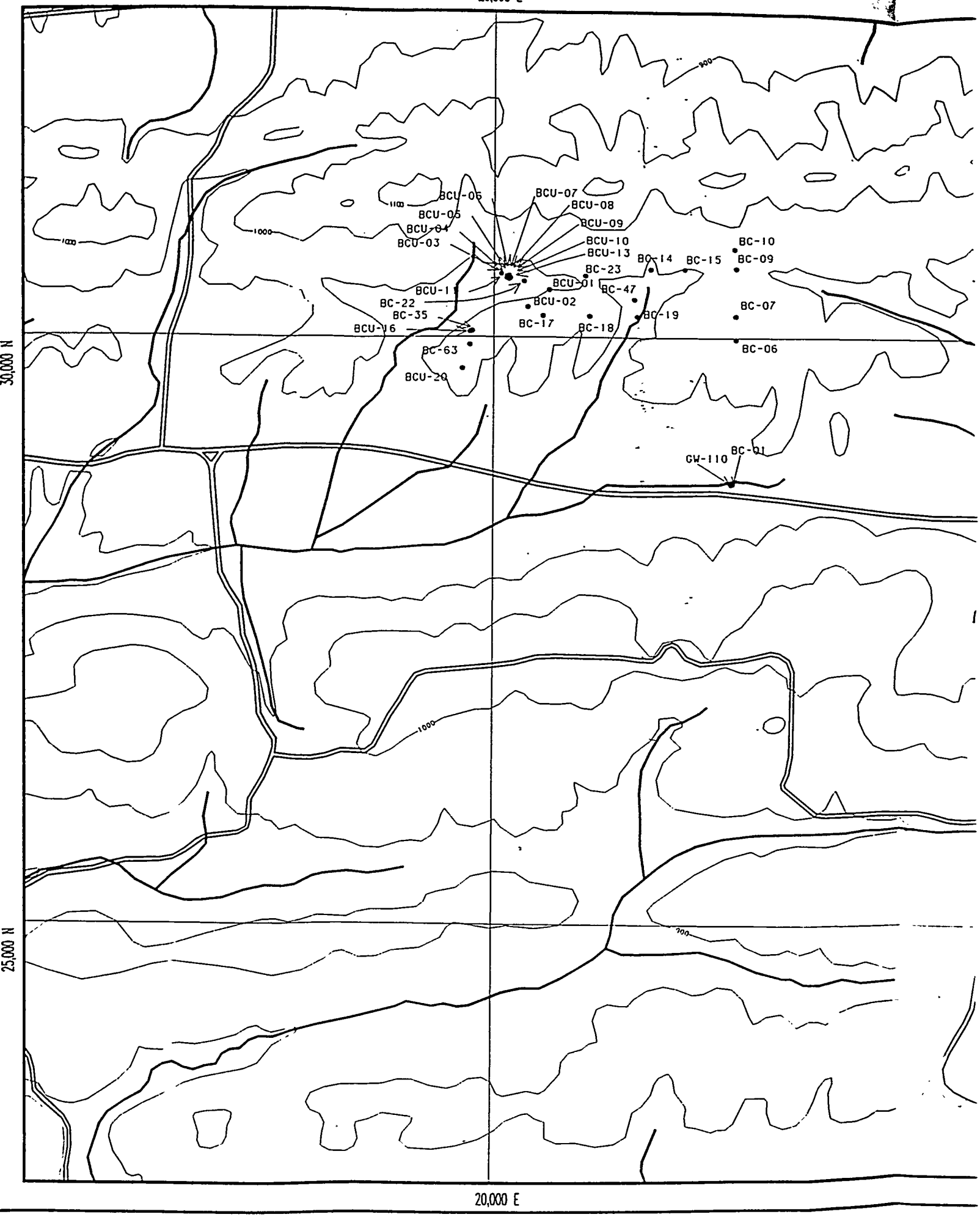
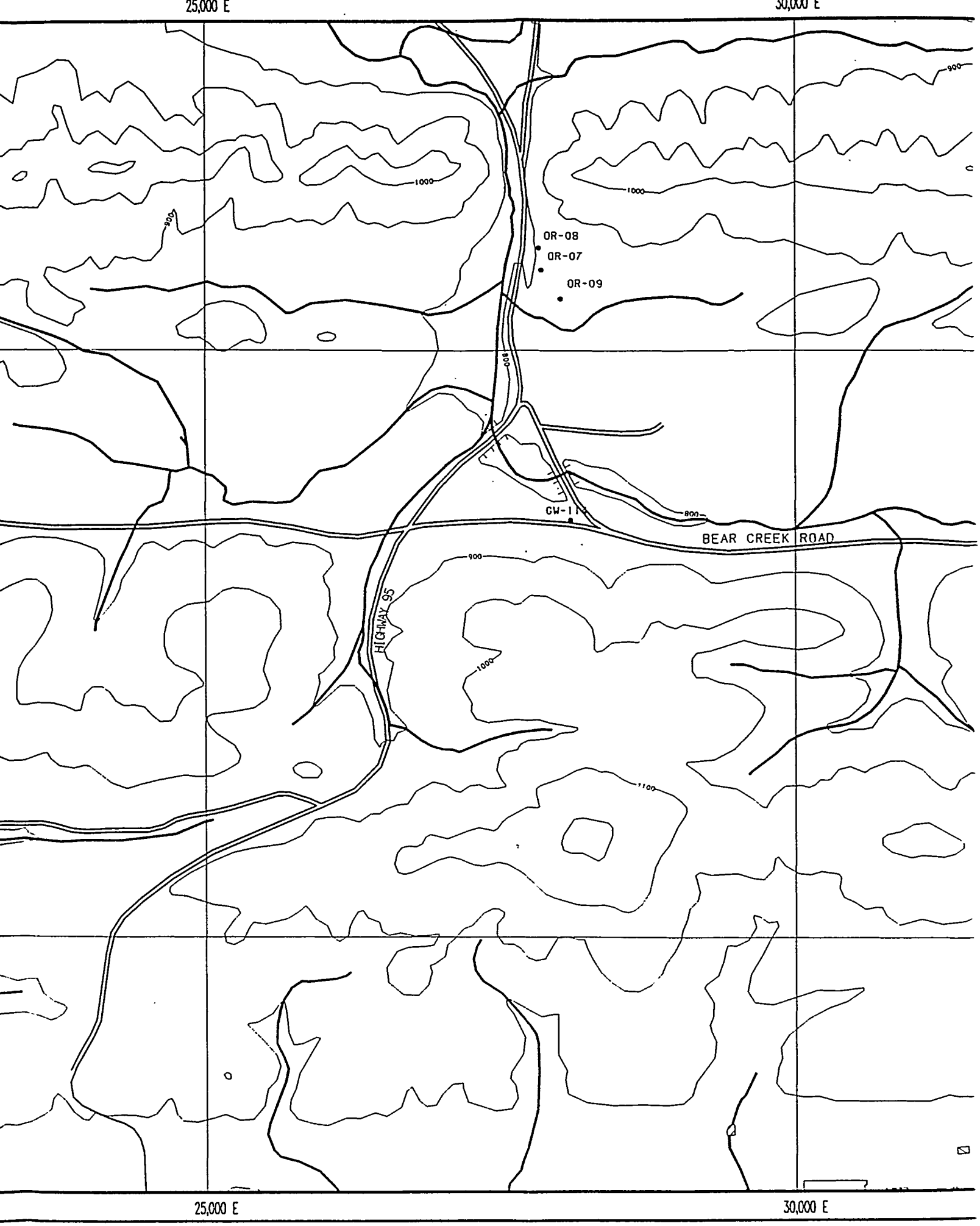
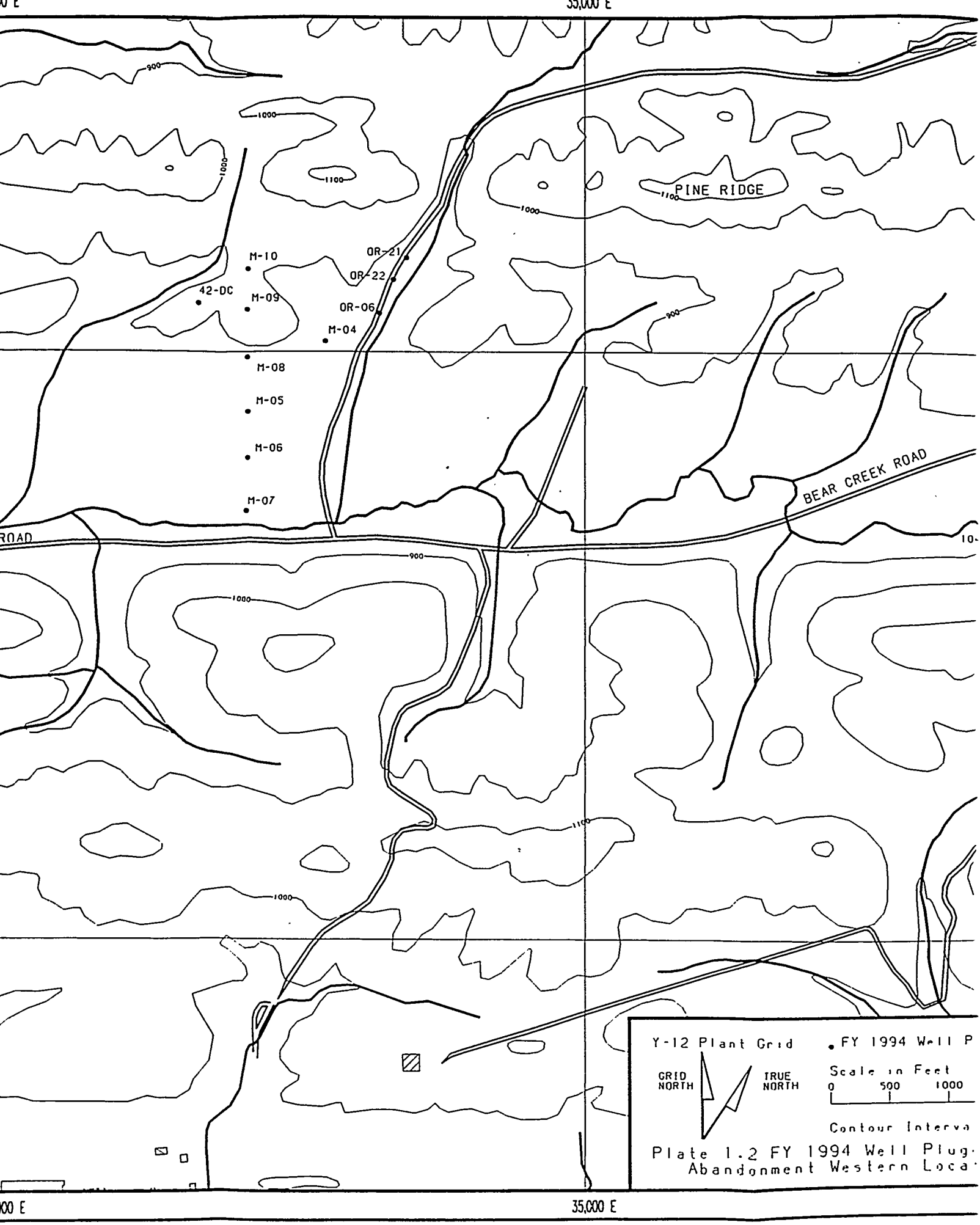
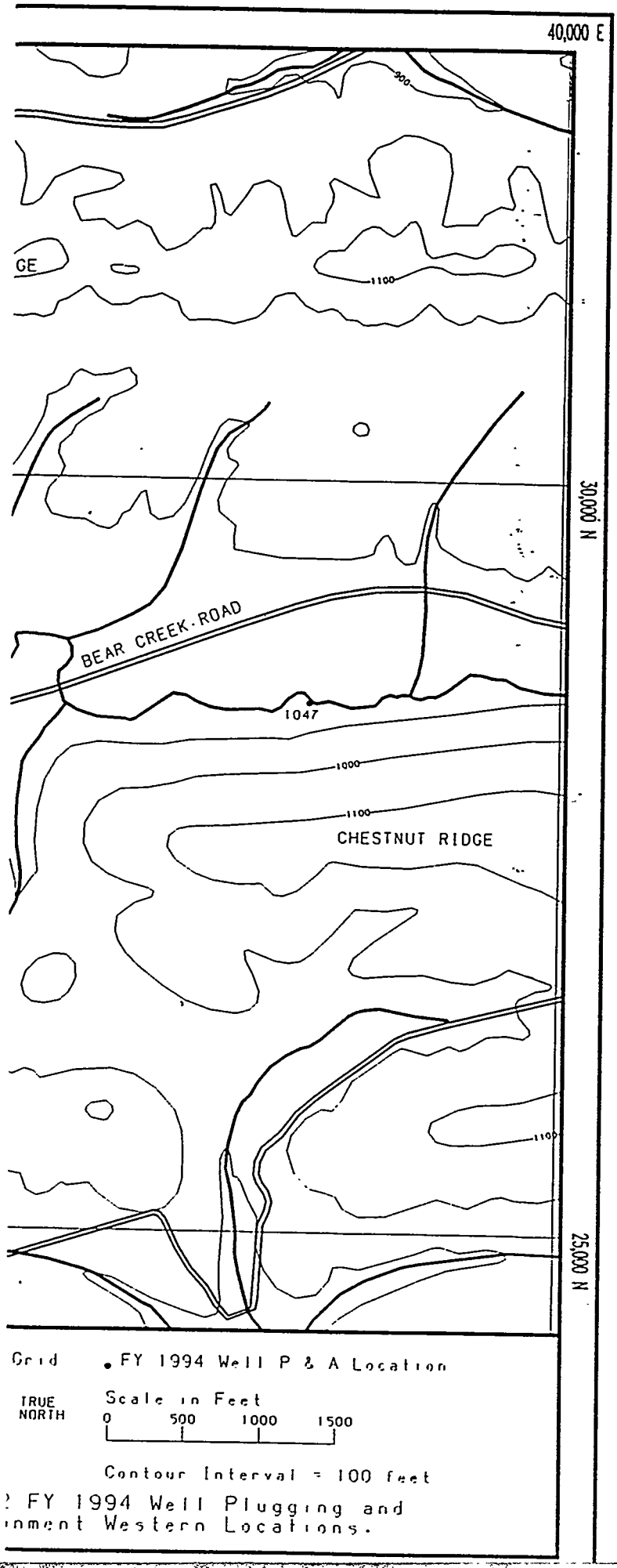


Plate 1.1 FY 1994 Well Plugging and Abandonment Eastern Locations.


BCU-06
BCU-07
BCU-08
BCU-05
BCU-09
BCU-04
BCU-10
BCU-03
BCU-13
BC-10
BC-14
BC-15
BC-09
BC-23
BCU-01
BCU-11
BC-47
BC-22
BCU-02
BC-07
BC-35
BC-19
BC-17
BC-18
BCU-16
BC-63
BC-06
BCU-20
GW-110
BC-01
1100
1000
900
700
30,000 N
25,000 N
20,000 E


25,000 E
30,000 E
OR-08
OR-07
OR-09
GW-11
BEAR CREEK ROAD
HIGHWAY 95
900
1000
1100
800
25,000 E
30,000 E


35,000 E
PINE RIDGE
M-10
OR-21
OR-22
42-DC
M-09
OR-06
M-04
M-08
M-05
M-06
M-07
BEAR CREEK ROAD
ROAD
900
1000
1100
Y-12 Plant Grid
FY 1994 Well P
GRID NORTH
TRUE NORTH
Scale in Feet
0
500
1000
Contour Interva
Plate 1.2 FY 1994 Well Plug
Abandonment Western Loca
35,000 E



FY 1994 Well Plugging and
nment Western Locations.

2. GENERAL GEOLOGY

2.1 LOCATION AND PHYSIOGRAPHY

The Oak Ridge Y-12 Plant is located in Bear Creek Valley, in the southwestern corner of Anderson County. The area of interest covered by this report includes Pine Ridge (which bounds Bear Creek Valley to the north), Chestnut Ridge (to the south of Bear Creek Valley), and parts of Bethel Valley.

The Y-12 Plant, occupying an area of approximately 86 square miles, lies in a portion of the Tennessee section of the Valley and Ridge Physiographic Province (McMaster 1963). This province is characterized by narrow, elongated ridges and valleys trending northeast-southwest. Resistant sandstone, siltstone, and siliceous limestone and dolostone typically form the ridges; the valleys are commonly underlain by less resistant shale and soluble carbonates (Rodgers 1953). Elevations within the Oak Ridge Reservation (ORR) range from about 900 ft to just over 1200 ft above mean sea level.

2.2 STRATIGRAPHY

Four major stratigraphic units, classified according to lithology, fossils, and age, underlie the Bear Creek Valley and vicinity. From oldest to youngest, these units are the Rome Formation, Conasauga Group, Knox Group, and Chickamauga Group. The formations located in and around Bear Creek Valley generally strike N47°E to N67°E. Regional dips range from 30° to 50° to the southeast (King and Haase 1987). Figures 2.1 and 2.2 represent a generalized geologic cross section and map, respectively, that illustrate the locations and stratigraphic relationships of the major stratigraphic groups and formations that occur in the Bear Creek Valley area.

The Rome Formation, which forms Pine Ridge, is Lower Cambrian in age and consists of interbedded sandstone, shale, and siltstone with local beds of dolostone (McMaster 1963).

The Conasauga Group, of the Middle to Upper Cambrian period, has been subdivided into six formations of alternating, predominantly shale and limestone lithologies. The six divisions, from oldest to youngest, are the Pumpkin Valley Shale, Rutledge Limestone, Rogersville Shale, Maryville Limestone, Nolichucky Shale, and Maynardville Limestone. Detailed lithologic descriptions of these formations are given in King and Haase (1987). The majority of the wells decommissioned during FY 1993 had been installed in Conasauga Group formations. Figure 2.3 presents the relative positions of the member formations of the Conasauga Group, in cross section, as they appear in Bear Creek Valley.

Chestnut Ridge, to the south of Bear Creek Valley, is formed from siliceous dolostones of the Knox Group. This upper Cambrian to lower Ordovician-aged unit is divided into five formations that are, from oldest to youngest, the Copper Ridge Dolomite, Chepultepec Dolomite, Longview Dolomite, Kingsport Formations, and Mascot Dolomite. Detailed lithologic descriptions of the Knox Group formations are published in Milici (1973). Only one well (GW-570) was located in the Knox Group formation.

Overlying the Knox Group, unconformably, is the Middle Ordovician Chickamauga Group. The Chickamauga Group is subdivided into a number of member formations. Two wells (1081 and 1083) were located in Lower Chickamauga Group formations. The basal members of the Chickamauga Group are described as a gray, argillaceous limestone interbedded with dark gray, calcareous shale (Hatcher et al. 1992).

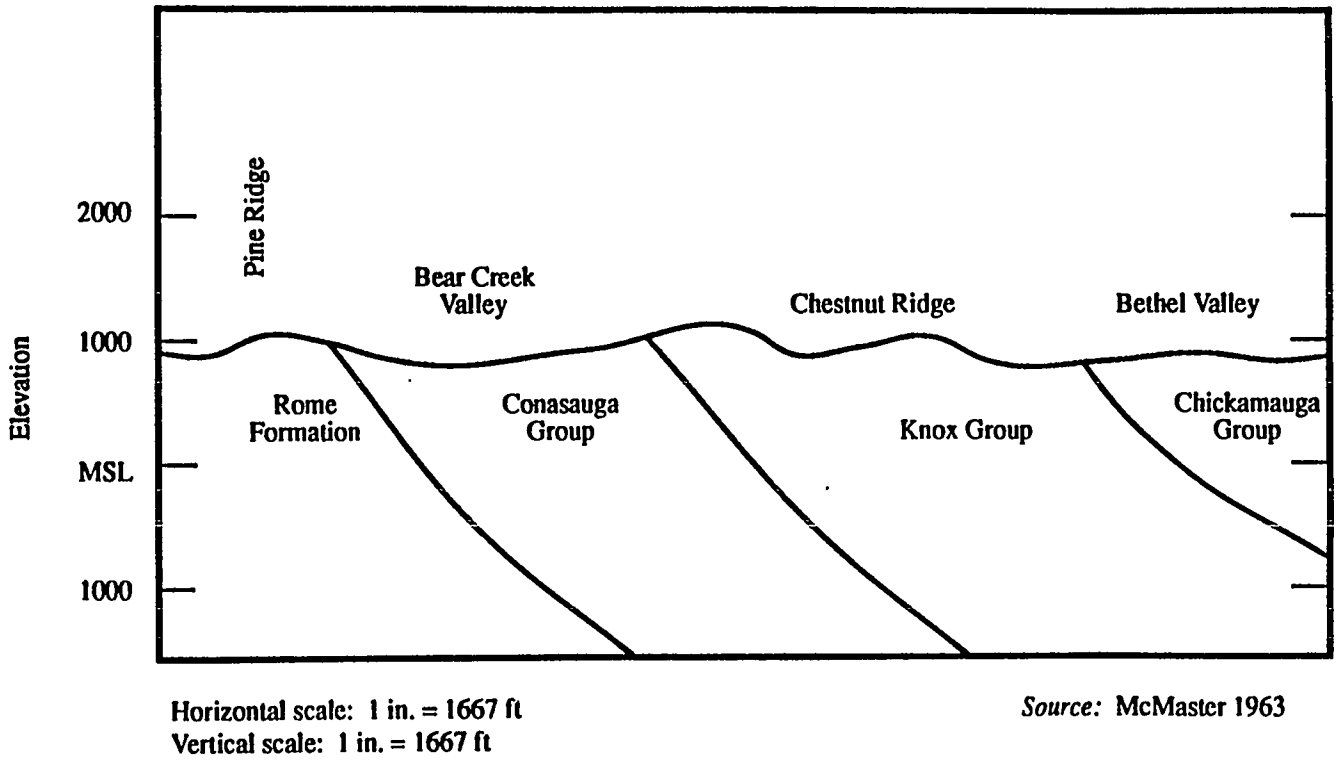
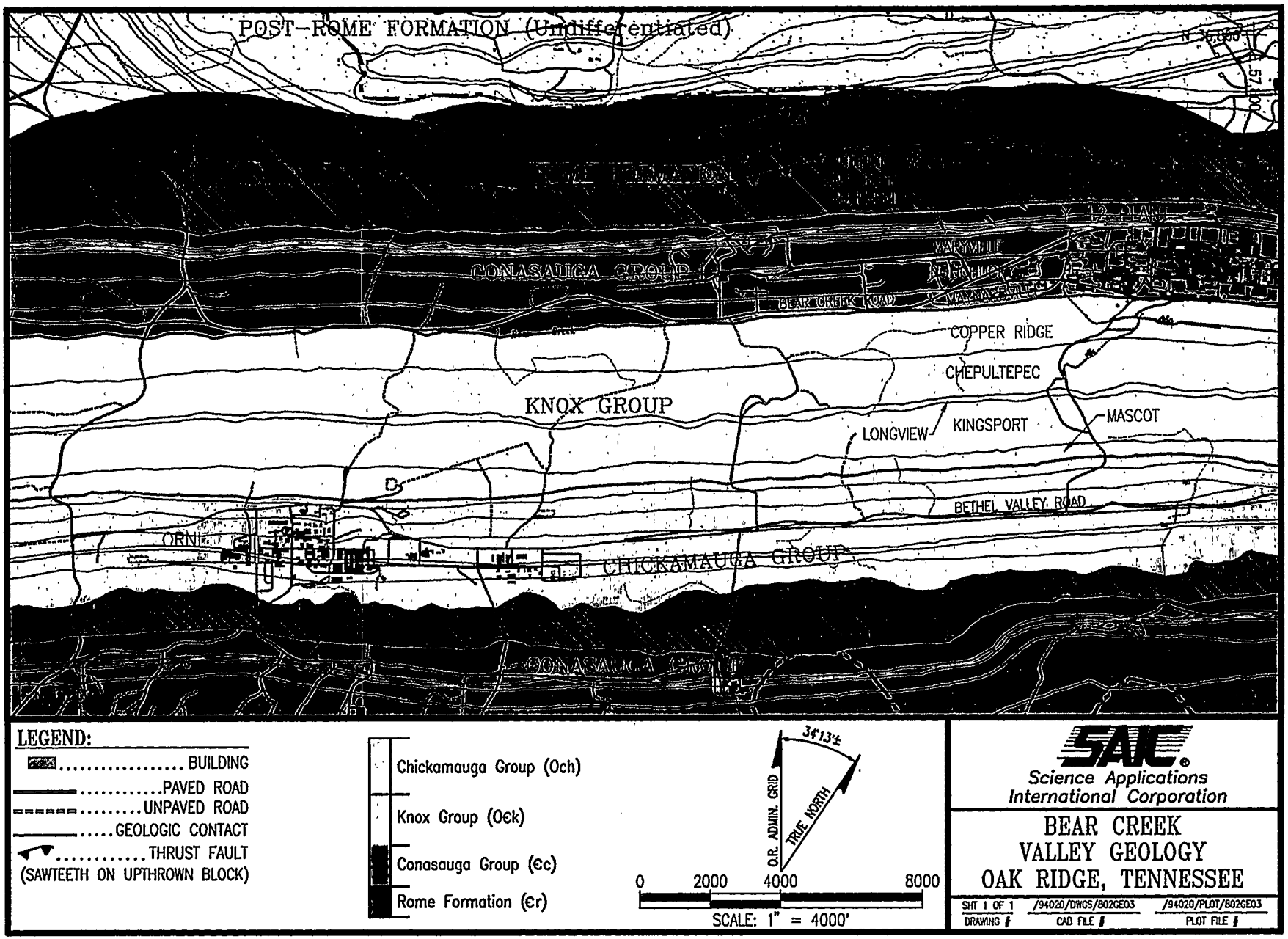


Fig. 2.1. Generalized geologic cross section through the Y-12 Plant and vicinity.


POST-ROME FORMATION (Undifferentiated)
CONASAUGA GROUP
BEAR CREEK ROAD
COPPER RIDGE
CHEPULTEPEC
KNOX GROUP
LONGVIEW
KINGSPORT
MASCOT
BETHEL VALLEY ROAD
ORNL
CHICKAMAUGA GROUP
LEGEND:
BUILDING
PAVED ROAD
UNPAVED ROAD
GEOLOGIC CONTACT
THRUST FAULT
(SAWTEETH ON UPTHROWN BLOCK)
Chickamauga Group (Och)
Knox Group (Ock)
Conasauga Group (Ec)
Rome Formation (Er)
34°13'±
O.R. ADMIN. GRID
TRUE NORTH
0
2000
4000
8000
SCALE: 1" = 4000'
Science Applications International Corporation
BEAR CREEK VALLEY GEOLOGY OAK RIDGE, TENNESSEE
SHT 1 OF 1
DRAWING #
/94020/DWGS/B02GE03
CAD FILE #
/94020/PLOT/B02GE03
PLOT FILE #

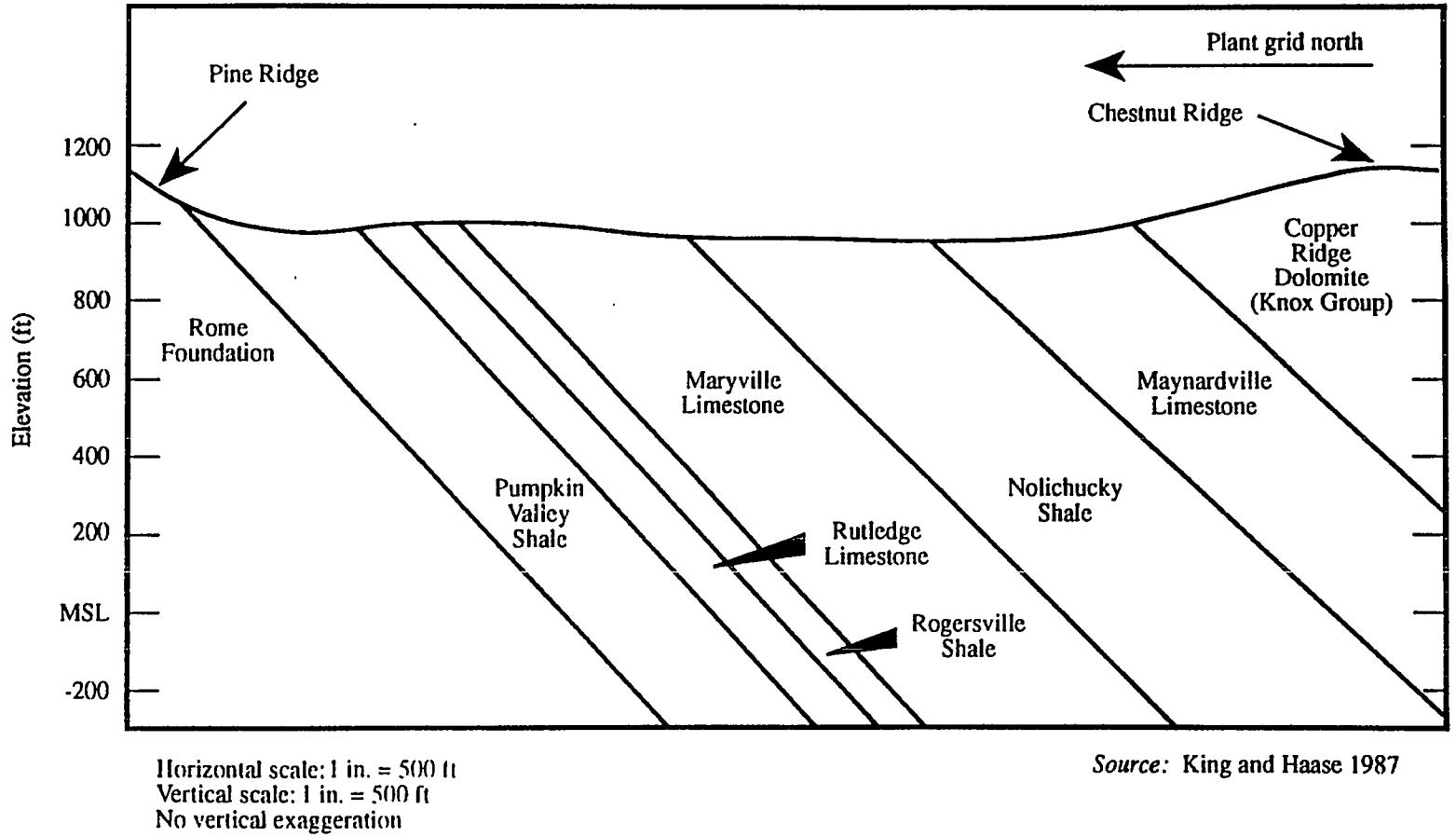


Figure 2.3. Generalized geologic cross section of the member formations of the Conasauga Group.

All of the bedrock formations in Bear Creek Valley and vicinity are overlain by unconsolidated deposits of fill, alluvium, colluvium, and in situ weathered bedrock (residuum). The thickness of unconsolidated deposits overlying the Conasauga and Chickamauga Groups (occupying valleys) ranged from approximately 1 ft to as much as 46 ft. Unconsolidated deposits overlying the Knox Group on Chestnut Ridge are considerably thicker than those in the adjacent valleys.

Figure 2.4 is a generalized stratigraphic column of the major stratigraphic units and accepted subdivisions of the Y-12 Plant area bedrock formations.

Age	Group	Formation	Approximate Thickness (ft)		
			King and Haase 1987	Millici 1973	McMaster 1963
Middle Ordovician	Chickamauga	Undifferentiated	Not Determined		1750
Lower Ordovician	Knox	Mascot Dolomite	Not Determined	400-800	3000 (undivided)
		Kingsport Formation		200-320	
		Longview Dolomite		250-450	
		Chepultepec Dolomite		725-880	
Middle & Upper Cambrian		Copper Ridge Dolomite		900-1000	
	Conasauga	Maynardville Limestone	418-450		1500 (undivided)
		Nolichucky Shale	422-550		
		Maryville Limestone	346-445		
		Rogersville Shale	90-120		
		Rutledge Limestone	90-120		
		Pumpkin Valley Shale	260-320		
Lower Cambrian		Rome	Not Determined		800+

Fig. 2.4. Stratigraphic units in the vicinity of the Y-12 Plant.

3. WELL PLUGGING AND ABANDONMENT

3.1 DRILLING CONTRACTOR

The principal drilling contractor for plugging and abandonment activities at the Y-12 Plant during FY 1994 was Highland Drilling Company (Highland). All plugging and abandonment activities were performed by Highland (Table 3.1).

Air rotary drilling rigs were the only drill rigs utilized by Highland to plug and abandon wells during FY 1994. An Ingersoll-Rand T4W rig was used to plug wells 1012, 1016, 1018, 1019, 1020, 1026, 1081, 1083, 1097, 42-DC, BC-06, BC-07, BC-09, BC-10, BC-14, BC-15, BC-19, BC-23, BC-47, BCU-07, BCU-09, M-04, M-07, M-08, M-09, and M-10. Another air rotary rig, an Ingersoll-Rand XL-750, was used by Highland to plug and abandon wells 1047, 1047A, BC-17, BC-18, BC-22, BC-35, BC-63, BCU-02, BCU-03, BCU-04, BCU-05, BCU-06, BCU-08, BCU-10, BCU-11, BCU-13, BCU-16, BCU-20, M-05, M-06, GW-110, GW-114, GW-570, OR-07, OR-08, OR-09, OR-21, and OR-22. Both air rotary rigs were used, on different stages, to plug and abandon well BCU-01.

3.2 PLUGGING AND ABANDONMENT METHODS

Four generalized plugging and abandonment methods, approved by the Tennessee Department of Environment and Conservation, were followed. The four methods are discussed in *Monitoring Well Plugging and Abandonment Plan for the Department of Energy Y-12 Plant, Oak Ridge, Tennessee* (HSW, Inc. 1991). These methods are applicable to different types of well or boring construction. Wells that were plugged and abandoned during FY 1994 required the use of all of these methods.

Method A is used for wells constructed of ≤ 7-in. outside diameter (OD) steel or stainless steel well casing, typically completed with 5- to 20-ft well screens and sand filter packs. Wells completed in bedrock may also have 8- to 12-in. OD steel or polyvinyl chloride (PVC) surface casing extending from ground surface to the top of bedrock. Some wells may also be completed with a conductor casing in place. Method A involves the overwash and removal of casing with washover pipe. Once the well casing has been removed, the borehole is reamed with a tricone bit at least 0.25 in. larger in diameter than the original bore. API Class A (Type I) neat cement is tremied to within 4 ft of the surface (if there is no surface casing or conductor casing) and, after verification of the depth to the grout plug, the remaining 4 ft of bore is capped using compacted noncontaminated soil. If the well was completed with surface casing, the first grout plug is tremied to the bottom of the surface casing and allowed to cure. The surface casing is then overwashed in the same manner as the inner casing, and grout is tremied from the bottom to within 4 ft of the surface. If the well was also completed with a conductor casing, it is removed in a manner similar to that for the surface casing. During FY 1994, method A was followed for the plugging and abandonment of wells 1081, 1083, GW-110, GW-114, and GW-570.

Method B is used for wells constructed of ≤ 7-in. OD steel or PVC well casing and completed with open-hole intervals in competent bedrock. The well casing typically extends from the ground surface to the top of the open-hole interval, which typically extends from 5 to 100 ft or more below the bottom of the well casing. The wells may also be completed with 8- to 12-in. OD steel or PVC surface casing extending from ground surface to the top of bedrock. Some wells may also be completed with a conductor casing. In method B, the open interval of the well is reamed by lowering a tricone drill bit through the casing. After reaming, the open interval is tremied with API Class A neat cement to the bottom of the well casing. After the initial plug has cured, the well casing is over washed or drilled out (depending on casing material) using a bit or washover pipe at least 0.25-in diameter greater than the original bore. This upper portion of the bore is then filled using grout tremied to within 4 ft of the surface and capped as detailed in method A. During FY 1994, method B was used in the plugging and abandonment of wells 1012, 1016, 1018, 1019, 1020, 1026, 1097, 42-DC, BCU-10, BCU-13, M-04, M-05, M-06, M-07, M-08, M-09, M-10, OR-07, OR-08, OR-21, and OR-22.

Table 3.1 Summary of drilling contractor services provided at each abandoned well or boring

Well Number	Contractor	Service Supplied
1012	Highland Drilling Co.	Plugging and abandonment of an open interval well
1016	Highland Drilling Co.	Plugging and abandonment of an open interval well
1018	Highland Drilling Co.	Plugging and abandonment of an open interval well
1019	Highland Drilling Co.	Plugging and abandonment of an open interval well
1020	Highland Drilling Co.	Plugging and abandonment of an open interval well
1026	Highland Drilling Co.	Plugging and abandonment of an open interval well
1047	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
1047A	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
1081	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
1083	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
1097	Highland Drilling Co.	Plugging and abandonment of an open interval well
42-DC	Highland Drilling Co.	Plugging and abandonment of an open interval well
BC-06	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-07	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-09	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-10	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole.
BC-14	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-15	Highland Drilling Co.	Plugging and abandonment of a PVC screened well/core hole
BC-17	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-18	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-19	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole.

Table 3.1 (continued)

Well Number	Contractor	Service Supplied
BC-22	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-23	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-35	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BC-47	Highland Drilling Co.	Plugging and abandonment of a PVC screened interval well/core hole
BC-63	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BCU-01	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BCU-02	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BCU-03	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-04	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-05	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-06	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-07	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-08	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-09	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-10	Highland Drilling Co.	Plugging and abandonment of an open interval well
BCU-11	Highland Drilling Co.	Plugging and abandonment of a PVC screened well
BCU-13	Highland Drilling Co.	Plugging and abandonment of an open interval well
BCU-16	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
BCU-20	Highland Drilling Co.	Plugging and abandonment of an open interval well/core hole
GW-110	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-114	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-570	Highland Drilling Co.	Plugging and abandonment of a stainless-steel monitoring well

Table 3.1 (continued)

Well Number	Contractor	Service Supplied
M-04	Highland Drilling Co.	Plugging and abandonment of an open interval well
M-05	Highland Drilling Co.	Plugging and abandonment of an open interval well
M-06	Highland Drilling Co.	Plugging and abandonment of an open interval well
M-07	Highland Drilling Co.	Plugging and abandonment of an open interval well
M-08	Highland Drilling Co.	Plugging and abandonment of an open interval well
M-09	Highland Drilling Co.	Plugging and abandonment of an open interval well
M-10	Highland Drilling Co.	Plugging and abandonment of an open interval well
OR-07	Highland Drilling Co.	Plugging and abandonment of an open interval well
OR-08	Highland Drilling Co.	Plugging and abandonment of an open interval well
OR-09	Highland Drilling Co.	Plugging and abandonment of a PVC screened monitoring well
OR-21	Highland Drilling Co.	Plugging and abandonment of an open interval well
OR-22	Highland Drilling Co.	Plugging and abandonment of an open interval well

Method C is used for wells constructed of 7-in. OD or smaller PVC well casing, typically completed with 5- to 20-ft well screens and sand filter packs. Wells completed in bedrock may also have 8- to 12-in. OD steel or PVC surface casing extending to bedrock in addition to conductor casing. In method C, the well casing is removed by either overwashing or (if the well casing material allows) by drilling out the well casing with a tricone roller bit. In both cases, the bore is reamed to at least 0.25 in. larger than the original diameter. The initial grout plug is created by placing API Class A neat cement by tremie to within 4 ft of the surface or to the bottom of surface casing. If surface casing or conductor casing is used in the well construction, removal is done as described in methods A and B. The bore is capped using compacted, noncontaminated soil to the surface. During FY 1994, method C was used in the plugging and abandonment of wells BCU-03, BCU-04, BCU-05, BCU-06, BCU-07, BCU-08, BCU-09, and BCU-11.

Method D is a variation of method B that is used solely for exploratory core holes with 4.5-in. OD or smaller steel surface casings. The only variance from method B is that, in method D, the open interval of these core holes is not conditioned or reamed to expose fresh rock. This would require the prior removal of the surface casing with the resulting potential for bore collapse. In addition, open intervals are typically very deep and sometimes highly deviated from vertical. Rotary bits required for open interval reaming are not manufactured in a size small enough to ream NX (approximately 3.0-in. diameter) core holes. The subsequent steps in the plugging and abandonment of wells using method D, from setting the initial grout plug to placing the cap, are similar to those given for method B. During FY 1994, method D was used in the plugging and abandonment of wells 1047, 1047A, BC-06, BC-07, BC-09, BC-10, BC-14, BC-15, BC-17, BC-18, BC-19, BC-22, BC-23, BC-35, BC-63, BCU-01, BCU-02, BCU-16, and BCU-20.

3.3 GROUTING PROCEDURES

Open Interval Wells

During plugging of the open-interval wells, the open intervals were reamed to fresh material, at least 1 ft deeper than the total depth (TD) of the well. The open intervals were then cleaned of as much debris as possible, and API Class I (Type I) cement was either hand-mixed or delivered neat. Cement was tremied into the borehole through 1.5-in. OD PVC tremie pipe. The plug of each open interval was brought up to the bottom of the innermost (deepest) casing of each well. The grout plug was allowed to cure overnight or 24 hours before further plugging and abandonment activities were pursued at each well.

Following removal of casing and reaming of the borehole to expose fresh rock, cement grout was tremied to within ≤ 4 ft of the ground surface, again using 1.5-in. OD PVC. Where bore depth was < 20 ft below ground surface (BGS) and/or danger of the bore bridging was negligible, neat grout was poured directly into the borehole from the surface. The remaining bore (≤ 4 ft BGS) was subsequently filled with a compacted clay/soil cap after the plug was cured.

Screened Monitoring Wells and Piezometers

Following removal of screen and casing from these wells, and subsequent conditioning of the borehole, neat cement grout was placed into the bore to within ≤ 4 ft of the bottom of surface casing (if no surface casing was present, grout was brought to within ≤ 4 ft of the surface). After the grout had cured, surface casings were removed, and neat cement grout was placed into the reamed bore to within 4 ft BGS. This grout was allowed to cure, and the remaining open bore was filled with a clay/soil plug.

Highland either hand-mixed API Class I (Type I) grout used in plugging and abandonment or used premixed cement delivered to the site of the same specifications. In bores > 20 ft deep, grout was tremied through 1.5-in. OD PVC tremie pipe at a depth of approximately 10 to 20 ft from the bottom of the bore. Grouting of boreholes ≤ 20 ft deep or where the danger of bridging was negligible was accomplished by pouring or by pumping grout through a short hose into the bore.

3.4 WASTE MANAGEMENT PRACTICES

A waste management plan for the plugging and abandonment program was supplied to Energy Systems (Appendix C). Because the majority of the abandonment sites were outside areas of known or suspected contamination, drilling cuttings and water were discharged to the ground surface or to an excavated cuttings pit, provided that field screening criteria for radiation, volatile organics, and pH were not exceeded.

In the event that drill cuttings exceeded acceptable disposal limits, Health, Safety, Environment, and Accountability Organization (HSEA) personnel directed subcontractor personnel in the proper disposal techniques.

Well 1083

A headspace analysis of the cuttings composite from well 1083 measured in excess of acceptable disposal limits. After resealing the sample and allowing an appropriate incubation period, the headspace was again measured, and again exceeded the disposal limits. HSEA directed the oversight geologist to allow the cuttings to aerate overnight and resample the following day. A headspace analysis of another cuttings composite the following day, using both a photoionization detector (PID) and flame ionizaton detectors (FIDs), resulted in measurements that still exceeded the disposal limits. HSEA directed the oversight and subcontractor personnel to drum the cuttings for disposal.

3.5 DEVIATIONS FROM NORMAL PLUGGING AND ABANDONMENT PROCEDURES

Due to certain irregularities or unusual circumstances in the installation of the well to be decommissioned, deviations from the approved plugging and abandonment (P&A) methods were necessary to complete the P&A. Authorization to deviate from P&A methods was always obtained from HSEA prior to beginning P&A activities. Generally, deviations of this type included: drilling up of PVC well casing/screen while reaming the well bore to fresh material thereby streamlining the applicable P&A method; using bentonite Hole Plug™ instead of cement to bridge voids, cavities, or fractures; and abbreviating P&A activities at a well when removal of the well casing/screen (after a respectable attempt) has been deemed impractical.

A summary of specific deviations to P&A methods that occurred during the FY 1994 program follows:

- The open interval in well 1019 was short (3.5 ft) and not conditioned prior to the removal of the casing; rather, the casing was overwashed, removed, and the well bore reamed to below TD.

- Many of the wells decommissioned during FY 1994 had been constructed with PVC casing/screen. During P&A of the following wells, the casing/screen was drilled up while the well bore was reamed to fresh material: 1097, BC-47, BCU-03, BCU-04, BCU-05, BCU-06, BCU-07, BCU-08, BCU-09, BCU-10, OR-07, OR-08, OR-09, OR-21, and OR-22.

- Hole Plug™ was used on well M-05 to bridge large voids/cavities.

- Wells BC-06, BC-07, BC-09, BC-10, BC-19, BC-35, BCU-01, BCU-02, and BCU-16 were all located at the Exxon Nuclear Site. Modified P&A procedures were implemented for the Exxon Nuclear Site wells. The open intervals of the above-listed wells were grouted without preconditioning. Then, the well bores were reamed to fresh material to approximately 20 ft below top of fresh rock (TOFR) and grouted. A detailed modified standard operating procedure for the Exxon Nuclear Site is included in Sect. 4.4.

In some cases, it was impossible to complete the P&A of a well for one reason or another. Wells that were incompletely decommissioned, and the reason, are listed below:

1047/CO-1. Unable to ream well bore to TD because bit deflected off of borehole: P&A terminated to prevent possible impact to Bear Creek.

1083. Unable to extract all of the well casing; reaming of well bore terminated short of TD to prevent possible damage to bit.

BC-63. Well bore obstructed; unable to grout the open interval.

BCU-11. PVC casing drilled up and borehole reamed short of TD; the washed-out borehole collar jeopardized the stability of the drilling rig.

GW-110 and GW-114. The stainless-steel casings bound up inside the washover pipe and twisted off. The distorted casing was pushed further down inside the boreholes making extraction impossible. Only 4.4 ft of casing was recovered from well GW-110, while 9.5 ft of casing was obtained from well GW-114.

GW-570. The stainless-steel casing in well GW-510 was apparently installed in a deflecting borehole. The casing was sheared off at a depth of 21.6 ft BGS while overwashing. The remaining casing was not recovered.

M-07. Constructed in a suspected sinkhole, the well collapsed while reaming the well bore. The remaining borehole was backfilled with gravel.

4. PLUGGING AND ABANDONMENT SUMMARIES

This section provides a brief summary of each of the 57 wells decommissioned at the Y-12 Plant GWPP during FY 1994. The wells are arranged numerically within the same geographic region or operational area. A summary of the recorded well construction and location information is presented in Tables 4.1 and 4.2 (Y/TS-881/R1). Occasional minor differences existed between reported construction and actual construction. These differences, as well as deviations from the plugging and abandonment procedures, are noted below. The location of each of the plugged and abandoned wells in the S-3 Ponds Functional Area, the Oak Ridge Sludge Farm, and Chestnut Ridge is shown on Plate 1.1. The location of each of the plugged and abandoned wells in the Gum Branch Road Functional Area, Exxon Nuclear Site, and Bear Creek Road is shown on Plate 1.2.

4.1 S-3 PONDS FUNCTIONAL AREA

Seven wells were decommissioned from a part of the S-3 Ponds Functional Area that was referred to as the Brunton Study Area. The Brunton Study Area was the site of hydrologic investigations, upgradient of the Y-12 Plant, in the late 1970s. All of the wells at this location were open interval monitoring wells with all but one having steel surface casing (Well 1097 utilized PVC casing).

Well 1012

Well 1012 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (40.0 ft to 70.0 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 72.3 ft BGS. The interval was grouted by pumping six 94-lb sacks (7.1 cubic ft) of Type I cement into the borehole through 70 ft of 1.5-in. OD PVC tremie pipe inserted to 69.0 ft BGS. The cement was allowed to cure and the level tagged on the following work day at 28.1 ft BGS (12.1 ft above the bottom of casing). The cured cement inside the casing was drilled out with the 6 1/8-in. diameter bit to 40.0 ft BGS.

The 6.5-in. OD steel casing was overwashed with 9.5-in. OD, 8.0-in. inside diameter (ID) washover pipe to a depth of 22.2 ft BGS. A total of 40 ft of 6.5-in. OD steel casing was extracted from the borehole.

The cased interval was further reamed to fresh material with a 10 5/8-in. diameter tricone roller bit to a depth of 43.4 ft BGS. The cased interval was grouted by pouring one cubic yd of (delivered) Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following day at 4.0 ft BGS. The remaining borehole was capped with clay soil.

Well 1016

Well 1016 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (32.0 ft to 63.0 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 63.9 ft BGS. Near the bottom of the open interval, the bit encountered a metal and rubber plug that prevented reaming to a full 1.0 ft below the reported TD. The reamed open interval was grouted by pumping six 94-lb sacks (7.1 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 58.5 ft. BGS. The cement was allowed to cure and the level tagged the next day at 19.6 ft BGS (12.4 ft above the bottom of the casing). The cured cement inside the casing was drilled out with the 6 1/8-in. diameter bit to a depth of 32.0 ft BGS.

Table 4.1. Summary of abandoned well construction data, Part I

Well no.	Y-12 Plant northing	Coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other name(s)	Screened (S) Open (O)
1012	31114	51185	1085.0	70.0	S-3 Ponds	Y-02/AP-12	O
1016	31278	51451	1060.2	63.0	S-3 Ponds	Y-07/AP-16	O
1018	31207	51345	1077.9	47.2	S-3 Ponds	Y-09/AP-18	O
1019	31149	51346	1084.0	43.5	S-3 Ponds	Y-10/AP-19	O
1020	31336	51453	1048.2	40.0	S-3 Ponds	Y-11/AP-20	O
1026	30860	51059	1071.0	70.0	S-3 Ponds	Y-01/AP-26	O
1047	28535	38325	862.0	–NA–	Bear Creek Road	YGMW-16/ BG-21/CO-1	O
1047A[c]	–NA–	–NA–	–NA–	–NA–	Bear Creek Road	CO-3	
1081	23392	55966	831.8	38.0	Oak Ridge Sludge Farm	Well 1	S
1083	23309	52550	851.5	58.5	Oak Ridge Sludge Farm	Well 3	S
1097	31151	51300	1081.0	40.0	S-3 Ponds	YC-1	O
42-DC	30416	31729	934.1	98.3	Gum Branch Road	None	O
BC-01	28750	22011	864.3	250.3	Exxon Nuclear Site	None	

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Table 4.1. (continued)

Well no.	Y-12 Plant northing	Coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other name(s)	Screened (S) Open (O)
BC-06	29980[d]/29990[e]	22002[d]/22040[e]	970.2[d]/970.5[e]	352.5	Exxon Nuclear Site	None	O[f]
BC-07	30177[d]/30188[e]	22002[d]/22037[e]	983.1[d]/983.0[e]	351.9	Exxon Nuclear Site	None	O[f]
BC-09	30579[d]/30589[e]	22002[d]/22039[e]	921.1[d]/921.2[e]	343.0	Exxon Nuclear Site	None	O[f]
BC-10	30760[d]/30755[e]	22002[d]/22025[e]	955.4[d]/955.7[e]	349.0	Exxon Nuclear Site	None	O[f]
BC-14	30580[d]/30585[e]	21311[d]/21312[e]	899.2[d]/899.4[e]	102.0	Exxon Nuclear Site	None	O[f]
BC-15	30580[d]/30584[e]	21602[d]/21601[e]	904.2[d]/904.3[e]	100.2	Exxon Nuclear Site	None	S
BC-17	30228[d]/30187[e]	20414[d]/20408[e]	917.4[d]/917.5[e]	100.4	Exxon Nuclear Site	None	O[f]
BC-18	30179[d]/30186[e]	20805[d]/20799[e]	925.1[d]/925.9[e]	100.2	Exxon Nuclear Site	None	O[f]
BC-19	30178[d]/30184[e]	21205[d]/21200[e]	873.7[d]/873.3[e]	151.8	Exxon Nuclear Site	None	O[f]
BC-22	30465[d]/30475[e]	20249[d]/20247[e]	888.3[d]/888.6[e]	100.2	Exxon Nuclear Site	None	O[f]
BC-23	30539[d]/30524[e]	20765[d]/20763[e]	899.6[d]/900.3[e]	56.0	Exxon Nuclear Site	None	O[f]
BC-35	30041[d]/30054[e]	19799[d]/19796[e]	922.3[d]/922.1[e]	325.0	Exxon Nuclear Site	None	O[f]
BC-47	30342[d]/30327[e]	21195[d]/21175[e]	883.7[d]/883.4[e]	50.0	Exxon Nuclear Site	None	S

Table 4.1. (continued)

Well no.	Y-12 Plant northing	Coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other name(s)	Screened (S) Open (O)
BC-63	29928[d]/29941[e]	19794[d]/19794[e]	942.5[d]/942.6[e]	283.7	Exxon Nuclear Site	None	O[f]
BCU-01[c,g]	30404	20460	884.8	135.5[h]	Exxon Nuclear Site	None	O[f]
BCU-02[c,g]	30261	20280	900.8	178.0	Exxon Nuclear Site	None	O[f]
BCU-03[c,g]	30504	20131	889.2	57.6	Exxon Nuclear Site	None	S
BCU-04[c,g]	30504	20121	889.7	60.2	Exxon Nuclear Site	None	S
BCU-05[c,g]	30504	20117	889.8	61.0	Exxon Nuclear Site	None	S
BCU-06[c,g]	30504	20109	890.3	62.0	Exxon Nuclear Site	None	S
BCU-07[c,g]	30504	20101	891.0	61.0	Exxon Nuclear Site	None	S
BCU-08[c,g]	30497	20109	889.3	61.7	Exxon Nuclear Site	None	S
BCU-09[c,g]	30494	20121	888.4	61.0	Exxon Nuclear Site	None	S
BCU-10[c,g]	30524	20121	892.5	55.8[h]	Exxon Nuclear Site	None	S
BCU-11[c,g]	30520	20107	890.8	–NA–	Exxon Nuclear Site	None	S
BCU-13[c,g]	30538	20054	895.9	25.1[h]	Exxon Nuclear Site	None	O[f]

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Table 4.1. (continued)

Well no.	Y-12 Plant northing	Coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other name(s)	Screened (S) Open (O)
BCU-16[c,g]	30058	19813	923.1	146.3	Exxon Nuclear Site	None	O[f]
BCU-20[c,g]	29739	19734	934.8	76.6[h]	Exxon Nuclear Site	None	O[f]
GW-110	28745	21995	863.3	40.0	Grassy Creek	None	S
GW-114	28575	28100	824.4	120.0	Bear Creek Road	None	S
GW-570	27725	60818	1050.3	137.8	Chestnut Ridge	None	S
M-04[i]	30094	32802	–NA–	34.5	Gum Branch Road	None	O[j]
M-05[i]	29504	32146	–NA–	164.5	Gum Branch Road	None	O[j]
M-06[i]	29113	32144	–NA–	162.5	Gum Branch Road	None	O[j]
M-07[i]	28666	32133	–NA–	–NA–	Gum Branch Road	None	O[j]
M-08[i]	29960	32142	–NA–	159.8	Gum Branch Road	None	O[j]
M-09[i]	30360	32141	–NA–	158.4	Gum Branch Road	None	O[j]
M-10[i]	30703	32147	–NA–	104.3	Gum Branch Road	None	O[j]
OR-06	30330	33259	868.6	100.0	Gum Branch Road	None	

Table 4.1. (continued)

Well no.	Y-12 Plant northing	Coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other name(s)	Screened (S) Open (O)
OR-07	30684	27856	813.7	100.0	BCV @ Hagwood Road	None	O[j]
OR-08	30871	27834	802.7	100.0	BCV @ Hagwood Road	None	O[j]
OR-09	30441	28020	822.7	100.0	BCV @ Hagwood Road	None	O[j]
OR-21	30797	33487	889.8	100.0	Gum Branch Road	None	O[j]
OR-22	30614	33377	884.0	100.0	Gum Branch Road	None	O[j]

[a]MSL = mean sea level
[b]BGS = below ground surface
[c]Not listed in Subsurface Data Base, Y/TS-881/R1.
[d]First coordinate/elevation taken from source document.
[e]Actual measured coordinate/elevation.
[f]Surface casing slotted over entire length.
[g]Information obtained from field observations.
[h]Depth measured with weighted tape.
[i]Depth not reported in Subsurface Data Base; depth given is based on field observations.
[j]Construction type is reported as "Unknown." Field observations determine well to be of open-interval construction.
–NA– Not Available

Source: Jones, Thompson, and Field 1993.

Table 4.2. Summary of abandoned well construction data, Part II

Well no.	Protective casing depth/OD (ft BGS/in.)	Surface casing[a] type	Surface casing[a] depth/OD (ft BGS/in.)	TOWR[b] (ft BGS)	TOFR[c] (ft BGS)	Plugging and abandonment method	Rock Formation(s)[d]
1012	None	Steel	40.0/6.5	40.0	—	B	Rogersville
1016	None	Steel	32.0/6.5	32.0	—	B	Rutledge
1018	None	Steel	36.0/6.5	36.0	—	B	Rogersville/Rutledge
1019	None	Steel	40.0/6.5	40.0	—	B	Rogersville
1020	None	Steel	21.6/6.5	21.6	—	B	Rutledge
1026	None	Steel	46.0/6.5	46.0	—	B	Maryville
1047	None	*Steel*[e]	*4.9/4.0*[e]	—	—	D	Maynardville
1047A	None	*Steel*[e]	*4.7/4.0*[e]	—	—	D	—
1081	2.3/4.75	SS/#304	38.0/2.37	—	—	A	Chickamauga
1083	2.5/4.75	SS/#304	58.5/2.37	—	—	A	Chickamauga
1097	None	PVC/#40	20.0/4.5	20.0		B	Chickamauga
42-DC	None	Steel	28.5/6.62	1.0	28.5	B	Rogersville
BC-01	None	–NA–	–NA–	12.0	20.4	–NA–	Maynardville/Nolichucky

Table 4.2. (continued)

Well no.	Protective casing depth/OD (ft BGS/in.)	Surface casing[a] type	Surface casing[a] depth/OD (ft BGS/in.)	TOWR[b] (ft BGS)	TOFR[c] (ft BGS)	Plugging and abandonment method	Rock Formation(s)[d]
BC-06	None	*PVC/#40/sl.*[e]	*60.0/1.25 (ID)*[e]	7.0	44.5	D	Maryville/Rogersville (253)
BC-07	None	*PVC/#40/sl.*[e]	*58.0/1.25 (ID)*[e]	9.0	33.0	D	Maryville/Rogersville (115)/Rutledge
BC-09	None	*PVC/#40/sl.*[e]	*/1.25 (ID)*[e]	12.0	24.0	D	Pumpkin Valley
BC-10	None	*PVC/#40/sl.*[e]	*58.9/1.25 (ID)*[e]	13.0	45.0	D	Pumpkin Valley/Rome (263)
BC-14	None	*PVC/#40/sl.*[e]	*17.8/4.5*[e]	8.0	11.5	D	Pumpkin Valley
BC-15	None	*PVC*[e]	*40.5/1.0 (ID)*[e]	7.0	15.0	D	Pumpkin Valley
BC-17	None	*PVC/#40/sl.*[e]	*19.1/1.25 (ID)*[e]	12.0	13.9	D	Rogersville/Rutledge
BC-18	None	*PVC/#40/sl.*[e]	*58.8/1.25 (ID)*[e]	8.0	14.0	D	Rogersville
BC-19	None	*PVC/#40/sl.*[e]	*38.9/1.25 (ID)*[e]	7.0	10.4	D	Rogersville/Rutledge (96)
BC-22	None	*PVC/#80/sl.*[e]	*39.6/1.25*[e]	3.0	10.2	D	Pumpkin Valley
BC-23	None	*PVC/#40/sl.*[e]	*17.9/4.5*[e]	7.0	14.5	D	Pumpkin Valley
BC-35	None	*PVC/#80/sl.*[e]	*91.0/1.25*[e]	18.0	27.0	D	Rogersville/Rutledge (162)
BC-47	None	*PVC/sl.*[e]	*50.0/1.25 (ID)*[e]	3.0	12.0	D	Rutledge

Table 4.2. (continued)

Well no.	Protective casing depth/OD (ft BGS/in.)	Surface casing[a] type	Surface casing[a] depth/OD (ft BGS/in.)	TOWR[b] (ft BGS)	TOFR[c] (ft BGS)	Plugging and abandonment method	Rock Formation(s)[d]
BC-63	None	*PVC/#80*[e]	*55.5/1.25*[e]	39.3	—	D	Maryville/Rogersville (146)/Rutledge(272)
BCU-01	None	*PVC/#40/sl.*[e]	*37.9/1.25*[e]	—	—	D	Pumpkin Valley
BCU-02	None	*PVC/#40/sl.*[e]	*37.2/1.25 (ID)*[e]	—	—	D	Rutledge
BCU-03	None	—	—	—	—	C	Pumpkin Valley
BCU-04	None	—	—	—	—	C	Pumpkin Valley
BCU-05	None	—	—	—	—	C	Pumpkin Valley
BCU-06	None	—	—	—	—	C	Pumpkin Valley
BCU-07	None	—	—	—	—	C	Pumpkin Valley
BCU-08	None	*PVC/#40/sl.*[e]	*61.7/1.25*[e]	—	—	C	Pumpkin Valley
BCU-09	None	*PVC/#40/sl.*[e]	*61.0/1.25*[e]	—	—	C	Pumpkin Valley
BCU-10	None	*PVC/#80*[e]	*/1.25*[e]	—	—	B	Pumpkin Valley
BCU-11	None	*PVC/#40/sl.*[e]	*/1.25*[e]	—	—	C	Pumpkin Valley
BCU-13	None	*PVC/#40*[e]	*8.9/4.5*[e]	—	—	B	Pumpkin Valley

Table 4.2. (continued)

Well no.	Protective casing depth/OD (ft BGS/in.)	Surface casing[a] type	Surface casing[a] depth/OD (ft BGS/in.)	TOWR[b] (ft BGS)	TOFR[c] (ft BGS)	Plugging and abandonment method	Rock Formation(s)[d]
BCU-16	None	*PVC/#40/sl.*[e]	*37.5/1.25 (ID)*[e]	—	—	D	Rogersville
BCU-20	None	*PVC/#80/sl.*[e]	*43.3/1.25*[e]	—	—	D	Maryville
GW-110	1.9/6.62	SS/#304	38.6/2.37	20.0	29.3	A	Maynardville
GW-114	/6.62	SS/#304	118.8/2.37	—	18	A	Maynardville
GW-570	None	SS/#304	137.8/2.0	—	—	A	Knox
M-04	None	*Steel*[e]	*19.4/6.5*[e]	—	—	B	Maryville
M-05	None	*Steel*[e]	*42.8/6.5*[e]	—	—	B	Nolichucky
M-06	None	*Steel*[e]	*39.3/6.5*[e]	—	—	B	Nolichucky
M-07	None	*Steel*	*36.0/6.5*	—	—	B	Maynardville
M-08	None	*Steel*	*48.3/6.5*	—	—	B	Maryville
M-09	None	*Steel*	*32.7/6.5*	—	—	B	Maryville
M-10	None	*Steel*	*20.3/6.5*	—	—	B	Pumpkin Valley
OR-06	–NA–	*–NA–*	*–NA–*	10.0	31.0	–NA–	Maryville

Table 4.2. (continued)

Well no.	Protective casing depth/OD (ft BGS/in.)	Surface casing[a] type	Surface casing[a] depth/OD (ft BGS/in.)	TOWR[b] (ft BGS)	TOFR[c] (ft BGS)	Plugging and abandonment method	Rock Formation(s)[d]
OR-07	None	*PVC/#80*	*36.0/2.0*	10.5	17.0	B	Pumpkin Valley
OR-08	None	*PVC/#80*	*42.0/2.0*	16.0	23.0	B	Pumpkin Valley
OR-09	None	*PVC/#80*	*100.0/2.0*	7.5	27.0	C	Rogersville/Rutledge
OR-21	None	*PVC/#80*	*37.5/2.0*	16.0	34.0	B	Pumpkin Valley
OR-22	None	*PVC/#80*	*28.2/2.0*	15.0	43.5	B	Pumpkin Valley

[a]Denotes surface casing for open-interval wells and well casing for screened-interval wells.
[b]TOWR = Top of Weathered Rock
[c]TOFR = Top of Fresh Rock
[d]Depth of contact given in parenthesis.
[e]Information provided in italics was obtained from field observations.
–NA– Not applicable

Source: Jones, Thompson, and Field 1993.

The 6.5-in. OD steel casing was overwashed with 9.5-in. OD, 8.0-in. ID washover pipe to a depth of 23.3 ft BGS. A lifting bell was welded to the casing collar to facilitate pulling of the casing. A total of 31.6 ft (includes 1.0 ft cut off to obtain an undeformed segment with which to weld lifting bell) of 6.5-in. OD steel casing was extracted from the borehole with a moderate amount of resistance.

The cased interval was further reamed to fresh material with a 10 5/8-in. diameter tricone roller bit to a depth of 33.6 ft BGS. This interval was grouted by pouring 15 94-lb sacks (17.7 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following day at 11.0 ft BGS. An additional five 94-lb. sacks (5.9 cubic ft) of Type I cement were poured directly into the borehole. After the cement had cured, the level was tagged at 1.9 ft BGS. The remaining borehole was capped with clay soil.

Well 1018

Well 1018 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (36.0 ft to 47.2 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 49.9 ft BGS. The reamed open interval was grouted by pumping three 94-lb. sacks (3.5 cubic ft) of Type I cement into the borehole through 30 ft of 1.5-in. OD PVC tremie pipe inserted to 28.0 ft BGS. The cement was allowed to cure and the level tagged the following work day at 34.0 ft BGS (2.0 ft above the bottom of casing).

The 6.5-in. OD steel casing was overwashed with 9.5-in. OD, 8.0-in. ID washover pipe to a depth of 23.8 ft BGS. A lifting bell was welded to the casing collar and an attempt to pull the casing was made. After the weld broke, the casing was overwashed from 23.8 ft to 37.7 ft BGS. A total of 31.9 ft (plus 3.6 ft removed earlier for a total of 35.5 ft) of 6.5-in. OD steel casing was extracted from the borehole.

The cased interval was grouted by pouring one cubic yd of (delivered) Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following day at 3.5 ft BGS. The remaining borehole was capped with clay soil.

Well 1019

Well 1019 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

Due to the short, open interval in this well, the 3.5 ft open interval (40.0 ft to 43.5 ft BGS) was not conditioned/reamed to fresh material prior to overwashing the casing. This deviation from procedures was approved by HSEA in advance.

The 6.5-in. OD steel casing was overwashed with 9.5-in. OD, 8.0-in. ID washover pipe to a depth of 22.5 ft BGS. A total of 39.2 ft of 6.5-in. OD steel casing was extracted from the borehole.

The entire borehole was further reamed to fresh material with a 10 5/8-in. diameter tricone roller bit to a total depth of 45.0 ft BGS. The borehole was grouted by pouring one cubic yd of (delivered) Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the next day at 6.7 ft BGS. The borehole was topped off with (delivered) Type I cement to the ground surface and allowed to cure. The final cement level was tagged at 1.0 ft BGS. The remaining borehole was capped with clay soil.

Well 1020

Well 1020 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (21.6 ft to 40.0 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 42.0 ft BGS. The interval was grouted by pumping three 94-lb sacks (3.5 cubic ft) of Type I cement into the borehole through 30 ft of 1.5-in. OD PVC tremie pipe inserted to approximately 28 ft BGS. The cement was allowed to cure and the level tagged on the following work day at 19.5 ft BGS (2.1 ft above the bottom of the casing).

The 6.5-in. OD steel casing was overwashed with 9.5-in OD, 8.0-in. ID washover pipe to a depth of 22.6 ft BGS. A total of 21.5 ft of 6.5-in. OD steel casing was extracted from the borehole. This interval of the borehole was grouted by pumping nine 94-lb sacks (10.6 cubic ft) of Type I cement into the borehole through 20 ft of 1.5-in. OD PVC tremie pipe inserted to 18.5 ft BGS. The cement was allowed to cure and the level tagged the following day at 3.8 ft BGS. The remaining borehole was capped with clay soil.

Well 1026

Well 1026 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (46.0 ft to 70.0 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 72.8 ft BGS. The interval was grouted by pumping five 94-lb sacks (5.9 cubic ft) of Type I cement into the borehole through 70 ft of 1.5-in. OD PVC tremie pipe inserted to 68.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 35.5 ft BGS (9.5 ft above the bottom of the casing). The cured cement inside the casing was drilled out with the 6 1/8-in. diameter bit to 48.5 ft BGS.

The casing was overwashed with 9.5-in. OD, 8.0-in. ID washover pipe to a depth of 40.0 ft BGS. A total of 46.3 ft of 6.5-in. OD steel casing was extracted from the borehole.

The cased interval was further reamed to fresh material with a 10 5/8-in. diameter tricone roller bit to a depth of 46.0 ft BGS. The cased interval was grouted by pouring twenty 94-lb sacks (23.6 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following work day at 8.0 ft BGS. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement was poured into the borehole and allowed to cure. The final cement level was tagged at 1.8 ft BGS. The remaining borehole was capped with clay soil.

Well 1097

Well 1097 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

Well 1097 was constructed using 4.5-in. OD PVC casing that allowed the casing to be drilled up at the same time that the borehole was being reamed to fresh material with a 10 5/8-in. diameter tricone roller bit. This deviation from normal P&A procedures was approved by HSEA in advance. The borehole was reamed to a total depth of 47.6 ft BGS. The entire borehole was grouted by pouring one cubic yd of (delivered) Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the next day at 5.0 ft BGS. An additional approximate one cubic ft of Type I cement was poured into the borehole and allowed to cure. The final cement level was tagged at 0.9 ft BGS. The remaining borehole was capped with clay soil.

4.2 GUM BRANCH ROAD FUNCTIONAL AREA

A total of 13 wells were decommissioned in the Gum Branch Road Area of west Bear Creek Valley. This area has been the site of several groundwater characterization studies for either research or proposed industrial purposes. A search was made for another well (OR-06), reportedly still active, in this area. The well apparently had been destroyed at an earlier time. All of the wells in the Gum Branch Area, with the exception of one well (OR-09), were open-interval monitoring wells. Well OR-09 apparently was constructed of slotted PVC casing from the ground surface to TD.

Well 42-DC

Well 42-DC was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (28.5 ft to 98.3 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a depth of 105.0 ft BGS. The reamed open interval was grouted by pumping 0.6 cubic yd of (delivered) Type I cement into the borehole through 90 ft of 1.5-in. OD PVC tremie pipe inserted to 88.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 15.4 ft BGS (approximately 13 ft above the suspected bottom of the casing).

The 6 1/8-in. diameter bit was used to drill out the partially cured cement inside the casing to a depth of 28.0 ft BGS. The surface casing was overwashed with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 22.5 ft BGS. A total of 27.0 ft of 6.5-in. OD steel casing was extracted from the borehole. The interval was further reamed to fresh material using a 10 5/8-in. diameter tricone roller bit to a depth of 28.0 ft BGS. The reamed borehole was grouted by pouring 12, 94-lb sacks (14.2 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following day at 3.5 ft BGS. The remaining borehole was capped with clay soil.

Well M-04

Well M-04 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (19.4 ft to 34.5 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 38.5 ft BGS. The interval was grouted by pouring three 94-lb sacks (3.5 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following day at 23.0 ft BGS.

The surface casing was overwashed with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 22.0 ft BGS. A total of 21.0 ft of 6.5-in. OD steel casing was extracted from the borehole.

The cased interval was grouted by pouring seven 94-lb sacks (8.3 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following work day at 5.2 ft BGS. An additional two 94-lb sacks (2.4 cubic ft) of Type I cement were poured into the borehole and allowed to cure. The final cement level was tagged at 1.2 ft BGS; the remaining borehole was capped with clay soil.

Well M-05

Well M-05 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (42.8 ft to 164.5 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a total depth of 166.8 ft BGS. The reamed open interval was grouted by pumping 21, 94-lb sacks (24.8 cubic ft) of Type I cement into the borehole through 160 ft of 1.5-in. OD PVC tremie pipe installed to 158.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 56.0 ft BGS.

The surface casing was overwashed with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 23.0 ft BGS. A total of 44.4 ft of 6.5-in. OD steel casing was extracted from the borehole. The cased interval was further reamed to fresh material with a 10 5/8-in. diameter tricone roller bit to a depth of 57.0 ft BGS.

The cased interval was grouted by pumping twenty-five 94-lb sacks (29.5 cubic ft) of Type I cement into the borehole through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 47.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 42.0 ft BGS. With HSEA approval, nine 60-lb sacks (6.2 cubic ft) of Hole Plug™ were poured into the borehole to

bridge suspected voids related to a large-quantity water production zone at about 42 ft BGS. The hydrated Hole Plug™ level reached at 32.7 ft BGS. An additional 19, 94-lb sacks (22.4 cubic ft) of Type I cement were pumped into the borehole through 30 ft of 1.5-in. OD PVC tremie pipe inserted to 29.0 ft BGS. This cement was allowed to cure approximately 6 hrs and the level tagged at 32.7 ft BGS (the level of the hydrated Hole Plug™). An additional 20, 60-lb sacks (13.8 cubic ft) of Hole Plug™ were poured into the borehole. After hydrating overnight, the Hole Plug™ level was measured at 14.4 ft BGS. Another eight 94-lb sacks (9.4 cubic ft) of Type I cement were pumped into the borehole. This cement was allowed to cure and the level tagged the following work day at 3.6 ft BGS. The remaining borehole was capped with clay soil.

Well M-06

Well M-06 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (39.3 ft to 162.5 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a depth of 164.5 ft BGS. The reamed open interval was grouted by pumping 21, 94-lb sacks (24.8 cubic ft) of Type I cement into the borehole through 160 ft of 1.5-in. OD PVC tremie pipe inserted to 158.0 ft BGS. The cement was allowed to cure and the level tagged at 62.1 ft BGS.

The surface casing was overwashed with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 23.4 ft BGS. A total of 41.3 ft of 6.5-in. OD steel casing (including 1.4-ft section cut off from the original casing stick-up to allow positioning of the drill rig over the well) was extracted from the borehole.

The cased interval was further reamed to fresh material using a 10 5/8-in. diameter tricone roller bit to a depth of 62.4 ft BGS. The reamed borehole was grouted by pumping 29, 94-lb sacks (34.2 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 59.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 38.8 ft BGS. An additional 19, 94-lb sacks (22.4 cubic ft) of Type I cement were pumped into the borehole through 30 ft of 1.5-in. OD PVC tremie pipe inserted to 29.0 ft BGS. This cement was allowed to cure and the level tagged the following day at 18.2 ft BGS. Another nine 94-lb sacks (10.6 cubic ft) of Type I cement were poured directly into the borehole. This cement was allowed to cure and the level tagged at 4.0 ft BGS. The remaining borehole was capped with clay soil.

Well M-07

Well M-07 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

Prior to commencing P&A activities at M-07, a 4.0-ft long section of 12.0-in. OD, 11.25-in. ID steel conductor casing was installed around M-07 because the well occupied an apparent sink hole. At first, indications were that well M-07 was very shallow with a taped depth of 32.5 ft BGS. But when the suspected open interval was reamed to fresh material with a 6 1/8-in. diameter tricone roller bit to a depth of 37.5 ft BGS and 36.2 ft of 6.5-in. OD steel casing, it became apparent that what had once been the open interval was now filled with sediment (the open wellhead and close proximity to Bear Creek left the well susceptible to accept sediment during occasional flood episodes). An attempt to ream to the bottom of the cased interval with a 10 5/8-in. diameter tricone roller bit resulted in the eventual complete collapse of the ground surface around the well collar. The conductor casing installed to facilitate decommissioning of the well was barely salvaged as the sinkhole opened up to approximately 5 ft in diameter and 8 to 10 ft deep. After removal of the conductor casing, any remnant of the original borehole became lost in the collapse. With HSEA approval, the subsidence crater was filled with gravel and the site returned to original contours.

Well M-08

Well M-08 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the lack of a locking mechanism to prevent unauthorized access.

The open interval (48.3 ft to 159.8 ft) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a depth of 162.8 ft BGS. The reamed open interval was grouted by pumping one cubic yd of (delivered) Type I cement into the borehole through 140 ft of 1.5-in. OD PVC tremie pipe inserted to 138.0 ft. The cement was allowed to cure and the level tagged the following day at 54.0 ft BGS.

The surface casing was overwashed with 9.5 in. OD, 8.25-in. ID washover pipe to a depth of 22.8 ft BGS. A total of 49.0 ft of 6.5-in. OD steel casing was extracted from the borehole. The cased interval was further reamed to fresh material using a 10 5/8-in. diameter tricone roller bit to a depth of 54.0 ft BGS. The reamed borehole was grouted by pumping 1.5 cubic yds of (delivered) Type I cement through 40 ft of 1.5-in. OD PVC tremie pipe into the borehole inserted to 38.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 27.6 ft BGS.

A week passed before the borehole could be topped-off with cement and during that time, borehole collapse had filled the hole from 27.6 ft to 24.5 ft BGS. An additional ten 94-lb sacks (11.8 cubic ft) of Type I cement were poured directly into the borehole. The cement was allowed to cure and the level tagged at 9.2 ft BGS. Another five 94-lb sacks (5.9 cubic ft) of Type I cement were poured into the borehole, bringing the cement level to 3.0 ft BGS. The remaining borehole was capped with clay soil.

Well M-09

Well M-09 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (32.7 ft to 158.4 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a depth of 160.0 ft BGS. The open interval was grouted by pumping 13, 94-lb sacks (15.3 cubic ft) of Type I cement into the borehole through 130 ft of 1.5-in. OD PVC tremie pipe inserted to 128.0 ft BGS. The cement was allowed to cure and the level tagged at 48.5 ft BGS.

The surface casing was overwashed with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 24.7 ft BGS. After welding a lifting bell to the casing collar, a total of 34.3 ft of 6.5-in. OD steel casing was extracted from the borehole. The cased interval was further reamed to fresh material using a 10 5/8-in. diameter tricone roller bit to a depth of 50.0 ft BGS. The reamed borehole was grouted by pouring 15, 94-lb sacks (17.7 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the next working day at 9.0 ft BGS. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement were poured directly into the borehole. This cement was allowed to cure and the level tagged the following day at 3.5 ft BGS. The remaining borehole was capped with clay soil.

Well M-10

Well M-10 was an obsolete, open-interval well of substantial construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The open interval (20.3 ft to 104.3 ft BGS) was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to a depth of 108.0 ft BGS. The reamed open interval was grouted by pumping 15, 94-lb sacks (17.7 cubic ft) of Type I cement into the borehole through 80 ft of 15-in. OD PVC pipe inserted to 78.5 ft BGS. The cement was allowed to cure and the level tagged at 15.6 ft BGS (8.4 ft above the suspected bottom of the casing). The partially cured cement inside the casing was drilled out with the 6 1/8-in. diameter bit to a depth of 22.6 ft BGS.

The surface casing was overwashed with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 22.5 ft BGS. A total of 21.1 ft of 6.5-in. OD steel casing was extracted from the borehole. The cased interval was grouted by pouring ten 94-lb sacks (11.8 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following work day at 2.5 ft BGS. The remaining borehole was capped with clay soil.

Well OR-06

Well OR-06 was an obsolete well that had been assumed to be damaged. An attempt was made to locate any remains of the damaged casing by excavating a shallow pit at the reported location. HSEA terminated further P&A work when no evidence of a well, existing or damaged, was found. Documentation of the attempt to plug and abandon Well OR-06 is included in Appendices A, B, and D.

Well OR-07

Well OR-07 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

Approximately 36 ft of 2.0-in. OD PVC casing was drilled up while the well bore was reamed to fresh material using a 6 1/2-in. diameter tricone roller bit to a depth of 102.1 ft BGS.

The reamed borehole was grouted by pumping 14, 94-lb sacks (16.5 cubic ft) of Type I cement into the borehole through 70 ft of 1.5-in. OD PVC tremie pipe inserted to 66.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 10.4 ft BGS. An additional 2.5, 94-lb sacks (3.0 cubic ft) of Type I cement were used to bring the cement level up to 1.7 ft BGS. The remaining borehole was capped with clay soil.

Well OR-08

Well OR-08 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The well bore was reamed to fresh material using a 6 1/.2-in. diameter tricone roller bit to a depth of 101.4 ft BGS. While reaming, approximately 41 ft of 2.0-in. OD PVC casing was drilled up.

The reamed borehole was grouted by pumping 12, 94-lb sacks (14.2 cubic ft) of Type I cement into the borehole through 80 ft of 1.5-in. OD PVC tremie pipe inserted to 79.0 ft BGS. The cement was allowed to cure and the level tagged at 13.9 ft BGS on the following day. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement were pumped into the borehole, bringing the cement level to 1.7 ft BGS. The remaining borehole was capped with clay soil.

Well OR-09

Well OR-09 was an obsolete, slotted PVC screened well of substandard construction completed to 100.0 ft BGS. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

The well bore was reamed to fresh material using a 6 1/2-in. diameter tricone roller bit to a depth of 102.2 ft BGS. While reaming, approximately 100.0 ft of 2.0-in. OD PVC casing (presumably slotted but over an unknown length) was drilled up.

The reamed borehole was grouted by pumping 14, 94-lb sacks (16.5 cubic ft) of Type I cement into the borehole through 100 ft of 1.5-in. OD PVC tremie pipe inserted to 97.0 ft BGS. The cement was allowed to cure and the cement level tagged the following work day at 18.0 ft BGS. An additional five 94-lb sacks (5.9 cubic ft) of Type I cement were pumped into the borehole, bringing the cement level up to 1.0 ft BGS. The remaining borehole was capped with clay soil.

OR-21

Well OR-21 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

Approximately 37.5 ft of 2.0-in. OD, schedule 80 PVC casing was drilled up while the well bore was reamed to fresh material using a 6 1/2-in. diameter tricone roller bit to a depth of 101.9 ft BGS.

The reamed borehole was grouted by pumping 15, 94-lb sacks (17.7 cubic ft) of Type I cement into the borehole through 90 ft of 1.5-in. OD PVC tremie pipe inserted to 89.0 ft BGS. The cement was allowed to cure and the level tagged at 17.7 ft BGS on the following day. An additional four 94-lb sacks (4.7 cubic ft) of Type I cement were poured into the borehole, bringing the cement level to 2.8 ft BGS. The remaining borehole was capped with clay soil.

OR-22

Well OR-22 was an obsolete, open-interval well of substandard construction. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access.

Approximately 28.2 ft of 2.0-in. OD, schedule 80 PVC casing was drilled up while the well bore was reamed to fresh material using a 6 1/2-in. diameter tricone roller bit to a depth of 101.7 ft BGS.

The reamed borehole was grouted by pumping 20, 94-lb sacks (23.6 cubic ft) of Type I cement into the borehole through 90 ft of 1.5-in. OD PVC tremie pipe inserted to 87.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 8.5 ft BGS. An additional two 94-lb sacks (2.4 cubic ft) of Type I cement were poured into the borehole, bringing the cement level to 1.2 ft BGS. The remaining borehole was capped with clay soil.

4.3 OAK RIDGE SLUDGE FARM

Wells 1081 and 1083 were located on the periphery of the Oak Ridge Sludge Farm, along Bethel Valley Road. Both wells were originally installed to monitor potential groundwater effects of landfarming applications of sludge from the City of Oak Ridge. Both wells were of stainless steel screen construction.

Well 1081

Well 1081 was a damaged, stainless-steel screened well installed to a depth of 38.0 ft BGS. The 2.37-in. OD well casing, along with a 4.0-ft section of 4.75-in. OD steel protective casing, was overwashed with 6.5-in. OD, 5.0-in. ID washover pipe to a depth of 28.0 ft BGS. A total of 41.3 ft of 2.37-in. OD stainless steel casing, including a 5.6-ft-long section of screen (Subsurface Data Base reported a 10-ft screen for Well 1081) with a 0.5-ft well point, were extracted from the borehole.

The well bore was further reamed to fresh material using a 10 5/8-in. diameter tricone roller bit to a depth of 40.3 ft BGS. The reamed borehole was grouted by pumping 13, 94-lb sacks (15.3 cubic ft) of Type I cement into the borehole through 40 ft of 1.5-in. OD PVC tremie pipe inserted to 38.0 ft BGS. The cement was allowed to cure and the level tagged the following work day at 4.7 ft BGS . An additional 94-lb sack (1.2 cubic ft) of Type I cement was used to bring the cement level in the borehole to 2.5 ft BGS. The remaining borehole was subsequently capped with clay soil.

Well 1083

Well 1083 was a damaged, stainless-steel screened well installed to a reported depth of 58.5 ft BGS (the bottom of the well was actually tagged, prior to P&A activities, at 59.4 ft BGS). The 2.37-in. OD well casing, along with a 4.0-ft section of 4.75-in. OD steel protective casing,

was overwashed with 6.5-in. OD, 5.0-in. ID washover pipe to a depth of 51.5 ft BGS. An estimated 53 ft of 2.37-in. OD stainless-steel screen and casing were extracted from the borehole (leaving approximately 8 ft of screen still anchored in the hole).

The well bore was further reamed to fresh material using a 10 5/8-in. diameter tricone roller bit to a depth of 57.0 ft BGS (short of the reported well depth and tagged well depth by 1.5 ft and 2.4 ft, respectively). Reaming terminated by HSEA at 57.0 ft BGS to prevent excessive wear or damage to the bit from grinding on the stainless-steel screen that had been left in the borehole. The reamed borehole was grouted by pumping 20, 94-lb sacks (23.6 cubic ft) of Type I cement into the borehole through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 49.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 3.9 ft BGS. The remaining borehole was capped with clay soil.

Headspace analyses of cuttings composites, including a composite taken after allowing cuttings to aerate for 24 hrs, exceeded disposal action levels. All cuttings generated from Well 1083 P&A activities were placed in U.S. Department of Transportation (DOT)-approved drums for disposal.

4.4 EXXON NUCLEAR SITE

Located along Bear Creek Road, west of Highway 95, the Exxon Nuclear Site is in a highly characterized area that was investigated in the mid-1970s as a potential location for a low-level radioactive waste facility. A total of 28 wells, the majority of which were converted from core holes, were plugged and abandoned during the FY 1994 program. Several of the wells constructed had either deteriorated and subsequently were assumed to be destroyed, or were constructed without casing that left no trace of their location.

In addition to the known wells (reported in the Subsurface Data Base: Y/TS-881/R1), a substantial number of wells were discovered at the Exxon Nuclear Site of which no construction information was available. These wells were labeled BCU-XX and numbered consecutively as per HSEA.

Many of the wells at the Exxon Nuclear Site were constructed in core holes and, since many of these holes exceeded 300 ft in depth, HSEA personnel opted for a less intensive P&A effort here. Basically, the Standard Operating Procedures (SOPs) for plugging and abandonment of the Exxon Nuclear Site wells are as follows:

- If a BC-series well is less than 110 ft deep: then the casing is removed from the well bore (if possible), the well bore is reamed to fresh material to approximately 1 ft deeper than reported depth, and the borehole is grouted to within 4 ft of the ground surface. If the PVC well casing cannot be extracted from the hole, it is drilled up as the borehole is reamed. Note: No steel (mild, stainless, etc.) casing was found at the Exxon Nuclear Site.

- If a BC-series well is greater than 110 ft deep: the casing is removed from the well bore, the open interval is grouted from TD to approximately 20 ft below reported TOFR, the cased interval reamed to 20 ft below TOFR, and the reamed borehole grouted to within 4 ft of the ground surface.

- Special circumstances: If it was impossible to remove the casing from the well bore, an option was presented whereby the casing would be drilled up while the well bore was reamed to fresh material to a point approximately 5 ft below the reported (or tagged) casing bottom.

- If a BCU-series well is less than 110 ft deep: the casing is removed from the well bore, the well bore is reamed to fresh material to approximately 1 ft deeper than the TD of the well (if that depth can be determined while drilling), and the borehole is grouted to within 4 ft of the ground surface.

- If a BCU-series well is greater than 110 ft deep: the casing is removed from the well bore, the open interval is grouted to at least 5 ft below the bottom of the casing, the cased interval is reamed to approximately 5 ft below the bottom of the casing, and the borehole is grouted to within 4 ft of the ground surface. Special circumstances, such as being unable to remove the casing from the well bore, would be treated in the same manner as the BC-series wells stated earlier.

Well BC-01

Well BC-01 was an obsolete well located in the Exxon Nuclear Site area, but had no surface indications. The reported location was identified by cadastral survey, and an attempt was made to visually locate any remains of the well or evidence of a boring by digging around the reported location with a hand shovel. No evidence of the well or borehole was found. HSEA considers the well destroyed. Documentation of the search for well BC-01 is included in Appendices A and B.

Well BC-06

Well BC-06 was an open-interval well constructed in a continuously cored, NX-size hole with a TD of 352.5 ft. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 60.1 ft of 1.25-in. ID, schedule 40 PVC casing (slotted over the entire length) was extracted from the borehole. The open interval was grouted by pumping nine 94-lb sacks (10.6 cubic ft) of Type I cement into the borehole through 200 ft of 1.5-in. OD PVC tremie pipe inserted to 198.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 26.4 ft BGS.

The cased portion of the borehole was reamed to fresh material using a 6 1/8-in diameter tricone roller bit to a depth of 85.1 ft BGS (40.6 ft below the reported TOFR). The reamed borehole was grouted by pumping 12, 94-lb sacks (14.2 cubic ft) of Type I cement into the borehole through 80 ft of 1.5-in. OD PVC tremie pipe inserted to 77.0 ft BGS. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement were poured into the borehole, bringing the cement level up from 22.9 ft to 1.5 ft BGS. The remaining borehole was capped with clay soil.

Well BC-07

Well BC-07 was an open-interval well constructed in a continuously cored, NX-size hole with a TD of 351.9 ft. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 59.8 ft of 1.25-in. ID, schedule 40 PVC casing (slotted over the entire length) was extracted from the borehole. The open interval was grouted by pumping 11, 94-lb sacks (13.0 cubic ft) of Type I cement into the borehole through 200 ft of 1.5-in. OD PVC tremie pipe inserted to 198.0 ft BGS. The cement was allowed to cure and the level tagged the following work day at 5.5 ft BGS.

The cased portion of the borehole was reamed to fresh material using a 6 1/8-in diameter tricone roller bit to a depth of 55.3 ft BGS (22.3 ft below the reported TOFR). The reamed borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into the borehole through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 49.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 15.6 ft BGS. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement were poured into the borehole, bringing the cement level to 1.3 ft BGS. The remaining borehole was capped with clay soil.

Well BC-08

Well BC-08 was an obsolete well located in the Exxon Nuclear Site area, but had no surface indications. An attempt was made to visually locate any remains of the well or evidence of a

boring at the apparent well site. No evidence of the well or borehole was found. HSEA considers the well destroyed. No other documentation of the search for the well was compiled.

Well BC-09

Well BC-09 was an open-interval well constructed in a continuously cored, NX-size hole with a TD of 343.0 ft. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 35.6 ft of 1.25-in. ID, schedule 40 PVC casing (slotted over the entire length) was extracted from the borehole. The open interval was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into the borehole through 200 ft of 1.5-in. OD PVC tremie pipe inserted to 199.0 ft BGS. An unknown length of casing that broke off during extraction was also grouted in place in the open interval with HSEA approval. The cement was allowed to cure and the level tagged the next day at 23.5 ft BGS.

The cased portion of the borehole was reamed to fresh material using a 6 1/8-in diameter tricone roller bit to a depth of 44.1 ft BGS (20.1 ft below the reported TOFR). The reamed borehole was grouted by pumping six 94-lb sacks (7.1 cubic ft) of Type I cement into the borehole through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 39.0 ft BGS. The cement was allowed to cure and the level tagged at 6.2 ft BGS. An additional 94-lb sack (1.2 cubic ft) of Type I cement was poured into the borehole, bringing the cement level up to 2.5 ft BGS. The remaining borehole was capped with clay soil.

Well BC-10

Well BC-10 was an open-interval well constructed in a continuously cored, NX-size hole with a TD of 349.0 ft. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 60.0 ft of 1.25-in. ID, schedule 40 PVC casing (slotted over the bottom 15 ft) was extracted from the borehole. The open interval was grouted by pumping ten 94-lb sacks (11.8 cubic ft) of Type I cement into the borehole through 200 ft of 1.5-in. OD PVC tremie pipe inserted to 198.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 29.0 ft BGS.

The cased portion of the borehole was reamed to fresh material using a 6 1/8-in diameter tricone roller bit to a depth of 66.5 ft BGS (21.5 ft below the reported TOFR). The reamed borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 59.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 16.0 ft BGS. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement were poured into the borehole, bringing the cement level up to 2.0 ft BGS. The remaining borehole was capped with clay soil.

Well BC-14

Well BC-14 was an open-interval well constructed in a continuously cored, NX-size hole with a TD of 102.0 ft. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 20.2 ft of 4.5-in. OD, schedule 40 PVC casing (slotted over the entire length) was extracted from the borehole. The borehole was reamed to fresh material using an 8 3/4-in. diameter tricone roller bit to a depth of 103.0 ft BGS. The reamed borehole was grouted by pumping 32, 94-lb sacks (37.8 cubic ft) of Type I cement into the borehole through 100 ft of 1.5 -in. OD PVC tremie pipe inserted to 97.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 2.1 ft BGS. The remaining borehole was capped with clay soil.

Well BC-15

Well BC-15 was a PVC-screened (slotted screen) well installed to 100.2 ft BGS. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 51.1 ft of 1.0-in. ID, schedule 80 PVC casing (slotted over the bottom 10.0 ft) was extracted from the continuously cored, NX-sized borehole. The borehole was reamed to fresh material (and 49.1 ft of presumably slotted, 1.0-in. ID, schedule 80 PVC casing drilled up) using a 6 1/8-in. diameter tricone roller bit to a depth of 102.4 ft BGS. The borehole was grouted by pumping 12, 94-lb sacks (14.2 cubic ft) of Type I cement into the borehole through 90 ft of 1.5-in. OD PVC tremie pipe inserted to 86.0 ft BGS. The cement was allowed to cure and the level tagged the following work day at 3.6 ft BGS. The remaining borehole was capped with clay soil.

Well BC-17

Well BC-17 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The open-interval well consisted of 20.1 ft of 1.25-in. ID PVC casing slotted over the bottom 15.0 ft. The casing had been installed in an NX-size core hole and had an open interval from 19.1 ft to 100.4 ft BGS.

After removing the casing, the borehole was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 102.5 ft BGS. The borehole was grouted by pumping 13, 94-lb sacks (15.3 cubic ft) of Type I cement through 100 ft of 1.5-in. OD PVC tremie pipe inserted to 97.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 14.0 ft BGS. An additional two 94-lb sacks (2.4 cubic ft) of Type I cement were used to bring the cured cement level to 2.3 ft BGS. The remaining borehole was then capped with clay soil.

Well BC-18

Well BC-18 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The well consisted of PVC casing installed in an NX-size core hole.

A total of 60.1 ft of 1.25-in. ID PVC casing, slotted over the bottom 51.5 ft, was extracted from the well bore that had an open interval from 58.8 ft to 100.2 ft BGS. The well bore was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 50.4 ft BGS. Reaming was completed to a depth of 102.3 ft BGS.

The borehole was grouted by pumping eight 94-lb sacks (9.4 cubic ft) of Type I cement through 100 ft of 1.5-in. OD PVC tremie pipe inserted to 97.0 ft BGS. The cement was allowed to cure and the level tagged at 10.7 ft BGS the next day. An additional two 94-lb sacks (2.4 cubic ft) of Type I cement were poured into the borehole and allowed to cure. The remaining 1.5 ft of the borehole was capped with clay soil.

Well BC-19

Well BC-19 was an obsolete well of substandard construction that also lacked a locking mechanism to prevent unauthorized access. The open-interval well consisted of 40.0 ft of 1.25-in. ID PVC casing slotted over its entire length. The casing had been installed in an NX-size core hole and had an open interval from 38.9 ft to 151.8 ft BGS. The bottom 17.4 ft of the open interval had become bridged with sediment accumulation.

After removing the casing, the open interval was grouted to 20 ft below the TOFR (the TOFR in BC-19 was reported to be 10.4 ft BGS). Five 94-lb sacks (5.9 cubic ft) of Type I cement were pumped into the borehole through 130 ft of 1.5-in. OD PVC tremie pipe inserted to 126.0 ft BGS. The grout was allowed to cure.

The cased portion of the well bore was reamed to fresh material using a 6 1/8-in diameter tricone roller bit to a depth of 30.7 ft BGS. This portion of the borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement (approximately 50% more than calculated volume—probable thief zone) into the borehole through 30 ft of 1.5-in. OD PVC tremie pipe inserted to 27.0 ft BGS. The cement was allowed to cure and the level eventually tagged at 2.5 ft BGS. The remaining borehole was capped with clay soil.

Well BC-22

Well BC-22 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The well consisted of 40.2 ft of 1.25-in. OD PVC casing, slotted over the bottom approximately 33 ft, and installed in an NX-size core hole. The open interval was from 39.6 ft to 100.2 ft BGS.

After removing the casing by hand, the borehole was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to 102.0 ft BGS. The borehole was grouted by pumping 16, 94-lb sacks (18.9 cubic ft) of Type I cement into the borehole through 100 ft of 1.5-in. OD PVC tremie pipe inserted to 95.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 10.7 ft BGS. An additional two, 94-lb sacks (2.4 cubic ft) of Type I cement brought the cured cement level up to 1.7 ft BGS. The remaining borehole was capped with clay soil.

Well BC-23

Well BC-23 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The open-interval well consisted of 18.4 ft of 4.5-in. OD PVC casing, slotted over the bottom 10 ft, and installed to 17.9 ft BGS. The 3.0-in. diameter open interval (NX core hole) extended from 17.9 ft to 56.0 ft BGS.

After removing the casing, the well bore was reamed to fresh material using a 8 3/4-in. diameter tricone roller bit to a depth of 57.4 ft BGS. The borehole was grouted by pumping 16, 94-lb sacks (18.9 cubic ft) of Type I cement through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 56.0 ft BGS. The cement was allowed to cure and the level tagged at 12.8 ft BGS on the following day. An additional five 94-lb sacks (5.9 cubic ft) of Type I cement were pumped into the borehole raising the cement level to 1.9 ft BGS. The remaining borehole was capped with clay soil.

Well BC-35

Well BC-35 was an open-interval well consisting of 1.25-in. OD PVC casing, constructed within a 325.0-ft deep, NX-size core hole. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

A total of 91.3 ft of 1.25-in. OD PVC casing was extracted from the borehole (the casing was slotted over the bottom approximately 87 ft). The open interval was grouted to a point 20 ft below the reported TOFR (27.0 ft BGS) by pumping ten 94-lb sacks (11.8 cubic ft) of Type I cement through 200 ft of 1.5-in. OD PVC tremie pipe inserted to 199.0 ft BGS.

After the cement had cured, the cased interval was reamed to fresh material using a 6 1/8-in diameter tricone roller bit to a depth of 47.8 ft BGS. The reamed borehole was grouted by pumping eight 94-lb sacks (9.4 cubic ft) of Type I cement through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 46.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 2.2 ft BGS. The remaining borehole was capped with clay soil.

Well BC-47

Well BC-47 was a PVC-screened (slotted screen) well installed to 50.0 ft BGS in a 3.0-in. diameter, NX core hole. The obsolete well was of substandard construction, and also lacked a locking mechanism to prevent unauthorized access.

The casing was drilled up while the well bore was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 52.8 ft BGS. The borehole was grouted by pumping nine 94-lb sacks (10.6 cubic ft) of Type I cement into the borehole through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 48.0 ft BGS. The cement was allowed to cure and the level tagged the next work day at 4.7 ft BGS. Another 1/2 sack (0.6 cubic ft) of Type I cement was poured into the hole bringing the cement level up to 1.2 ft BGS. The remaining borehole was capped with clay soil.

Well BC-63

Well BC-63 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The open-interval well, reportedly completed to 283.7 ft BGS, consisted of 1.25-in. OD PVC casing installed in a 3.0-in. diameter, NX core hole. A total of 55.6 ft of unslotted casing was extracted from the well bore. The open interval of Well BC-63 had apparently collapsed, as it was impossible to get a weighted tape deeper than 52.5 ft BGS into the well bore.

With direction from HSEA, the open interval was left ungrouted and the cased interval reamed to fresh material using a 6 1/4-in. diameter tricone roller bit. The borehole was reamed to a depth of 59.4 ft BGS, approximately 20 ft deeper than the reported TOFR of 39.3 ft BGS. The borehole was grouted by pumping nine 94-lb sacks (10.6 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 57.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 5.4 ft BGS. Another 94-lb sack (1.2 cubic ft) of Type I cement brought the final cured cement level to 1.0 ft BGS, where the remaining borehole was capped with clay soil.

Wells described in the following passages were not reported in the Subsurface Data Base (Y/TS-881/R1). Well construction details of the following wells were obtained from field observations.

Well BCU-01

Well BCU-01 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The well, originally thought to be a screened well, consisted of 40.0 ft of 1.25-in. OD PVC casing slotted over the bottom 30 ft and capped on both the upper and lower ends. This slotted PVC assembly was installed in a 3.0-in. diameter, NX core hole such that the open interval extended from 37.9 ft to at least 135.5 ft BGS (depth tagged with weighted tape).

After the casing had been removed, the open interval was grouted to approximately 5 ft below the bottom of the casing by pumping four 94-lb sacks (4.7 cubic ft) of Type I cement into the well bore through 130 ft of 1.5-in. OD PVC tremie pipe inserted to 125.0 ft BGS. The cement was allowed to cure.

The cased interval was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to a depth of 40.8 ft BGS. The reamed borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into the borehole through 40 ft of 1.5-in. OD PVC tremie pipe inserted to 39.0 ft BGS. The cement was allowed to cure and the level tagged the next work day at 7.4-ft BGS. An additional two 94-lb sack (2.4 cubic ft) of Type I cement were poured into the borehole to bring the final cement level to 2.0 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-02

Well BCU-02 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The well consisted of 38.9 ft of 1.25-in. ID PVC casing slotted over the bottom approximately 28 ft, capped on both the upper and lower ends. The casing was removed from the 3.0-in. diameter core hole, and the open interval (37.2 ft to 178.0 ft BGS) grouted to a depth of approximately 5 ft below the bottom of the casing. Six, 94-lb sacks (7.1 cubic ft) of Type I cement were pumped into the borehole through 180 ft of 1.5-in. OD PVC tremie pipe inserted to 178.0 ft BGS. The cement was allowed to cure.

The cased interval was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 42.4 ft BGS. The reamed borehole was grouted by pumping six 94-lb sacks (7.1 cubic ft) of Type I cement into the borehole through 40 ft of 1.5-in. OD PVC tremie pipe inserted to 36.0 ft BGS. The cement was allowed to cure and the level tagged the next work day at 3.4 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-03

Well BCU-03 was a PVC screened well installed to 57.6 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access. The original well bore was apparently 5.0-in. in diameter.

The well casing/screen was drilled up while the well bore was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to 59.6 ft BGS. The borehole was grouted by pumping 12, 94-lb sacks (14.2 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 58.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 17.8 ft BGS. An additional four 94-lb sacks (4.7 cubic ft) of Type I cement were pumped into the borehole. The final cement level was measured at 1.8 ft BGS where the remaining borehole was capped with clay soil.

Well BCU-04

Well BCU-04 was a PVC-screened well installed to 60.2 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access. The 4.5-in. OD PVC well casing/screen was installed in an apparent 8.0-in. diameter well bore.

The well casing/screen was drilled up while the well bore was reamed to fresh material using a 8 3/4-in. diameter tricone roller bit to a depth of 61.2 ft BGS. The borehole was grouted by pumping 17, 94-lb sacks (20.1 cubic ft) of Type I cement into the borehole through 50 ft of 1.5-in. OD PVC tremie pipe inserted to 49.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 17.5 ft BGS. An additional six 94-lb sacks (7.1 cubic ft) of Type I cement were pumped into the borehole, bringing the final cement level up to 3.0 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-05

Well BCU-05 was a PVC-screened well installed in an apparent 5.0-in. diameter well bore to 61.0 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access.

The well casing/screen was drilled up while the well bore was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to a depth of 63.0 ft BGS. The borehole was grouted by pumping nine 94-lb sacks (10.6 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 59.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 9.2 ft BGS. An additional two 94-lb sacks (2.4 cubic ft) of Type I cement were poured into the borehole to 1.5 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-06

Well BCU-06 was a PVC-screened well installed to 62.0 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access. The 4.5-in. OD PVC well casing/screen was installed in an apparent 8.0-in. diameter well bore.

The well casing/screen was drilled up while the well bore was reamed to fresh material using a 8 3/4-in. diameter tricone roller bit to 64.3 ft BGS. The reamed hole was grouted by pumping 20, 94-lb sacks (23.6 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 59.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 9.2 ft BGS. An additional three 94-lb sacks (3.5 cubic ft) of Type I cement were

pumped into the borehole, bringing the cement level to 2.2 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-07

Well BCU-07 was a 1.25-in. OD PVC-screened well completed in an apparent 5.0-in. diameter borehole to 61.0 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access.

The PVC well casing/screen was drilled up while the well bore was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to 62.6 ft BGS. The borehole was grouted by pumping eight 94-lb sacks (9.4 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 60.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 13.0 ft BGS. Three more 94-lb sacks (3.5 cubic ft) of Type I cement were pumped into the borehole. The final cement level was measured at 1.8 ft BGS and the remaining borehole was capped with clay soil.

Well BCU-08

Well BCU-08 was a PVC-screened well completed to 61.7 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access. The well consisted of 1.25-in. OD PVC well casing/screen installed in an apparent 5.0-in. diameter borehole.

The well casing/screen was drilled up while the well bore was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to a depth of 63.7 ft BGS. The borehole was grouted by pumping ten 94-lb sacks (11.8 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 58.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 9.6 ft BGS. An additional two 94-lb sacks (3.5 cubic ft) of Type I cement brought the final cement level to 3.1 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-09

Well BCU-09 was a 1.25-in. OD PVC-screened well installed to 61.0 ft BGS. The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access. The original well bore was apparently 5.0-in. in diameter.

The PVC casing and screen were drilled up while the well bore was reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to a depth of 62.6 ft BGS. The borehole was grouted by pumping ten 94-lb sacks (11.8 cubic ft) of Type I cement into the borehole through 60 ft of 1.5-in. OD PVC tremie pipe inserted to 58.0 ft BGS. The cement was allowed to cure and the level tagged the following work day at 7.0 ft BGS. Approximately 1 1/2, 94-lb sacks (1.8 cubic ft) of Type I cement were added to the borehole. The final cement level was measured at 2.0 ft BGS, whereupon the remaining borehole was capped with clay soil.

Well BCU-10

Well BCU-10 was an obsolete PVC-screened well of substandard construction. The well also lacked a locking mechanism to prevent unauthorized access. The 1.25-in. OD well casing/screen was installed in an apparent 5.0-in. diameter borehole. The completed depth of this well was unknown and could not be determined during plugging and abandonment. A depth of 55.8 ft was measured prior to P&A activities and was thought to include an unknown accumulation of sediment.

The well casing/screen was drilled up while reaming the well bore to fresh material using a 6 1/4-in. diameter tricone roller bit to a point approximately 5 ft below the pre-P&A tagged depth (61.6 ft BGS). The reamed hole was grouted by pumping 11, 94-lb sacks (13.0 cubic ft) of Type I cement into the borehole through 60.0 ft of 1.5-in. OD PVC tremie pipe inserted to 56.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 6.7 ft BGS. An additional

two 94-lb sacks (2.4 cubic ft) of Type I cement were pumped into the borehole bringing the cement level to 1.5 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-11

Well BCU-11 was a 1.25-in. OD PVC-screened well completed to an unknown depth (casing obstructed at 2.0 ft BGS). The obsolete well was of substandard construction and lacked a locking mechanism to prevent unauthorized access. The well was apparently installed in a 5.0-in. diameter borehole.

The PVC casing and screen were drilled up while reaming the well bore to fresh material using a 6 1/4-in. diameter tricone roller bit to 47.3 ft BGS. At this point, HSEA directed to grout the borehole short of the TD because washing out of the borehole collar was jeopardizing the integrity of the borehole and the safety of the drilling.

The borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into the borehole through 40 ft of 1.5-in. OD PVC tremie pipe inserted to 39.0 ft BGS. After curing until the next day, the cement level was tagged at 17.8 ft BGS. Three more 94-lb sacks (3.5 cubic ft) of Type I cement were poured into the borehole bringing the final cement level up to 3.0 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-13

Well BCU-13 was an obsolete well of substandard construction that also lacked a locking mechanism to prevent unauthorized access. The well consisted of 4.5-in. OD PVC casing installed in an apparent 5.0-in. diameter borehole.

A total of 9.9 ft of casing was extracted from the well that had an open interval between 8.9 ft and 25.1 ft BGS (The depth of 25.1 ft BGS was measured with a weighted tape. The bottom of the well was suspected to contain an unknown amount of accumulated sediment). The well bore was reamed to fresh material using an 8 3/4-in. diameter tricone roller bit to 30.8 ft BGS (a point approximately 5 ft below the tagged depth of the well). The borehole was grouted by pumping eight 94-lb sacks (9.4 cubic ft) of Type I cement into the borehole through 30 ft of 1.5-in. OD PVC pipe inserted to 29.0 ft BGS. The cement was allowed to cure and the level tagged the next work day at 7.7 ft BGS. Two 94-lb sacks (2.4 cubic ft) of Type I cement were poured into the borehole, bringing the cement level up to 1.3 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-16

Well BCU-16 was an obsolete well of substandard construction that lacked a locking mechanism to prevent unauthorized access. The well consisted of 38.4 ft of 1.25-in. ID PVC casing, slotted over its entire length, capped on both the upper and lower ends, and installed in a 3.0-in. diameter core hole. The open interval was from 37.5 ft to 146.3 ft BGS.

The open interval was grouted from the TD of the well to 47.0 ft BGS (47 ft was approximately 20 ft below TOFR in Well BC-35, located 18 ft from BCU-16). Five 94-lb sacks (5.9 cubic ft) of Type I cement were pumped into the well bore through 140 ft of 1.5-in. OD PVC tremie pipe inserted to 137.0 ft BGS. The cement was allowed to cure.

The cased well bore was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 47.6 ft BGS. The reamed borehole was grouted by pumping eight 94-lb sacks (9.4 cubic ft) of Type I cement into the borehole through 40 ft of 1.5-in. OD PVC tremie pipe inserted to 36.0 ft BGS. The cement was allowed to cure and the level measured the next day at 5.6 ft BGS. One 94-lb sack (1.2 cubic ft) of Type I cement was poured into the borehole to 1.0 ft BGS. The remaining borehole was capped with clay soil.

Well BCU-20

Well BCU-20 was an obsolete open-interval well of substandard construction that also lacked a locking mechanism to prevent unauthorized access. The well consisted of 44.5.ft of 1.25-in. ID PVC casing (the bottom 5 ft being commercially manufactured screen) installed in a 3.0-in. diameter core hole to 43.3 ft BGS.

The casing was removed, and the well bore reamed to fresh material using a 6 1/4-in. diameter tricone roller bit to a depth of 82.6 ft BGS. The reamed borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into the borehole through 80 ft of 1.5-in. OD PVC tremie pipe inserted to 79.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 14.0 ft BGS. Another three 94-lb sacks (3.5 cubic ft) of Type I cement were poured into the borehole, bringing the cement level up to 2.0 ft BGS. The remaining borehole was capped with clay soil.

4.5 BEAR CREEK ROAD

Four wells located along or in the vicinity of Bear Creek Road were decommissioned in FY 1994. Wells 1047 and 1047A were part of a northeast-southwest-trending transect of open-interval monitoring wells. Wells GW-110 and GW-114 were of stainless steel, screened construction. Well GW-110 was actually located within the Grassy Creek Functional Area, but is included here for convenience.

Well 1047

Well 1047 was an obsolete open-interval well of substandard construction that was located along a powerline right-of-way near Bear Creek Road, west of the Bear Creek Burial Grounds. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access. Before any intrusive P&A activities took place, a total of 5.0 ft of 4.0-in. OD steel casing was extracted from the well.

The well bore was reamed to fresh material using a 6 1/2-in. diameter tricone roller bit to a depth of 23.2 ft BGS. Continued reaming resulted in a number of blow-outs in the ground surrounding the wellhead that began eroding the borehole collar.

An attempt to install a 7.0-ft-long section of 7.0-in. OD steel casing to maintain the borehole collar integrity failed as it became impossible to obtain an annular cement seal due to the short casing extension into bedrock. An attempt to install an 18.2-ft section of 8.5-in. OD steel casing also failed when the reaming bit (a 10 5/8-in. diameter tricone roller bit) deflected out of the original borehole making the installation of the casing impossible. Further decommissioning attempts on Well 1047 were rejected primarily in consideration of the possible impact to nearby Bear Creek.

The reamed borehole was grouted by pumping seven 94-lb sacks (8.3 cubic ft) of Type I cement into it. The cement was allowed to cure and the level tagged the following day at 3.8 ft BGS. The remaining borehole was capped with clay soil.

Well 1047A

Well 1047A (nomenclature as per HSEA) was an obsolete open-interval well located along an old gravel road, between Well 1047 and Bear Creek Road. Security of the well was compromised by the absence of a locking mechanism to prevent unauthorized access. Before any intrusive P&A activities took place, a total of 5.1 ft of 4.0-in. OD steel casing was extracted from the well.

The well bore was reamed to fresh material using a 6 1/2-in. diameter tricone roller bit to a depth of 170.0 ft BGS. The reamed borehole was grouted by pumping 27, 94-lb sacks (31.9 cubic ft) of Type I cement into the borehole through 160 ft of 1.5-in. OD PVC tremie pipe inserted to 158.0 ft BGS. The cement was allowed to cure and the level tagged the next work day

at 24.3 ft BGS. An additional six 94-lb sacks (7.1 cubic ft) of Type I cement were pumped into the borehole, bringing the cement level to 1.8 ft BGS. The remaining borehole was capped with clay soil.

Well GW-110

Well GW-110 was a stainless-steel screened well installed to 38.6 ft BGS. The well was decommissioned because irreparably damaged casing rendered the well unusable. A total of 4.4 ft of 6 5/8-in. OD steel conductor casing was removed by excavating to the base of the casing and cutting the casing into fragments with a torch. The 2.37-in. OD well casing was then overwashed with 8.25-in. ID, 9.5-in. OD washover pipe to a depth of 22.6 ft BGS. A total of only 4.4 ft of stainless-steel well casing (twisted off at the bottom end) was recovered from the borehole; the remaining casing assumably being distorted and pushed to the bottom of the borehole.

The borehole was grouted, without further overwashing/reaming (at the direction of HSEA), by pumping six 94-lb sacks (7.1 cubic ft) of Type I cement into the borehole through 10 ft of 1.5-in. OD PVC tremie pipe inserted to 10.0 ft BGS. The cement was allowed to cure and the level tagged the next day at 7.3 ft BGS. An additional two 94-lb sacks (2.4 cubic ft) of Type I cement were pumped into the borehole, bringing the cement level to 3.4 ft BGS. The remaining borehole was capped with clay soil.

Well GW-114

Well GW-114 was a stainless-steel screened well installed to 118.8 ft BGS. The well was decommissioned because irreparably damaged casing rendered the well unusable. A total of 2.8 ft of 6 5/8-in. OD steel conductor casing was cut into fragments with a torch (immediately below the steel conductor casing—6.0-in. OD PVC conductor casing extended to an unknown depth) and removed. The 2.37-in. OD stainless-steel well casing was overwashed with 4.25-in. ID, 5.5-in. OD washover pipe to a depth of 14.0 ft BGS. A total of 9.5 ft of twisted and distorted stainless-steel well casing, along with approximately 9.0 ft of 6.0-in. OD PVC conductor casing, were extracted from the borehole.

The borehole was further reamed to fresh material with a 10 5/8-in. diameter tricone roller bit to a depth of 20.6 ft. The borehole was grouted at this point (at the direction of HSEA) by pouring three 94-lb sacks (3.5 cubic ft) of Type I cement directly into the borehole. The cement was allowed to cure and the level tagged the following work day at 2.5 ft BGS. The remaining borehole was capped with clay soil.

4.6 CHESTNUT RIDGE

Well GW-570 was located near the crest of Chestnut Ridge, near the northern boundary of the Steam Plant Ash Disposal (SPAD) Landfill.

Well GW-570

Well GW-570 was a stainless-steel screened well that impeded the construction of an access road connecting the SPAD Landfill to the East Patrol Road. The 2.37-in. OD well had been constructed to a depth of 137.3 ft BGS. The well casing was overwashed with 6 3/4-in. OD, 4 1/2-in. ID washover pipe to a depth of 21.6 ft BGS. At this point, the casing became entangled inside the washover pipe, shearing off at approximately 21.6 ft BGS. HSEA directed to grout the borehole, which was accomplished by pumping four 94-lb sacks (4.7 cubic ft) of Type I cement through 20 ft of 1.5-in. OD PVC tremie pipe inserted to 19.0 ft BGS. The cement was allowed to cure and the level tagged the following day at 3.5 ft BGS. The remaining borehole was capped with clay soil.

5. QUALITY ASSURANCE

Quality control was closely monitored during all plugging and abandonment activities to ensure that borings and well abandonments conformed to Energy Systems plugging and abandonment procedures (Energy Systems 1991). All task-related activities were observed and documented by a registered professional geologist employed by SAIC. Any deviations were approved by the GWPP Manager. Drill rigs and all ancillary drilling equipment were steam cleaned before drilling operations at each site.* During plugging and abandonment operations, equipment was routinely inspected for fuel and oil leaks, and a spill control kit was present during each abandonment.

Plastic sheeting and straw bale berms were used to contain normal drilling cuttings and water when abandonment activities occurred near surface waters. Only vegetable-oil-based or nonpetroleum thread lubricant (Well-Guard – a beeswax-based thread lubricant) was used when needed during drilling.

At times when cuttings were circulated and available for collection, these were sampled continuously over 10- to 20-ft intervals. All samples were screened and inspected for comparison with expected well and boring materials.

*Energy Systems personnel initiated the use of a new form, Equipment Decontamination Inspection Summary, to be included with all P&A well reports during FY 1994. This form documents the steam cleaning and inspection of all equipment prior to use at each location.

6. HEALTH AND SAFETY

A Health and Safety Plan [Y/SUB/92-99928C(Y11/1)] was followed for all FY 1994 plugging and abandonment activities. All on-site personnel were in compliance with training requirements mandated by 29 *CFR* 1910.120, and all were enrolled in an annual health screening and occupational medical examination program. Additionally, all personnel present on site during plugging and abandonment activities wore thermoluminescent dosimeter badges collected and monitored by Energy Systems. During the period of work covered by the annual report, no personnel received radiation exposure exceeding permissible limits based on field screening. Low potential for exposure to hazardous materials at all work sites allowed use of Level D personal protection. This protective level consisted of not less than steel-toed footwear, gloves, hard hats, hearing protection in the form of plugs or muffs, and safety glasses.

Technical oversight personnel provided health and safety monitoring at the work sites using monitoring equipment supplied and maintained by Energy Systems. Instrumentation used on site typically consisted of an HNu Model HW-101 PID, an OVA Model 108 or Model 128 FID, and Ludlum radiation meters. The HNu PID and OVA FID were used to detect ionizable organic vapors. Radiation detection instruments included a Ludlum Model 3 Survey Meter for detection of beta and gamma radiation with a Geiger-Mueller "pancake" type probe. Alpha radiation was monitored using a Ludlum Model 12 Count Ratemeter with a scintillation tube probe or an air probe.

In addition to screening for health and safety, drilling returns were screened per Energy Systems guidelines in a general waste management plan for drilling activities (Appendix C). This daily screening consisted of alpha, beta, and gamma radiation screening of composited drill cuttings. A headspace analysis of organic vapors and a pH measurement were also performed on this composited cuttings sample. Because grout cuttings often were a significant component of drilling returns during overwashing and borehole reaming, pH levels sometimes exceeded the upper bounds of waste screening criteria. If grout cuttings were present, as identified visually, and no screening parameters other than pH exceeded guideline criteria, then no containment actions were taken. Screening results are contained in Appendix D.

Health and safety plan action levels (SAIC 1992) and waste management guideline values used during plugging and abandonment activities are presented in Table 6.1.

Table 6.1. Action levels used for health and safety monitoring during well plugging and abandonment

Parameter	Action level
Waste Management Guidelines:	
pH	<4.0 and >10.5 standard units
Organic vapors	>5 ppm
Alpha radiation	>500 counts per minute
Beta/gamma radiation	>100 counts per minute
Health and Safety Plan:	
pH	Below 5 or above 9
Explosivity	>25% Lower Explosive Limit
Organic vapors	>10 ppm in breathing zone
Radiation	>2 millirem/h, and/or an 8-h time-weighted average of 0.25 millirem/h at chest level

7. REFERENCES

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APPENDIX A
ACTIVITY/PROGRESS REPORTS

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1012
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 6

LOCATION: S3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: R. Phillips/R. Jones - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 8-27-93

FINISH: 9-7-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-27-93	0832	0851	Arrive at 1012 site. Drill rig is positioned over the well, appears
			to have been adequately steam-cleaned. Crew has already
			threaded a 6 1/8-in. diameter tricone bit onto a drill rod, however
			bit will not fit into well casing due to damaged collar. Tag bottom
			of well at 47.5 ft below top of casing (BTOC) = 46.4 ft below ground
			surface (BGS). Subsurface data base (Y/TS-881) reports the
			total depth (TD) of 1012 is 70.0 ft. Water level is at approximately
			40 ft BGS.
	0851	0911	Cut off damaged portion of casing stick-up (0.9 ft), and burn 2
			lifting holes in casing collar.
	0911	0912	Start drill rig. Trip into well. Table height = 3.2 ft.
	0912	0921	Encounter water at 39.3 ft BGS. Encounter resistance at 40.3 ft
			BGS; begin reaming open interval. Ream to 47.3 ft BGS. Returns
			from 40.3 ft to 47.3 ft BGS consist of black (N1), foul-smelling
			water and organic debris. Breathing zone analysis (BZA) =
			0.0 ppm.
	0921	0924	At 47.3 ft BGS. Add drill rod.
	0924	0937	Continue reaming open interval. Ream from 47.3 ft to 72.3 ft
			BGS. Bit stops at about 48.0 ft BGS; hard, ratty drilling. Suspect
			that there is a plug or a packer down-hole. The bit suddenly drops
			about 1 ft and continues a slow, ratty advance. Bit slows

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1012
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-27-93			considerably at 68.3 ft BGS. Drilling becomes extremely hard and
(cont.)			ratty, fragments of rubber and metal return at 68.8 ft BGS. Cuttings
			from 47.3 ft to 70.3 ft are: continued black (N1) organic debris,
			white (N9) fragments that appear to be Cal-Seal™, and minor
			medium dark gray (N4) thinly laminated shale. Bit breaks through
			plug at 70.3 ft BGS. Cuttings, 70.3 ft to 72.3 ft, consist predomi-
			nantly of medium dark gray (N4) shale, Cal-Seal™ fragments, and
			rubber and metal fragments.
	0937	0944	At 72.3 ft BGS. Clean out borehole.
	0944	0956	Trip out, rig down bit. Unable to tag bottom of well; tape is clinging
			to the borehole wall. Calculate a borehole volume to 40.0 ft BGS
			(bottom of casing) of 6.6 cubic ft, equivalent to 5.6 sacks of Type I
			Portland cement.
	0956	1018	Run 7, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe into borehole to 69.0 ft BGS. Gathering other grouting
			materials.
	1018	1040	Mix and pump-tremie 6 sacks (7.1 cubic ft) of neat, Type I Portland
			cement into the borehole.
	1040	1107	Pull out tremie pipe. Clean up. Secure site and depart.
8-30-93	0810	0857	At 1012 site. Tag cement level at 28.1 ft BGS (12.1 ft above bottom
			of casing). Wait for drillers.
	0857	0913	R. Phillips (Highland) arrives, informs oversight that priorities have
			changed; P&A work will be interrupted temporarily. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1012
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-3-93	0837	0845	Resume P&A activities. Arrive at 1012 site right behind drillers who are pulling steam cleaner. Crew performs pre-work equipment inspection.
	0845	0848	Thread a 6 1/8-in. diameter tricone bit onto a drill rod. Table height = 3.3 ft.
	0848	0852	Trip bit into well. Encounter water at 22.0 ft BGS.
	0852	0858	Continue tripping tools into well. Encounter cement at 28.1 ft BGS; commence reaming cement. Ream to approximately 40 ft BGS (bottom of casing).
	0858	0900	At 40 ft BGS, clean out borehole.
	0900	0905	Trip out tools, rig down bit.
	0905	0915	Steam clean and rig up a 24.5-ft section of 9.5-in. OD, 8.25-in. inside diameter (ID) steel washover pipe with a 1.0 ft subadapter; table height remains at 3.3 ft.
	0915	0932	Commence over wash with compressed air only. Over wash casing from ground surface to 22.2 ft BGS. Dust abates at 9.0 ft BGS. Cuttings from 0.0 to 9.0 ft are moderate brown (5YR 4/4) soil and subsoil with medium gray (N5) to medium dark gray (N4) shale and cement cuttings from open interval reaming. Cuttings from 9.0 ft to 22.2 ft BGS consist of dark yellowish-brown (10YR 4/2) soil with fragments of light brown (5YR 5/6) weathered shale and medium dark gray (N4) to dark gray (N3) fresh shale fragments. No cement fragments observed this interval.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1012
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-3-93	0932	0937	At 22.2 ft BGS. Clean out borehole.
(cont.)			
	0937	0939	Continue over wash of casing. Over wash casing to 23.0 ft BGS.
			Cuttings are the same as the 9.0 to 22.2 ft interval.
	0939	1020	Trip out and rig down washover pipe. Crew to attempt casing pull
			before over washing any further.
	1020	1120	Attempt to pull casing; casing comes out fairly easily. Attach winch
			cable to lifting bell and extract 39.1 ft (plus 0.9 ft of casing stick up
			cut off earlier for a total of 40.0 ft) of 6.5-in. OD steel casing. Only
			the bottom approximate 14 ft of casing appears to have been fully
			encased in cement.
	1120	1125	Rig up with a 10 5/8-in. diameter tricone bit, on a subadapter;
			assembly length = 6.1 ft, table height = 2.7 ft.
	1125	1127	Commence reaming borehole. Ream from about 1.0 ft to 4.4 ft
			BGS.
	1127	1131	Continue reaming borehole with compressed air only. Ream from
			4.4 ft to 29.4 ft BGS. Ratty drilling at approximately 28 ft BGS
			(cement). Cuttings this interval consist of approximately equal
			amounts of grayish-orange (10YR 7/4) to light greenish-gray
			(5GY 8/1) weathered shale and medium dark gray (N4) fresh
			shale, plus a minor amount of light olive gray (5Y 6/1) uncured
			cement.
	1131	1135	At 29.4 ft BGS. Clean out borehole. Add drill rod.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1012
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-3-93	1135	1140	Continue reaming borehole with compressed air only. Ream from
(cont.)			29.4 ft to 43.4 ft BGS. Ratty drilling throughout the interval.
			Cuttings are the same as the previous interval with the addition of
			grayish-red (5R 4/2) shale and very pale orange (10YR 8/2)
			cement fragments.
	1140	1145	At 43.4 ft BGS. Clean out borehole.
	1145	1155	Trip out, rig down bit and subadapter assembly. Tag bottom of
			hole at 43.2 ft BGS.
	1155	1208	Calculate a borehole volume to 4.0 ft BGS of 24.1 cubic ft =
			0.9 cubic yds. R. Phillips (Highland) orders cement delivery
			(1.0 cubic yd) for 1400 hrs.
	1208	1236	Break for lunch.
	1236	1245	Rig down drill rig, lower mast and clean up site. Cement delivery
			moved to 1300 hrs.
	1245	1251	Move rig off-site.
	1251	1316	Waiting on cement delivery.
	1316	1339	Cement truck arrives. Pour neat cement (borehole is clean and
			dry to the bottom) into the borehole. Liquid grout level to ground
			surface. Depart site.
9-7-93	0744	0750	Arrive at 1012 site. Tag cement level at 4.0 ft BGS. Borehole is
			ready to be capped. Depart.
	1300	1330	Borehole is capped with clay/soil.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1012
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
			P&A of 1012 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1016

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 7

LOCATION: S3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: R. Phillips/S. Brown/R. Jones - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 8-24-93

FINISH: 9-3-93

METHOD: B

LOGGED BY: V.R.Harness/ T.J. Coffey-SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-24-93	0809	0832	Technical oversight by T.J. Coffey - SAIC. Arrive at 1016 site. The drill rig is positioned over the well location with a 6 1/8-in. diameter tricone bit threaded onto a drill rod. Table height =3.4 ft. Tag bottom of well at 47.3 ft below top of casing (BTOC) = 46.7 ft below ground surface (BGS). Subsurface data base (Y/TS-881) reports the total depth (TD) of the well to be 63.0 ft. Water level at 24.4 ft BGS.
	0832	0851	Crew arrives onsite. Unload cement. Crew performs pre-work equipment inspections. Drill rig appears to have been adequately steam cleaned. Radiological scan of drill site: alpha = 0 cpm, beta/gamma = 50 cpm (background readings).
	0851	0854	Trip into well.
	0854	0859	Encounter water at approximately 25 ft. BGS.
	0859	0901	Encounter resistance at about 36 ft BGS, commence reaming of open interval. Ream from 36 ft to 47.1 ft BGS. Cuttings from 36 ft to 47.1 ft consist mostly of black (N1) organic debris including leaves, animal bones, and hair/fur. Interval also contains minor amounts of both fresh and weathered shale fragments.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1016
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-24-93	0906	0929	Continue reaming open interval. Ream from 47.1 ft to 63.7 ft
(cont'd)			BGS. Advance nearly stops at 61.9 ft BGS, very hard drilling.
			Begin to return rubber fragments, then metal fragments: suspect
			drilling on a plug. Cuttings from 47.1 ft to 63.7 ft BGS consist of:
			dark gray (N3) thinly laminated shale; white (N9) fragments of
			what appears to be cal-seal™; light olive gray (5Y 5/2) cement
			fragments; moderate blue-green (5BG 4/6), soft rubber; and
			metal fragments and shavings
	0929	0932	At 63.7 ft BGS, bit advance has stopped. Clean out borehole.
	0932	0948	Trip out, rig down bit. Tag bottom of borehole at 63.9 ft BGS.
			Calculate a borehole volume to 32.0 ft BGS (bottom of casing)
			of 6.5 cubic ft equivalent to 5.5 sacks of Type I Portland cement.
	0948	0953	Run 6, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe into borehole to 58.5 ft BGS.
	0953	1015	Mix and pump-tremie 6 sacks (7.1 cubic ft) of neat, Type I
			Portland cement into the borehole.
	1015	1035	Pull out tremie pipe. Clean up. Secure site and depart.
8-25-93	0812	0835	Arrive at 1016 site. Tag cement level at 19.6 ft BGS (12.4 ft
			above bottom of casing). Crew arrives.
	0835	0849	Crew performs pre-work equipment inspection. Add oil to rig
			motor.
	0849	0853	Add a drill rod to rig head, thread the 6 1/8 - in. diameter bit to drill
			rod. Table height = 3.7 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1016
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-25-93	0853	0855	Trip into borehole. Encounter water at 17.0 ft BGS. Encounter
(cont'd)			cement at 19.6 ft BGS and commence reaming.
	0855	0859	Continue reaming cement. Ream to 32.0 ft BGS (bottom of
			casing).
	0859	0901	At 32.0 ft BGS. Clean out borehole.
	0901	0909	Trip out, rig down bit. Tag cement level at 32.4 ft BGS.
	0909	0917	Rig up with a 24.5-ft section of 9.5-in. OD, 8.25 - in. inside
			diameter (ID) washover pipe with a 1.0-ft long subadapter; total
			length = 25.5 ft, table height = 3.8 ft.
	0917	0935	Commence over wash with compressed air only. Over wash
			casing from ground surface to 21.7 ft BGS. Cuttings in first 1.0
			ft are wet and consist of grayish-black (N2), topsoil, cement, and
			previously returned cuttings. Cuttings become dry at 1.0 ft BGS.
			Dust abates as a small amount of moisture is encountered at 16.5
			ft BGS. Ratty drilling at 19.7 ft BGS. Cuttings from 1.0 ft to 21.7
			ft BGS consist of moderate yellowish-brown (10YR 5/4) to
			moderate brown (5YR 4/4), weathered shale and medium bluish-
			gray (5B 5/1) to medium dark gray (N4), thinly laminated fresh
			shale (casing apparently back-filled, in part, with cuttings while
			drilling completion interval). The weathered shale fragments
			dominated the bottom 5 ft of the interval.
	0935	0942	At 21.7 ft BGS. Clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1016
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-25-93	0942	0950	Continue over wash. Over wash casing from 21.7 ft to 23.3 ft BGS
(con't)			Cuttings in this interval are predominantly very pale orange
			(10YR 8/2) cement fragments with minor weathered and compe-
			tent shale fragments as above.
	0950	1010	Subadapter on washover pipe contacts casing (bit at 23.3 ft BGS).
			Clean out borehole and continue rotating to loosen the casing.
			Dump valve control rod breaks at connection. Able to continue to
			use drill rig, but will not be able to drill any more until this is fixed.
	1010	1015	Trip out, break connection with washover pipe, and rig down.
	1015	1023	Rig up clevis and chain. Attempt to pull casing; chain tears
			through the lifting holes. Call for a burn permit to cut more lifting
			holes.
	1023	1102	Having difficulty getting in touch with HSEA. Finally talk to K. Jago
			(HSEA) who arranges for a burn permit. B. McMaster (UT/HSEA)
			onsite, will go retrieve burn permit.
	1102	1126	B. McMaster returns with burn permit. Cut off torn casing collar
			(0.4 linear ft) and burn 2 new lifting holes.
	1126	1202	Make second attempt to pull casing; casing comes out approxi-
			mately 0.5 ft then stops.
	1202	1211	Thread a drill rod to rig head, try to push casing back into the hole;
			will not move.
	1211	1219	Return the drill rod to the carousel. Rig up the clevis and chain,
			attempt to pull casing; casing does not move and lifting holes begin
			to tear out.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1016

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-25-93	1219	1226	Thread a drill rod to drill head again. Rig clevis to rod, try to run
(con'td)			clevis into casing to try and rotate the casing loose; clevis will not
			fit inside casing.
	1226	1250	Driller goes to pipeyard to find something such as a lifting bell that
			can be used to turn the casing, and returns unsuccessful.
	1250	1320	Break for lunch.
	1320	1350	H. Hall (Highland) goes to pipeyard to gather materials to manu-
			facture a lifting device. R. Phillips (Highland) welding repairs to
			dump valve control rod.
	1350	1400	H. Hall returns. He has a section of 7.0 - in. OD casing threaded
			onto commercially manufactured lifting bell that they will weld to
			casing in ground.
	1400	1524	Crew cuts off an additional 0.6 ft of casing and begins welding the
			lifting device to the casing. S. Jones (HSEA) onsite.
	1524	1552	Attempt to pull casing. casing eventually comes out. Hook winch
			cable to lifting bell and extract 30.6 ft (31.6 ft total) of 6.5 - in. OD
			steel casing. The bottom 7.0 ft of casing is unpitted indicating only
			that portion had been fully grouted. Tag the bottom of the hole at
			32.7 ft BGS.
	1552	1600	S. Jones departs. Clean up, secure site, and depart.
8-26-93	0902	0920	Technical oversight by V. R. Harness - SAIC. Arrive at 1016 site.
			Crew is rigging up a 10 5/8-in. diameter tricone bit on a subadapter;
			assembly length = 6.2 ft, table height = 4.0 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1016
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 6 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-26-93	0920	0928	Commence reaming. Ream from 0.0 ft to 27.2 ft BGS. Encounter
(cont'd)			water at 14.2 ft BGS. Encounter fill at 21.7 ft BGS. Cuttings from
			0.0 ft to 27.2 ft BGS are: moderate yellowish-brown (10YR 5/4),
			moist, silty, cherty clay.
	0928	0937	Continue reaming. Ream from 27.2 ft to 33.0 ft BGS. Cuttings are
			predominantly cement fragments.
	0937	0943	At 33.0 ft BGS. Clean out borehole. Trip out tools. Rig down bit
			and subadapter assembly. Tag bottom of borehole at 33.6 ft BGS.
	0943	1039	Calculate a borehole volume to 4.0 ft BGS of 18.2 cubic ft,
			equivalent to 15.4 sacks of Type I Portland cement. Gathering
			grouting materials. Plan to pour grout into borehole (dry hole).
	1039	1136	Mix and pour 15 sacks (17.7 cubic ft) of neat, Type I Portland
			cement into borehole. Circulate cement.
	1136	1141	Clean up, secure site, and depart.
8-27-93	0826	0832	Technical oversight resumed by T.J. Coffey. Arrive at 1016 site.
			Tag cement level at 11.0 ft BGS. Calculate a borehole volume to
			4.0 ft BGS of 4.3 cubic ft, equivalent to 3.7 sacks of Type I Portland
			cement. Depart site.
	1110	1122	Return to 1016 site. Mix and pour 5 sacks (5.9 cubic ft) of neat,
			Type I Portland cement into borehole. Fill to ground surface,
			circulate 100% cement.
	1122	1125	Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1016
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 7 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-30-93	0806	0810	At 1016 site. Tag cement level at 1.9 ft BGS. Borehole is ready to be capped.
9-3-93	1040	1045	Borehole 1016 is capped with clay soil.
			P&A of 1016 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1018

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Randy Phillips/Russell Jones - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 9-10-93

FINISH: 9-17-93

METHOD: B

LOGGED BY: V.R.Harness/ T.J. Coffey-SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-10-93	0803	0825	Technical oversight by Victor Harness - SAIC. Arrive at 1018 site.
			Tag bottom of well (hard) at 47.6 ft below ground surface (BGS).
			Drill crew has welded a lifting bell to casing collar to facilitate
			pulling casing. Casing stick-up = 0.9 ft. Awaiting crew.
	0825	0903	Crew arrives. Position drill rig over well. Oversight inspects drill
			rig: appears to be adequately steam-cleaned. Set up drill location,
			prepare to drill. Thread a 6 1/8-in. diameter tricone bit onto a drill
			rod; length of bit = 0.5 ft, table height = 4.0 ft.
	0903	0911	Trip rods into casing. Encounter water at 33.5 ft BGS.
	0911	0919	Returning organic debris, commence reaming of open interval at
			40.0 ft BGS. Ream from 40.0 ft to 49.0 ft BGS. No odor, breathing
			zone analysis (BZA) = 0.0 ppm over entire interval. Cuttings from
			40.0 ft to 49.0 ft BGS are: greenish-black (5GY 2/1) shale (60%),
			and grayish-black (N2) organic debris consisting mainly of leaves
			and wood fragments.
	0919	0920	At 49.0 ft BGS. Clean out borehole.
	0920	0934	Trip out rods. Tag bottom of borehole at 49.9 ft BGS. Calculate
			a borehole volume to 36.0 ft BGS (bottom of casing) of 2.8 cubic
			ft, equivalent to 2.4 sacks of Type I cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1018
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-10-93	0934	0937	Run 1.5-in. outside diameter (OD) PVC tremie pipe into borehole
(cont.)			to 28.0 ft BGS.
	0937	0949	Mix and pump-tremie 3.0 sacks (3.5 cubic ft) of neat, Type I
			Portland cement into the borehole.
	0949	1055	Remove tremie pipe. Clean up. Screening cuttings from 40.0 ft
			to 49.9 ft BGS (see Well Cuttings Field Screening/Disposal
			Sheet). Secure site and depart.
9-13-93	0805	0837	Technical oversight by T.J. Coffey (SAIC). Arrive at 1018 site. Tag
			cement level at 34.0 ft BGS (2.0 ft above bottom of casing). Crew
			arrives, and steam cleans washover pipe.
	0837	0847	Rig up with a 24.5-ft section of 9.5-in. OD, 8.25-in. inside diameter
			(ID) steel washover pipe with a 1.0 ft subadapter. Table height =
			4.4 ft.
	0847	0859	Commence over wash. Over wash casing from ground surface to
			21.1 ft BGS. At 12.0 ft BGS, dust abates with moisture at obvious
			lithologic change. Cuttings from 0.0 ft to 12.0 ft BGS consist of:
			dark yellowish-brown (10YR 4/2) surface soil and moderate
			yellowish-brown (10YR 5/4) subsoil with dark yellowish-orange
			(10YR 6/6) to greenish-gray (5GY 6/1) weathered shale and minor
			amounts of dark gray (N3) to grayish-black (N2) fresh shale.
			Cuttings from 12.0 ft to 21.1 ft BGS are dark yellowish-brown
			(10YR 4/2) to grayish-brown (5YR 3/2) subsoil with an abundance
			of dark gray (N3) to grayish-black (N2) fresh shale.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1018
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-13-93	0859	0900	Continue over wash. Over wash casing from 21.1 ft to 23.8 ft BGS
(cont.)			(subadapter contacts the top of the casing). The cuttings from
			21.1 ft to 23.8 ft BGS are the same as the previous interval with the
			addition of a minimal amount of light gray (N7) cement fragments.
	0900	0924	Trip out, rig down washover pipe.
	0924	0934	Attempt to pull casing; weld breaks where drill crew had added a
			length of casing after cutting off damaged section.
	0934	1010	Rig down and move the drill rig 15 ft away from the borehole.
	1010	1035	Digging pit around casing stick-up to facilitate welding access.
			B. Thedford (HSEA) delivers burn permit.
	1035	1139	Reconstruct casing pulling device. Weld pulling device to casing
			stick-up.
	1139	1217	Fill in pit.
	1217	1252	Break for lunch.
	1252	1319	Move rig back over location, and raise mast. Attempt to pull casing;
			casing comes out of the ground approximately 0.3 ft then stops.
	1319	1340	Reassemble drill rig table. Rig up washover pipe again.
	1340	1353	Over wash casing to 23.8 ft BGS (subadapter contacts the casing).
	1353	1415	Trip out and rig down washover pipe.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1018
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-13-93	1415	1420	Attempt to pull the casing a third time; weld breaks in the same
(cont.)			place as before.
	1420	1440	Shut off drill rig. Crew decides that they will have to over wash
			more of the casing, however, all of their big washover pipe
			wrenches, pitons, etc. are at their shop. Operations conclude for
			the day. Secure site and depart.
9-14-93	0832	0914	Oversight and crew arrive at 1018 site. Crew working to break
			subadapter off of washover pipe: connection breaks without
			having to heat the joint. B. McMaster (UT-HSEA) delivers burn
			permit to site.
	0914	0926	Burn lifting holes in top of casing which is approximately 2 ft BGS.
	0926	0947	Rig up and run washover pipe into borehole. Total length of
			tools = 41.1 ft, total length with subadapter = 42.1 ft. Table
			height = 4.4 ft.
	0947	1015	Connection made, commence over wash. Over wash casing from
			23.8 ft to 37.7 ft BGS. Advance rates slows considerably at 29.5 ft
			BGS: suspect drilling on hard cement. Cuttings from 23.8 ft to 29.5
			ft BGS are primarily dark yellowish-orange (10YR 6/6) to moderate
			brown (5YR 4/4) weathered shale, and minor very light gray (N8)
			cement. Cuttings from 29.5 ft to 37.7 ft BGS consist predominantly
			of dark gray (N3), thinly laminated, competent shale (suspect
			approximate top of fresh bedrock at 29.5 ft BGS) and very light
			gray (N8) cement fragments with rare amounts of weathered
			shale. Encounter a small amount of water at 34.5 ft BGS.
	1015	1021	At 37.7 ft BGS. Clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1018
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-14-93	1021	1033	Trip out and rig down washover pipe. Casing has dropped down
(cont.)			into borehole, top of casing at approximately 5 ft BGS.
	1033	1045	Attach jaw clamp to casing and pull out. Extract 31.9 ft of 6.5-in.
			OD steel casing (plus 3.6 ft of casing removed earlier makes a total
			of 35.5 ft of casing removed) from borehole. Tag bottom of hole
			at 37.2 ft BGS (0.5 ft of fill). Calculate a borehole volume to 4.0 ft
			BGS of 16.3 cubic ft = 0.6 cubic yds of straight cement. Cement
			delivery of 1.0 cubic yds scheduled for 1500-1530 hrs.
	1045	1104	B. Thedford (HSEA) onsite. Shuts down operation to do
			unannounced inspection of Highland Drilling's daily logbook. Bill
			noted that equipment inspections have not been logged daily as
			required.
	1104	1138	Reassemble rig table. Lower mast. Move drill rig offsite and
			commence steam cleaning. Oversight finishes screening cuttings
			composite, then departs site.
	1504	1521	Return to 1018 site. Cement truck onsite. Pour approximately
			1 cubic yd of neat, Type I cement into the borehole. Liquid grout
			level at 2.0 ft BGS.
	1521	1540	Clean up and secure site. Oversight departs. Crew to remain and
			complete set up at next location.
9-15-93	0817	0821	At 1018 site. Tag cement level at 3.5 ft BGS. Borehole is ready
			to be capped. Depart site.
9-17-93	0900	0930	Borehole capped with clay soil.
			P&A of 1018 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1019
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: S3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPER: Russell Jones - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 9-9-93

FINISH: 9-17-93

METHOD: B

LOGGED BY: Victor R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-9-93	0846	0853	Technical oversight provided by V.R. Harness - SAIC. Arrive at
			site. Awaiting drill crew. Have received permission from HSEA
			to forego reaming open interval prior to over wash due to short
			length of open interval.
	0853	0913	Crew arrives. Raising mast. Spill kit stocked and on site. Fire
			extinguisher nearby rig. Rig has been adequately steam-cleaned
			prior to set up on this site. Rig up with 9.5-in. outside diameter
			(OD), 8.25-in. inside diameter (ID) washover pipe.
	0913	0916	Begin over wash of steel surface casing. Casing stick up = 1.0 ft.
			Background levels are: 0.0 ppm organic vapors, 0% lower explo-
			sive limit (LEL), alpha radiation = 0 cpm, and beta/gamma
			radiation = 60 cpm. Begin continuous monitoring of organic vapor
			by breathing zone analysis (BZA) and percentage of LEL.
	0916	0947	Advance to 22.5 ft BGS using compressed air only. Borehole is
			dry. BZA = 0.0 ppm, 0% LEL. Maximum depth attainable with
			single piece of washover pipe. Description of 0.0 to 22.5 ft BGS
			cuttings composite:
			light yellowish-brown (10 YR 6/4) silty, cherty loam, only
			slightly moist.
	0947	1114	Trip out washover pipe. BZA = 0.0 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1019
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-9-93	1114	1127	Extract 39.2 ft of 6.5-in. OD, 6.25-in. ID steel casing in 3 pieces.
(cont.)			
	1127	1137	Crew rigs up 10 5/8-in. diameter tricone roller bit. Bit and
			subadapter assembly = 6.2 ft long. Target depth of reaming =
			45.0 ft BGS.
	1137	1208	Commence reaming bore. BZA = 0.0 ppm, 0% LEL. Advance to
			26.0 ft BGS. Return dry cuttings. BZA at 26.0 ft BGS = 0.0 ppm,
			0% LEL. Ream to 43.0 ft BGS. BZA at 43.0 ft BGS = 0.0 ppm, 0%
			LEL.
	1208	1238	Withdraw bit to 27.0 ft BGS, break for lunch.
	1238	1246	Trip bit back to 43.0 ft BGS, continue reaming borehole. Ream to
			45.0 ft BGS.
	1246	1252	At 45.0 ft BGS, clean out borehole. Cuttings from 0.0 ft to 45.0 ft
			BGS are: brownish-gray (7.5 YR 5/1), silty subsoil (60%) and light
			gray (N7) grout with accessory PVC fragments (40%).
	1252	1335	Trip out tools, rig down bit and subadapter assembly. Tag bottom
			of the borehole at 44.6 ft BGS (dry). Calculate a borehole volume
			to 4.0 ft BGS of 25.2 cubic ft = 0.9 cubic yds. Cement delivery (1.0
			cubic yd) scheduled for 1500 hrs. Lower mast and move drill rig
			off site.
	1335	1456	Oversight departs to return monitoring equipment; returns to site
			at 1429. Awaiting cement delivery.
	1456	1504	Cement truck arrives. Pour neat cement into the borehole, liquid
			grout to ground surface.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1019
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-9-93	1504	1521	Clean up, secure site, and depart.
(cont.)			
9-10-93	0809	0914	Arrive at 1019 site, tag cement level at 6.7 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 1.7 cubic ft, equivalent to 1.4
			sacks of Type I cement. Depart site.
9-14-93	1455	1504	Top off borehole 1019 with cement from truck. Liquid grout to
			ground surface.
9-15-93	0815	0817	Arrive at 1019 site, tag cement level at 1.0 ft BGS. Borehole is
			ready to be capped.
9-17-93	1300	1315	Borehole capped with clay soil.
			P&A of 1019 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1020

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Steve Brown/Russell Jones - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 8-20-93

FINISH: 8-24-93

METHOD: B

LOGGED BY: V.R.Harness/T.J. Coffey-SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-20-93	1302	1315	Technical oversight by Victor Harness - SAIC. Arrive at 1020 site.
			Drill rig is positioned over well. A 6 1/8-in. diameter tricone bit is
			threaded onto a drill rod and is located at the casing collar. Crew
			arrives.
	1315	1333	Crew steam cleans drill rig and down-hole equipment at wellsite.
			Tag bottom of well at 36.9 ft below ground surface (BGS). Casing
			top is flush with ground surface.
	1333	1337	Trip into well to 22.8 ft BGS. Returned fragments of white (N9)
			plastic (not PVC).
	1337	1342	Ream open interval from 22.8 ft to 42.0 ft BGS. Bottom of well
			apparently at approximately 38 ft BGS. Cuttings consist primarily
			of olive black (5Y 2/1), thinly laminated shale with a small amount
			of organic debris and light gray (N7) cement fragments.
	1342	1349	Clean out borehole.
	1349	1353	Trip out, rig down bit. Calculate a borehole volume to 21.6 ft BGS
			(base of surface casing) of 3.5 cubic ft, equivalent to 3.0 sacks of
			Type I Portland cement.
	1353	1426	Gathering grouting supplies. Screening cuttings composite (see
			well cuttings Field Screening/Disposal Sheet).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1020

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-20-93	1426	1436	Run 3,10.0-ft sections of 1.5-in. outside diameter (OD) PVC
(cont.)			tremie pipe into the borehole to approximately 28 ft BGS.
	1436	1445	Mix and pump-tremie 3 sacks (3.5 cubic ft) of neat, Type I
			Portland cement into the borehole.
	1445	1453	Pull out tremie pipe and clean up. Lay down rig mast for safety.
			Secure site and depart.
8-23-93	0817	0838	Technical oversight assumed by T.J. Coffey - SAIC. Arrive at
			1020 site. Tag cement level at 19.5 ft BGS. Awaiting crew.
	0838	0903	Crew arrives. Pioneer a road with dozer to get truck alongside
			drill rig.
	0903	0912	Crew burns lifting holes in casing.
	0912	0924	Crew performing pre-work equipment inspection.
	0924	0935	Raise rig mast. Rig up with a section of 9.5-in. OD, 8.25-in. inside
			diameter (ID), 24.5-ft long washover pipe; subadapter is 1.0 ft
			long making total length of 25.5 ft. Table height = 2.9 ft.
	0935	0954	Commence over wash with compressed air only. Over wash
			casing from ground surface to 22.6 ft BGS. Cuttings from 0.0 ft
			to 12.0 ft are moderate yellowish-brown (10YR 5/4), dry soil and
			subsoil with fragments of both weathered and fresh shale (the
			fresh shale fragments likely filled the casing annulus during
			completion zone drilling. The cuttings from 12.0 ft to 16.6 ft
			consist of pale brown (5 YR 5/2) to grayish-red (10R 4/2) subsoil
			with weathered shale fragments, grayish-red (5R 4/2) fresh
			shale, and very light gray (N8) cement fragments.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1020
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-23-93			Adding water at 17.0 ft BGS. Detect a foul odor at 21.6 ft BGS;
(cont.)			breathing zone analysis reads 0.0 ppm. Cuttings from 16.6 ft to
			22.6 ft BGS are in approximately equal amounts of medium dark
			gray (N4) and grayish-red (5R 4/2), thinly laminated shale; with
			minor very light gray (N8) cement fragments.
	0954	1003	At 22.6 ft BGS (1.0 ft below reported bottom of casing). Clean out
			borehole.
	1003	1010	Trip washover pipe out of the borehole. The surface casing has
			dropped down about 1 ft.
	1010	1020	Attach cable hook to casing and extract 21.5 ft of 6.5-in. OD steel
			casing: only the bottom 7.0 ft of the casing appears to have been
			entirely encased in cement. Tag the bottom of the borehole at 22.8
			ft BGS. Calculate a borehole volume to 4.0 ft BGS of 9.3 cubic ft,
			equivalent to 7.8 sacks of Type I Portland cement.
	1020	1042	Crew gathering grouting supplies. Screening cuttings composite
			(see Well Cuttings Field Screening/Disposal Sheet).
	1042	1111	Crew returns, inserts 2, 10.0-ft sections of 1.5-in. OD PVC tremie
			pipe into borehole to approximately 18.5 ft BGS. Mix and pump-
			tremie 9 sacks (10.6 cubic ft) of neat, Type I Portland cement into
			the borehole. Circulate 100% cement.
	1111	1125	Pull out tremie pipe. Clean up. Secure site and depart.
8-24-93	0809	0812	At 1020 site. Tag cement level at 3.8 ft BGS. Borehole is ready
			to be capped.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1020
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-24-93	0915	0920	Borehole 1020 is capped with clay soil.
(cont.)			
			P&A of 1020 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1026

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Randy Phillips/Russell Jones - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 9-15-93

FINISH: 9-21-93

METHOD: B

LOGGED BY: T.J. Coffey/V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-15-93	0821	0832	Technical oversight by T.J. Coffey - SAIC. Arrive at 1026 site.
			Drill rig (mast down) is positioned over the well. Inspect rig: rig
			appears to have been adequately steam cleaned. Tag bottom of
			hole at 70.4 ft below top of casing (BTOC) = 69.8 ft below ground
			surface (BGS). Water level is at approximately 45 ft BGS.
	0832	0851	Perform pre-work equipment inspection.
	0851	0917	Raise mast on drill rig, prepare to drill. Finish erecting flagging
			around location.
	0917	0920	Add drill rod to drill head. Thread a 6 1/8-in. diameter tricone bit
			to a 25-ft drill rod; length of bit = 0.5 ft, table height = 2.9 ft.
	0920	0929	Trip into well to 47.6 ft BGS. Encounter water at 43.0 ft BGS.
	0929	0933	Commence reaming open interval. Ream from 47.6 ft to 72.6 ft
			BGS. No resistance until 70.6 ft BGS: hard drilling, apparent
			bottom of the well. Cuttings from 47.6 ft to 72.6 ft BGS consist of:
			black (N1) organic debris and dark gray (N3), thinly laminated
			shale with occasional white (N9) crystalline calcite vein material.
	0933	0943	At 72.6 ft BGS. Add water, clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1026
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-15-93	0943	0957	Trip out. Tag bottom of hole at 72.8 ft BGS. Calculate a borehole
(cont.)			volume to 46.0 ft BGS (bottom of casing) of 5.5 cubic ft, equivalent
			to 4.6 sacks of Type I cement.
	0957	1000	Run 1.5-in. outside diameter (OD) PVC tremie pipe into the hole
			to 68.0 ft BGS.
	1000	1005	Mix 4 sacks (4.7 cubic ft) of neat, Type I Portland cement.
	1005	1026	Begins to rain extremely hard, everyone seeks shelter in trucks.
	1026	1029	Rain slacks. Mix one more sack (1.2 cubic ft) of cement.
	1029	1034	Pump-tremie a total of 5 sacks (5.9 cubic ft) of cement into the
			borehole.
	1034	1047	Pull out tremie pipe. Clean up. Secure site and depart.
9-16-93	0840	0912	Technical oversight assumed by Victor Harness - SAIC. Arrive at
			1026 site. Tag cement level at 35.5 ft BGS (9.5 ft above bottom
			of casing). Drill crew arrives.
	0912	0939	Waiting for rain to let up.
	0939	0942	Rain lets up. Thread a 6 1/8-in. diameter bit onto a drill rod.
	0942	0948	Trip into casing. Encounter cement at 35.5 ft BGS: Commence
			drilling. Add water at 38.0 ft BGS. Drill out cement to 48.5 ft BGS.
	0948	1001	At 48.5 ft BGS. Trip out tools.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1026
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-16-93	1001	1016	Begin rigging up 41.1 ft of 9.5-in. OD, 8.25-in. inside diameter (ID),
(cont.)			washover pipe in two pieces. Length of washover pipe is too long,
			will have to over wash with one section at a time.
	1016	1114	Lay washover pipe down. Break the two pieces of washover pipe
			apart.
	1114	1222	Break for lunch.
	1222	1239	Return to site. Rig up a 24.5-ft section of washover pipe on a 1.0-ft
			subadapter; total length = 25.5 ft, table height = 2.0 ft.
	1239	1252	Commence over wash. Over wash casing from 0.0 ft to 23.5 ft
			BGS.
	1252	1324	Break connection and rig up a second section of washover pipe,
			15.6 ft in length; total length = 41.1 ft, table height remains at 2.0 ft.
	1324	1329	Connection made, resume over wash. Over wash casing from
			23.5 ft to 40.0 ft BGS. Cuttings from 0.0 ft to 40.0 ft BGS consist
			of light yellowish-brown (2.5Y 6/4) to olive yellow (2.5Y 6/6),
			silty, cherty clay soil. Rad screen: beta/gamma = 60 cpm,
			alpha = 20 cpm. BZA over entire interval = 0.0 ppm.
	1329	1346	At 40.0 ft BGS, rotate washover pipe to loosen casing.
	1346	1408	Trip out and rig down washover pipe. All 41.1 ft out in one piece.
	1408	1437	Burn lifting holes in casing collar.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1026
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-16-93	1437	1509	Extract a total of 46.3 ft of 6.5-in. OD steel casing in two pieces. It
(cont.)			appears that only the bottom 5.0 ft of the casing was grouted.
	1509	1510	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter; length
			= 6.2 ft, table height = 2.0 ft.
	1510	1516	Commence reaming borehole. Ream from 0.0 ft to 28.2 ft BGS.
			Cuttings are moderate yellowish-brown (10YR 5/4), dry, stiff clay
			soil.
	1516	1521	At 28.2 ft BGS. Shut off drill rig: stopping for the day. Secure site
			and depart.
9-17-93	0757	0833	Arrive at 1026 site. Waiting on crew.
	0833	0844	Crew arrives, conducts pre-work equipment check.
	0844	0905	Resume reaming of borehole. Ream from 28.2 ft to 46.0 ft BGS.
			Cuttings this interval are the same as the previous interval.
	0905	0929	At 46.0 ft BGS. Clean out borehole. Trip out, and rig down bit and
			subadapter assembly. Lower mast on drill rig. Calculate a
			borehole volume to 4.0 ft BGS of 25.9 cubic ft, equivalent to 21.9
			sacks of Type I cement.
	0929	1108	Crew off site gathering grouting supplies.
	1108	1151	Crew returns, mix and pour (borehole is dry to 46.0 ft BGS)
			20 sacks (23.6 cubic ft) of neat, Type I Portland cement into the
			borehole. Liquid grout to 3.0 ft BGS. Clean up, secure site, and
			depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1026
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-20-93	0952	1023	Oversight resumed by Timothy Coffey - SAIC. Arrive at 1026 site.
			Tag cement level at 8.0 ft BGS. Calculate a borehole volume to
			4.0 ft BGS of 2.5 cubic ft, equivalent to 2.1 sacks of Type I cement.
	1023	1034	Crew arrives. Mix and pour 3 sacks (3.5 cubic ft) of neat, Type I
			Portland cement into the borehole. Liquid grout to 0.8 ft BGS.
	1034	1040	Clean up, secure site, and depart.
9-21-93	0729	0734	At 1026 site. Tag cement level at 1.8 ft BGS. Borehole is ready
			to be capped.
	1300	1330	Borehole is capped with clay soil.
			P&A of 1026 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 8

LOCATION: Bear Creek Road

DRILLERS: Hubert Hall/John Young-Highland Drilling Co.

HELPERS: Randy Phillips/Jeff Monger/Donald Key

DRILL: Ingersoll-Rand XL-750

DATE: START: 12-13-93

FINISH: 12-16-93

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-13-93	1008	1016	Arrive at 1047 site. Drill rig is positioned over well; crew is having difficulty starting rig.
	1016	1048	Drill rig finally starts. Part of crew departs for plastic sheeting and more timbers.
			Very little is known about well 1047. The well is an open interval well (of unknown depth), the borehole having been continuously cored. The well casing is 4.0-in. outside diameter (OD), 3.5-in. inside diameter (ID) steel casing with an approximate 0.1 ft stick-up. The water level is at 1.9 ft below ground surface (BGS). In attempting to tag bottom, a weighted tape stops at 4.8 ft BGS. Plan to try and pull out the casing first.
	1048	1122	Crew returns, continues shoring up drill rig supports with timbers. Oversight pushes through the obstruction at 4.8 ft BGS with a section of PVC tremie pipe. Well is plugged tight at approximately 9 ft BGS.
	1122	1146	Burn 2 lifting holes in the casing. Give site-specific health and safety briefing to Donald Key. S. Jones (HSEA) arrives onsite.
	1146	1208	Raise mast on drill rig. Attach chain to casing. Easily pull casing out of the ground, extract 5.0 ft of 4.0-in. OD steel casing. Plan to ream the borehole with a 6.5-in. diameter tricone bit (with approval from S. Jones). In anticipation of prolific water returns (due to

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-13-93			close proximity to Bear Creek), a cuttings pit is to be utilized at this
(cont.)			location. S. Jones departs.
	1208	1230	Cuttings pit excavated using dozer. Lower mast on drill rig.
	1230	1305	Break for lunch.
	1305	1353	Crew departs for silt fencing and reaming equipment.
	1353	1430	Crew returns. Install silt fencing along excavated soil piles
			upgradient of a Bear Creek tributary. Flag pit area.
	1430	1449	Raise mast. Rig up to 25-ft drilling rod. Thread a 6.5-in. diameter
			tricone bit onto the rod. Length of bit = 0.7 ft, table height = 2.5 ft.
			Background radiation at site: beta/gamma = 40-50 cpm, alpha =
			0 cpm.
	1449	1458	Push in a 5.0-ft section of 7.0-in. OD steel conductor casing.
			Casing encounters something hard at 4.2 ft BGS, stick-up = 0.8 ft.
	1458	1530	Trip into casing; return free water, then soil. Encounter top of
			bedrock at 4.2 ft BGS. Begin reaming borehole. Ream from 4.2 ft
			to 23.2 ft BGS. Breathing zone analysis (BZA) at 4.2 ft BGS = 0.0
			ppm (background). Cuttings from 0.0 to 4.2 ft BGS are: moderate
			yellowish-brown (10YR 5/4) to dark yellowish-brown (10YR 4/2),
			moist, clayey soil with black (N1) organic detritus (leaves, pine
			needles, animal hair, etc.). Drilling is slow, however, steady: hard
			rock. BZA at 6.0 ft BGS = 0.2 ppm. Encounter water at 7.5 ft BGS.
			Lower explosive limit (LEL) reading at collar (10.0 ft BGS): <1%
			(3.5 ppm: background). BZA at 14.5 ft BGS = 0.0 ppm. LEL at
			19.0 ft BGS: <1% (3.0 ppm: background). At 22.6 ft BGS, bit
			appears to drop slightly and return water changes color

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-13-93			momentarily. Cuttings from 4.2 ft to 23.2 ft BGS consist primarily
(cont.)			of grayish-brown (5YR 3/2) to brownish-black (5YR 2/1), massive,
			oolitic micrite with sparite blebs and minor oomicrite. Also present
			in interval: minor dusky yellow (5Y 6/4) to olive gray (5Y 3/2)
			laminated shale.
	1530	1532	At 23.2 ft BGS. Clean out borehole. Crew decides to stop at this
			point for the day.
	1532	1540	Trip out, secure carousel, and lower mast on drill rig. Tag bottom
			of reamed borehole (soft) at 21.8 ft BGS (1.4 ft of fill).
	1540	1604	Clean up, secure site, and depart.
12-14-93	0755	0847	Arrive at 1047 site. Tag bottom of borehole at 21.7 ft BGS (an
			additional 0.1 ft of fill has accumulated overnight. Part of crew
			arrives. Crew performs pre-work equipment checks; finds loose
			alternator belt on rig motor: tighten belt. Background radiation
			(beta/gamma) remains in the 40 to 60 cpm range (no alpha: wet).
			S. Jones (HSEA) onsite. Third man in crew arrives.
	0847	0851	Raise mast on drill rig. Table height = 2.8 ft.
	0851	0902	Trip into borehole. Circulate water, then cuttings/debris. Rotating
			the tools.
	0902	0910	At 22.9 ft BGS. Clean out borehole, hole is making water. Add drill
			rod. Turn on compressed air. Do not have air circulation to
			surface. Rotate tools. Turn on compressed air again; circulation
			at surface. Blow-outs begin to appear within an approximate 10-ft
			radius of the borehole, including under the rig support timbers.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-14-93	0910	0935	Shut off drill rig and discuss options with S. Jones. The Highland
(cont.)			Drilling Supervisor states that in order to continue drilling, a piece
			of casing should be set and cemented into rock. S. Jones concurs.
			Trip out, remove bit.
	0935	1100	Crew departs to gather casing and a larger bit.
	1100	1104	Crew returns and pulls out conductor casing.
	1104	1108	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter
			assembly; total length of assembly = 6.1 ft, table height = 2.9 ft.
	1108	1115	Commence reaming borehole. Ream from 0.0 ft to 6.3 ft BGS.
			BZA at 1.8 ft BGS = 0.0 ppm (background). Encounter top of rock
			at 4.5 ft BGS. BZA at 5.0 ft = 0.0 ppm. Encounter water at 6.0 ft
			BGS. Lithology of soil and rock cuttings same as 12-13-93.
	1115	1118	At 6.3 ft BGS. Clean out borehole. Tag bottom of borehole with
			bit and confirm 6.3 ft of 10 5/8-in. reamed hole.
	1118	1124	Trip out, rig down bit/subadapter assembly. Thread the 6.5-in. bit
			to a drill rod.
	1124	1130	Run a 7.0-ft section of 7.0-in. OD steel casing into the borehole,
			casing stick-up = 0.7 ft. Run the 6.5-in. bit inside the casing to
			center it in the reamed hole.
	1130	1135	Slowly pour approximately 1/4 sack (0.18 cubic ft) of Hole Plug™
			into annulus to help seal the casing. Hole Plug™ level to about
			6.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 5 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-14-93	1135	1150	Mix and pour 1 sack (1.2 cubic ft) of neat, Type I Portland cement
(cont.)			into annulus. One sack of cement calculated to fill approximately
			3.4 ft of annulus.
	1150	1158	Pull bit out of the casing. Secure carousel, and lower mast.
			Oversight departs as crew breaks for lunch.
12-15-93	0755	0813	Arrive at 1047 site. Tag annular cement level at 6.0 ft BGS; no
			cement remained in annulus, tag was made on hydrated Hole
			Plug™. Pour approximately 3/4 sack (0.52 cubic ft) of Hole Plug™
			into annulus to 4.0 ft BGS.
	0813	0825	Pour 3 1/2 sacks (175 lbs) of filter pack sand into annulus and pack
			down. Sand level at 2.0 ft BGS. Top off annulus to ground surface
			with cuttings and soil. Casing appears to be fairly solid.
	0825	0828	Crew performs pre-work equipment checks.
	0828	0833	Start drill rig, raise mast.
	0833	0843	Trip 6 1/2-in. diameter bit into casing. Pull bit out, casing comes
			out also; no cement seal. Use tools to push casing deeper than
			reamed depth (suspect fractured, cavatose, or weathered rock).
			New casing stick-up = 0.3 ft.
	0843	0908	Shut off drill rig. Plan to continue, but need to burn hole in casing
			to secure to rig. Call S. Jones (HSEA); he will bring a burn permit.
			Waiting.
	0908	0918	Burn permit onsite. Burn hole in casing and secure to rig leg with
			a chain. Give site-specific health and safety briefing to S. Jones.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 6 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-15-93	0918	0923	Trip into casing again. Encounter hard rock at bottom of casing;
(cont.)			have to drill through. Blow-outs appear again under rig timbers and
			within 10-ft radius of borehole.
	0923	0935	Shut off drill rig, discuss options. Plan to set a longer piece of
			casing. Also, will pack the annulus with filter sand; if that does not
			make an adequate seal, plan to cement the casing.
	0935	1005	Pull out conductor casing. Unthread 6 1/2-in. bit. Rig up the
			10 5/8-in. diameter tricone bit/subadapter assembly; length =
			6.1 ft, table height = 2.8 ft. Crew departs for longer section of
			casing. S. Jones departs.
	1005	1028	Crew returns with 18.2-ft long section of 8.5-in. OD steel casing.
			Trip into borehole and commence reaming. Ream borehole from
			6.5 ft to 17.0 ft BGS. Lithology of rock cuttings same as 12-13-93.
			BZA at 9.3 ft BGS = 0.2 ppm (background = 0.0 ppm). Noted odor
			of partially cured cement. Very ratty drilling from 10.0 ft to 10.5 ft
			BGS. BZA at 14.3 ft BGS = 0.0 ppm.
	1028	1040	At 17.0 ft BGS. Clean out borehole. Trip out. Debris is falling in
			behind bit; having to drill out of the hole. Blow-outs appear again
			under rig timbers.
	1040	1102	Bit is out of the hole, rig down. Connection breaks at top of mast
			forcing lower connection to be broken manually.
	1102	1128	Run casing into borehole. Casing stops with bottom at 5.0 ft BGS.
			Push casing in about another 1 ft with drill head. Disassemble the
			rig table and run casing again, this time to approximately 9 ft BGS.
			The reamed hole apparently has kicked off to one side. A weighted
			tape tags bottom of hole inside casing at 16.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 7 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-15-93	1128	1146	Shut off drill rig and discuss options. The latest reamed hole has
(cont.)			deflected off of the original borehole and chances of regaining the
			original hole are slim. Report status to S. Jones who directs to halt
			further P&A efforts and grout the borehole as is for the following
			reasons:
			1. Potential safety hazard from the possible continued
			undermining of the drill rig.
			2. Possible impact to Bear Creek.
			3. Cost of continuing P&A efforts with small likelihood of
			positive results.
	1146	1217	Break for lunch.
	1217	1240	Rig up clevis and pin to casing. Casing pulls out of borehole fairly
			easily. Tag bottom of borehole at 13.0 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 5.5 cubic ft, equivalent to
			4.7 sacks of Type I cement.
	1240	1305	Mix and pump-tremie (using the discharge hose of the pump as
			the tremie line) 7 sacks (8.3 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water (no cement). Also
			circulate water from one of the blow-outs under the rig timber
			supports.
	1305	1335	Clean up. Lower mast on the drill rig. Oversight departs, crew to
			remain and demobilize.
12-16-93	0833	0840	Arrive at 1047 site. Tag cement level at 3.8 ft BGS. Borehole is
			ready to be capped. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047/CO-1
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 8 of 8

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-16-93	1230	1235	Return to 1047 site and cap borehole with clay soil.
(cont.)			
			P&A of well 1047 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047A/CO-3
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 6

LOCATION: Bear Creek Road
DRILLER: Hubert Hall-Highland Drilling Co.
HELPERS: Randy Phillips/Jeff Monger - Highland
DRILL: Ingersoll-Rand XL-750

DATE: START: 12-16-93
FINISH: 12-22-93
METHOD: D
LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-16-93	0842	0907	Arrive at unnamed/unnumbered well located approximately mid-way between Well 1047 and Bear Creek Road, later found to be an old core hole numbered CO-3. HSEA has directed well to be designated 1047 A/CO-3. Tag bottom of well (tape stops on obstruction) at 9.3 ft below top of casing (BTOC) = 8.9 ft below ground surface (BGS). Well casing is steel, 4.0-in. outside diameter (OD), 3.5-in. inside diameter (ID). No information is known about this well: it is not listed in the data base (Y/TS-881/R1).
	0907	1004	Drill crew begins setting up site. Position drill rig over well. Timber the rig supports. Perform pre-work equipment checks.
	1004	1021	Steam clean the 10 5/8-in. diameter tricone bit/subadapter assembly, and casing.
	1021	1044	Continue setting up site. Background radiation at site: Alpha = 0 cpm, Beta/gamma = 40-50 cpm.
	1044	1052	Raise mast. Organic vapors at casing collar = 0.3 ppm (background = 0.0 ppm), lower explosive limit (LEL) = <1% (5.0 ppm, background = 4.7 ppm). Attached jawed clamp to casing wall and extract a total of 5.1 ft of 4.0-in. OD steel casing.
	1052	1100	Rig up a 25-ft long drill rod, thread on a 6 1/2-in. diameter tricone bit; length of bit = 0.7 ft, table height = 2.8 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047A/CO-3
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-16-93	1100	1127	Commence reaming with compressed air only. Ream from 0.0 ft
(cont.)			to 22.9 ft BGS. Breathing zone analysis (BZA) at 1.9 ft BGS =
			0.0 ppm (background). Cuttings from 0.0 ft to 2.7 ft BGS are:
			grayish-brown (5YR 3/2) to dusky brown (5YR 2/2), wet, loamy
			topsoil with abundant organic detritus. Encounter top of weathered
			rock (shale) at 4.9 ft BGS. Cuttings from 2.7 ft to 4.9 ft BGS are:
			dusky yellow (5Y 6/4) to yellowish-gray (5Y 7/2) moist, clayey
			subsoil with weathered shale fragments. LEL at 4.9 ft BGS = <1%
			(4.5 ppm). BZA at 6.9 ft BGS = 0.0 ppm. Encounter water at 7.9 ft
			BGS. Drilling becomes harder at 10.5 ft BGS. Cuttings from 4.9 ft
			to 10.5 ft BGS consist of greenish-gray (5GY 6/1) to pale olive
			(10Y 6/2), weathered and stained, thinly laminated shale. Cuttings
			from 10.5 ft to 14.9 ft are: brownish-gray (5YR 4/1) to light
			brownish-gray (5YR 6/1), massive, finely-crystalline micrite/
			intramicrite with occasional stylolites and rare amounts of white
			(N9) calcite vein material. BZA at 12.5 ft BGS = 0.0 ppm. LEL at
			13.5 ft BGS = <1% (3.5 ppm). BZA at 20.9 ft BGS = 0.2 ppm.
			Cuttings from 14.9 ft to 22.9 ft BGS are predominantly medium
			bluish-gray (5B 5/1), thinly laminated shale with minor amounts of
			micrite and blackish-red (5R 2/2) shale.
	1127	1140	At 22.9 ft BGS. Clean out borehole. Trip out, tag bottom of
			borehole at 22.8 ft BGS (0.1 ft of fill).
	1140	1223	Break for lunch.
	1223	1258	In anticipation of prolific water returns, crew excavates a cuttings
			pit. Install silt fencing and flagging around finished pit and excavated
			soil pile. Steam-clean a section of 7.0-in. OD steel casing.
	1258	1313	Push a 7.0-in. OD, 7.0-ft long section of casing into the ground.
			Casing stick-up = 0.9 ft. Table height = 2.7 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047A/CO-3
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-16-93	1313	1319	Trip into the casing with the 6 1/2-in. bit. Bit passes easily through
(cont.)			casing.
	1319	1323	At 23.0 ft BGS. Clean out borehole. Add drill rod.
	1323	1425	Continue reaming borehole with compressed air only. Ream from
			23.0 ft to 98.0 ft BGS. BZA readings from the following depths:
			28.0 ft = 0.0 ppm
			45.0 ft = 4.0 pm (background = 4.0 ppm)*
			55.5 ft = 4.0 ppm (background = 4.0 ppm)*
			66.9 ft = 3.5 ppm (background = 3.5 ppm)*
			78.5 ft = 4.0 ppm (background = 4.0 ppm)*
			90.0 ft = 3.5 ppm (background = 3.5 ppm)*
			* BZA measurements taken with OVA model M-108 because
			HNu battery died.
			Cuttings from 23.0 ft to 98.0 ft BGS generally consist of light
			brownish-gray (5YR 6/1) to brownish-black (5YR 2/1), massive,
			stylolitic micrite/intramicrite/oomicrite, containing blebs of sparite;
			and medium bluish-gray (5B 5/1), thinly laminated shale alternating
			in predominance (but each comprising about 50% of the interval).
	1425	1455	At 98.0 ft BGS. Clean out borehole. Trip out, tag bottom at
			98.0 ft BGS. Contact S. Jones (HSEA) who directs to grout the
			hole. Calculate a borehole volume to 4.0 ft BGS of 21.7 cubic ft,
			equivalent to 18.4 sacks of Type I cement.
	1455	1514	Run PVC tremie pipe into the borehole. Tremie pipe finds and
			drops into original borehole. Tremie pipe to 102.5 ft BGS. Report
			these findings to S. Jones. Steve reports that information he
			recently acquired about this well (and well 1047) places it in the

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047A/CO-3
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-16-93	1455	1514	same approximate generation as the M-series wells at Gum
(cont.)			Branch Road. In light of this new information (assuming depths
			to be all about the same), Steve directs to continue reaming to
			170 ft BGS.
	1514	1535	Remove tremie pipe from borehole . Plan to continue reaming
			tomorrow. Secure site and depart.
12-17-93	0750	0825	Oversight arrives at 1047A site. Waiting on crew.
	0825	0846	Crew arrives with 2 additional drill rods. Crew performs pre-work
			equipment checks and steam-cleans the additional drill rods.
	0846	0900	Start drill rig, warming up. Background radiation at well site:
			alpha = 0 cpm, beta/gamma = 40-70 cpm. Rig up a 25-ft drill rod
			and thread the 6 1/2-in. diameter bit onto it. Table height remains
			at 2.7 ft.
	0900	0933	Trip into the borehole. Blow the water out of the hole: no leaks
			around the conductor casing.
	0933	0936	At 98.0 ft BGS. Add drill rod.
	0936	1030	Commence reaming borehole with compressed air only. Ream
			from 98.0 ft to 170.0 ft BGS. BZA readings from the following
			depths:
			102.0 ft = 0.3 ppm (background = 0.0 ppm)
			115.0 ft = 0.0 ppm
			130.0 ft = 0.1 ppm
			142.0 ft = 0.4 ppm
			160.0 ft = 0.2 ppm

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047A/CO-3
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 5 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-17-93	0936	1030	Regular beta/gamma scans of the cuttings range 40-70 cpm.
(cont.)			Cuttings from 98.0 ft to 170.0 ft BGS consist predominantly of
			medium dark gray (N4) to dark greenish-gray (5G 4/1) and
			blackish-red (5R 2/2), thinly laminated shale; with minor light
			brownish-gray (5YR 4/1) to grayish-black (N2), massive, stylolitic
			micrite/intramicrite/oomicrite. Hard, slow drilling at 168.0 ft BGS
			(suspect bottom of well).
	1030	1117	At 170.0 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 169.1 ft BGS (0.9 ft of fill) and no evidence of
			additional original borehole. Report status to S. Jones (HSEA).
			Interrupt trip out to fuel drill rig.
	1117	1132	Run PVC tremie pipe into borehole to 158.0 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 38.0 cubic ft, equivalent to 32.2
			sacks of Type I cement. Crew has only 27 sacks of cement
			onsite.
	1132	1210	Break for lunch.
	1210	1343	Mix and pump-tremie 27 sacks (31.9 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water almost
			immediately, eventually circulate 100 % cement.
	1343	1430	Pull out tremie pipe. Clean up. Lower mast on drill rig. Secure
			site and depart.
12-20-93	0757	0825	Arrive at 1047A site. Tag cement level at 24.3 ft BGS. Water level
			= 4.5 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			4.7 cubic ft, equivalent to 4.0 sacks of Type I cement. Crew
			arrives.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1047A/CO-3
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 6 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-20-93	0825	0840	Run PVC tremie pipe into borehole to 19.0 ft BGS.
(cont.)			
	0840	0910	Mix and pump-tremie 5 sacks (5.9 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water then 100% cement.
	0910	0920	Pull out tremie pipe. Clean up. Oversight departs, crew will remain
			and demobilize the drill rig.
12-21-93	0754	0830	Arrive at 1047A site, crew has removed the 7.0-in. OD steel
			conductor casing. Tag cement level at 6.5 ft BGS. Water level =
			2.5 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 0.6 cubic
			ft, equivalent to 0.5 sacks of Type I cement. Crew arrives.
	0830	0853	Mix and pour 1 sack (1.2 cubic ft) of neat, Type I Portland cement
			into the borehole. Cement/water level to ground surface. Oversight
			departs, crew remains to finish cleaning up the site.
12-22-93	0742	0749	Arrive at 1047A site. Tag cement level at 1.8 ft BGS. Borehole is
			ready to be capped. Depart.
	0815	0830	Borehole is capped with clay soil.
			P&A of Well 1047A is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1081

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Oak Ridge Sludge Farm

DRILLER: Hubert Hall-Highland Drilling Co.

HELPERS: R. Phillips/J. Monger/M. Baker/D. Key

DRILL: Ingersoll-Rand T4W

DATE: START: 1-27-94

FINISH: 2-3-94

METHOD: A

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-27-94	1120	1132	Arrive at 1081 site. Crew is cutting off well casing and conductor casing. Protective posts have already been cut off. Well consists of 2.37-in. outside diameter (OD) stainless steel casing (casing stick-up = 2.3 ft, 1.3 ft above pad after crew cuts off 1.0 ft) within 4.75-in. OD steel conductor casing (stick-up = 1.7 ft, 0.5 ft after removal of 1.2 ft). The well casing has been pinched together from about 1.3 ft above top of pad to an unknown depth.
	1132	1215	Move drill rig onto site and position over well. Crew performs pre-work equipment inspection. Set-up site, prepare to drill. Background radiation at site: alpha = 0 cpm, beta/gamma = 30-50 cpm. Raise mast.
	1215	1235	Break for lunch.
	1235	1252	Oversight conducts site-specific health and safety briefing.
	1252	1254	Start drill rig. Crew attempts to pull out well casing; casing stretches, and does not appear to be loose enough to come out.
	1254	1259	Rig up with a 16.9-ft long section of 6.5-in. OD, 5.0-in. inside diameter (ID) washover pipe (length includes subadapter); table height = 3.0 ft. Crew plans to over wash casing with well pad in place. Thickness of pad = 0.3 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1081
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-27-94	1259	1335	Commence over wash with compressed air only. Over wash
(cont.)			casing from top of pad to 13.9 ft below ground surface (BGS).
			Cuttings from +0.3 ft to 0.3 ft BGS consist of pinkish-gray
			(5YR 8/1) concrete fragments and grayish-yellow (5Y 8/4) to
			grayish-orange (10YR 7/4) undifferentiated aggregate. After
			washover had penetrated the concrete pad, the pad lifted up
			slightly from the pressurized air. Breathing zone analysis (BZA) at
			1.5 ft BGS = 0.0 ppm (background). Noted ammonia-like, acrid
			odor. Advance rate decreases significantly at 1.8 ft BGS. Small
			blowouts form and ground begins pulsating with washover bit at
			3.0 ft BGS. BZA at 4.3 ft and 9.4 ft BGS both read 0.0 ppm.
			Cuttings from 0.3 ft to 13.9 ft BGS are exclusively medium dark
			gray (N4) cement fragments. Encounter water at 13.7 ft BGS.
	1335	1340	At 13.9 ft BGS. Trip out washover pipe. Conductor casing and well
			casing still at ground surface.
	1340	1347	Attach winch hook to well casing and attempt to pull out; hook pulls
			through well casing, casing doesn't budge.
	1347	1414	Break washover pipe loose from subadapter.
	1414	1518	Crew departs for more washover pipe.
	1518	1537	Crew returns with a 14.0-ft long section of washover pipe, make
			connection with that already in borehole. Total length of washover
			pipe (including subadapter) = 30.9 ft; table height = 2.9 ft.
	1537	1542	Continue over wash with compressed air only. Over wash casing
			from 13.9 ft to 28.0 ft BGS. Water encountered at 13.7 ft BGS
			continues in large volumes. Encounter what appears to be
			bentonite annular seal at approximately 25 ft BGS. BZA at 26.3 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1081
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-27-94			BGS = 0.0 ppm. Bit begins a rapid drop at 27.1 ft BGS (filter sand
(cont.)			pack). Cuttings from 13.9 ft to 28.0 ft BGS consist primarily of
			medium dark gray (N4) to grayish-black (N2) cement fragments,
			and clumps of very pale orange (10YR 8/2) bentonite (possibly
			bentonite pellets).
	1542	1550	At 28.0 ft BGS. Trip out washover pipe. Well casing comes out
			inside washover pipe.
	1550	1620	Rig down the washover pipe and remove the casing inside.
			Extract the following amounts of casing:
			A total of 4.0 ft of 4.75-in. OD steel conductor casing
			(includes pieces cut off prior to P&A activities).
			A total of 41.3 ft of 2.37-in. OD stainless-steel casing and
			screen (includes pieces cut off prior to P&A activities,
			total screen was 5.6-ft section that includes a 0.5-ft long
			drive-point).
			Note: The Subsurface Data Base (Y/TS-881/R1) reports the
			screen in well 1081 to be 10 ft in length (from 28.0 ft to 38.0 ft
			BGS).
	1620	1634	Clean up, secure site, and depart.
1-28-94	0755	0900	Arrive at 1081 site. Tag bottom of borehole at 24.4 ft BGS. Water
			level is 0.9 ft BGS. Scan washover pipe and extracted casing with
			the following results (beta/gamma):
			Washover pipe = 40 cpm (max), background = 30 cpm.
			Casing = 50 cpm (max), background = 30 cpm.
			Awaiting crew.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1081
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-28-94	0900	0926	Crew arrives, conducts pre-work equipment inspection. Rig up a
(cont.)			10 5/8-in. diameter tricone bit on a subadapter; total length = 6.2
			ft, table height remains at 2.9 ft. Awaiting the third helper. Crew
			plans to ream through the concrete well pad as they did when over
			washing the casing.
	0926	0931	D. Key (Highland) arrives. Oversight gives site-specific health
			and safety briefing to new helper.
	0931	1005	Commence reaming the borehole with compressed air only.
			Ream from the top of the pad to 40.3 ft BGS. Cuttings from +0.3 ft
			to 0.3 ft BGS are pinkish-gray (5YR 8/1) concrete fragments plus
			undifferentiated aggregate (concrete pad). Encounter water at
			0.9 ft BGS, water diminishes by 4.0 ft BGS. BZA at 3.0 ft BGS =
			0.0 ppm (background). Lower explosive limit (LEL) at 5.8 ft BGS
			= <1% (5.6 ppm). Encounter more water at 8.0 ft BGS. Also,
			estimated top of weathered rock at 8.0 ft BGS. Cuttings from 0.3 ft
			to 8.0 ft BGS are medium dark gray (N4) cement fragments and
			pale yellowish-orange (10YR 8/6), moist, clayey soil. BZA at
			11.0 ft BGS = 0.2 ppm. LEL at 18.6 ft BGS = <1% (3.5 ppm).
			Estimated top of fresh rock at 18.0 ft BGS. Cuttings from 8.0 ft to
			18.0 ft BGS are dark yellowish-orange (10YR 6/6) to moderate
			yellowish-brown (10YR 5/4), massive to laminated, weathered
			and stained micrite; and medium dark gray (N4) cement fragments.
			BZA at 23.6 ft BGS = 0.4 ppm. Encounter bentonite annular seal
			at approximately 25 ft BGS which diminishes circulation of
			cuttings. BZA at 31.2 ft BGS = 0.4 ppm. Encounter more water
			at 33.0 ft BGS. Hard drilling at 38.6 ft BGS: suspect bottom of
			well. Cuttings from 18.0 ft to 40.3 ft BGS consist predominantly
			of brownish-black (5YR 2/1), massive, peletal biomicrite (large
			bivalve fossile shell fragments visible); with bentonite clumps and

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1081
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 5 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-28-94			coatings on fragments; and very coarse filter pack sand (especially
(cont.)			below 27 ft BGS).
	1005	1016	At 40.3 ft BGS. Clean out borehole. Borehole is making a small
			amount of water.
	1016	1029	Trip out and rig down bit and subadapter assembly. Tag bottom
			of borehole at 39.6 ft BGS (0.7 ft of fill). Calculate a borehole
			volume to 4.0 ft BGS of 22.1 cubic ft, equivalent to 18.7 sacks of
			Type I cement.
	1029	1050	Pick up tools, secure drill rig, and lower mast. Move drill rig off-
			site.
	1050	1055	Run PVC tremie pipe into borehole to 38.0 ft BGS.
	1055	1144	Mix and pump-tremie 6 sacks (7.1 cubic ft) of neat, Type I Portland
			cement into the borehole.
	1144	1151	Clean up grouting equipment and remove 2 sections of tremie
			pipe (bottom of tremie pipe at 19.0 ft BGS).
	1151	1323	Crew departs for more cement and to take lunch break.
	1323	1351	Crew returns. Mix and pump-tremie an additional 7 sacks
			(8.3 cubic ft) of neat, Type I Portland cement into the borehole.
			Circulate water, then 100% cement. Used a total of 13 sacks
			(15.3 cubic ft) of cement.
	1351	1405	Pull out remaining tremie pipe. Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1081
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 6 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-31-94	0737	0848	Arrive at 1081 site. Tag cement level at 4.7 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 0.4 cubic ft, equivalent to 0.4 sacks of Type I cement. Awaiting crew.
	0848	0900	Crew arrives. Mix and pour 1 sack (1.2 cubic ft) of neat, Type I Portland cement into borehole, liquid cement level at approximately 2 ft BGS. Depart site.
2-1-94	0750	0758	Arrive at 1081 site. Tag cement level at 2.5 ft BGS. Borehole is ready to be capped. Depart site.
2-3-94	1220	1230	Highland crew caps remaining borehole with clay soil.
			P&A of well 1081 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1083

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 6

LOCATION: Oak Ridge Sludge Farm

DRILLER: Hubert Hall-Highland Drilling Co.

HELPERS: Randy Phillips/Jeff Monger-Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 2-2-94

FINISH: 2-4-94

METHOD: A

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-2-94	0955	1102	Arrive at 1083 site. Crew is onsite, preparing site for drill rig: moving a fence and clearing brush. Note: Well 1083 is located under a 500 kV powerline. Preliminary surveys have indicated a minimum distance of 42 ft from the projected top of the drill rig mast (in extended position) to the nearest wire. HSEA personnel have consulted with the appropriate authorities regarding safe drilling activities around power lines. In addition, an approved Operations Safety Work Permit has been issued for this site. S. Jones (HSEA) onsite, crew and oversight report experiencing mild static electrical discharges from vehicles parked beneath the power lines.
	1102	1120	S. Jones conducts site-specific health and safety briefing, emphasizing working beneath the powerline as the primary hazard at this location.
	1120	1146	Move drill rig onto site and position over the well. Well 1083 consists of 2.37-in. outside diameter (OD) stainless-steel casing (stick-up = 2.3 ft) within a section of 4.75-in. OD steel conductor casing (stick-up = 1.4 ft). The stainless-steel well casing is bent over at the top of the conductor casing (reason for P&A). Uncap well: organic vapors = 0.6 ppm (background = 0.0 ppm), lower explosive limit (LEL) = <1% (4.8 ppm).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1083
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-2-94	1146	1209	Cut off well casing flush with conductor casing (remove 0.8 ft), and
(cont.)			burn two holes in conductor casing. Casing stick-up remains at
			1.4 ft. Tag (hard) bottom of well at 59.4 ft below ground surface
			(BGS), water level is at approximately 39 ft BGS. Note: the
			Subsurface Data Base (Y/TS-881/R1) reports the total depth of
			well 1083 to be 58.5 ft. Background radiation at site: alpha =
			0 cpm, beta/gamma = 30-50 cpm.
	1209	1216	Install grounding rod. Raise mast: mast appears to be well clear
			of the overhead powerlines.
	1216	1257	Break for lunch.
	1257	1310	Rig up with a 30.9-ft long section (length includes subadapter) of
			6.5-in. OD, 5.0-in. inside diameter (ID) washover pipe; table
			height = 3.9 ft.
	1310	1402	Commence over wash with compressed air only. Over wash
			casing from 0.0 ft to 27.0 ft BGS. Breathing zone analysis (BZA)
			at 1.0 ft BGS = 0.4 ppm (background = 0.2 ppm). Ground begins
			pulsating slightly with bit at 2.0 ft BGS. Lower explosive limit (LEL)
			reading at 4.0 ft BGS = <1% (6.2 ppm). Dust has acrid, ammonia-
			like odor. BZA at 7.5 ft BGS = 0.2 ppm (background = 0.0 ppm).
			Dust abates slightly at 12.0 ft BGS. BZA at 16.6 ft BGS = 0.2 ppm.
			Cuttings from 0.0 ft to 17.0 ft BGS are exclusively dark gray (N3)
			to olive gray (5Y 4/1) cement fragments. A small amount of black
			(N1) to olive black (5Y 2/1), moist topsoil occurred in the top 1 ft
			of the interval. LEL reading at 19.0 ft BGS = <1% (6.0 ppm). BZA
			at 22.0 ft BGS = 0.2 ppm. Cuttings from 17.0 ft to 27.0 ft BGS
			continue to be almost exclusively dark gray (N3) to olive gray
			(5Y 4/1) cement fragments with rare fragments of dark yellowish-
			orange (10YR 6/6) to light brown (5YR 5/6) residual chert.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1083
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-2-94	1402	1430	At 27.0 ft BGS. Trip out washover pipe: casing is still at borehole
(cont.)			collar, and casing appears to be securely anchored at depth. Trip
			back into hole. Break connection. Add second length of washover
			pipe (24.7 ft long) to string; total length of tools = 55.6 ft (includes
			length of subadapter), table height remains at 3.9 ft.
	1430	1538	Continue over wash with compressed air only. Over wash casing
			from 27.0 ft to 51.5 ft BGS. BZA at 29.0 ft BGS = 0.3 ppm
			(background = 0.0 ppm). Begin to see bedrock fragments in the
			cuttings at 32.5 ft BGS (fresh rock, no weathered rock observed).
			Cuttings from 27.0 ft to 32.5 ft BGS continue to be almost
			exclusively dark gray (N3) to olive gray (5Y 4/1) cement fragments.
			Very slow drilling. BZA at 36.5 ft BGS = 0.2 ppm. Encounter water
			at 39.0 ft BGS, rate of advance increases. Bit drops rapidly from
			42.0 ft to 46.5 ft where water returns cease. Appear to be returning
			bentonite gel. Cuttings from 32.5 ft to 46.5 ft BGS consist of:
			brownish-black (5YR 2/1), massive micrite/intramicrite with minor
			cement fragments and rare metal bits and shavings. Fragments
			from the end of this interval are commonly coated with bentonite
			gel. Bit commenced a rapid advance again at 49.0 ft BGS and
			continued to end of interval. Cuttings from 46.5 ft to 51.5 ft BGS
			consist of: the continuation of the micrite/intramicrite fragments,
			plus very coarse sand (filter pack). Fragments continue to be
			bentonite-coated.
	1538	1638	At 51.5 ft BGS. Disconnect and rig down the washover pipe.
	1638	1700	Washover pipe is out of the hole and on the ground. No casing
			observed in borehole, there is approximately 53 ft of well casing
			and an unknown length of conductor casing all jammed into the
			lower, 30.9-ft length of washover pipe. Lower mast. Tag bottom

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1083
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-2-94			of borehole at 50.4 ft BGS (1.1 ft of fill). Clean up, secure site, and
(cont)			depart.
2-3-94	0821	0910	Arrive at 1083 site. Measure water level at 39.1 ft BGS. S. Jones
			(HSEA) onsite. Awaiting crew.
	0910	1004	Crew arrives, conducts pre-work equipment inspections. Warming
			up equipment. Raise mast.
	1004	1012	Rig up a 10 5/8-in. diameter tricone bit on a subadapter; length of
			assembly = 6.2 ft, table height = 3.6 ft.
	1012	1123	Commence reaming. Ream borehole from 0.0 ft to 57.0 ft BGS.
			BZA at 1.0 ft and 5.0 ft BGS are both 0.0 ppm (background). LEL
			reading at 9.6 ft BGS = <1% (5.1 ppm). Ratty drilling at 12.6 ft
			BGS: suspect bedrock surface. Cuttings from 0.0 ft to 12.6 ft BGS
			are: brownish-black (5YR 2/1), moist topsoil (in top 1.0 ft only),
			and predominantly light brown (5YR 5/6) to moderate brown (5YR
			4/4), moist, clayey soil (60%) with medium dark gray (N4) cement
			fragments (40%). Acrid, ammonia-like odor observed while over
			washing casing, again observed now while reaming borehole.
			BZA at 15.0 ft BGS = 0.4 ppm. LEL at 17.0 ft BGS = <1% (4.0
			ppm). Encounter slight moisture at approximately 21.0 ft BGS.
			BZA at 23.6 ft BGS = 0.0 ppm. BZA at 32.6 ft BGS is also 0.0 ppm.
			Encounter water at 39.1 ft BGS. BZA at 42.0 ft BGS = 0.2 ppm.
			Circulation is spotty beginning at 46.6 ft BGS: the bentonite seal
			is the reason. Cuttings from 12.6 ft to 46.6 ft BGS consist of
			brownish-black (5YR 2/1), massive micrite/intramicrite with
			occasional blebs of sparite and minor medium dark gray (N4)
			cement fragments. A few olive gray (5Y 4/1) micrite fragments
			returned from near the top of the interval represent the weathered
			component (small) of the bedrock. From near the end of the

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1083
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 5 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-3-94			interval, light greenish-gray (5GY 8/1) hydrated bentonite chips
(cont)			are observed (as well as a bentonite coating of many rock and
			cement fragments). Very hard drilling (bit stops often) beginning
			at 51.6 ft BGS: bit is now grinding on the stainless-steel casing
			that was left in the borehole after over washing. Have fairly prolific
			water returns at about 53 ft BGS. Drilling smooths out slightly at
			53.6 ft BGS. BZA at 56.0 ft BGS = 0.0 ppm. Bit advance stops at
			57.0 ft BGS possibly on remnant casing at the bottom of the hole
			(driller using 30,000 psi pull-down pressure). S. Jones (HSEA)
			and R. Phillips (Highland) terminate reaming operations at 57.0 ft
			BGS to prevent possible excessive wear or damage to the bit.
			Cuttings from 46.6 ft to 57.0 ft BGS consist predominantly of very
			coarse sand (filter pack), brownish-black (5YR 2/1) micrite/
			intramicrite, and shards of stainless steel. Bentonite gel continues
			to coat many of the fragments.
	1123	1136	At 57.0 ft BGS (1.5 ft short of the reported depth of the well, 2.4 ft
			short of the measured total depth of the well). Clean out borehole,
			hole is making water. Trip out, rig down bit/subadapter assembly.
			Tag bottom of borehole at 56.9 ft BGS (0.1 ft of fill). Calculate a
			borehole volume to 4.0 ft BGS of 32.6 cubic ft, equivalent to 27.6
			sacks of Type I cement.
	1136	1150	Secure rig. Lower mast. Move drill rig off-site.
	1150	1236	Break for lunch.
	1236	1242	Run PVC tremie pipe into borehole to 49.0 ft BGS.
	1242	1354	Mix and pump-tremie 20 sacks (23.6 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then
			approximately 10% cement. Headspace analysis (1323 hrs) of

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1083
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 6 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-3-94			0.0 ft to 57.0 ft BGS cuttings composite reads 18.0 ppm (exceeds
(cont)			action level). Sample jar resealed.
	1354	1433	Pull out tremie pipe (cement is coating tremie pipe nearly to ground
			surface). Clean up. Headspace analysis (1405 hrs) of re-sealed
			cuttings composite reads 11.6 ppm (still exceeds action levels for
			drill-site disposal). Notify K. Jago (HSEA) who directs to let
			cuttings aerate overnight and re-sample. Secure site and depart.
2-4-94	0727	0730	Arrive at 1083 site. Tag cement level at 3.9 ft BGS. Borehole is
			ready to be capped. Depart.
	1007	1155	Return to 1083 site. Re-sample cuttings on site as per K. Jago
			(HSEA). Headspace analysis reads: 14.0 ppm (Century-Foxboro
			OVA FID) and 5.2 ppm (HNu PID): still exceeding action level.
			Note: Crew eventually extracted 4.0 ft of 4.75-in. OD steel
			conductor casing and 14.6 ft (plus a 0.8 ft cut off from stick-up for
			a total of 15.4 ft) of 2.37-in. OD stainless-steel well casing.
			Approximately 38.4 ft of the stainless-steel casing remains jammed
			inside the washover pipe.
	1155	1210	Notify S. Jones (HSEA) of high headspace analyses. S. Jones
			onsite.
	1210	1228	S. Jones confers with K. Jago regarding continued high headspace
			analyses. K. Jago directs to drum cuttings. HSEA personnel to
			oversee drumming of cuttings. Depart site.
	1330	1345	Remaining borehole is capped with clay soil while disposing of
			cuttings.
			P&A of well 1083 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1097

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLER: Russell Jones - Highland Drilling Co.

HELPERS: Hubert Hall/Steve Brown - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 9-8-93

FINISH: 9-18-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-8-93	0838	0844	Technical oversight provided by V.R. Harness - SAIC. Arrive on site. Awaiting crew.
	0844	0900	Inspect site. Spill kit is stocked. Fire extinguisher handy. Rig has been steam-cleaned adequately. Background values of: 0.0 ppm organic vapors, 0 cpm alpha, 60 cpm beta/gamma radiation.
	0900	0903	Crew arrives. Rig up 10 5/8-in. diameter tricone roller bit. Bit and subadaptor assembly = 6.2 ft long. Table height = 3.4 ft.
	0903	0908	Commence drilling out well. By permission of HSEA, removal of casing and reaming of hole will be performed in one pass. Target depth will be approximately 46 ft below ground surface (BGS). Begin continuous monitoring with OVA 108. Initial breathing zone analysis (BZA) = 0.0 ppm; 0% lower explosive limit (LEL).
	0908	0926	Drill from 3.0 ft to 25.8 ft BGS. Regular breathing zone monitoring yield measurements of 0.0 ppm for entire interval. LEL also 0% for entire interval. Cuttings are dry; dust generated. Add a 25-ft drill rod.
	0926	0931	Resume drilling. Advance to 37.7 ft BGS. Hole still dry. Beginning to observe gray shale cuttings at surface. BZA = 0.0 ppm; 0% LEL.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1097
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-8-93	0931	0935	Advance to target depth of approximately 47 ft BGS.
(cont.)			BZA = 0.0 ppm; 0% LEL. Cleaning hole.
	0935	0956	Trip tools out. Tag bore at 47.6 ft BGS (firm). Bore is dry.
			Description of cuttings:
			0.0 to 37.0 ft BGS: light brown (7.5 YR 6/4) to pink (7.5 YR
			7/4) silty, cherty clay subsoil with white (N8) PVC cuttings.
			37.0 to 47.6 ft BGS: gray (N5) shale with white (N8) PVC
			cuttings.
	0956	1030	Drilling rig is demobilized from site for steam-cleaning. Secure
			site. Depart.
	1616	1626	Arrive at site. Awaiting grout delivery.
	1626	1632	Grout delivery arrives. Boring is dry with no danger of bridging so
			grout is poured directly into bore.
	1632	1640	Grout at surface. Used 1 cubic yd of neat, Type I Portland cement
			grout to plug hole. Secure site and depart.
9-9-93	0902	0913	Tag depth to plug at 5.0 ft BGS.
	1504	1521	Pour an additional (approximate) 1 cubic ft into bore. Grout at
			surface.
9-10-93	0809	0825	Tag depth to plug at 0.9 ft BGS. Bore is ready to cap.
9-18-93	1300	1315	Cap bore with clay soil.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1097
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
			P&A of well 1097 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 42-DC
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 4

LOCATION: Gum Branch Road Functional Area
DRILLER: Hubert Hall - Highland Drilling Co.
HELPERS: Russell Jones/Scott Gilbert - Highland
DRILL: Ingersoll-Rand T4W

DATE: START: 10-4-93
FINISH: 10-7-93
METHOD: B
LOGGED BY: Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-4-93	0829	0901	Technical oversight by Victor Harness - SAIC. Arrive at 42-DC
			site. Drill rig is positioned over the well. Tag bottom of well at
			103.6 ft below top of casing (BTOC) = 102.5 ft below ground
			surface (BGS). Subsurface data base (Y/TS-881) reports: total
			depth (TD) of 42-DC at 98.3 ft.
	0901	0913	Raise mast on drill rig. Rig inspected by oversight: adequately
			steam-cleaned. Crew performs pre-work equipment check.
			Background radiation scan of site: alpha = 20 cpm, beta/
			gamma = 60 cpm. Crew rigs up a 6 1/8-in. diameter tricone bit;
			length = 0.5 ft, table height = 3.5 ft.
	0913	0953	Trip into casing. Encounter water (grayish, rotten-smelling) at
			32.0 ft BGS: lower explosive limit (LEL) reading is ≤ background.
			Reaming open interval. Ream to 105.0 ft BGS. At 97.0 ft BGS,
			HNu measured 5.0 ppm in breathing zone (all readings to 97.0 ft
			BGS = 0.0 ppm).
	0953	0955	At 105.0 ft BGS, clean out borehole. While cleaning borehole,
			HNu reads 15.0 ppm momentarily. Stop, crew steps away from
			borehole until vapors dissipate.
	0955	1022	Trip out tools. Calculate a borehole volume to 28.5 ft BGS (bottom
			of casing) of 15.3 cubic ft = 0.6 cubic yds. Cement delivery
			scheduled for 1100 hrs. Description of cuttings from 0.0 ft to 105.0
			ft BGS as follows: medium dark gray (N4) thinly

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 42-DC
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-4-93			laminated shale and grayish-black (N2) to black (N1) organic
(cont.)			debris.
	1022	1106	Awaiting cement truck.
	1106	1146	Cement truck arrives. Crew runs 1.5-in. outside diameter (OD)
			PVC tremie pipe into borehole to 88.0 ft BGS. Pour cement from
			truck into tub, pump-tremie into borehole. Circulate water, circulate
			cement.
	1146	1326	Pull out tremie pipe. Clean up. Crew departs at 1207 hrs.
			Oversight remains to screen cuttings (see Well Cuttings Field
			Screening/Disposal Sheet). Oversight Departs.
10-5-93	0815	0913	Arrive at 42-DC site. Tag cement level at 15.4 ft BGS. Crew
			conducts pre-work equipment check. Reposition drill rig over well.
			Thread the 6 1/8-in. diameter tricone bit onto the drill rod. Table
			height = 3.3 ft.
	0913	0924	Trip into casing, begin drilling out cement at 15.4 ft BGS. Add
			water at 16.0 ft BGS. Continue drilling to 28.0 ft BGS. Grout
			returns pH = 11.0, B. Thedford (HSEA) approves discharge to
			ground surface.
	0924	0928	At 28.0 ft BGS. Clean out borehole.
	0928	0950	Trip out. Rig up with a 24.5-ft long section of 8.25-in. inside
			diameter (ID), 9.5-in. OD washover pipe on a 1.0-ft long subadapter;
			total length = 25.5 ft, table height remains at 3.3 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 42-DC
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-5-93	0950	1016	Commence over wash. Over wash casing from 0.0 ft to 22.5 ft
(cont.)			BGS. Begin to cut annular cement at 21.5 ft BGS. Breathing zone
			analyses = 0.0 ppm/0% LEL over entire interval.
	1016	1036	At 22.5 ft BGS. Clean out borehole. Trip out and rig down
			washover pipe. Casing is loose.
	1036	1059	Pull out casing. Extract a total of 27.0 ft of 6.5-in. OD steel casing
			(includes stick-up).
	1059	1104	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter; length
			of bit and sub = 6.2 ft, table height remains at 3.3 ft.
	1104	1109	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 28.0 ft BGS. Encounter annular cement at 25.0 ft
			BGS, top of weathered bedrock at 26.0 ft BGS.
	1109	1114	At 28.0 ft BGS. Clean out borehole.
	1114	1131	Trip out, rig down bit and subadapter assembly. Lower mast on drill
			rig and move rig offsite. Calculate a borehole volume to 4.0 ft BGS
			of 14.9 cubic ft, equivalent to 12.6 sacks of Type I cement.
	1131	1227	Break for lunch.
	1227	1331	Mix and pour 12 sacks (14.2 cubic ft) of neat, Type I Portland
			cement into the borehole. Fill to ground surface.
	1331	1430	Clean up. Secure site. Finish screening cuttings (see Well
			Cuttings Field Screening/Disposal Sheet). Oversight departs.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 42-DC
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-7-93	0815	0844	At 42-DC site. Tag cement level at 3.5 ft BGS. Cap borehole with
			clay soil. Depart.
			P&A of 42-DC is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-01
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 1

LOCATION: Exxon Nuclear Site

DRILLER: Randy Phillips - Highland Drilling Co.

HELPER: -NA-

DRILL: -NA-

DATE: START: 1-11-94

FINISH: 1-11-94

METHOD: -NA-

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-11-94			W. Thedford (HSEA) directs oversight and drill crew to search
			for evidence of well BC-01, the location of which had been
			staked by surveyors using the as-built coordinates reported in
			the Subsurface Data Base (Y/TS-881/RI).
	1346	1404	With a shovel, R. Phillips (Highland) digs approximately 0.3 ft
			deep within an approximate 2.5-ft radius of the location stake.
			He then digs to about 1.0 ft below the ground surface within a
			0.5-ft radius of the location stake. No boreholes or penetrations
			of any kind are observed in the excavation. The soil at this
			location does not exhibit any evidence of being disturbed.
	1404	1420	Report observations to W. Thedford. He is satisfied with the
			attempt to locate the well. The well is to be considered
			destroyed. Replace excavated soil.
			Note: No cuttings generated; no Field Screening/Disposal
			Sheet. No equipment used; no Decontamination Inspection
			Summary.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-06

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 4

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling

DRILL: Ingersoll-Rand T4W

DATE: START: 3-2-94

FINISH: 3-7-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-2-94	1106	1113	Arrive at BC-06 site. The drill rig is positioned over the well. Top of the casing is nearly even with the ground surface (only the cap sticks up above the ground). Able to pull casing up by hand. Crew performs pre-work equipment inspections.
	1113	1127	Start drill rig. Radiation scan of drill site: beta/gamma = 50-60 cpm. No alpha scan: ground is wet. Raise mast.
	1127	1152	Pull out casing by hand. Extract 60.1 ft of 1.25-in. inside diameter (ID), schedule 40 PVC casing slotted over entire length. Tag bottom of borehole at 351.7 ft below ground surface (BGS). Note: the Subsurface Data Base (Y/TS-881/R1) reports the total depth (TD) of BC-06 to be 352.5 ft. Weighted tape becomes hung on an obstruction. Tape breaks while withdrawing. Plan to grout the borehole from TD to a point 20 ft below the top of fresh rock (TOFR). The TOFR in BC-06 is 44.5 ft BGS. Calculate a borehole volume from TD to 64.5 ft BGS of 14.1 cubic ft, equivalent to 12.0 sacks of Type I cement.
	1152	1347	Crew departs for grouting supplies and lunch break.
	1347	1415	Crew returns; had considerable difficulty getting their trucks up to the site (slick, muddy roads). Run PVC tremie pipe into borehole to 198.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-2-94	1415	1438	Mix and pump-tremie 9 sacks (10.6 cubic ft) of neat, Type I
(cont'd)			Portland cement into the borehole. Circulate water. then 100%
			cement.
	1438	1516	Pull out tremie pipe. Clean up. Lower mast as safety precaution.
			Secure site and depart.
3-3-94	0910	0935	Arrive at BC-06 site. Tag cement level at 26.4 ft BGS. Crew
			performs pre-work equipment inspections. Start rig and allow to
			warm up. Alpha radiation scan of site = 0 cpm.
	0935	0947	Raise mast.
	0947	1005	Lower mast and reposition drill rig over well. Raise the mast again.
	1005	1011	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 2.7 ft. Add a drill rod.
	1011	1117	Commence reaming the borehole with compressed air only.
			Ream from 0.0 ft to 85.1 ft BGS. Note: Because no cement
			cuttings were observed in the returns, reaming continued
			approximately 20 ft beyond the original target depth. Breathing
			zone analysis (BZA) at 2.0 ft BGS = 0.0 ppm (background =
			0.0 ppm). Encounter moisture at 8.0 ft BGS. BZA at 10.0 ft BGS
			= 0.0 ppm. Encounter additional moisture at 12.0 ft BGS.
			Weathered bedrock encountered at 13.0 ft BGS. Cuttings from
			0.0 ft to 13.0 ft BGS are dark yellowish-orange (10YR 6/6) to
			moderate yellowish-brown (10YR 5/4), dry, stiff soil and subsoil
			with weathered shale fragments. Encounter water at 15.0 ft BGS,
			BZA = 0.0 pm. BZA at 27.1 ft BGS = 0.0 ppm. Encounter additional
			moisture at 27.5 ft BGS. BZA at 36.5 ft and 41.0 ft BGS both read
			0.0 pm. Top of fresh bedrock at 44.5 ft BGS. Cuttings from 13.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-3-94			to 44.5 ft BGS consist of: light olive gray (5Y 5/2) to moderate olive
(cont'd)			brown (5Y 4/4), stained and weathered, thinly laminated shale and
			relatively massive sandy shale; and brownish-black (5YR 2/1),
			massive oomicrite with pink calcite veining. Detect acrid, ammonia-
			like odor at 47.0 ft BGS, BZA = 0.0 ppm. BZA at 54.0 ft BGS =
			0.0 ppm. More moisture at 65.1 ft BGS. BZA at 70.1 ft and 77.1 ft
			BGS both read 0.0 ppm. Detect acrid, ammonia-like odor again at
			80.5 ft BGS. Cuttings from 44.5 ft to 85.1 ft BGS consist of: medium
			gray (N5) to medium bluish-gray (5B 5/1), thinly laminated shale;
			and medium dark gray (N4), veined micrite/oomicrite, and brownish-
			gray (5YR 4/1) to brownish-black (5YR 2/1), peletal micrite to
			intramicrite. Beta/gamma measurements of cuttings throughout
			the interval ranges from 60 to 90 cpm (background = 50 cpm).
	1117	1133	At 85.1 ft BGS. Clean out borehole. Trip out, rig down bit and
			subadaptor assembly. Tag bottom of borehole at 84.6 ft BGS
			(0.5 ft of fill at bottom). Calculate a borehole volume to 4.0 ft BGS
			of 16.5 cubic ft, equivalent to 14.0 sacks of Type I cement.
	1133	1146	Run PVC tremie pipe into borehole to 77.0 ft BGS.
	1146	1317	Crew departs for grouting supplies and lunch break.
	1317	1359	Crew returns. Mix and pump-tremie 12 sacks (14.2 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate 100%
			cement.
	1359	1415	Pull out tremie pipe and clean up the site.
	1415	1447	Lower mast and move rig off site for steam cleaning. Secure site
			and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-4-94	0744	0750	Arrive at BC-06 site. Tag cement level at 22.0 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 3.7 cubic ft, equivalent to
			3.1 sacks of Type I cement. Depart site.
	1252	1314	Return to BC-06 site. Mix and pour 3 sacks (3.5 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid grout to ground
			surface. Depart site.
3-7-94	0754	0757	Arrive at BC-06 site. Tag cement level at 1.5 ft BGS. Borehole is
			ready to be capped. Depart.
	0910	0916	Return to BC-06 site. Cap borehole with clay soil.
			P&A of well BC-06 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-07

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: J. Young/H. Hall/R. Phillips - Highland

HELPERS: J. Monger/D. Williford/B. Parks - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 3-4-94

FINISH: 3-9-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-4-94	1100	1125	Arrive at BC-07 site. Casing stick-up = 1.8 ft. Uncap well: organic
			vapors = 1.0 ppm (background = 1.0 ppm), lower explosive limit
			(LEL) reading = <1% (5.0 ppm). Measure water level at 42.6 ft
			below ground surface (BGS). Tag bottom of well: tape stops on
			an obstruction at 75.3 ft BGS. Note: The subsurface Data Base
			(Y/TS-881/R1) reports the total depth (TD) of BC-07 to be 351.9 ft.
			Crew performing pre-work equipment inspections.
	1125	1144	Move drill rig onto location, position over well. Break up concrete
			"pad" with sledge hammer: casing is loose enough to pull out by
			hand. Start drill rig and raise mast. Radiation scan of location
			(background): alpha = 0 cpm, beta/gamma = 50-70 cpm.
	1144	1155	Pull out casing by hand. Extract a total of 59.8 ft of 1.25-in. inside
			diameter (ID), schedule 40 PVC casing slotted over the entire
			length. Run weighted tape into borehole: obstruction at 75.3 ft BGS
			remains.
	1155	1200	Call to S. Jones (HSEA). Report status. Steve directs to attempt to
			push through obstruction with tremie pipe, if unable to: ream to
			approximately 5 ft below obstruction.
	1200	1232	Break for lunch.
	1232	1252	Run PVC tremie pipe into borehole to 198.0 ft BGS (tremie pipe
			easily punched through the obstruction). Plan to grout the bottom

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-4-94			of the well from TD to a point 20 ft below the top of fresh rock
(cont'd)			(TOFR). The TOFR in BC-07 is reported to be 33.0 ft BGS.
			Calculate a borehole volume from 351.9 ft to 53.0 ft BGS of
			14.7 cubic ft, equivalent to 12.4 sacks of Type I cement. Secure
			site and depart.
	1316	1430	Return to BC-07 site. Mix and pump-tremie 11 sacks (13.0 cubic
			ft) of neat, Type I Portland cement into the borehole. Circulate
			water.
	1430	1506	Pull out tremie pipe. Clean up. Lower mast as safety precaution.
			Secure site and depart.
3-7-94	0757	0856	Arrive at BC-07 site. Tag cement level at 5.5 ft BGS. That depth
			does not seem right, so run a section of tremie pipe into borehole:
			it feels solid. Wait on drill crew.
	0856	0923	Crew arrives, performs pre-work equipment inspections. Oversight
			gives site-specific health and safety briefing to new Highland
			Drilling Co. helper, Brad Parks. Start drill rig, raise mast.
	0923	0931	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter, total
			length = 2.8 ft, table height = 2.8 ft.
	0931	1031	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 55.3 ft BGS. Breathing zone analysis (BZA) at 4.0 ft
			BGS = 0.0 ppm (background = 0.0 ppm). Suspect top of weathered
			bedrock at 5.0 ft BGS. Cuttings from 0.0 ft to 5.0 ft BGS are dark
			yellowish-orange (10YR 6/6) to moderate yellowish-brown
			(10YR 5/4), dry, stiff subsoil containing fragments of weathered
			shale. Encounter a small amount of moisture at 6.0 ft BGS. LEL
			reading at 10.0 ft BGS = <1% (5.2 ppm). BZA at 18.0 ft and 29.5 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-7-94			BGS read 0.2 ppm and 0.0 ppm, respectively. LEL reading at
(cont'd)			20.0 ft BGS = <1% (3.0 ppm). Encounter additional moisture at:
			19.0 ft, 20.5 ft, and 24.0 ft BGS. Top of fresh bedrock at 38.5 ft
			BGS. Cuttings from 5.0 ft to 38.5 ft BGS consist predominantly of
			light olive gray (5Y 5/2) to olive gray (5Y 3/2), thinly laminated,
			stained and weathered shale with minor dark yellowish-brown
			(10YR 4/2), weathered micrite. BZA at 44.0 ft BGS = 0.0 ppm.
			Encounter water at 52.5 ft BGS. Cuttings from 38.5 ft to 55.3 ft
			BGS consist of: medium dark gray (N4) to medium bluish-gray (5B
			5/1), thinly laminated shale and dark gray (N3), massive to
			laminated micrite. Beta/gamma scan of cuttings from entire
			interval ranges 60-90 cpm (background = 60 cpm).
	1031	1052	At 55.3 ft BGS. Clean out borehole. Did not observe any cement
			in the cuttings: weighted tape must have stopped on an obstruction
			at 5.5 ft BGS. Call to K. Jago (HSEA), report status. Kevin directs
			to grout the borehole as is.
	1052	1127	Trip out, rig down bit/subadapter assembly. Tag bottom of
			borehole at 55.3 ft BGS. Calculate a borehole volume to 4.0 ft
			BGS of 10.5 cubic ft, equivalent to 8.9 sacks of Type I cement.
			Lower mast, move drill rig away from borehole.
	1127	1145	Run PVC tremie pipe into borehole at 49.0 ft BGS.
	1145	1210	Mix and pump-tremie 7 sacks (8.3 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water, then 100% cement.
	1210	1222	Pull out tremie pipe. Clean up. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-8-94	0748	0758	Arrive at BC-07 site. Tag cement level at 15.6 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 2.4 cubic ft, equivalent to
			2.0 sacks of Type I cement. Depart site.
	0854	0927	Return to BC-07 site. Mix and pour 3 sacks (3.5 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid grout to ground
			surface. Clean up. Depart site.
3-9-94	0810	0815	Arrive at BC-07 site. Tag cement level at 1.3 ft BGS. Borehole
			is ready to be capped. Depart site.
	1125	1130	Return to BC-07 site. Cap borehole with clay soil.
			P&A of well BC-07 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-09

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: H. Hall/R. Phillips - Highland Drilling Co.

HELPERS: J. Monger/D. Key - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-8-94

FINISH: 3-16-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-8-94	1000	1018	Arrive at BC-09 site. The drill rig is already on site, positioned over
			the well. The well casing has a stick-up of 0.6 ft. Uncap well:
			organic vapors = 0.0 ppm (background = 0.0 ppm), lower explosive
			limit (LEL) reading = <1% (<1 ppm). Measure water level at 3.7 ft
			below ground surface (BGS). Tag bottom (soft) at 316.4 ft BGS.
			Note: the Subsurface Data Base (Y/TS-881/R1) reports the total
			depth (TD) of BC-09 to be 343.0 ft. Radiation scan of location:
			alpha = 0 cpm, beta/gamma = 50-80 cpm. Crew is on site.
	1018	1035	Pull out casing by hand. Before all of casing can be extracted, it
			breaks (shatters) and the part that was still in the hole drops further
			down the hole. Run weighted tape into hole where it stops at
			25.3 ft BGS. Extract 35.6 ft of 1.25-in inside diameter (ID),
			schedule 40 PVC casing, slotted over entire length.
	1035	1040	Call to S. Jones (HSEA), report status. Steve approves pushing
			remaining casing to bottom of well and grouting in place. Plan to
			grout bottom of well to a point 20 ft below the top of fresh rock
			(TOFR). The TOFR in BC-09 is reported to be at 24.0 ft BGS.
	1040	1059	Run PVC tremie pipe into well to 199.0 ft BGS, push casing deeper
			into well. Calculate a borehole volume from 316.4 ft to 44.0 ft BGS
			of 13.4 cubic ft, equivalent to 11.3 sacks of Type I cement.
	1059	1126	Mix and pump-tremie 7 sacks (8.3 cubic ft) of neat, Type I Portland
			cement into the well. Circulate water, then 100% cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-8-94	1126	1151	Pulll out tremie pipe. Clean up. Secure site and depart
(cont'd)			
3-9-94	0825	0858	Arrive at BC-09 site. Tag cement level (solid) at 23.5 ft BGS. Crew performing pre-work equipment inspections.
	0858	0908	Start drill rig. Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total length = 2.8 ft, table height = 3.7 ft. Add a drill rod.
	0908	0930	Commence reaming borehole with compressed air only. Ream from 0.0 ft to 44.1 ft BGS. Breathing zone analysis (BZA) at 3.0 ft BGS = 0.0 ppm (background = 0.0 ppm). Encounter top of weathered bedrock at 11.5 ft BGS. Cuttings from 0.0 ft to 11.5 ft BGS are moderate brown (5YR 4/4) to dark yellowish-brown (10YR 4/2), moist, clayey soil containing weathered shale fragments Encounter a small amount of water at 14.0 ft BGS. BZA at 21.0 ft BGS = 0.2 ppm. Encounter the top of fresh bedrock at 24.1 ft BGS. Cuttings from 11.5 ft to 24.1 ft BGS consist of: pale yellowish-brown (10YR 6/2) to moderate yellowish-brown (10YR 5/4), weathered and stained shale. BZA at 31.5 ft and 39.1 ft BGS both read 0.0 ppm. Cuttings from 24 1 ft to 44 1 ft BGS are predominantly grayish-red (5R 4/2) and dark gray (N3), thinly laminated shale with minor amounts of dark greenish-gray (5GY 4/1), banded, bedded glauconitic siltstone and brownish-gray (5YR 4/1), bedded intramicrite. Beta/gamma scan of cuttings throughout interval range 70-80 cpm (background = 50 cpm).
	0930	0940	At 44.1 ft BGS. Clean out borehole. Trip out, rig down bit/ subadapter assembly. Tag bottom of hole at 43.4 ft BGS (0.7 ft of fill). Did not observe any cement in the cuttings: weighted tape must have stopped on an obstruction at 23.5 ft BGS. Calculate a

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-9-94			borehole volume to 4.0 ft BGS of 8 1 cubic ft. equivalent to
(cont'd)			6.8 sacks of Type I cement.
	0940	0945	Run PVC tremie pipe into the borehole to 39.0 ft BGS.
	0945	1018	Mix and pump-tremie 6 sacks (7.1 cubic ft) of neat, Type I cement
			into the borehole. Circulate 100% cement.
	1018	1036	Pull out tremie pipe. Clean up. Secure site and depart.
3-10-94	0920	0935	Arrive at BC-09 site. Tag cement level at 6.2 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 0.5 cubic ft, equivalent to
			0.4 sacks of Type I cement. Mix and pour 1 sack (1.2 cubic ft) of
			neat, Type I Portland cement into the borehole. Liquid cement to
			ground surface. Depart site.
3-11-94	1319	1323	Arrive at BC-09 site. Tag cement level at 2.5 ft BGS. Borehole is
			ready to be capped. Depart site.
3-16-94	0950	1000	Borehole is capped with clay soil.
			P&A of well BC-09 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-10

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-16-94

FINISH: 3-22-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-16-94	1053	1120	Arrive at BC-10 site, drill rig has just been moved to the location.
			Crew is setting up the site. Well consists of 1.25-in. inside
			diameter (ID) PVC casing (stick-up = 1.1 ft), slotted above the
			ground surface. Uncap well: organic vapors = 0.2 ppm (background
			= 0.2 ppm), lower explosive limit (LEL) reading = <1% (4.0 ppm).
			Measure water level at 3.8 ft below ground surface (BGS). Tag
			bottom of well (soft) at 344.6 ft BGS. Note: the Subsurface Data
			Base (Y/TS-881/R1) reports the total depth of well BC-10 to be
			349.0 ft. Radiation scan of location: alpha = 0 cpm, beta/gamma
			= 40–50 cpm.
	1120	1156	Break for lunch.
	1156	1208	Break up concrete pad. Casing is loose enough to pull out by
			hand. Extract a total of 60.0 ft of 1.25-in ID. schedule 40 PVC
			casing slotted over the bottom 15 ft and top approximately 5 ft.
			Plan to grout the bottom of the well to a point 20 ft below the top
			of fresh rock (TOFR). The TOFR in well BC-10 is reported to be
			45.0 ft BGS. Calculate a borehole volume from 344.6 ft to 65.0 ft
			BGS of 13.7 cubic ft, equivalent to 11.6 sacks of Type I cement.
	1208	1250	Run PVC tremie pipe into borehole. Tremie pipe encounters
			several obstructions, but eventually pushes through them. Tremie
			pipe to 198.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-16-94	1250	1333	Mix and pump-tremie 10 sacks (11.8 cubic ft) of neat, Type 1
(cont'd)			Portland cement into the borehole. Circulate water, then 100%
			cement. Also observe cement circulating from several small holes
			around the borehole collar. Oversight departs as crew cleans up.
3-17-94	0810	0900	Arrive at BC-10 site. Tag cement level at 29.0 ft BGS. Awaiting
			crew.
	0900	0918	Crew arrives pulling the steam cleaner (they had been delayed
			because of a flat tire on the steam cleaner). Crew conducts pre-
			work equipment inspections.
	0918	0927	Start drill rig. Rig up with a 6 1/8-in. diameter tricone bit on a
			subadapter; total length = 2.8 ft, table height = 3.3 ft.
	0927	1002	Commence reaming with compressed air only Ream from 0.0 ft
			to 66.5 ft BGS. Breathing zone analysis (BZA) at 2.8 ft BGS = 0.2
			ppm (background = 0.0 ppm). Encounter moisture at 7.5 ft BGS.
			Encounter weathered bedrock at 9.5 ft BGS, LEL reading at 9.5 ft
			BGS = <1% (3.8 ppm). Cuttings from 0.0 ft to 9.5 ft BGS are: light
			brown (5 YR 5/6) to dark yellowish-orange (10 YR 6/6), moist,
			clayey soil and subsoil with weathered shale fragments. Encounter
			water at 15.0 ft BGS. BZA = 0.1 ppm. BZA at 21.5 ft and 35.0 ft BGS
			read 0.0 ppm and 0.1 ppm, respectively. Encounter fresh bedrock
			at 45.0 ft BGS. Cuttings from 9.5 ft to 45.0 ft BGS consist
			predominantly of: blackish-red (5 R 2/2) to very dusky red
			(10 R 2/2), weathered, thinly laminated shale. BZA at 54.0 ft and
			64.0 ft BGS read 0.0 ppm and 0.2 ppm, respectively. Cuttings from
			45.0 ft to 66.5 ft BGS are: medium gray (N5) to medium dark gray
			(N4), thinly laminated shale with brownish-black (5 YR 2/1),
			massive micrite and dark greenish-gray (5 GY 4/1), bedded and
			banded, glauconitic siltstone. Beta/gamma scan of cuttings

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-10

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-17-94	0927	1002	ranges from 40 to 60 cpm for entire interval. No cement fragments
(cont'd)			observed, tape must have stopped on an obstruction at 29.0 ft BGS.
	1002	1017	At 66.5 ft BGS. Clean out borehole. Trip out, rig down bit/
			subadapter assembly. Tag bottom of borehole at 64.0 ft BGS
			(2.5 ft of fill in borehole). Calculate a borehole volume to 4.0 ft BGS
			of 12.3 cubic ft. equivalent to 10.4 sacks of Type I cement.
	1017	1025	Secure carousel, lower mast, and move drill rig away from bore-
			hole.
	1025	1036	Run PVC tremie pipe into borehole to 59.0 ft BGS.
	1036	1100	Mix and pump-tremie 7 sacks (8.3 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate 100% cement.
	1100	1124	Pull out tremie pipe and clean up. Secure site and depart.
3-18-94	0811	0911	Arrive at BC-10 site. Tag cement level at 16.0 ft BGS (water level
			= 11.0 ft BGS). Calculate a borehole volume to 4.0 ft BGS of 2.5
			cubic ft. equivalent to 2 1 sacks of Type I cement Crew arrives at
			site.
	0911	0933	Mix and pour 3 sacks (3.5 cubic ft) of neat, Type I Portland cement
			into the borehole, liquid grout to ground surface.
	0933	0943	Clean up. Depart site.
3-21-94	0922	0928	Arrive at BC-10 site. Tag cement level at 2.0 ft BGS. Borehole is
			ready to be capped. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-22-94	0900	0905	At BC-10 site. Cap borehole with clay soil.
			P&A of well BC-10 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-14

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLER: R. Phillips - Highland Drilling Co.

HELPERS: D. Williford, J. Gallaher, J. Monger, M. Nance, C. Guettner - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-21-94

FINISH: 3-23-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-21-94	0904	1021	Arrive at BC-14 site. Drill rig is on site, but not set up. Crew performs pre-work equipment inspections, positions drill rig over well, and begins setting up while waiting for delivery of stabilizer and bit. Well BC-14 consists of 4.5-in. outside diameter (OD) PVC casing with a 2.4-ft stick-up. Wellhead is uncapped and open. Measure water level at 2.2 ft below ground surface (BGS). Tag bottom of well (soft) at 100.3 ft BGS. NOTE: The Subsurface Data Base (Y/TS-881/R1) reports the total depth of BC-14 to be 102.0 ft. Radiation scan of location: alpha = 0 cpm, beta/gamma = 60-70 cpm. Cut off casing, new stick-up = 0.5 ft.
	1021	1039	Break up the concrete pad. Pull out the casing using the drill rig. Extract a total of 20.2 ft (includes portion cut off earlier) of 4.5-in. OD, schedule 40 PVC casing, slotted over entire length.
	1039	1112	D. Key (Highland) arrives with stabilizer. Off-load stabilizer and bit. Fuel drill rig. Oversight gives site-specific health and safety briefing to new Highland Drilling helper: J. Gallaher.
	1112	1147	Steam-clean bit/subadapter assembly, and rig up; total length = 4.3 ft, table height = 3.3 ft, bit = 8 3/4-in. diameter tricone bit.
	1147	1312	Break for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-21-94	1312	1453	Commence reaming with compressed air only. Ream from 0.0 ft
(cont'd)			to 103.0 ft BGS. Begin returning water immediately. Breathing
			zone analysis (BZA) at 2.0 ft BGS = 0.2 ppm (Background =
			0.2 ppm). Encounter weathered bedrock at 7.0 ft BGS. Cuttings
			from 0.0 ft to 7.0 ft BGS are: pale brown (5 YR 5/2) to light brown
			(5 YR 5/6), moist, clayey soil and subsoil. Encounter fresh
			bedrock at 11.0 ft BGS. Cuttings from 7.0 ft to11.0 ft BGS consist
			of: grayish-brown (5 YR 3/2) to moderate brown (5 YR 3/4),
			weathered shale with light brown (5 YR 5/6) staining. BZA at 13.0
			ft BGS = 0.2 ppm. Lower explosive limit (LEL) reading at 18.0 ft
			BGS = <1% (4.0 ppm). BZA at 22.0 ft BGS = 0.2 ppm. NOTE:
			Drilling interrupted from 1330 hrs to 1355 hrs due to thunderstorm.
			BZA at 36.0 ft, 47.0 ft, and 65.0 ft BGS all read 0.0 ppm (background
			= 0.0 ppm). Borehole is making considerable water by 76.0 ft BGS.
			BZA at 83.0 ft and 97.0 ft BGS both read 0.0 ppm. Cuttings from
			11.0 ft to 103.0 ft BGS consist of: dark gray (N3) to grayish-black
			(N2) and blackish-red (5 R 3/2), thinly laminated shale in
			approximately equal amounts throughout interval; with scattered
			occurrences of dark greenish-gray (5 GY 4/1), bedded and banded,
			glauconitic siltstone; and grayish-black (N2) to black (N1), massive
			micrite with white (N9) calcite veinlets. Fairly ratty drilling during
			the last 25 to 30 ft of the interval. Beta/gamma scan of the cuttings
			range 50 to 80 cpm throughout the entire interval. Borehole
			continues to make considerable water.
	1453	1500	At 103.0 ft BGS. Clean out borehole.
	1500	1512	Shut off drill rig, allow water to accumulate to facilitate borehole
			cleaning.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-21-94	1512	1530	Start drill rig. Clean borehole again. Trip out, rig down bit/
(cont'd)			subadapter assembly. Tag bottom of borehole at 100.5 ft BGS
			(2.5 ft of fill at the bottom of the borehole).
	1530	1544	Secure carousel, lower mast for safety reasons. Depart site.
3-22-94	0841	0850	Arrive at BC-14 site. Tag bottom of borehole again at 96.5 ft BGS
			(an additional 4.0 ft of fill accumulated overnight), the top 2 ft of
			which was very "soupy." Plan to grout the borehole without
			additional cleaning.
	0850	0934	Part of crew departs to get the grout plant.
	0934	1004	Run PVC tremie pipe into borehole to 97.0 ft BGS (the last 2 to 3 ft
			of tremie is in soupy fill). Calculate a borehole volume to 4.0 ft BGS
			of 38.6 cubic ft, equivalent to 32.7 sacks of Type I cement.
			Oversight gives site-specific health and safety briefing to new
			Highland Drilling Co. helper: C. Guettner.
	1004	1148	Mix and pump-tremie (with grout plant) 24 sacks (28.3 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate cloudy
			water.
	1148	1225	Pull out tremie pipe. Clean up.
	1225	1350	Break for lunch. Crew departs for more cement and water.
			Oversight gives site-specific health and safety briefing to yet
			another new Highland Drilling Co. helper: M. Nance.
	1350	1451	Crew returns with grouting supplies. Secure carousel, lower mast,
			and move drill rig off-site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-22-94	1451	1506	Run PVC tremie pipe into borehole to 18.0 ft BGS, the bottom of the
(cont'd)			tremie encounters thickening cement.
	1506	1536	Mix and pump-tremie (with grout plant) an additional 8 sacks
			(9.4 cubic ft) of neat, Type 1 Portland cement into the borehole
			(used a total of 32 sacks, 37.8 cubic ft of cement). Circulate water,
			then sediment-laden "soupy" water, and finally 100% cement.
			Anticipate good cement plug down to 97.0 ft BGS.
	1536	1554	Pull out tremie pipe. Clean up. Secure site and depart.
3-23-94	0821	0830	Arrive at BC-14 site. Tag cement level at 2.1 ft BGS. Borehole is
			ready to be capped. Depart.
	0854	0900	Return to BC-14 site. Cap borehole with clay soil.
			P&A of well BC-14 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-15

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-18-94

FINISH: 3-22-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-18-94	0954	1030	Arrive at BC-15 site. Drill rig is on site, positioned over well. Crew
			performs pre-work equipment inspections. Set up site. Well
			consists of capped, 1.0-in. inside diameter (ID) PVC casing (stick-
			up = 0.6 ft). Uncap well: organic vapors = 0.1 ppm (background
			= 0.0 ppm), lower explosive limit (LEL) reading = <1% (4.0 ppm).
			Radiation scan of location (background): alpha = 0 cpm, beta/
			gamma = 50-80 cpm. Measure water level at 5.9 ft below ground
			surface (BGS). Tag bottom (soft) at 55.4 ft BGS. Note. The
			Subsurface Data Base (Y/TS-881/R1) reports the total depth of
			well BC-15 to be 100.2 ft.
	1030	1035	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 2.9 ft.
	1035	1042	Break up concrete pad and pull out casing by hand. Extract a total
			of 51.1 ft of 1.0-in. ID PVC, thin-walled (probably schedule 80)
			casing, slotted over the bottom 10 ft.
	1042	1148	Commence reaming with compressed air only. Ream from 0.0 ft
			to 102.4 ft BGS. Breathing zone analysis (BZA) at 2.8 ft BGS = 0.0
			ppm (background). Encounter moisture at 4.0 BGS. Encounter
			weathered bedrock at 7.5 ft BGS. Cuttings from 0.0 ft to 7.5 ft BGS
			consist of moderate yellowish-brown (10 YR 5/4), to dark yellowish-
			brown (10 YR 4/2) moist, clayey soil. LEL reading at 11.9 ft BGS
			= <1% (4.2 ppm). Encounter water at 12.5 ft BGS. Top of fresh
			rock (TOFR) at 13.4 ft BGS. Cuttings from 7.5 ft to 13.4 ft BGS are:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-15
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-18-94	1042	1148	grayish-brown (5 YR 3/2) to very dusky red (10 R 2/2), weathered,
(cont'd)	(cont'd)	(cont'd)	micaceous shale. Dust abates at 17.0 ft BGS with additional
			moisture. BZA at 19.9 ft and 29.9 ft BGS both read 0.0 ppm.
			Encounter more moisture at 31.4 ft BGS. BZA at 43.9 ft BGS = 0.0
			ppm. Begin to see PVC fragments in the cuttings below
			approximately 50 ft BGS. BZA at 54.9 ft BGS = 0.0 ppm.
			Encounter additional moisture at 57.9 ft and 60.9 ft BGS. BZA at
			69.5 ft and 89.9 ft BGS both read 0.0 ppm. Cuttings from 13.4 to
			102.4 ft BGS consist of: grayish-red (5 R 4/2) to very dusky red
			(10R 2/2) micaceous shale, and dark greenish-gray (5 GY 4/1),
			laminated, banded, sandy glauconitic siltstone, plus medium light
			gray (N6) PVC fragments. PVC cuttings continue nearly to end of
			the interval: suspect slotted casing (screen) to the total depth of
			the well). Beta/gamma scan of cuttings range 60 to 90 cpm over
			the entire interval
	1148	1205	At 102.4 BGS. Clean out borehole. Trip out, rig down bit/
			subadapter assembly. Can hear debris falling into borehole. Tag
			bottom of borehole at 88.0 ft BGS (14.4 ft of fill). Additional
			cleaning may continue to bring more debris into borehole. Plan to
			grout borehole as is. Calculate a borehole volume to 4.0 ft BGS
			of 17.2 cubic ft, equivalent to 14.6 sacks of Type I cement.
	1205	1210	Run PVC tremie pipe into borehole to 86.0 ft BGS.
	1210	1255	Break for lunch.
	1255	1359	Mix and pump-tremie 12 sacks (14.2 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate muddy water, then
			100% cement.
	1359	1422	Pull out tremie pipe and clean up. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-15

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-21-94	0915	0922	Arrive at BC-15 site. Tag cement level at 3.6 ft BGS. Borehole is
(cont'd)			ready to be capped. Depart.
3-22-94	0850	0855	Arrive at BC-15 site. Cap borehole with clay soil.
			P&A of well BC-15 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-17
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-18-94

FINISH: 4-20-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-18-94	0840	0856	Arrive at BC-17 site along with drill crew. Drill rig is onsite,
			positioned over well. Well consists of uncapped, 1.25-in. inside
			diameter (ID) PVC casing (stick-up = 1.0 ft). Measure water level
			at 13.5 ft below ground surface (BGS). Tag bottom of well at
			84.5 ft BGS. NOTE: The Subsurface Data Base (Y/TS-881/R1)
			reports the total depth of BC-17 to be 100.4 ft. Crew conducts pre-
			work equipment inspections. Background radiation scan of location:
			alpha = 0 cpm, beta/gamma = 60-90 cpm. Start drill rig, raise mast.
	0856	0901	Break up concrete "pad," and pull out casing by hand. Extract a
			total of 20.1 ft of 1.25-in. ID, schedule 40 PVC casing, slotted over
			the bottom 15.0 ft.
	0901	0910	Lower mast and reposition drill rig over the well.
	0910	0915	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 2.3 ft.
	0915	1024	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 102.5 ft BGS. Breathing zone analysis (BZA) at 2.8 ft
			BGS = 0.0 ppm (background). Encounter weathered rock at 9.5 ft
			BGS. Cuttings from 0.0 ft to 9.5 ft BGS consist of: moderate
			yellowish-brown (10YR 5/4) to grayish-brown (5YR 3/2), dry, stiff
			soil with extremely weathered shale fragments. Encounter moisture
			at 11.5 ft BGS. BZA at 12.5 ft BGS = 0.0 ppm. Fresh bedrock at

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-17
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-18-94			14.0 ft BGS. Cuttings from 9.5 ft to 14.0 ft BGS are: pale yellowish
(cont'd)			brown (10YR 6/2) to grayish-brown (5YR 3/2), weathered and
			stained shale. Encounter water at 16.0 ft BGS. BZA at 17.5 ft
			BGS = 0.0 ppm. Lower explosive limit (LEL) reading at 20.5 ft
			BGS = <1% (3.0 ppm). Encounter water with a sewage-like odor
			at 22.5 ft BGS: BZA = 0.0 ppm. BZA at 28.5 ft BGS = 0.0 ppm. More
			water at 31.0 ft BGS. LEL reading at 39.5 ft BGS = <1% (2.8 ppm).
			BZA at 46.5 ft and at 64.0 ft BGS both read 0.0 ppm. LEL reading
			at 71.5 ft BGS = <1% (3.2 ppm). BZA at 96.5 ft BGS = 0.0 ppm.
			Cuttings from 14.0 ft to 102.5 ft BGS consist of approximately
			equal amounts of medium dark gray (N4) to dark gray (N3) and
			blackish-red (5R 2/2), thinly laminated shale; plus a minor amount
			of grayish-black (N2) to black (N1), massive micrite with occasional
			pinkish-gray (5YR 8/1) calcite veining (observed near the top of the
			interval only). Beta/gamma scan of the cuttings range from 70 to
			100 cpm for the entire interval.
	1024	1044	At 102.5 ft BGS. Clean out the borehole. Trip out, rig down bit/
			subadapter assembly. Tag bottom of borehole at 100.5 ft BGS
			(2.0 ft of fill). Calculate a borehole volume to 4.0 ft BGS of
			19.7 cubic ft, equivalent to 16.7 sacks of Type I cement.
	1044	1050	Run PVC tremie into borehole to 97.0 ft BGS.
	1050	1116	Mix and pump-tremie 13 sacks (15.3 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate 100% cement.
	1116	1132	Pull out tremie pipe and clean up. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-17
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-19-94	0757	0803	Arrive at BC-17 site. Tag cement level at 14.0 ft BGS. Water level
			is at 9.0 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			2.1 cubic ft, equivalent to 1.7 sacks of Type I cement. Depart.
	1217	1232	Return to BC-17 site. Mix and pour 2 sacks (2.4 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid grout to ground
			surface. Depart site.
4-20-94	0803	0806	Arrive at BC-17 site. Tag cement level at 2.3 ft BGS. Borehole is
			ready to be capped. Depart.
	1456	1501	Return to BC-17 site and cap borehole with clay soil.
			P&A of well BC-17 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-18
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 4

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-19-94

FINISH: 4-22-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-19-94	0807	0830	Arrive at BC-18 site. Drill rig is positioned over the well. Well consists of capped, 1.25-in. inside diameter (ID) PVC casing (stick-up = 1.3 ft). Uncap well: organic vapors = 0.0 ppm (background), lower explosive limit (LEL) reading <1% (immediately jumps to 10.0 ppm, then steady at 4.0 ppm). Measure water level at 7.5 ft below ground surface (BGS). Tag bottom of well at 97.8 ft BGS. NOTE: The Subsurface Data Base (Y/TS-881/R1) reports the total depth of BC-18 to be 100.2 ft. Background radiation survey of location: alpha = 0 cpm, beta/gamma = 50-70 cpm.
	0830	0858	Crew arrives, conducts pre-work equipment inspections. Start drill rig.
	0858	0905	Pull out casing using a chain and the drill rig. Extract a total of 60.1 ft of 1.25-in. ID, schedule 40 PVC casing, slotted over the bottom 51.5 ft.
	0905	0911	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total length = 2.8 ft, table height = 2.4 ft.
	0911	0938	Commence reaming with compressed air only. Ream from 0.0 ft to 50.4 ft BGS. Breathing zone analysis (BZA) at 1.0 ft BGS = 0.0 ppm (background). Top of weathered rock at 5.0 ft BGS. Cuttings from 0.0 ft to 5.0 ft BGS are dark yellowish-brown (10YR 4/2) to grayish-brown (5YR 3/2), moist, clayey soil/subsoil with

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-18
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-19-94			fragments. LEL reading at 8.4 ft BGS = <1% (3.5 ppm). Encounter
(cont.)			moisture at 10.2 ft BGS; additional moisture at 12.4 ft BGS. Fresh
			rock at 16.0 ft BGS. Cuttings from 5.0 ft to 16.0 ft BGS consist of
			moderate brown (5YR 3/4) to dusky brown (5YR 2/2), weathered
			and stained thinly laminated shale, and calcareous siltstone.
			Encounter water at 18.4 ft BGS. BZA at 20.0 ft BGS = 0.0 ppm.
			More water at 27.4 ft BGS. LEL reading at 28.4 ft BGS <1% (2.9
			ppm). BZA at 32.4 ft BGS = 0.0 ppm. Encounter yet more water
			at 35.0 ft and at 36.4 ft BGS (the groundwater is causing the
			cuttings to agglomerate making it difficult to keep the borehole
			entirely clean). BZA at 43.4 ft BGS = 0.0 ppm. Encounter more
			water at 46.4 ft BGS. Cuttings from 16.0 ft to 50.4 ft BGS are:
			blackish-red (5YR 2/2) and dark gray (N3) to grayish-black (N2),
			thinly laminated, micaceous shale; with minor olive black (5Y 2/1)
			to grayish-black (N2), massive micrite. Beta/gamma scan of
			cuttings range from 50 to 70 cpm for the entire interval.
	0938	1020	At 50.4 ft BGS. The rotation motor on the drill head has developed
			a hydraulic leak, and is beginning to leak quite a bit of fluid onto the
			rig table. Excess fluid being wiped up with oil-absorbing cloths.
			Estimate total hydraulic fluid lost to be less than 1 pint. Will trip out
			of the borehole and make a closer inspection of the motor. Having
			difficulty tripping out; nine-spool controls are sluggish. Unable to
			complete trip-out; forced to leave bit/subadapter assembly and
			one drill rod in the hole, secured at the collar of the borehole.
	1020	1130	Lower mast. Inspect rotation motor and nine-spool hydraulics;
			leak is in rotation motor connections and is due to a worn "O" ring.
			Sluggish nine-spool hydraulic controls due to faulty pressure relief
			valve. The worn "O" ring can be easily replaced, however, a new
			pressure relief valve has to be ordered. Will be unable to continue

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-18
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-19-94			reaming borehole today. W. Thedford (HSEA) is onsite and aware
(cont.)			of the leak. Secure site and depart.
4-20-94	1100	1140	Arrive at BC-18 site. Crew onsite. Replacement parts arrive at
			site. Crew replaces worn "O" ring and pressure relief valve;
			conducts pre-work equipment inspections.
	1140	1158	Start drill rig, raise mast. Replacement components appear to be
			working properly. Top-off hydraulic tank with 5 gals. of hydraulic
			fluid.
	1158	1203	Add a drill rod to rig head and connect to tools left in borehole.
	1203	1230	Break for lunch.
	1230	1239	Start drill rig, trip into borehole (table height = 2.3 ft). Water level
			in borehole is at 27.0 ft BGS. Begin to see small blowouts in
			ground surface, in an approximate 5-ft radius around borehole
			collar.
	1239	1321	At 50.4 ft BGS. Commence reaming borehole with compressed air
			only. Ream from 50.4 ft to 102.3 ft BGS. Standing water blown out
			of borehole has a sewage-like odor: BZA = 0.0 ppm (background).
			LEL reading at 57.3 ft BGS <1% (5.4 ppm). BZA at 67.3 ft
			BGS = 0.0 ppm. Encounter moisture at 68.3 ft and at 75.0 ft BGS.
			BZA at 80.0 ft BGS = 0.0 ppm. LEL reading at 85.0 ft BGS <1%
			(8.0 ppm). BZA at 92.3 ft BGS = 0.0 ppm. Bottom of the well at
			100.3 ft BGS. Cuttings from 50.4 ft to 102.3 ft BGS consist
			predominantly of dark gray (N3) to medium dark gray (N4), thinly
			laminated shale with lessor blackish-red (5R 2/2), thinly laminated
			shale. Beta/gamma scan of the cuttings range from 70 to 100 cpm
			for the entire interval.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-18
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-20-94	1321	1351	At 102.3 ft BGS. Clean out borehole. Trip out, rig down bit/
(cont'd)			subadapter assembly. Tag bottom of borehole: unable to get tape
			beyond 12 ft BGS due to heavy mud/cuttings build-up on borehole
			walls.
	1351	1440	Run PVC tremie into borehole to 97.0 ft BGS (tremie pipe pushed
			through mud and cuttings). Tag bottom of borehole through
			tremie pipe at 101.0 ft BGS (1.3 ft of fill). Calculate a borehole
			volume to 4.0 ft BGS of 19.9 cubic ft, equivalent to 16.8 sacks of
			Type I cement.
	1400	1417	Mix and pump-tremie 8 sacks (9.4 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate 100% cement. Used only
			about 1/2 of calculated cement due to large volume of mud/
			cuttings clinging to borehole walls.
	1417	1442	Pull out tremie pipe and clean up. Secure site and depart.
4-21-94	0800	0808	Arrive at BC-18 site. Tag cement level at 10.7 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 1.4 cubic ft, equivalent to 1.2
			sacks of Type I cement. Depart site.
	1104	1114	Return to BC-18 site. Mix and pour 2 sacks (2.4 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid grout to ground
			surface. Depart.
4-22-94	0810	0814	Arrive at BC-18 site. Tag cement level at 1.5 ft BGS. Borehole is
			ready to be capped. Depart.
	0839	0844	Return to BC-18 site. Cap borehole with clay soil.
			P&A of well BC-18 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-19

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLERS: H. Hall/R. Phillips - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-23-94

FINISH: 3-31-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-23-94	0938	0955	Arrive at BC-19 site. Crew conducts pre-work equipment
			inspections, then begins setting up the site. Well BC-19 consists
			of capped 1.25-in. PVC casing (stick-up = 1.1 ft), which is also
			slotted above the ground surface. Uncap well: organic vapors =
			0.0 ppm (background = 0.0 ppm), lower explosive limit (LEL)
			reading = <1% (4.0 ppm). Measure water level at 1.6 ft below
			ground surface (BGS). Tag bottom of well (soft) at 134.4 ft BGS.
			NOTE: The Subsurface Data Base (Y/TS-881/R1) reports the
			total depth of BC-19 to be 151.8 ft.
	0955	1010	Cut down a fairly large tree that grew up alongside well BC-19. The
			roots of the tree have grown around, over, and under the concrete
			"pad." Break up the pad and remove a total of 40.0 ft of 1.25-in.
			inside diameter (ID), Schedule 40 PVC casing, slotted over its
			entire length. Casing is coated with bentonite gel.
	1010	1102	Position drill rig over well location. Radiation survey of drill site
			(background): alpha = 0 cpm, beta/gamma = 60 to 80 cpm. Plan
			to grout lower portion of the well to a point 20 ft below the top of
			fresh rock (TOFR). The TOFR in well BC-19 is reported to be at
			10.4 ft BGS. Calculate a borehole volume from 134.4 ft to 30.4 ft
			BGS of 5.1 cubic ft., equivalent to 4.3 sacks of Type I cement.
	1102	1114	Run PVC tremie pipe into the borehole to 126.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-19
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-23-94	1114	1146	Mix and pump-tremie (with grout plant) 5 sacks (5.9 cubic ft) of
(cont'd)			neat, Type I Portland cement into the borehole. Circulate water.
	1146	1218	Pull out tremie pipe, and clean up. Secure site and depart.
3-25-94	0858	0911	Arrive at BC-19 site. Tag cement level at 12.5 ft BGS. Crew
			performs pre-work equipment inspections. Start drill rig.
	0911	0917	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 3.1 ft.
	0917	0942	Commence reaming with compressed air only. Ream from 0.0 ft
			to 30.7 ft BGS. Encounter water at 1.0 ft BGS. Breathing zone
			analysis (BZA) at 3.0 ft BGS = 0.0 ppm (background). Top of
			weathered rock at 7.0 ft BGS. Cuttings from 0.0 ft to 7.0 ft BGS
			consist of: pale yellowish-brown (10YR 6/2) to moderate yellowish-
			brown (10YR 5/4), moist, clayey soil with dark yellowish-brown
			(10YR 4/2) weathered shale fragments. Top of fresh rock at 9.5 ft
			BGS. Cuttings from 7.0 ft to 9.5 ft BGS are predominantly dark
			yellowish-brown (10YR 4/2), weathered, thinly laminated shale
			fragments. LEL reading at 11.7 ft BGS = <1% (3.4 ppm). BZA at
			18.7 ft and 26.7 ft BGS both read 0.0 ppm. Cuttings from 9.5 ft to
			30.7 ft BGS are mostly: medium dark gray (N4), thinly laminated
			shale; with lesser amounts of blackish-red (5R 2/2), thinly laminated
			shale; and brownish-black (5YR 2/1), massive micrite with calcite
			veining. Interval also had rare occurrence of dark greenish-gray
			(5GY 4/1), bedded, banded, glauconitic siltstone as well as olive
			gray (5Y 4/1) partially-cured cement fragments. Beta/gamma
			scan of cuttings ranged from 60 to 70 cpm for the entire interval.
	0942	0950	At 30.7 ft BGS. Clean out borehole. Trip out, rig down bit/
			subadapter assembly. Tag bottom of the borehole at 30.7 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-19
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-25-94			Calculate a borehole volume to 4.0 ft BGS of 5.5 cubic ft. equivalent
(cont.)			to 4.6 sacks of Type I cement.
	0950	0955	Run PVC tremie pipe into borehole to 27.0 ft BGS.
	0955	1023	Mix and pump-tremie (with grout plant) 7 sacks (8.3 cubic ft), of
			neat, Type I Portland cement into the borehole. Circulate water,
			then 100% cement.
	1023	1105	Pull out tremie pipe and clean up. Secure site and depart.
3-29-94	0746	0749	Arrive at BC-19 site. Tag cement level at 2.5 ft BGS. Borehole is
			ready to be capped. Depart.
3-31-94	1038	1042	Arrive at BC-19 site. Cap borehole with clay soil.
			P&A of well BC-19 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-22
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-11-94

FINISH: 5-16-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-11-94	1346	1352	Move drill rig onto BC-22 location and position over the well. Well
			BC-22 is an uncapped well consisting of: 1.25-in. outside diameter
			(OD) PVC casing with a stick-up of 0.6 ft. Measure water level at
			4.0 ft below ground surface (BGS). Tag the bottom of the well at
			99.0 ft BGS. The Subsurface Data Base (Y/TS-881/R1) reports
			the total depth of BC-22 to be 100.2 ft.
	1352	1430	Begin setting up the site. Break up the concrete "pad," and pull out
			the casing by hand. Extract a total of 40.2 ft of 1.25-in. OD,
			schedule 80 PVC casing, slotted over the bottom 33 ft. The well
			bore appears to angle down toward the drill rig. Plan to ream the
			borehole to approximately 1 ft below reported total depth, beginning
			tomorrow.
	1430	1452	Finish setting up the site and depart.
5-12-94	0845	0859	Arrive at BC-22 site. Crew conducts pre-work equipment
			inspections. Background radiation scan of location: alpha = 0 cpm,
			beta/gamma = 50-70 cpm. Raise the mast.
	0859	0905	Add a 25-ft drill rod to the drill head. Thread a 6 1/4-in. diameter
			tricone bit to the drill rod; length of the bit = 0.6 ft, table height = 2.6 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-22
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-12-94	0905	0952	Commence reaming the borehole with compressed air only. Ream
(cont.)			from 0.0 ft to 102.0 ft BGS. Encounter weathered rock at 1.0 ft
			BGS. Cuttings from 0.0 ft to 1.0 ft BGS are: dark yellowish-orange
			(10YR 6/6) to light brown (5YR 5/6), moist, clayey subsoil with
			fragments of weathered shale. Breathing zone analysis (BZA) at
			3.0 ft BGS = 0.0 ppm (background). Water at 8.0 ft BGS. Top of
			fresh bedrock at 10.0 ft BGS. Cuttings from 1.0 ft to 10.0 ft BGS
			are: pale yellowish-brown (10YR 6/2) to pale brown (5YR 5/2) to
			moderate brown (5YR 3/4); weathered and stained shale becoming
			noticeably darker with increasing depth; plus dark yellowish-brown
			(10YR 4/2), bedded, sandy siltstone with heavy iron oxide cement
			and stain. BZA at 13.0 ft BGS = 0.2 ppm. Lower explosive limit
			(LEL) reading at 18.0 ft BGS <1% (9.0 ppm). BZA at 28.0 ft BGS
			= 0.2 ppm. LEL reading at 37.0 ft BGS <1% (6.0 ppm). BZA at
			43.0 ft BGS = 0.0 ppm. LEL reading at 58.0 ft BGS <1% (5.6 ppm).
			BZA at 68.0 ft, 76.0 ft, 85.0 ft, and 95.0 ft BGS read 0.0 ppm, 0.0
			ppm, 0.0 ppm, and 0.1 ppm, respectively. Cuttings from 10.0 ft to
			102.0 ft BGS consist of: blackish-red (5R 2/2), thinly laminated,
			micaceous shale; dark gray (N3), thinly laminated shale; and dark
			greenish-gray (5GY 4/1) to dark gray (N3), bedded and banded,
			glauconitic siltstone. A small amount of crystalline calcite was
			observed in the interval. Beta/gamma scans of the cuttings range
			from 50 to 80 cpm for the entire interval.
	0952	1018	At 102.0 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 95.2 ft BGS (6.8 ft of fill). Calculate a borehole volume
			to 4.0 ft BGS of 19.4 cubic ft, equivalent to 16.5 sacks of Type I
			cement.
	1018	1025	Run PVC tremie pipe into the borehole to 95.0 ft BGS.
	1025	1105	Crew off getting grouting supplies.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-22
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-12-94	1105	1205	Crew returns. Mix and pump-tremie 16 sacks (18.9 cubic ft) of
(cont.)			neat, Type I Portland cement into the borehole. Circulate water,
			sediment-laden water, then 100% cement.
	1205	1241	Pull out tremie pipe. Clean up. Secure site and depart.
5-13-94	0800	0806	Arrive at BC-22 site. Tag cement level at 10.7 ft BGS. Water level
			is at 7.3 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			1.4 cubic ft, equivalent to 1.2 sacks of Type I cement. Depart site.
	0934	0942	Return to BC-22 site. Mix and pour 2 sacks (2.4 cubic ft) of neat,
			Type I Portland cement into the borehole; liquid cement to the
			ground surface. Depart.
5-16-94	0840	0843	At BC-22 site. Tag cement level at 1.7 ft BGS. Borehole is ready
			to be capped. Depart.
	1458	1503	Return to BC-22 site. Cap remaining borehole with clay soil.
			P&A of well BC-22 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-23
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-29-94

FINISH: 3-31-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-29-94	1108	1120	Arrive at BC-23 site. Drill rig is positioned over the well. Crew is setting up, preparing to drill. Well consists of uncapped and open 4.5-in. outside diameter (OD), schedule 40 PVC casing (stick-up = 0.5 ft). Water level is even with top of casing (due to heavy past weekend rains). Static water level measured prior to rain = 5.9 ft below ground surface (BGS). Tag bottom of well at 45.0 ft BGS. NOTE: The Subsurface Data Base (Y/TS-881/R1) reports the total depth of BC-23 to be 56.0 ft. Radiation scan of location (background): alpha=0 cpm, beta/gamma=50-80 cpm.
	1120	1122	Pull out casing using jaw-clamp and drill rig. Extract a total of 18.4 ft of PVC casing, slotted over the bottom 10 ft.
	1122	1127	Rig up with an 8 3/4-in. diameter tricone bit on a subadapter; total length = 4.3 ft, table height = 2.9 ft.
	1127	1156	Break for lunch.
	1156	1242	Commence reaming with compressed air only. Ream from 0.0 ft to 57.4 ft BGS. Return water immediately. Breathing zone analysis (BZA) at 4.0 ft BGS = 0.0 ppm (background). Encounter top of weathered bedrock at 7.0 ft BGS. Cuttings from 0.0 ft to 7.0 ft BGS are: moderate yellowish-brown (10YR 5/4), moist, clayey topsoil (0.0 ft to 2.4 ft BGS); and grayish-red (5R 4/2) to moderate brown (5YR 3/4), dry, stiff subsoil with weathered shale fragments (2.4 ft to 7.0 ft BGS). BZA at 8.4 ft BGS = 0.0 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-23
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-29-94			Lower explosive limit (LEL) reading at 11.4 ft BGS = <1% (3.6
(cont'd)			ppm). Top of fresh rock at 12.0 ft BGS. Cuttings from 7.0 ft to 12.0
			ft BGS consist of: pale yellowish-brown (10YR 6/2) to moderate
			brown (5YR 3/4), weathered and stained shale. Encounter
			additional moisture at 14.0 ft BGS. BZA at 19.4 ft BGS = 0.0 ppm.
			LEL reading at 23.4 ft BGS = <1% (3.4 ppm). Encounter more
			moisture at 21.0 ft BGS. BZA at 32.0 ft BGS = 0.2 ppm. Very ratty
			drilling (drill rods bouncing) at 41.4 ft BGS. Encounter yet more
			water at 43.0 ft BGS. BZA at 48.4 ft BGS = 0.2 ppm. Cuttings from
			12.0 ft to 57.4 ft BGS consist of approximately even amounts of
			blackish-red (5R 2/2), thinly laminated shale and dark greenish-
			gray (5GY 4/1), bedded and banded glauconitic siltstone; with
			minor medium dark gray (N4), thinly laminated shale.
	1242	1249	At 57.4 ft BGS. Clean out borehole. Borehole is making
			considerable water.
	1249	1302	Shut off drill rig. Allow water to accumulate to facilitate borehole
			cleaning.
	1302	1315	Start drill rig. Clean out borehole thoroughly. Trip out, rig down bit/
			subadapter assembly. Tag bottom of borehole at 56.0 ft BGS (1.4
			ft of fill). Calculate a borehole volume to 4.0 ft BGS of 21.7 cubic
			ft, equivalent to 18.4 sacks of Type I cement.
	1315	1319	Run PVC tremie pipe into borehole to 56.0 ft BGS.
	1319	1415	Move grout plant and water supply to location.
	1415	1515	Mix and pump-tremie (with grout plant) 16 sacks (18.9 cubic ft) of
			neat, Type I Portland cement into borehole. Circulate water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-23
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-29-94	1515	1547	Pull out tremie pipe. Clean up. Secure site and depart.
(cont'd)			
3-30-94	0825	0900	Arrive at BC-23 site. Tag cement level at 12.8 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 3.7 cubic ft, equivalent to 3.1
			sacks of Type I cement. Water level at 1.7 ft BGS. Awaiting crew.
	0900	0920	Crew arrives. Run PVC tremie pipe into borehole to 10.0 ft BGS.
	0920	0958	Mix and pump-tremie (with grout plant) 5 sacks (5.9 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate water,
			then "soupy," sediment-laden water, and finally 100% cement.
	0958	1020	Pull out tremie pipe and clean up. Secure site and depart.
3-31-94	0812	0815	Arrive at BC-23 site. Tag cement level at 1.9 ft BGS (through 0.9 ft
			of cuttings/sediment). Borehole is ready to be capped. Depart.
	1012	1017	Return to BC-23 site. Cap borehole with clay soil.
			P&A of well BC-23 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-35

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-11-94

FINISH: 4-14-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-11-94	0840	0905	Arrive at BC-35 site. The drill rig is onsite, positioned over the well.
			The well consists of capped 1.25-in. outside diameter (OD), PVC
			casing (stick-up = 0.3 ft). Uncap well: organic vapors = 0.0 ppm
			(background), lower explosive limit (LEL) reading = <1% (4.0 ppm).
			Measure water level at approximately 40 ft below ground surface
			(BGS). The bottom of the well is beyond the reach of weighted tape
			(290 ft). The Subsurface Data Base (Y/TS-881/R1) reports the
			total depth of BC-35 to be 325.0 ft. Plan to grout open interval to
			a point 20 ft below the top of fresh rock (TOFR). The Subsurface
			Data Base reports the TOFR in BC-35 to be at 27.0 ft BGS.
			Calculate a borehole volume from 325.0 ft to 47.0 ft BGS of
			13.7 cubic ft, equivalent to 11.6 sacks of Type I cement.
	0905	1017	Crew conducts pre-work equipment inspections. Set up site,
			prepare to pull casing. A great deal of time was used in re-
			positioning the drill rig over the well. When the dozer was moved,
			it was noticed that some oil had leaked from it over the weekend
			(crew noted dozer motor oil was about 2 quarts low): scatter oil-
			absorbing material over oil spot, scoop-up contaminated soil and
			place in plastic bag pending disposal in USDOT-approved drum.
			Radiation scan of location (background): alpha = -NA- (wet), beta/
			gamma = 50-70 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-35
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-11-94	1017	1022	Well does not have a concrete pad, instead, the annulus contains
(cont'd)			a bentonite plug at the top of the borehole. Pull out the casing
			using the drill rig and a chain. Extract a total of 91.3 ft of 1.25-in.
			OD, thin-walled (probably schedule 80) PVC casing, slotted over
			the bottom approximate 87 ft.
	1022	1035	Run PVC tremie pipe into borehole to 199.0 ft BGS.
	1035	1109	Waiting for cement.
	1109	1125	D. Key (Highland) brings cement to staging area. Off-load cement
			into metal shed at staging area.
	1125	1205	Break for lunch.
	1205	1255	Mix and pump-tremie 10 sacks (11.8 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1255	1308	Pull out tremie pipe. Clean up, lower mast on drill rig as safety
			precaution. Secure site and depart.
4-12-94	0811	0840	Arrive at BC-35 site. Tag cement level at 7.5 ft BGS. Alpha scan
			of location = 0 cpm.
	0840	0937	Crew arrives, conducts pre-work equipment inspections. Re-
			position drill rig over the well again: drill rig moved further off well
			overnight as timbers settled under rig jacks.
	0937	0942	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 2.0 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-35
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-12-94	0942	1013	Commence reaming borehole with compressed air only. Ream
(cont'd)			from 0.0 ft to 47.8 ft BGS. Breathing zone analysis (BZA) at 2.8 ft
			BGS = 0.0 ppm (background). Encounter weathered bedrock at
			7.8 ft BGS. LEL reading at 7.8 ft BGS = <1% (4.0 ppm). Cuttings
			from 0.0 ft to 7.8 ft BGS are dark yellowish-brown (10YR 4/2) to
			light brown (5YR 5/6), moist, clayey soil with some medium dark
			gray (N4) cement fragments. BZA at 11.8 ft BGS = 0.0 ppm. LEL
			reading at 17.0 ft BGS = <1% (3.9 ppm). Observe alcohol-like
			odor at 19.8 ft BGS: BZA = 2.6 ppm. Encounter fresh bedrock at
			22.8 ft BGS. Cuttings from 7.8 ft to 22.8 ft BGS consist of:
			moderate yellowish-brown (10YR 5/4) to moderate olive-brown
			(5Y4/4), thinly laminated weathered shale stained light brown
			(5YR 5/6) and dark yellowish-orange (10YR 6/6). Driller notices
			a pungent, indescribable odor at approximately 24 ft BGS: BZA
			= 1.4 ppm. BZA at 31.4 ft and 39.8 ft BGS both read 0.0 ppm.
			Cuttings from 22.8 ft to 47.8 ft BGS consist of approximately
			equal amounts of very dusky red (10R 2/2) and medium dark gray
			(N4), thinly laminated shale. Beta/gamma scan of cuttings range
			from 60 to 80 cpm for the entire interval.
	1013	1022	At 47.8 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 47.5 ft BGS (0.3 ft of fill). Calculate a borehole
			volume to 4.0 ft BGS of 8.9 cubic ft, equivalent to 7.5 sacks of
			Type I cement.
	1022	1027	Run PVC tremie pipe into the borehole to 46.0 ft BGS.
	1027	1048	Mix and pump-tremie 8 sacks (9.4 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate 100% cement.
	1048	1113	Pull out tremie pipe. Clean up. Secure carousel and lower mast.
			Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-35
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-13-94	0820	0823	Arrive at BC-35 site. The drill rig has been positioned over another well, but the front end is over BC-35 location. Tag cement level at 2.2 ft BGS. The borehole is ready to be capped. Depart.
4-14-94	1158	1205	Cap borehole with clay soil.
			P&A of well BC-35 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-47
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DATE: START: 3-25-94

FINISH: 3-31-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-25-94	1112	1156	Move drill rig onto BC-47 location and position over the well. Crew
			begins setting up site. Well BC-47 consists of uncapped, 1.25-in.
			inside diameter (ID) PVC casing (stick-up = 2.0 ft). Measure water
			level at 3.7 ft below ground surface (BGS). Tag bottom of well at
			46.0 ft BGS. NOTE: The Subsurface Data Base (Y/TS-881/R1)
			reports the total depth of BC-47 to be 50.0 ft. Radiation scan of
			location (background): alpha = 0 cpm, beta/gamma = 70-100 cpm.
	1156	1228	Break for lunch.
	1228	1250	Attempt to pull out casing: casing does not come out of ground
			more than approximately 1 ft by hand. Pull out with chain using drill
			rig: casing breaks off below ground surface. Extract a total of 8.4 ft
			of thin-walled (probably schedule 80) PVC casing, slotted over its
			entire length. Plan to mill up the remaining casing when reaming
			the borehole.
	1250	1255	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 4.0 ft.
	1255	1328	Commence reaming with compressed air only. Ream from 0.0 ft
			to 52.8 ft BGS. Encounter weathered rock at 1.0 ft BGS. Cuttings
			from 0.0 ft to 1.0 ft BGS are moderate brown (5YR 4/4) to moderate
			yellowish-brown (10YR 5/4), moist, clayey soil with weathered
			shale fragments. Breathing zone analysis (BZA) at 2.0 ft BGS =
			0.0 ppm (background). Encounter water at 6.8 ft BGS. Fresh

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-47
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-25-94			bedrock encountered at 10.8 ft BGS as drilling becomes ratty.
(cont'd)			Cuttings from 1.0 ft to 10.8 ft BGS consist of: pale yellowish-brown
			(10YR 6/2) to light olive gray (5Y 5/2), stained and weathered
			shale. Lower explosive limit (LEL) reading at 15.8 ft BGS = <1%
			(2.9 ppm). BZA at 17.8 ft and 28.8 ft BGS read 0.2 ppm and
			0.0 ppm, respectively. LEL reading at 32.8 ft BGS = <1% (4.0 ppm).
			Dust abates slightly as more moisture is encountered at 36.8 ft
			BGS. BZA at 42.8 ft and 49.8 ft read 0.2 ppm and 0.0 ppm,
			respectively. Cuttings from 10.8 ft to 52.8 ft BGS are predominantly
			medium dark gray (N4), thinly laminated shale with minor amounts
			of blackish-red (5R 2/2) shale and medium dark gray (N4) and
			medium light gray (N6), bedded, calcareous siltstone. Medium
			gray (N5) PVC fragments continued nearly to the end of the
			interval, suspect well was "screened" well with slotted casing as
			the screen. Beta/gamma scan of cuttings range from 80 to 110
			cpm for the entire interval.
	1328	1342	At 52.8 ft BGS. Clean out borehole. Trip out, rig down bit/
			subadaptor assembly. Tag bottom of borehole at 51.3 ft (1.5 ft of
			fill). Calculate a borehole volume to 4.0 ft BGS of 9.7 cubic ft,
			equivalent to 8.2 sacks of Type I cement.
	1342	1348	Run PVC tremie pipe into borehole to 48.0 ft BGS.
	1348	1420	Mix and pump-tremie (with grout plant) 9 sacks (10.6 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate only a
			small amount of water before circulating 100% cement (borehole
			was nearly dry prior to grouting).
	1420	1506	Pull out tremie pipe. Clean up. Lower mast on drill rig. Secure site
			and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-47
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-29-94	0749	0753	Arrive at BC-47 site. Tag cement level at 4.7 ft BGS. Water level
			is even with ground surface. Calculate a borehole volume to
			4.0 ft BGS of 0.14 cubic ft, equivalent to 0.12 sacks of Type I
			cement. Depart.
	0915	0930	Return to BC-47 site. Mix and pour approximately 1/2 sack
			(0.6 cubic ft) of neat, Type I Portland cement into the borehole.
			Cement displaces water out of the hole. Depart site.
3-30-94	0819	0822	Arrive at BC-47 site. Tag cement level at 1.2 ft BGS. Borehole
			is ready to be capped. Depart site.
3-31-94	1035	1040	At BC-47 site. Cap borehole with clay soil.
			P&A of well BC-47 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-63

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-3-94

FINISH: 5-5-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-94	0905	0942	Arrive at BC-63 site. Drill rig arrives soon after. Crew positions drill
			rig over well. Well BC-63 consists of: uncapped, 1.25-in. outside
			diameter (OD), thin-walled PVC casing with a stick-up of 0.1 ft.
			Measure water level at 12.3 ft below ground surface (BGS). Tag
			bottom: tape stops on an obstruction at 52.5 ft BGS. NOTE: the
			Subsurface Data Base (Y/TS-881/R1) reports the total depth of
			BC-63 to be 283.7 ft. Background radiation scan of location: alpha
			= 0 cpm, beta/gamma = 50-80 cpm.
	0942	1005	R. Phillips (Highland) arrives with water supply. Highland Drilling
			Co. had used bleach in the water supply to kill algae growth: pH
			of water supply sample = 9.0. While uncovering concrete "pad,"
			crew discovers a second penetration through the "pad" (casing is
			missing from second penetration). Run tape into second hole:
			stops at 43.2 ft BGS. Appears that at one time, 2 lengths of casing
			were inserted into the same borehole.
	1005	1030	Start drill rig, raise mast. Rig is not quite centered over well. Lower
			mast and reposition drill rig over well. Raise mast again.
	1030	1055	Break up concrete "pad" and pull out casing by hand. Extract a
			total of 55.6 ft of 1.25-in. OD, unslotted, schedule 80 PVC casing.
			The bottom of the casing is pinched together. Tag bottom: tape
			stops at 52.0 ft BGS. Run PVC tremie into the borehole and it also
			stops at 52.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-63
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-94	1055	1100	Call to S. Jones (HSEA), report status. Steve directs to ream to
(cont.)			20 ft beyond the top of fresh rock (TOFR) and grout the borehole.
			The TOFR in BC-63 is reported to be 39.3 ft BGS. Remove tremie
			pipe from borehole.
	1100	1108	Start drill rig. Add a 25-ft drill rod to the drill head. Thread on a
			6-1/4-in. diameter tricone bit; length of the bit = 0.6 ft, table
			height = 2.2 ft.
	1108	1147	Commence reaming the borehole with compressed air only.
			Ream from 0.0 ft to 59.4 ft BGS. Breathing zone analysis (BZA)
			at 2.4 ft BGS = 0.1 ppm (background = 0.0 ppm). Encounter
			weathered rock at 3.4 ft BGS. Cuttings from 0.0 ft to 3.4 ft BGS
			are dark yellowish-brown (10YR 4/2) to dusky brown (5YR 2/2)
			topsoil. Lower explosive limit (LEL) reading at 7.8 ft BGS <1% (4.0
			ppm): BZA at 10.4 ft BGS = 0.0 ppm. Encounter moisture (enough
			for dust abatement) at 13.0 ft BGS, and again at 14.8 ft BGS. BZA
			at 19.4 ft BGS = 0.0 ppm. Water in returns at 22.0 ft BGS. LEL
			reading at 29.6 ft BGS <1% (2.9 ppm). BZA at 35.4 ft BGS = 0.0
			ppm. Encounter fresh rock at 39.4 ft BGS as drilling becomes
			ratty. Cuttings from 3.4 ft to 39.4 ft BGS consist of: yellowish-gray
			(5Y 7/2) to light olive gray (5Y 5/2) to dark greenish-gray (5GY 4/
			1), weathered and stained, thinly laminated shale; the color
			becoming noticeably darker with depth. Borehole is making
			abundant water by now. BZA at 51.4 ft BGS = 0.0 ppm. Cuttings
			from 39.4 ft to 59.4 ft BGS consist almost exclusively of medium
			gray (N5) to medium bluish-gray (5B 5/1), thinly laminated shale.
			A few relatively large fragments of crystalline calcite were observed
			near the end of the interval, though no limestone was observed.
			Beta/gamma scan of the cuttings ranged from 60 to 80 cpm for the
			entire interval.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-63
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-94	1147	1152	At 59.4 ft BGS. Clean out borehole. Pull up to a connection and
(cont'd)			secure the tools.
	1152	1222	Break for lunch.
	1222	1233	Start drill rig. Trip back to bottom of borehole. Borehole had
			accumulated more than 11 ft of water during lunch break. Clean
			out borehole. Trip out. Tag bottom: tape stops on mud/cuttings
			clinging to borehole wall at 26.5 ft BGS.
	1233	1256	Run PVC tremie pipe into borehole to 57.0 ft BGS (tremie pipe
			easily pushed through obstruction). Calculate a borehole volume
			from 59.4 ft to 4.0 ft BGS of 11.8 cubic ft, equivalent to 10.0 sacks
			of Type I cement. Mix and pump-tremie 9 sacks (10.6 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate water,
			then 100% cement.
	1256	1310	Pull out tremie pipe. Clean up.
	1310	1330	Begin breaking down the site. Oversight departs.
5-4-94	0821	0828	Arrive at BC-63 site. Tag cement level at 5.4 ft BGS. Water level
			is at 2.5 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			0.3 cubic ft, equivalent to 0.25 sacks of Type I cement. Crew
			arrives, conducts pre-work equipment inspections.
	0828	0832	Mix and pour 1 sack (1.2 cubic ft) of neat, Type I Portland cement
			into the borehole. Liquid grout to the ground surface. Depart.
5-5-94	1216	1220	At BC-63 site. Tag cement level at 1.0 ft BGS. Borehole is ready
			to be capped. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-63
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-94	1331	1336	Return to BC-63 site. Cap borehole with clay soil.
(cont'd)			
			P&A of well BC-63 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-01

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 4

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand (IR) T4W/IR XL-750

DATE: START: 3-30-94

FINISH: 5-10-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-30-94	1243	1254	Move drill rig (Ingersoll-Rand T4W) to BCU-01 site, position over
			well. Begin setting up site. Well BCU-01 is a previously unknown
			and unreported (in Subsurface Data Base) well. The BCU-01
			designation for this well is per S. Jones (HSEA). Well consists
			of PVC casing (stick-up = 2.1 ft). Uncap well: organic
			vapors = 0.0 ppm (background), lower explosive limit (LEL) reading
			<1% (5.2 ppm). Measure water level at 0.9 ft below ground surface
			(BGS). Tag bottom of well (firm) at 37.0 ft BGS. Plan to ream to 5 ft
			below bottom of well. Radiation survey of location: alpha = 0 cpm,
			beta/gamma = 60-90 cpm.
	1254	1310	Break up concrete "pad" and pull out casing by hand. Extract a
			total of 40.0 ft of 1.25-in. outside diameter (OD), schedule 40 PVC
			casing. Casing is slotted over the bottom 30.0 ft; casing also has
			a cap on the bottom end. Tag bottom of well at 135.5 ft BGS.
			Change plans: now plan to grout "open interval" to depth of casing
			and ream cased interval. Calculate a borehole volume from
			135.5 ft to 37.0 ft BGS of 4.8 cubic ft, equivalent to 4.1 sacks of
			Type I cement.
	1310	1400	Secure drill rig and move off site. Highland Drilling Co. plans to
			move this rig out of Exxon Nuclear Site. Will bring in another drill
			rig to continue P&A at a later date.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-01
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-30-94	1400	1424	Move grout plant and water supply to site.
(cont.)			
	1424	1446	Run PVC tremie pipe into borehole to 125.0 ft BGS.
	1446	1501	Mix and pump-tremie (with grout plant) 4 sacks (4.7 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate water.
	1501	1526	Pull out tremie pipe. Clean up. Secure site and depart.
3-31-94	0817	0825	Arrive at BCU-01 site. Tag cement level at 39.5 ft BGS. Water level
			is at 1.6 ft BGS. Depart site.
5-5-94	1423	1502	Move drill rig (Ingersoll-Rand XL-750) onto BCU-01 site and
			position over well. Begin setting up site. Tag bottom of borehole at
			32.5 ft BGS (7.0 ft of fill has accumulated in borehole since
			3-31-94). The water level remains at 1.6 ft BGS.
	1502	1506	Add a 25-ft drill rod to the drill head. Thread a 6 1/4-in. diameter
			tricone bit onto the rod; length of the bit = 0.6 ft, table height = 2.8 ft.
	1506	1533	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 40.8 ft BGS. Begin to see weathered rock cuttings
			immediately; have weathered bedrock at the ground surface at
			this location. Encounter water at 2.5 ft BGS. Breathing zone
			analysis (BZA) at 3.8 ft BGS = 0.0 ppm (background). LEL reading
			at 7.8 ft BGS <1% (3.9 ppm). Fresh bedrock at 10.8 ft BGS.
			Cuttings from 0.0 ft to 10.8 ft BGS are: moderate yellowish-brown
			(10 YR 5/4) to dark yellowish-brown (10 YR 4/2), weathered and
			stained, thinly laminated shale. BZA at 13.8 ft, 25.8 ft, and 33.8 ft
			BGS all read 0.0 ppm. Cuttings from 10.8 ft to 40.8 ft BGS consist
			of predominantly blackish-red (5 R 2/2), thinly laminated shale,
			with minor medium dark gray (N4), thinly laminated shale; plus

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-01
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-94			dark greenish-gray (5 GY 4/1), bedded and banded, glauconitic,
(cont.)			sandy siltstone. Observed a small amount of yellowish-gray
			(5 Y 7/2), rounded cement fragments from near the end of the
			interval. Beta/gamma scan of the cuttings range from 60 to 70 cpm
			for the entire interval.
	1533	1550	At 40.8 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 39.8 ft BGS (1.0 ft of fill). Plan to grout the borehole
			tomorrow. Secure carousel and lower mast as a safety precaution.
			Secure site and depart.
5-6-94	0832	0853	Arrive at BCU-01 site. Tag bottom of borehole at 37.7 ft BGS (an
			additional 2.1 ft of fill has accumulated in the borehole overnight:
			total of 3.1 ft of fill). Calculate a borehole volume to 4.0 ft BGS of
			7.2 cubic ft, equivalent to 6.1 sacks of Type I cement. Crew arrives
			and moves water supply and cement into position.
	0853	0859	Run PVC tremie pipe into the borehole to 39.0 ft BGS. Tremie pipe
			is in soft sediment at the bottom of the hole.
	0859	0922	Mix and pump-tremie 7 sacks (8.3 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water, then 100% cement.
	0922	0959	Pull out tremie pipe and clean up. Begin breaking down the site.
			Move drill rig off site and depart.
5-9-94	0858	0901	At BCU-01 site. Tag cement level at 7.4 ft BGS. Water level is at
			3.5 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 0.7 cubic ft,
			equivalent to 0.6 sacks of Type I cement. Depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-01
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-9-94	0948	1006	Return to BCU-01 site. Mix and pour 2 sacks (2.4 cubic ft) of neat,
(cont.)			Type I Portland cement directly into borehole. Liquid grout to
			ground surface. Depart.
5-10-94	0809	0811	Arrive at BCU-01 site. Tag cement level at 2.0 ft BGS. Borehole is
			ready to be capped. Depart.
	1230	1235	Return to BCU-01 site. Cap the remaining borehole with clay soil.
			P&A of well BCU-01 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-02

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-14-94

FINISH: 4-18-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-14-94	1215	1248	Move drill rig onto BCU-02 location, position drill rig over the well.
			Begin setting up the site. Well BCU-02 consists of 1.25-in. inside
			diameter (ID) PVC casing with a stick-up of 2.7 ft (2.2 ft of casing
			removed to facilitate drill rig move to location). Well BCU-02 is a
			previously unknown and unreported (in Subsurface Data Base)
			well. The BCU-02 designation for this well as per HSEA. Uncap
			well: organic vapors = 0.0 ppm (background), lower explosive limit
			(LEL) reading = <1% (5.8 ppm). Measure water level at 12.0 ft
			below ground surface (BGS). Tag bottom (hard) at 37.2 ft BGS:
			suspect that bottom of casing is capped, and that wellbore extends
			much deeper than the bottom of casing.
	1248	1302	Break up concrete "pad." Pull out casing by hand. Extract a total
			of 38.9 ft of 1.25-in. ID, schedule 40 PVC casing (includes 2.2 ft cut
			off to move rig onto site), slotted over the bottom approximate 28
			ft. Tag bottom of well (soft) at 178.0 ft BGS. Plan to grout "open
			interval" to about 5 ft below the bottom of the casing. Calculate a
			borehole volume from 178.0 ft to 42.0 ft BGS of 6.7 cubic ft,
			equivalent to 5.7 sacks of Type I cement.
	1302	1424	Part of crew departs for grouting supplies. Remaining crew runs
			PVC tremie pipe into the borehole to 178.0 ft BGS.
	1424	1445	Water and cement onsite. Mix and pump-tremie 6 sacks (7.1 cubic
			ft) of neat, Type I Portland cement into the borehole. Circulate
			water, then cloudy, sediment-laden water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-02
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-14-94	1445	1510	Pull out tremie pipe and clean up. Secure site and depart.
(cont'd)			
4-15-94	0817	0856	Arrive at BCU-02 site. Tag cement level at 19.0 ft BGS. Crew
			arrives and conducts pre-work equipment inspections. Start drill
			rig and raise mast.
	0856	0900	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 2.4 ft.
	0900	0922	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 42.4 ft BGS. Breathing zone analysis (BZA) at 2.8 ft
			BGS = 0.0 ppm (background). Encounter top of weathered
			bedrock at 3.0 ft BGS. Cuttings from 0.0 ft 3.0 ft BGS consist of:
			dark yellowish-brown (10YR 4/2) to moderate yellowish-brown
			(10YR 5/4), dry, stiff soil with weathered shale fragments. Encounter
			water at 10.4 ft BGS. LEL reading at 14.4 ft BGS = <1% (3.5 ppm).
			Top of fresh bedrock (TOFR) at 17.4 ft BGS. Cuttings from 3.0 ft
			to 17.4 ft BGS are: grayish-orange (10YR 7/4) to pale yellowish-
			brown (10YR 6/2) weathered and stained, thinly laminated shale;
			and grayish-brown (5YR 3/2), weathered, massive micrite. BZA at
			19.6 ft BGS = 0.2 ppm. Observe the odor of partially cured cement
			while drilling below 21.0 ft BGS. BZA readings at 26.4 ft and 35.0 ft
			BGS read 0.0 ppm and 0.2 ppm, respectively. Cuttings from
			17.4 ft to 42.4 ft BGS consist of olive gray (5Y 4/1) to dark greenish-
			gray (5GY 4/1), massive micrite; medium dark gray (N4) to
			medium bluish-gray (5B 5/1), thinly laminated shale; and blackish-
			red (5R 2/2), thinly laminated shale. Beta/gamma scan of cuttings
			range from 60 to 80 cpm for the entire interval.
	0922	0934	At 42.4 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 41.4 ft BGS (1.0 ft of fill). Calculate a borehole volume

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-02
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-15-94			to 4.0 ft BGS of 7.7 cubic ft, equivalent to 6.5 sacks of Type I
(cont'd)			cement.
	0934	0936	Run PVC tremie into borehole to 36.0 ft BGS.
	0936	0951	Mix and pump-tremie 6 sacks (7.1 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate 100% cement.
	0951	1028	Pull out tremie pipe and clean up. Secure carousel and lower
			mast. Move drill rig off site. Depart site.
4-18-94	0808	0810	Arrive at BCU-02 site. Tag cement level at 3.4 ft BGS. The
			borehole is ready to be capped. Depart site.
	1350	1400	Return to BCU-02 site. Cap the borehole with clay soil.
			P&A of well BCU-02 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-03

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-16-94

FINISH: 5-20-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-16-94	1218	1231	Arrive at BCU-03 site. Well BCU-03 consists of: capped, 1.25-in.
			outside diameter (OD), thin-walled (Schedule #80?) PVC casing
			with a stick-up of 2.9 ft. Well BCU-03 is a previously unknown and
			unreported (in Subsurface Data Base) well. The BCU-03
			designation for this well is per HSEA. Uncap well: organic vapors
			= 0.2 ppm (background = 0.2 ppm), lower explosive limit (LEL)
			reading = <1% (17.0 ppm). Measure water level at 1.0 ft below
			ground surface (BGS). Tag bottom of well at 56.8 ft BGS. Plan to
			ream the well bore to approximately 5 ft beyond tagged depth.
	1231	1249	Move drill rig onto BCU-03 site and position over well. Begin
			setting up the site. Background radiation scan of location:
			alpa = 0 cpm, beta/gamma = 50-60 cpm.
	1249	1308	Cut off 2.5 ft of the casing stickup. Dig around the well to expose
			the concrete "pad." Break up the "pad" to expose the annular
			cement below. Break up the annular cement and recover another
			1.5 ft of 1.25-in. OD PVC casing. Plan to drill up the remaining
			casing while reaming the well bore. The original well bore appears
			to have a diameter of 5.0 in. Raise the mast.
	1308	1312	Add a 25-ft drill rod to the drill head. Thread a 6 1/4-in. diameter
			tricone bit onto the rod; length of the bit = 0.6 ft, table height = 2.0 ft.
	1312	1354	Commence reaming the borehole, drilling up the casing with
			compressed air only. Ream from 0.0 ft to 59.6 ft BGS. Breathing

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-03
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-16-94			zone analysis (BZA) at 1.0 ft BGS = 0.0 ppm (background). Drill
(cont.)			through annular cement and into gravel filter pack at 3.6 ft BGS.
			Encounter water at 4.6 ft BGS. Top of weathered bedrock at 5.6 ft
			BGS. Cuttings from 0.0 ft to 5.6 ft BGS are: grayish-orange pink
			(10R 8/2) to grayish-brown (5YR 3/2), dry topsoil with medium
			light gray (N6) cement fragments; and PVC fragments. BZA at
			8.6 ft BGS = 0.0 ppm. LEL reading at 11.6 ft BGS <1%
			(14.0 ppm). Top of fresh bedrock at 13.0 ft BGS (plus abundant
			water). Cuttings from 5.6 ft to 13.0 ft BGS consist predominantly
			of: "dirty" filter pack gravel (dirty meaning: not pure quartz gravel,
			contains angular, undifferentiated igneous and metamorphic rock
			pebbles) with moderate yellowish-brown (10YR 5/4) to dark
			yellowish-brown (10YR 4/2), weathered and stained shale; and
			greenish-black (5GY 2/1), banded and bedded, sandy, glauconitic
			siltstone (also weathered). BZA at 21.6 ft BGS = 0.0 ppm. LEL
			reading at 27.6 ft BGS <1% (14.0 ppm). BZA at 35.6 ft BGS = 0.0
			ppm. LEL reading at 41.6 ft BGS <1% (14.0 ppm). BZA at 55.6
			ft BGS = 0.0 ppm. Bottom of original well bore at 57.6 ft BGS.
			Cuttings from 13.0 ft to 59.6 ft BGS consist of: abundant "dirty"
			filter pack gravel; blackish-red (5R 2/2) and medium dark gray
			(N4), thinly laminated, micaceous shale with occasional glauconite
			lenses; dark greenish-gray (5GY 4/1), bedded and banded,
			glauconitic siltstone; and PVC screen fragments (assume screen
			to bottom of well bore). Beta/gamma scan of cuttings ranged from
			50 to 70 cpm throughout the interval.
	1354	1413	At 59.6 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 57.0 ft BGS (2.6 ft of fill). Calculate a borehole volume
			to 4.0 ft BGS of 11.3 cubic ft, equivalent to 9.6 sacks of Type I
			cement.
	1413	1415	Run PVC tremie pipe into the borehole to 58.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-03
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-16-94	1415	1458	Mix and pump-tremie 12 sacks (14.2 cubic ft) of neat, Type I
(cont.)			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1458	1516	Pull out tremie pipe and clean up. Secure site and depart.
5-17-94	0805	0809	Arrive at BCU-03 site. Tag cement level at 17.8 ft BGS. The water
			level is at 5.0 ft BGS. Calculate a borehole volume to 4.0 ft BGS
			of 2.9 cubic ft, equivalent to 2.5 sacks of Type I cement. Depart.
	1240	1244	Return to BCU-03 site. Run PVC tremie pipe into borehole to
			10.0 ft BGS.
	1244	1300	Mix and pump-tremie 4 sacks (4.7 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water, then approximately
			50% cement.
	1300	1305	Pull out tremie. Clean up. Secure site and depart.
5-18-94	0738	0740	At BCU-03 site. Tag cement level at 1.8 ft BGS. Borehole is ready
			to be capped. Depart site.
5-20-94	0921	0924	At BCU-03 site. Cap remaining borehole with clay soil.
			P&A of well BCU-03 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-04
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 4

LOCATION: Exxon Nuclear Site

DRILLER: H. Hall - Highland Drilling Co.

HELPERS: R. Phillips/J. Monger - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 6-21-94

FINISH: 6-23-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-21-94	0919	0940	Arrive at BCU-04 site. The drill rig is on site, and the crew is setting
			up the location. Well BCU-04 originally consisted of: capped,
			4.5-in. outside diameter (OD) PVC casing with a stick-up of 2.2 ft
			(the casing has been cut off flush with the ground surface to move
			the drill rig into the location). Well BCU-04 is a previously unknown
			and unreported (in Subsurface Data Base) well. The BCU-04
			designation for the well is per HSEA. Check headspace of casing:
			organic vapors = 0.7 ppm (background), lower explosive limit
			(LEL) reading <1% (10.5 ppm). Measure water level at 4.1 ft
			below ground surface (BGS). Tag bottom of well at 35.8 ft BGS
			(reaming target = 40.8 ft BGS). W. Thedford (HSEA) and L.O.
			Vaughan (MMES), who will be observing P&A operations, arrive.
	0940	1000	Dig around wellhead exposing annular cement plug. Break up and
			remove approximately 0.5 ft thickness of annular cement. Raise
			mast. Oversight gives site-specific health and safety briefing to
			L.O. Vaughan.
	1000	1012	Attach a jawed clamp to casing and attempt to pull out casing with
			drill rig winch: casing does not budge. Attempt to pull casing with
			drill head: clamp tears up casing. Plan to drill up the casing while
			reaming the borehole.
	1012	1024	Rig up with an 8 3/4-in. diameter tri-cone bit on a subadapter; total
			length = 4.3 ft. Discover that drill rig is not adequately centered
			over the well.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-04
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-21-94	1024	1035	Rig down bit/subadapter assembly, secure carousel, lower
(cont.)			mast, and reposition the drill rig over the well. Background
			radiation scan of location: alpha = 0 cpm, beta/gamma =
			40 cpm.
	1035	1042	Raise mast and rig up bit/subadapter assembly again; table
			height = 3.1 ft
	1042	1050	Commence drilling up casing/reaming wellbore with compressed
			air only. Ream from 0.0 ft to 1.2 ft BGS. While adding a drill rod,
			the driller notices that the rig is very low on hydraulic fluid.
			Cuttings from 0.0 ft to 1.2 ft BGS are grayish-brown (5YR 3/4) to
			moderate brown (5YR 3/4), moist, clayey topsoil with medium
			dark gray (N4) cement fragments, and PVC casing fragments.
			Beta/gamma scan of cuttings = 50 to 70 cpm. Shut off drill rig.
			W. Thedford and L.O. Vaughan depart site.
	1050	1251	Waiting for hydraulic fluid to be brought to the site. Break for
			lunch. Pour 10 gallons of hydraulic fluid into rig tank when it
			arrives. Start drill rig.
	1251	1323	Continue drilling up casing/reaming wellbore. Ream from 1.2 to
			61.2 ft BGS. Breathing zone analysis (BZA) at 2.2 ft BGS =
			0.0 ppm (background). LEL reading at 3.2 ft BGS <1% (10.2 ppm).
			Encounter weathered bedrock along with water at 5.0 ft BGS
			Cuttings from 1.2 ft to 5.0 ft BGS are a continuation of the 0.0-
			ft to 1.2-ft interval with a predominance of moderate brown (5 YR
			3/4) subsoil. BZA at 13.2 ft BGS = 0.0 ppm. Top of fresh bedrock
			at 13.2 ft BGS. Cuttings from 5.0 ft to 13.2 ft BGS consist of
			grayish-red (5R 4/2) to light olive brown (5Y 5/6) weathered and
			stained, thinly laminated shale; plus fragments of commercially
			manufactured PVC screen. LEL reading at 23.2 ft BGS <1%

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-04
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-21-94			(10.0 ppm). BZA at 27.2 ft BGS = 0.0 ppm. LEL reading at 34.2
(cont.)			ft BGS <1% (10.2 ppm). BZA at 39.2 ft and 49.2 ft BGS both read
			0.0 ppm. Begin to see coarse, quartz sand filter pack material in
			returns at approximately 50.2 ft BGS. Tag of 35.8 ft before starting
			was apparently on an obstruction. BZA at 54.7 ft BGS = 0.0 ppm
			(observed a sulfur odor near this depth). At a depth of approximately
			56 ft BGS, abundant quartz sand is returned from the borehole and
			inundates the ground surface around the drill rig. Shortly after that
			(about 59 ft BGS), a blow-out occurs at the ground surface near the
			left rear wheels of the drill rig. Suspect a void near the bottom of
			the borehole with communication to the ground surface. Hard
			drilling (bottom of wellbore) at 60.2 ft BGS. Circulation at the
			borehole has quit, returns coming out of the blow-out. Cuttings
			from 13.2 ft to 61.2 ft BGS consist predominantly of blackish-red
			(5R 2/2) and dark gray (N3), thinly laminated shale to approximately
			50.2 ft BGS, from there, rounded, coarse-grained quartz sand
			predominates. PVC screen fragments and rare dark greenish-
			gray (5GY 4/1), banded and bedded, glauconitic siltstone were
			observed throughout the interval. Wood fragments, including
			bark, were observed from the bottom of the interval. Radiation
			scan of the cuttings ranged 40 to 70 cpm for the entire interval.
	1323	1339	At 61.2 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 56.2 ft BGS (5.0 ft of fill). Any attempts to further clean
			out the hole will likely result in bringing in more debris. Calculate
			a borehole volume to 4.0 ft BGS of 21.8 cubic ft, equivalent to 8.5
			sacks of Type I cement.
	1339	1400	Take a break due to excessive heat and humidity.
	1400	1408	Run PVC tremie pipe into borehole to 49.0 ft BGS. W. Thedford
			and L.O. Vaughan return to site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-04
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-21-94	1408	1443	Mix and pump-tremie 17 sacks (20.1 cubic ft) of neat, Type I
(cont.)			Portland cement in the borehole. Circulate water.
	1443	1455	Pull out tremie pipe: no cement visible on tremie pipe. Concerned
			that suspected void is taking cement. Will stop here and tag
			cement level tomorrow.
	1455	1579	Clean up, secure site, and depart.
6-22-94	0937	0941	Arrive at BCU-04 site. Crew is on site. Tag cement level at 17.5 ft
			BGS. Water level is at 6.0 ft BGS. Calculate a borehole volume
			to 4.0 ft BGS of 5.6 cubic ft, equivalent to 4.8 sacks of Type I
			cement. Crew has already run PVC tremie pipe into borehole to
			10.0 ft BGS.
	0941	1005	Mix and pump-tremie 6 sacks (7.1 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water, then 100% cement.
	1005	1014	Pull out tremie pipe. Clean up. Secure site and depart.
6-23-94	0821	0824	Arrive at BCU-04 site. Tag cement level at 3.0 ft BGS. Borehole
			is ready to be capped. Depart site.
	0930	0945	Return to BCU-04 site. Cap remaining borehole with clay soil.
			P&A of well BCU-04 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-05

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Exxon Nuclear Site

DRILLER: H. Hall - Highland Drilling Co.

HELPERS: R. Phillips/R. Collins - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-24-94

FINISH: 5-27-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-24-94	0817	0856	Arrive at BCU-05 site. The drill rig is onsite, positioned over the
			well. Well BCU-05 is a capped well with 1.25-in. outside diameter
			(OD), thin-walled PVC casing with a stick-up of 2.6 ft. Well
			BCU-05 is a previously unknown and unreported (in Subsurface
			Data Base) well. The BCU-05 designation as per HSEA. Uncap
			well: organic vapors = 0.0 ppm, lower explosive limit (LEL) reading
			<1% (9.5 ppm). Measure water level at 5.2 ft below ground surface
			(BGS). Tag bottom of the well at 55.8 ft BGS (reaming target is
			60.8 ft BGS). Background radiation scan of location: alpha = 0
			cpm, beta/gamma = 60-70 cpm.
	0856	0928	Crew arrives and continues setting up the site. Drill rig is not
			actually centered over the well: position the rig over the well.
			Raise the mast. Cut off casing flush with ground surface (plan to
			drill out casing while reaming well bore).
	0928	0934	Add a 25-ft drill rod to the drill head. Thread a 6 1/4-in. diameter
			tricone bit onto the rod; length of the bit = 0.6 ft, table height = 3.6 ft.
	0934	1007	Commence drilling casing/reaming borehole with compressed air
			only. Ream from 0.0 ft to 63.0 ft BGS. Breathing zone analysis
			(BZA) at 1.0 ft BGS = 0.0 ppm (background). Drill through annular
			cement plug at 4.0 ft BGS, encounter quartz sand/pebble filter
			pack below. Top of weathered bedrock at 5.0 ft BGS. Cuttings
			from 0.0 ft to 5.0 ft BGS are: grayish-brown (5YR 3/2) to dusky
			brown (5YR 2/2), moist topsoil with medium dark gray (N4) cement

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-24-94			fragments and PVC casing fragments. Encounter water at 6.0 ft
(cont.)			BGS. LEL reading at 11.0 ft BGS <1% (9.0 ppm). Top of fresh
			bedrock at 13.5 ft BGS. Cuttings from 5.0 ft to 13.5 ft BGS are:
			moderate brown (5YR 4/4) to light brown (5YR 5/6) sandstone
			with heavy iron oxide staining and cement; PVC fragments; and
			filter pack consisting of mixed coarse quartz sand and quartz
			pebbles. BZA at 19.0 ft BGS = 0.1 ppm. LEL reading at 25.0 ft
			BGS <1% (10.0 ppm). BZA at 33.0 ft BGS = 0.0 ppm. LEL
			reading at 41.0 ft BGS <1% (9.5 ppm). BZA at 52.0 ft BGS = 0.4
			ppm. Bottom of well bore at 61.0 ft BGS. Cuttings from 13.5 ft
			to 63.0 ft BGS consist of: medium dark gray (N4), thinly
			laminated shale; blackish-red (5R 2/2) shale (amount of red
			shale increases with depth); dark greenish-gray (5GY 4/1) and
			light greenish-gray (5G 8/1), bedded and banded, glauconitic
			siltstone; PVC screen fragments; and coarse quartz sand/fine
			quartz pebbles. Beta/gamma scan of cuttings range 30 to 60
			cpm for the entire interval.
	1007	1020	At 63.0 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 63.0 ft BGS (no fill). Calculate a borehole volume to
			4.0 ft BGS of 12.6 cubic ft, equivalent to 10.7 sacks of Type I
			cement.
	1020	1044	Run PVC tremie pipe into borehole to 59.0 ft BGS.
	1044	1111	Mix and pump-tremie 9 sacks (10.6 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1111	1130	Pull out tremie pipe. Clean up. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-25-94	0811	0854	Arrive at BCU-05 site. Tag cement level at 9.2 ft BGS. Water
			level is at 6.4 ft BGS. Calculate a borehole volume to 4.0 ft BGS
			of 1.1 cubic ft, equivalent to 0.9 sacks of Type I cement.
	0854	0910	Crew arrives. Mix and pour 2 sacks (2.4 cubic ft) of neat, Type I
			Portland cement directly into borehole. Liquid cement to ground
			surface. Depart site.
5-26-94	0801	0804	Arrive at BCU-05 site. Tag cement level at 1.5 ft BGS. Borehole
			is ready to be capped. Depart.
5-27-94	1120	1130	At BCU-05 site. The remaining borehole is capped with clay soil.
			P&A of well BCU-05 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-06

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLER: R. Phillips - Highland Drilling Co.

HELPERS: J. Monger/R. Collins - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-23-94

FINISH: 5-25-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-23-94	0812	0916	Arrive at BCU-06 site. The drill rig is onsite, positioned over the well. Well BCU-06 originally consisted of: capped, 4.5-in. outside diameter (OD) PVC casing with a stick-up of 3.2 ft (3.0 ft of the stick-up was removed to move the drill rig onto the location). The casing cap was removed, and the well checked for hazardous vapors at an earlier date with the following results: organic vapors = 0.0 ppm (background), lower explosive limit (LEL) reading <1% (6.5 ppm). Well BCU-06 is a previously unknown and unreported (in Subsurface Data Base) well. The BCU-06 designation for this well as per HSEA. Measure water level at 4.3 ft below ground surface (BGS). Tag bottom of well at 58.5 ft BGS (reaming target = 63.5 ft BGS). Background radiation scan of location: alpha = 0 cpm, beta/gamma = 40-60 cpm. Waiting on crew.
	0916	0940	Crew arrives. Crew conducts pre-work equipment inspections. Oversite gives site-specific health and safety briefing to new Highland Drilling Company helper: R. Collins. Start drill rig and raise mast.
	0940	0952	Drill rig table is not perfectly centered over the well. Lower mast and reposition rig over the well.
	0952	0955	Wrap a choker around the exposed annular cement, attach to drill rig winch cable. Attempt to pull out well casing encased in cement;

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-23-94			cement breaks up into small pieces and choker slips off. Plan to
(cont.)			drill up casing while reaming the well bore.
	0955	1004	Rig up with an 8 3/4-in. diameter tricone bit on a subadapter
			(steam clean the bit/subadapter assembly); length of assembly
			= 4.3 ft, table height = 2.7 ft.
	1004	1007	Commence drilling on casing stick-up: bit is still not centered on
			the well.
	1007	1025	Rig down bit/subadapter assembly. Lower mast and reposition
			the rig over the well.
	1025	1028	Raise the mast. Rig up the bit/subadapter assembly; table height
			now is 3.0 ft.
	1028	1129	Commence drilling up casing/reaming borehole with compressed
			air only. Ream from 0.0 ft to 64.3 ft BGS. Suspect that original
			well bore is about 8.0 in. in diameter. Breathing zone analysis
			(BZA) at 2.0 ft BGS = 0.0 ppm (background). Top of weathered
			bedrock at 3.0 ft BGS. Cuttings from 0.0 ft to 3.0 ft BGS are:
			dusky brown (5YR 2/2) to brownish-black (5YR 2/1), moist
			topsoil with medium light gray (N6) cement fragments and PVC
			casing fragments. BZA at 4.3 ft BGS = 0.2 ppm. Drill through
			cement at 5.0 ft BGS, encounter rounded, coarse-grained quartz
			sand filter pack below. Encounter moisture at 6.0 ft, and water
			at 6.3 ft BGS. LEL reading at 8.3 ft BGS <1% (13.0 ppm). Top
			of fresh bedrock at 12.3 ft BGS. Cuttings from 3.0 ft to 12.3 ft BGS
			consist of dark reddish-brown (10R 3/4) weathered shale;
			moderate brown (5YR 4/4), massive, sandy siltstone with heavy
			iron oxide stain and cement; light olive gray (5Y 5/2) cement
			fragments; PVC casing and commercially-manufactured screen

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-23-94			fragments; and coarse-grained, rounded sand (filter pack). BZA
(cont.)			at 15.6 ft BGS = 0.2 ppm. LEL reading at 23.3 ft BGS <1% (13.0
			ppm). Borehole is making abundant water by now. BZA at 32.3
			ft BGS = 0.1 ppm. LEL reading at 36.3 ft BGS <1% (12.0 ppm).
			BZA at 42.3 ft and 53.8 ft BGS = 0.0 ppm and 0.1 ppm,
			respectively. Rate of advance slows from 56.1 ft to 56.6 ft BGS.
			Bottom of well bore at 62.0 ft BGS. Cuttings from 12.3 ft to 64.3
			ft BGS consist of: blackish-red (5R 2/2) and medium dark gray
			(N4), thinly laminated shale; dark greenish-gray (5GY 4/4),
			bedded and banded, glauconitic siltstone; PVC screen fragments;
			and coarse quartz sand grading to fine quartz pebbles with
			increasing depth. Beta/gamma scan of cuttings range 50 to 70
			cpm for the entire interval.
	1129	1145	At 64.3 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole at 64.3 ft BGS (no fill). Calculate a borehole volume to
			4.0 ft BGS of 25.2 cubic ft, equivalent to 21.3 sacks of Type I
			cement.
	1145	1227	Break for lunch.
	1227	1236	Run PVC tremie pipe into the borehole to 59.0 ft BGS.
	1236	1345	Mix and pump-tremie 20 sacks (23.6 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water; then 100%
			cement.
	1345	1357	Pull out tremie pipe. Clean up. Secure site and depart.
5-24-94	0808	0817	Arrive at BCU-06 site. Tag cement level at 9.2 ft BGS. Water level
			is at 7.0 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 2.2
			cubic ft, equivalent to 1.8 sacks of Type I cement. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-24-94	1111	1126	Return to BCU-06 site. Mix and pump-tremie 3 sacks (3.5 cubic
(cont.)			ft) of neat, Type I Portland cement into the borehole. Circulate
			100% cement.
	1126	1135	Clean up, secure site, and depart.
5-25-94	0809	0811	At BCU-06 site. Tag cement level at 2.2 ft BGS. Borehole is ready
			to be capped. Depart.
	0910	0916	Return to BCU-06 site. Cap remaining borehole with clay soil.
			P&A of well BCU-06 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-07

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-17-94

FINISH: 5-23-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-94	0915	0931	Using dozer to prepare the BCU-07 site. Well BCU-07 consists of:
			capped, 1.25-in. outside diameter (OD) PVC casing with a stick-
			up of 1.1 ft. Well BCU-07 is a previously unknown and unreported
			(in Subsurface Data Base) well. The BCU-07 designation for this
			well as per HSEA. Uncap well: organic vapors= 0.0 ppm
			(background), lower explosive limit (LEL) reading <1% (6.5 ppm).
			Measure water level at 2.2 ft below ground surface (BGS). Tag
			bottom of well at 57.5 ft BGS (reaming target = 62.5 ft BGS). Dig
			around well to expose annular cement plug.
	0931	0959	Move the drill rig onto BCU-07 site and position over the well.
			Begin setting up the site. Background radiation scan of location:
			alpha = 0 cpm, beta/gamma = 50-70 cpm. Raise the mast.
	0959	1021	Wrap a choker around the annular cement plug and attempt to pull
			out the grouted casing: chunk of cement (about 1.2 ft long) slips off
			of casing. Wrap choker around casing and pull: casing breaks.
			Attempt to pull casing using choker and the drill head: casing
			comes out with resistance, but then breaks off below ground
			surface. Recover a total of 7.2 ft of 1.25-in. OD, schedule 80 PVC
			casing. Plan to drill out remaining casing while reaming well bore.
	1021	1025	Add a 25-ft drill rod to the drill head. Thread a 6 1/4-in. diameter
			tricone bit onto the rod; length of the bit = 0.6 ft, table height = 2.0 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-94	1025	1057	Commence reaming borehole/drilling out casing with compressed air only. Ream from 0.0 ft to 62.6 ft BGS. Drilling through annular cement to 3.6 ft BGS. quartz "pea" gravel filter pack below cement. Encounter top of weathered rock along with water at 5.0 ft BGS. Cuttings from 0.0 ft to 5.0 ft BGS consist of: grayish-brown (5YR 3/2), moist topsoil; and moderate brown (5YR 4/4) to light brown (5 YR 5/6), moist, clayey subsoil with medium gray (N5) cement fragments. Breathing zone analysis (BZA) at 9.6 ft BGS = 0.0 ppm (background). LEL reading at 13.6 ft BGS <1% (8.5 ppm). Top of fresh rock at 13.6 ft BGS. Cuttings from 5.0 ft to 13.6 ft BGS are: abundant quartz gravel filter pack; PVC fragments; and moderate yellowish-brown (10 YR 5/4) to dark yellowish-brown (10 YR 4/2), weathered and stained shale and sandy siltstone. BZA at 22.6 ft BGS = 0.3 ppm. LEL reading at 27.6 ft BGS <1% (9.0 ppm). The borehole is making a small amount of water by now. BZA at 30.0 ft, 44.6 ft, and 52.6 ft BGS read 0.1 ppm, 0.0 ppm, and 0.0 ppm, respectively. Bottom of the well bore at 61.0 ft BGS. Cuttings from 13.6 ft to 62.6 ft consist of: quartz "pea" gravel; commercially-manufactured PVC screen fragments; medium dark gray (N4) and blackish-red (5R 2/2), thinly laminated shale; with minor dark greenish-gray (5GY 4/1), beaded and banded, sandy, glauconitic siltstone mainly in the upper part of the interval. Beta/gamma scan of the cuttings range 50 to 70 cprn for the entire interval.
	1057	1110	At 62.6 ft BGS. Clean out borehole. Trip out. Tag bottom of the borehole at 62.6 ft BGS (no fill). Calculate a borehole volume to 4.0 ft BGS of 12.5 cubic ft, equivalent to 10.6 sacks of Type I cement.
	1110	1125	Run PVC tremie pipe into the borehole to 60.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-94	1125	1209	Break for lunch.
(cont.)			
	1209	1236	Mix and pump-tremie 8 sacks (9.4 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1236	1305	Pull out tremie pipe. Clean up. Secure site and depart.
5-18-94	0740	0745	Arrive at BCU-07 site. Tag cement level at 13.0 ft BGS. Water
			level is at 7.3 ft BGS. Calculate a borehole volume to 4.0 ft BGS
			of 1.9 cubic ft, equivalent to 1.6 sacks of Type I cement. Depart
			site.
5-20-94	0926	0940	At BCU-07 site. Mix and gravity tremie 3 sacks (3.5 cubic ft) of
			neat, Type I Portland cement into the borehole using the
			discharge hose from the bladder pump as the tremie pipe.
			Circulate water, then 100% cement.,
	0940	0953	Clean up, secure site, and depart.
5-23-94	0811	0815	Arrive at BCU-07 site. Tag cement level at 1.8 ft BGS. Borehole
			is ready to be capped. Depart.
	0934	0940	Return to BCU-07 site. Cap remaining borehole with clay soil.
			P&A of well BCU-07 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Exxon Nuclear Site
DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.
HELPERS: J. Monger/D. Williford - Highland Drilling Co.
DRILL: Ingersoll-Rand XL-750

DATE: START: 5-13-94
FINISH: 5-20-94
METHOD: C
LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-13-94	1300	1347	Move drill rig onto BCU-08 site and position over the well. Begin
			setting up the site. Well BCU-08 consists of: uncapped, 1.25-in.
			outside diameter (OD), thin-walled PVC casing. Originally the
			casing had a stick-up of 2.4 ft (2.2 ft of which was removed while
			moving the rig onto the location). New casing stick-up = 0.2 ft. Well
			BCU-08 is a previously unknown and unreported (in the Subsurface
			Data Base) well. The BCU-08 designation for this well is per
			HSEA. Measure water level at 4.5 ft below ground surface (BGS).
			Tag bottom of well at 58.8 ft BGS (plan to ream borehole to
			approximately 5 ft below tagged depth, as per HSEA). Background
			radiation survey of location: alpha = 0 cpm, beta/gamma =
			60-80 cpm. Secure site and depart.
5-16-94	0843	0911	Arrive at BCU-08 site. Crew conducts pre-work equipment
			inspections. Drill rig is not perfectly centered over the well.
			Reposition the drill rig. Raise the mast.
	0911	0919	Wrap a choker around the casing and attach to drill rig winch line.
			Attempt to pull out casing encased in annular cement: cement and
			casing break, recover 1.0 ft of casing (excludes the 2.2 ft of casing
			cut off to facilitate the drill rig move). The original well bore appears
			to have a diameter of 5.0 in. Plan to drill up remaining casing while
			reaming the bore hole.
	0919	0922	Add a drill rod to the drill head. Thread a 6 1/4-in. diameter tricone
			bit onto the drill rod; length of the bit = 0.6 ft, table height = 1.9 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-16-94	0922	0958	Commence reaming the borehole with compressed air only.
(cont.)			Ream from 0.0 ft to 63.7 ft BGS. Annular cement ends at 2.0 ft
			BGS. Encounter water at 2.5 ft BGS. Top of weathered bedrock
			at 3.0 ft BGS. Cuttings from 0.0 ft to 3.0 ft BGS are: moderate
			brown (5 YR 3/4) to dark reddish-brown (10 R 3/4), moist topsoil
			with medium light gray (N6) cement fragments. Breathing zone
			analysis (BZA) at 5.0 ft BGS=0.0 ppm (background). Lower
			explosive limit (LEL) reading at 11.2 ft BGS <1% (10.2 ppm). Top
			of fresh bedrock at 11.7 ft BGS. Cuttings from 3.0 ft to 11.7 ft BGS
			are: grayish-red (5R 4/2) to grayish-brown (5YR 3/2), weathered
			and stained, thinly laminated, micaceous shale; dark yellowish-
			brown (10 YR 4/2), weathered and stained, bedded and banded
			sandy siltstone; PVC fragments; and coarse, angular quartz sand
			that grades to quartz "pea" gravel below approximately 6 ft BGS.
			BZA at 16.0 ft BGS=0.0 ppm. LEL reading at 27.7 ft BGS <1%
			(8.7 ppm). BZA at 33.5 ft, 41.7 ft, and 53.7 ft BGS read 0.0 ppm,
			0.1 ppm, and 0.0 ppm, respectively. Bottom of the well at 61.7 ft
			BGS. Cuttings from 11.7 ft to 63.7 ft BGS consist of abundant
			quartz pea gravel; blackish-red (5R 2/2) and medium dark gray
			(N4) to medium bluish-gray (5B 5/1), thinly laminated, micaceous
			shale; dark greenish-gray (5GY 4/1), bedded and banded, sandy,
			glauconitic siltstone; and PVC fragments (including commercially
			manufactured screen). Beta/gamma survey of cuttings range
			from 40 to 60 cpm for the entire interval.
	0958	1016	At 63.7 ft BGS. Clean out borehole. Trip out. Tag bottom of
			borehole; tape stops on obstruction at 24.0 ft BGS. Run PVC
			tremie pipe into borehole; it also stops at 24.0 ft BGS.
	1016	1026	Call to W. Thedford (HSEA), report status. Bill suggests cleaning
			borehole to bottom one more time, then, if still obstructed, grout the hole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-16-94	1026	1030	Pull out tremie pipe. Rig up drill bit on drill rod again.
(cont.)			
	1030	1042	Trip into borehole, cleaning. Bit to 63.0 ft BGS.
	1042	1050	Trip out. Tag bottom of borehole at 62.7 ft BGS (1.0 ft of fill).
			Calculate a borehole volume to 4.0 ft BGS of 12.5 cubic ft,
			equivalent to 10.6 sacks of Type I cement.
	1050	1056	Run PVC tremie pipe into borehole to 58.0 ft BGS.
	1056	1119	Mix and pump-tremie 10 sacks (11.8 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water.
	1119	1125	Pull out tremie pipe. Clean up. Secure site and depart.
5-17-94	0759	0803	Arrive at BCU-08 site. Tag cement level at 9.6 ft BGS. Water level
			is at 5.7 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			1.2 cubic ft, equivalent to 1.0 sack of Type I cement. Depart.
	1225	1240	Return to BCU-08 site. Mix and pour 2 sacks (2.4 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid cement to ground
			surface. Clean up. Depart site.
5-18-94	0736	0738	Arrive at BCU-08 site. Tag cement level at 3.1 ft BGS. The
			borehole is ready to be capped. Depart.
5-20-94	0918	0924	At BCU-08 site. Cap the remaining borehole with clay soil.
			P&A of well BCU-08 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-09

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-13-94

FINISH: 5-17-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-13-94	0818	0840	Arrive at BCU-09 site. The drill rig is onsite, positioned over the
			well. Well BCU-09 originally consisted of uncapped, 1.25-in.
			outside diameter (OD), thin-walled PVC casing with a stick-up of
			3.2 ft. Crew had apparently cut casing off flush with the ground
			surface to facilitate moving the drill rig onto the location. Well
			BCU-09 is a previously unknown and unreported (in the Subsurface
			Data Base) well. The BCU-09 designation for this well as per
			HSEA. Measure water level at 3.2 ft below ground surface (BGS).
			Tag bottom of well at 56.1 ft BGS. Background radiation survey
			of location: alpha = 0 cpm, beta/gamma = 60-80 cpm.
	0840	0911	Crew arrives, continues setting up the site. Dig around well head
			to expose the concrete "pad". Break up the pad and expose an
			annular cement plug below. The diameter of the original well bore
			appears to be 5.0 in. Raise the mast.
	0911	0916	Wrap a choker around the annular cement plug and attach winch
			cable to choker. Pull out casing. Extract a total of 12.5 ft of 1.25-in.
			OD, schedule 80 PVC casing, slotted over the bottom 9.2 ft.
			Casing broke off. Plan to drill up remaining casing while reaming
			borehole to a point approximately 5 ft below tagged depth.
	0916	0930	Lower mast and re-position drill rig over the well. Crew conducts
			pre-work equipment inspections.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-13-94	0930	1002	Waiting while one crew member goes for plastic sheeting. He
(cont.)			returns, spread plastic under the rig.
	1002	1006	Add a 25-ft long drill rod to the drill head. Thread a 6 1/4-in.
			diameter tricone bit onto the drill rod; length of the bit = 0.6 ft, table
			height = 2.0 ft.
	1006	1029	Commence reaming the borehole with compressed air only.
			Ream from 0.0 ft to 62.6 ft BGS. Encounter water at 1.0 ft BGS.
			Top of weathered rock at 4.0 ft BGS (cement ends and filter pack
			"pea" gravel begins at 4.0 ft BGS also). Cuttings from 0.0 ft to 4.0 ft
			BGS are: grayish-brown (5YR 3/2) topsoil with medium light gray
			(N6) cement fragments. Breathing zone analysis (BZA) at 5.0 ft
			BGS = 0.0 ppm (background). Encounter fresh rock at 12.6 ft
			BGS. Cuttings from 4.0 ft to 12.6 ft BGS are: moderate yellowish-
			brown (10YR 5/4), weathered shale; olive gray (5Y 3/2), weathered,
			bedded siltstone; and gravel. BZA at 18.6 ft BGS = 0.0 ppm.
			Lower explosive limit (LEL) reading at 22.0 ft BGS <1% (6.9 ppm).
			BZA at 29.6 ft BGS = 0.0 ppm. LEL reading at 38.6 ft BGS <1%
			(5.4 ppm). BZA at 41.6 ft and at 54.6 ft BGS both read 0.0 ppm.
			Cuttings from 12.6 ft to 62.6 ft are predominantly "dirty" pea gravel
			(dirty meaning: angular, miscellaneous igneous and/or
			metamorphic lithologies - not all quartz); blackish-red (5R 2/2),
			thinly laminated shale; greenish-black (5G 2/1), massive micrite/
			pelmicrite; and PVC fragments, the majority of which are of
			commercially-manufactured screen. The bottom of the well at
			61.0 ft BGS: assume PVC screen to the bottom. Beta/gamma
			survey of the cuttings range 50 to 70 cpm for the entire interval.
	1029	1043	At 62.6 ft BGS. Clean out borehole. Trip out. Tag the bottom of
			the borehole at 62.2 ft BGS (0.4 ft of fill). Calculate a borehole

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-13-94			volume to 4.0 ft BGS of 12.4 cubic ft, equivalent to 10.5 sacks of
(cont.)			Type I cement.
	1043	1047	Run PVC tremie pipe into the borehole to 58.0 ft BGS.
	1047	1109	Mix and pump-tremie 10 sacks (11.8 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1109	1123	Pull out tremie pipe. Clean up. Secure site and depart.
5-16-94	1222	1231	At BCU-09 site. Tag cement level at 7.0 ft BGS. Water level is
			even with the ground surface. Calculate a borehole volume to 4.0
			ft BGS of 0.6 cubic ft, equivalent to 0.5 sacks of Type I cement.
			Depart.
			--
	1450	1458	Return to BCU-09 site. Mix and pump-tremie (using the pump
			hose as tremie pipe) approximately 1.5 sacks (1.8 cubic ft) of neat,
			Type I Portland cement into the borehole. Circulate water, then
			100% cement. Clean up, and depart site.
5-17-94	0803	0805	Arrive at BCU-09 site. Tag cement level at 2.0 ft BGS. Borehole
			is ready to be capped.
	0859	0903	The remaining borehole is capped with clay soil.
			P&A of well BCU-09 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Exxon Nuclear Site
DRILLER: R. Phillips - Highland Drilling Co.
HELPERS: J. Monger/R.M. Collins - Highland Drilling Co.
DRILL: Ingersoll-Rand XL-750

DATE: START: 5-9-94
FINISH: 5-11-94
METHOD: B
LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-9-94	1006	1028	At BCU-10 site. Crew is using dozer to prepare the site for the drill
			rig. Well BCU-10 consists of capped, 1.25-in. outside diameter
			(OD), thin-walled PVC casing with a stick-up of 2.3 ft (1.6 ft of
			casing removed to facilitate drill rig move to location). Well
			BCU-10 is a previously unknown and unreported (in Subsurface
			Data Base) well. The BCU-10 designation for this well is per
			HSEA. Uncap well: organic vapors = 0.0 ppm (background), lower
			explosive limit (LEL) reading <1% (4.0 ppm). Measure water level
			at 2.9 ft below ground surface (BGS). Tag bottom of well at 55.8 ft
			BGS. Plan to ream the well bore to approximately 5 ft below this
			depth. Give site-specific health and safety briefing to new Highland
			Drilling Company helper: R.M. Collins. Crew conducts pre-work
			equipment inspections.
	1028	1059	Move drill rig onto the BCU-10 location and position over the well.
			Begin setting up the site. Background radiation survey of location:
			alpha = 0 cpm, beta/gamma = 50-70 cpm. Raise the mast.
	1059	1126	Dig around the well head to expose the concrete "pad." Break up the
			concrete pad and expose annular cement below. Break up some of
			the annular cement and extract a total of 8.2 ft (include 1.6 ft of stick-
			up cut off earlier) of 1.25-in. OD, schedule 80 PVC casing. The
			diameter of the original well bore appears to be 5.0 in. Plan to drill
			up remaining casing when reaming the borehole.
	1126	1157	Break for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-9-94	1157	1201	Add a 25-ft drill rod to the drill head. Thread a 6 1/4-in. diameter
(cont.)			tricone bit onto the drill rod; length of the bit = 0.6 ft, table
			height = 3.0 ft.
	1201	1253	Commence reaming the borehole with compressed air only.
			Ream from 0.0 ft to 61.6 ft BGS. Breathing zone analysis (BZA)
			at 2.6 ft BGS = 0.0 ppm (background). Encounter water at 2.8 ft
			BGS. Top of weathered rock at 4.2 ft BGS. Cuttings from 0.0 ft
			to 4.2 ft BGS; moderate brown (5YR 3/4) to moderate yellowish-
			brown (10YR 5/4), dry, stiff soil (topsoil). Medium gray (N5)
			cement fragments also observed in interval. LEL reading at 6.6 ft
			BGS <1% (4.5 ppm). BZA at 9.6 ft BGS = 0.0 ppm. Encounter
			fresh rock and abundant water at 13.0 ft BGS. Cuttings from
			4.2 ft to 13.0 ft BGS consist of dark yellowish-orange (10YR 6/6)
			to light olive gray (5Y 5/2), weathered and stained, thinly laminated,
			micaceous shale. BZA at 14.6 ft BGS = 0.2 ppm. LEL reading
			at 19.2 ft BGS <1% (5.5 ppm). BZA at 27.6 ft BGS = 0.2 ppm. LEL
			reading at 33.6 ft BGS <1% (6.0 ppm). BZA at 39.6 ft and at
			56.6 ft BGS read 0.0 ppm and 0.2 ppm, respectively. Cuttings
			from 13.0 ft to 61.6 ft BGS consist predominantly of blackish-red
			(5R 2/2) and dark gray (N3), thinly laminated shale; with minor
			dark greenish-gray (5GY 4/1), bedded and banded, glauconitic
			siltstone. Also noted PVC casing fragments from this interval.
			Beta/gamma survey of the cuttings range from 70 to 80 cpm for
			the entire interval.
	1253	1310	At 61.6 ft BGS. Clean out borehole. Trip out, tag bottom of
			borehole at 61.6 ft BGS (no fill). Calculate a borehole volume to
			4.0 ft BGS of 12.3 cubic ft, equivalent to 10.4 sacks of Type I
			cement.
	1310	1403	Crew goes to get grouting supplies.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-9-95	1403	1409	Crew returns and runs PVC tremie pipe into the borehole to
(cont.)			56.0 ft BGS.
	1409	1450	Mix and pump-tremie 11 sacks (13.0 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1450	1515	Pull out tremie pipe and clean up. Secure carousel and lower the
			mast as a safety precaution. Secure site and depart.
5-10-94	0814	0841	Arrive at BCU-10 site. Tag cement level at 6.7 ft BGS. Water level
			is at 5.7 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 0.6
			cubic ft, equivalent to 0.5 sacks of Type I cement. Awaiting crew.
	0841	0919	Crew arrives. Mix and pump-tremie (using pump discharge hose
			only as the tremie pipe) 2 sacks (2.4 cubic ft of neat, Type I
			Portland cement into the borehole. Circulate 100% cement.
			Depart site.
5-11-94	1340	1347	At BCU-10 site. Tag cement level at 1.5 ft BGS. Cap the
			remaining borehole with clay soil.
			P&A of well BCU-10 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-11

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLER: H. Hall - Highland Drilling Co.

HELPERS: J. Monger/R. Phillips - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-10-94

FINISH: 5-13-94

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-10-94	1000	1044	Arrive at BCU-11 site. Well is uncapped, and consists of 1.25-in.
			outside diameter (OD), thin-walled PVC casing flush with the
			ground. The well is located in a shallow depression. At the time
			of discovery of the well, water was flowing out of the well. The
			water level now is at an indeterminable depth. A weighted tape
			stops on an obstruction at 2.0 ft below ground surface (BGS). Well
			BCU-11 is a previously unknown and unreported (in the Subsurface
			Data Base) well. The BCU-11 designation for this well as per
			HSEA. Crew begins digging around the well to expose the annular
			cement. Dig to about 2.5 ft BGS, breaking up the cement plug
			along the way. Plan to drill up casing while reaming the borehole.
			The diameter of the original well bore appears to be 5.0 in. Cut off
			1.6 ft of casing. Run a weighted tape into the casing to 15.5 ft BGS:
			another obstruction.
	1044	1116	Move drill rig onto BCU-11 site, and position over the well. Begin
			setting up the site. Background radiation survey of location: alpha
			= -NA- (meter malfunctioning), beta/gamma = 60-80 cpm.
	1116	1120	Add a 25-ft long drill rod to the drill head. Thread a 6 1/4-in.
			diameter tricone bit onto the rod; length of the bit = 0.6 ft, table
			height = 3.3 ft.
	1120	1124	Commence reaming borehole/drilling PVC casing with compressed
			air only. Ream from 0.0 ft to 3.6 ft BGS. Bit is beginning to deflect
			off of the borehole. Breathing zone analysis (BZA) at 2.3 ft BGS

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-11
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-10-94			= 0.1 ppm (background = 0.0 ppm). Cement stops at 3.0 ft BGS,
(cont.)			"pea" gravel in annulus below cement. Cuttings from 0.0 ft to 3.6 ft
			BGS are grayish-orange (10YR 7/4) to pale yellowish-brown
			(10YR 6/2), dry, stiff soil including medium gray (N5) cement, and
			undifferentiated pea gravel.
	1124	1143	Trip out, secure carousel, and lower the mast. Re-position the drill
			rig over the well. Raise the mast, ready to drill. The table height
			remains at 3.3 ft.
	1143	1218	Break for lunch.
	1218	1247	Continue reaming. Ream from 3.6 ft to 47.3 ft BGS. Encounter
			moisture at 4.0 ft BGS, then water at 4.3 ft BGS. BZA at 6.3 ft BGS
			= 0.0 ppm. Lower explosive limit (LEL) reading at 9.0 ft BGS <1%
			(4.0 ppm). Encounter fresh bedrock at 12.0 ft BGS. Suspect top
			of weathered rock at 4.3 ft BGS. Cuttings from 3.6 ft to 4.3 ft BGS:
			same as 0.0-ft to 3.6-ft interval. Cuttings from 4.3 ft to 12.0 ft BGS
			are: dark yellowish-brown (10YR 4/2) to moderate yellowish-
			brown (10YR 5/4), weathered and stained shale and sandstone.
			Rock fragments contain abundant iron oxide stain and cement,
			and are cavatose in appearance. Also observe "pea" gravel and
			PVC fragments from this interval. BZA at 15.0 ft BGS = 0.2 ppm.
			LEL reading at 27.3 ft BGS <1% (3.7 ppm). BZA at 33.3 ft and at
			43.3 ft BGS both read 0.0 ppm. Cuttings from 12.0 ft to 47.3 ft BGS
			consist predominantly of equal amounts of blackish-red (5R 2/2)
			and medium dark gray (N4), thinly laminated shale; with minor
			dark greenish-gray (5GY 4/1), bedded and banded, glauconitic
			siltstone; and medium dark gray (N4) to olive gray (5Y 4/1),
			massive micrite. Still returning abundant pea gravel in this
			interval. Still see PVC fragments in returns, but it is difficult to tell
			if the PVC is from this interval or if it has washed in from above.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-11
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-10-94			Beta/gamma scan of cuttings range 50 to 60 cpm for the entire
(cont.)			interval.
	1247	1304	At 47.3 ft BGS. Clean out borehole. Pull bit 25 ft off bottom. Shut
			off drill rig. Driller is concerned that large hole at collar, made
			while exposing the annular cement, is growing and that further
			drilling without conducter casing could jeopardize the integrity of
			the borehole or the safety of the drill rig.
	1304	1338	Crew goes to get a piece of conductor casing.
	1338	1344	Crew returns with a 4.4 ft long section of 7.0 in. OD steel casing.
			Trip tools all the way out of the borehole.
	1344	1405	Run the casing into the borehole: the top of the hole is too large,
			casing drops too deeply into the borehole. Need to use a larger-
			diameter piece of casing. Try to contact HSEA for guidance, no
			one available.
	1405	1415	Lower mast as a safety precaution. Secure site and depart. Was
			able to reach K. Jago (HSEA) later who directed to grout the
			borehole without further reaming. We suspect that reaming has
			progressed to below the screened interval.
5-11-94	1027	1119	Arrive at BCU-11 site. Tag bottom of borehole at 45.0 ft BGS
			(2.3 ft of fill). Calculate a borehole volume to 4.0 ft BGS of
			8.7 cubic ft, equivalent to 7.4 sacks of Type I cement. Waiting on
			crew.
	1119	1130	Crew arrives and runs PVC tremie pipe into the borehole to 39.0 ft
			BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-11
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-11-94	1130	1150	Mix and pump-tremie 7 sacks (8.3 cubic ft) of neat, Type I
(cont.)			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1150	1155	Pull out tremie and clean up. Depart site.
5-12-94	0813	0823	Arrive at BCU-11 site. Tag cement level at 17.8 ft BGS. Water
			level is at 4.5 ft BGS. Calculate a borehole volume to 4.0 ft BGS
			of 2.9 cubic ft, equivalent to 2.5 sacks of Type I cement. Depart
			site.
	1213	1241	Return to BCU-11 site. Mix and pour 3 sacks (3.5 cubic ft) of
			neat, Type I Portland cement into the borehole. Liquid cement
			to ground surface. Depart.
5-13-94	0807	0810	At BCU-11 site. Tag cement level at 3.0 ft. Borehole is ready to
			be capped. Depart.
	1043	1047	Return to BCU-11 site, and cap the remaining borehole with clay
			soil.
			P&A of well BCU-11 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-13

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLER: H. Hall - Highland Drilling Co.

HELPERS: J. Monger/R. Phillips - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-6-94

FINISH: 5-10-94

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-6-94	0959	1030	Move drill rig onto BCU-13 site and position over the well. Begin
			to set up site. Well BCU-13 consists of uncapped, 4.5-in. outside
			diameter (OD) PVC casing with a stick-up of 1.0 ft. Well BCU-13
			is a previously unknown and unreported (in Subsurface Data Base)
			well. The BCU-13 designation for this well is per HSEA. Measure
			water level at 9.0 ft below ground surface (BGS). Tag bottom of
			well at 25.1ft BGS. Target depth for reaming is approximately
			30.1 ft BGS. Background radiation survey of location: alpha=0 cpm,
			beta/gamma = 60-70 cpm.
	1030	1051	There is no concrete pad for well BCU-13. Pull out the casing by
			hand. Extract a total of 9.9 ft of 4.5-in. OD, schedule 40 PVC
			casing. The diameter of the original well bore appears to be 5.0 in.
	1051	1058	Rig up with an 8 3/4-in. diameter tricone bit on a subadapter; total
			length = 4.3 ft, table height = 2.5 ft.
	1058	1118	Commence reaming the borehole with compressed air only. Ream
			from 0.0 ft to 30.8 ft BGS. Breathing zone analysis (BZA) at 2.8 ft
			BGS = 0.0 ppm (background). Lower explosive limit (LEL) reading
			at 7.8 ft BGS <1% (4.7 ppm). Encounter moisture along with the
			top of weathered bedrock at 8.8 ft BGS. Cuttings from 0.0 ft to 1.8 ft
			BGS consist of grayish-brown (5YR 3/2), moist, clayey topsoil.
			Cuttings from 1.8 ft to 8.8 ft BGS are light brown (5YR 5/6) to
			moderate brown (5 YR 4/4) and grayish-orange (10 YR 7/4), moist,
			stiff, clayey subsoil with weathered shale fragments.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-13
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-6-94			BZA at 15.8 ft BGS = 0.0 ppm. Top of fresh bedrock and sewage-
(cont.)			like smelling water at 17.8 ft BGS: BZA = 0.0 ppm. Cuttings from
			8.8 ft to 17.8 ft BGS are: light brown (5YR 5/6) to moderate
			yellowish-brown (10 YR 5/4), weathered shale and weathered
			bedded, sandy siltstone. LEL reading at 22.8 ft BGS <1%
			(3.5 ppm). BZA at 27.8 ft BGS = 0.0 ppm. Cuttings from 17.8 ft to
			30.8 ft consist predominantly of blackish-red (5R 2/2), thinly
			laminated, micaceous shale; plus dark greenish-gray (5GY 4/1),
			bedded and banded, glauconitic, sandy siltstone; plus animal hair
			and a large (1.0-in long) claw. Beta/gamma survey ranges from 60
			to 70 cpm for the entire interval.
	1118	1125	At 30.8 ft BGS. Clean out borehole. Trip out.
	1125	1222	Break for lunch.
	1222	1309	Crew departs for grouting supplies and a lifting bell for the bit/
			subadapter assembly.
	1309	1316	Rig down bit/subadapter assembly. Tag bottom of borehole at
			30.0 ft BGS (0.8 ft of fill). Calculate a borehole volume to 4.0 ft BGS
			of 10.9 cubic ft, equivalent to 9.2 sacks of Type I cement.
	1316	1322	Run PVC tremie pipe into the borehole to 29.0 ft BGS.
	1322	1345	Mix and pump-tremie 8 sacks (9.4 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water, then 100% cement.
	1345	1415	Pull out tremie pipe and clean up. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-13
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-9-94	0903	0919	At BCU-13 site. Tag cement level at 7.7 ft BGS. Water level is at
(cont.)			6.5 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 0.8 cubic
			ft, equivalent to 0.7 sacks of Type I cement. Awaiting crew.
	0919	0940	Crew arrives. Mix and pour 2 sacks (2.4 cubic ft) of neat, Type I
			Portland cement directly into the borehole. Liquid grout level to
			0.5 ft BGS. Depart.
5-10-94	0812	0815	Arrive at BCU-13 site. Tag cement level at 1.3 ft BGS. Borehole
			is ready to be capped. Depart.
	1218	1223	Return to BCU-13 site. Cap borehole with clay soil.
			P&A of well BCU-13 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-16

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-13-94

FINISH: 4-18-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-13-94	0823	0910	Arrive at BCU-16 site. Drill rig is onsite, positioned over the well.
			Well BCU-16 consists of uncapped, 1.25-in. inside diameter (ID)
			PVC casing (stick-up = 0.9 ft). Measure water level at 37.1 ft below
			ground surface (BGS). Tag bottom of the well (soft) at 146.3 ft
			BGS. Radiation scan (background) of location: alpha = 0 cpm,
			beta/gamma = 50-60 cpm. Well is previously unknown and is not
			reported in the Subsurface Data Base (Y/TS-881/R1). The BCU-
			16 designation for the well is per S. Jones (HSEA).
	0910	0922	Crew arrives (they had been delayed re-assembling brakes on the
			driller's truck). Crew conducts pre-work equipment inspections.
			Finish setting up site.
	0922	0930	Break up concrete "pad," and pull out casing by hand. Extract a
			total of 38.4 ft of 1.25-in. ID, schedule 40 PVC casing, slotted over
			entire length. Plan to grout the "open interval" to a point 20 ft below
			the top of fresh rock (TOFR). Assume the TOFR in BCU-16 to be
			the same as BC-35 located 18 ft to the west (27.0 ft BGS).
			Calculate a borehole volume from 146.3 ft to 47.0 ft BGS of 4.9
			cubic ft, equivalent to 4.1 sacks of Type I cement.
	0930	0944	Run PVC tremie pipe into borehole to 137.0 ft BGS.
	0944	1000	Crew off getting grouting supplies.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-16
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-13-94	1000	1017	Mix and pump-tremie 5 sacks (5.9 cubic ft) of neat, Type I Portland
(cont'd)			cement into the borehole. Circulate water.
	1017	1045	Pull out tremie pipe and clean up. Secure site and depart.
4-14-94	0810	0845	Arrive at BCU-16 site. Tag cement level at 9.0 ft BGS. Water level
			is at 8.5 ft BGS. Crew arrives, conducts pre-work equipment
			inspections.
	0845	0857	Start drill rig. Raise mast.
	0857	0916	Rig up with a 6 1/8-in. diameter tricone bit on a subadapter; total
			length = 2.8 ft, table height = 2.2 ft. Add a drill rod.
	0916	0946	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 47.6 ft BGS. Breathing zone analysis (BZA) at 7.0 ft
			BGS = 0.0 ppm (background). Top of weathered rock at 9.0 ft
			BGS. Cuttings from 0.0 ft to 9.0 ft BGS consist of moderate
			yellowish-brown (10YR 5/4) to light brown (5YR 5/6), moist, clayey
			soil. Lower explosive limit (LEL) reading at 12.2 ft BGS = <1%
			(6.0 ppm). BZA at 16.6 ft BGS = 0.0 ppm. Top of fresh rock at
			22.6 ft BGS. Cuttings from 9.0 ft to 22.6 ft BGS are: pale yellowish-
			brown (10YR 6/2) to light olive gray (5Y 5/2), weathered and
			stained thinly laminated shale, along with minor olive gray
			(5Y 4/1) partially-cured cement fragments. BZA at 28.6 ft, 35.6 ft,
			and 41.6 ft BGS all read 0.0 ppm. Cuttings from 22.6 ft to 47.6 ft
			BGS are: approximately equal amounts of very dusky red
			(10R 2/2) and medium dark gray (N4), thinly laminated shale; with
			rare pinkish-gray (5YR 8/1) calcite stringers. Beta/gamma scan of
			the cuttings range from 50 to 80 cpm for entire interval.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-16
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-14-94	0946	1005	At 47.6 ft BGS. Clean out borehole. Trip out. Tag the bottom of
(cont'd)			the borehole at 45.0 ft BGS (2.6 ft of fill). Calculate a borehole
			volume to 4.0 ft BGS of 8.4 cubic ft, equivalent to 7.1 sacks of
			Type I cement.
	1005	1008	Run PVC tremie pipe into the borehole to 36.0 ft BGS.
	1008	1027	Mix and pump-tremie 8 sacks (9.4 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate 100% cement.
	1027	1040	Pull out tremie pipe and clean up. Begin to break down site to move
			drill rig. Secure site and depart.
4-15-94	0802	0808	Arrive at BCU-16 site. Tag cement level at 5.6 ft BGS. Water level
			is at 5.1 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			0.3 cubic ft, equivalent to 0.3 sacks of Type I cement. Depart site.
	1108	1114	Return to BCU-16 site. Mix and pour 1 sack (1.2 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid grout to ground
			surface. Depart site.
4-18-94	0758	0800	Arrive at BCU-16 site. Tag cement level at 1.0 ft BGS. Borehole
			is ready to be capped. Depart.
	1400	1410	Return to BCU-16 site. Cap borehole with clay soil.
			P&A of well BCU-16 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-20

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Exxon Nuclear Site

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.

HELPERS: J. Monger/D. Williford - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-21-94

FINISH: 5-6-94

METHOD: D

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-21-94	0930	0948	Arrive at BCU-20 site. Move drill rig onto location and position over
			well. Drill crew conducts pre-work equipment inspections. Begin
			setting up site. Well BCU-20 consists of 1.25-in. outside diameter
			(OD), thin-walled PVC casing. The casing is broken off flush with
			the top of the concrete "pad." The top of the concrete pad (which
			marks the original ground surface) is approximately 1.2 ft above
			the present ground surface. Measure water level in well at 46.3 ft
			below ground surface (BGS). Tag bottom of well (soft) at 76.6 ft
			BGS. Radiation scan (background) of location: alpha = 0 cpm,
			beta/gamma = 70-90 cpm.
	0948	1005	Driller is experiencing difficulty with the nine-spool hydraulic
			controls: controls are sluggish.
	1005	1104	Move drill rig off site. Remove and inspect the pressure-relief
			valve: valve is in good shape and appears to be functioning
			properly. Highland Drilling Co. Field Supervisor calls Ingersoll-
			Rand mechanics for assistance.
	1104	1227	Crew performs tests on drill rig, mechanics suspect main hydraulic
			pump is on the verge of failing. Will be unable to begin reaming
			BCU-20 today. Crew is moving drill rig off site. Secure site and
			depart.
5-4-94	0850	0916	P&A activities resume at BCU-20 after extended delay due to
			mechanical problems with the drill rig. Arrive at BCU-20 site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-20
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-94			Crew is preparing the site for the drill rig. Weathered bedrock is
(cont'd)			now exposed at the ground surface. Cut off the top 1.1 ft of well
			casing (includes the concrete "pad").
	0916	0943	Move drill rig onto location, and position over well. Set up site,
			prepare to pull casing.
	0943	1000	Pull out the casing using the drill rig and a chain. Casing appears
			to break off below the ground surface. Extract 43.4 ft (plus 1.1 ft
			cut off earlier for a total of 44.5 ft) of 1.25-in. OD, schedule 80 PVC
			casing. The bottom 5.0 ft is a section of commercially manufactured
			screen, the bottom of which looks like it may have slipped out of
			a connection.
	1000	1006	Add a rod to the drill head and thread a 6 1/4-in. diameter tricone
			bit onto the rod; length of the bit = 0.6 ft, table height = 2.0 ft.
	1006	1046	Commence reaming the borehole with compressed air only.
			Ream from 0.0 ft to 82.6 ft BGS. No soil at this location, weathered
			bedrock begins at ground surface. Breathing zone analysis (BZA)
			at 3.6 ft BGS = 0.0 ppm (background). Lower explosive limit (LEL)
			reading at 8.0 ft BGS <1% (3.1 ppm). BZA at 14.5 ft BGS = 0.0 ppm.
			Encounter a small amount of moisture at 28.6 ft BGS. BZA at
			31.6 ft BGS = 0.0 ppm. LEL reading at 36.6 ft BGS <1%
			(2.5 ppm). Begin to see fresh rock at 41.6 ft BGS. Cuttings from
			0.0 ft to 41.6 ft BGS consist of grayish-orange (10YR 7/4) to
			moderate yellowish-brown (10YR 5/4) to pale yellowish-brown
			(10YR 6/2) to light olive gray (5Y 5/2), weathered and stained,
			thinly laminated shale; becoming noticeably darker with depth.
			Also, interval contains a minor amount of dark yellowish-brown
			(10YR 4/2), weathered, massive micrite. BZA at 44.6 ft BGS =
			0.0 ppm. Observe a mix of both weathered and fresh rock

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-20
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-94			cuttings. BZA at 53.6 ft BGS = 0.0 ppm. Top of entirely fresh
(cont'd)			bedrock at 54.6 ft BGS. Cuttings from 41.6 ft to 54.6 ft BGS
			consist of: pale yellowish-brown (10YR 6/2) to light olive gray
			(5Y 5/2), weathered, thinly laminated shale; and light brownish-
			gray (5YR 6/1), massive micrite. Small chips of granular to
			crystalline calcite were observed in this interval. LEL reading at
			66.6 ft BGS <1% (2.8 ppm). BZA at 69.6 ft and at 75.6 ft BGS both
			read 0.0 ppm. Cuttings from 54.6 ft to 82.6 ft BGS consist
			predominantly of medium dark gray (N4) to brownish-gray
			(5YR 4/1), massive micrite with occasional sparite blebs; minor
			medium dark gray (N4) shale; and coarsely-crystalline calcite.
			No PVC fragments observed at all. Beta/gamma survey of
			cuttings ranged from 60 to 90 cpm for the entire interval.
	1046	1052	At 82.6 ft BGS. Clean out borehole. Pull up to an even connection
			and secure tools. Call to W. Thedford (HSEA), report status:
			report no additional PVC observed. Bill directs to grout borehole.
	1052	1121	Trip out of borehole. Tag bottom at 82.6 ft BGS (no fill). Calculate
			a borehole volume to 4.0 ft BGS of 16.8 cubic ft, equivalent to
			14.2 sacks of Type I cement. Secure carousel and rig down.
	1121	1130	Move drill rig away from borehole. Run PVC tremie pipe into
			borehole to 79.0 ft BGS.
	1130	1240	Break for lunch. Screening cuttings from 0.0 ft to 82.6 ft BGS (see
			Well Cuttings Field Screening/Disposal Sheet).
	1240	1305	Mix and pump-tremie 7 sacks (8.3 cubic ft) of neat, Type I
			Portland cement into the borehole. Cement/Water level at
			approximately 20 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BCU-20
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-94	1305	1319	Pull out tremie pipe and clean up.
(cont'd)			
	1319	1343	H. Hall (Highland) off site, getting more water.
	1343	1403	H. Hall returns. Mix and pump-tremie (using pump hose as tremie
			pipe) an additional 5 sacks (5.9 cubic ft) of neat, Type I Portland
			cement into the borehole. Circulate water, then 100% cement.
			Used a total of 12 sacks (14.2 cubic ft) of cement.
	1403	1425	Clean up. Crew continues to break down the site. Oversight
			departs.
5-5-94	1211	1215	At BCU-20 site. Tag cement level at 14.0 ft BGS. Water level is
			at 13.8 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 2.1
			cubic ft, equivalent to 1.8 sacks of Type I cement. Depart.
	1300	1330	Return to BCU-20 site with crew. Mix and pour 3 sacks (3.5 cubic
			ft) of neat, Type I Portland cement directly into the borehole. Liquid
			grout to approximately 2 ft BGS. Depart site.
5-6-94	0810	0812	At BCU-20 site. Tag cement level at 2.0 ft BGS. Borehole is ready
			to be capped. Depart.
	1420	1427	Return to BCU-20 site. Cap remaining borehole with clay soil.
			P&A of well BCU-20 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-110

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 5

LOCATION: Grassy Creek Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: R. Phillips/J. Monger - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 1-10-94

FINISH: 1-13-94

METHOD: A

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-10-94	1038	1048	Arrive at GW-110 site. Crew is onsite. Drill rig is positioned over well. Well head consists of 2.37-in. outside diameter (OD) stainless-steel well casing (stick-up = 3.1 ft) cemented inside a section of 6 5/8-in. OD steel conductor casing (stick-up 2.5 ft). Crew has rig warming up, plan to try and pull well casing out of the ground.
	1048	1124	Begin breaking up concrete pad. Background radiation of site and concrete pad fragments: beta/gamma =-40-60 cpm, alpha = 0 cpm. Cut off 1.2 ft of the conductor casing. Note: When torch first penetrated the casing, a short burst of pressurized gas escaped from the opening. The gas did not ignite, but work was stopped and the area was cleared until screened with the following results: lower explosive limit (LEL) = <1% (4.5 ppm), organic vapors = 0.2 ppm (0.0 ppm = background), and radioactivity (beta/gamma) = 40 cpm. Note: HSEA directs that from now on, all wells with a functioning cap will have the cap removed, and the well checked for organic vapors and explosive gases. The stainless-steel well casing has been pinched tight beginning 1.4 ft below the top of the casing (BTOC). Cut off 1.2 ft of the stainless-steel casing.
	1124	1158	Excavate around the conductor casing with shovels and locate the base of the casing approximately 2 ft below the ground surface (BGS). Raise the rig mast.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-110
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-10-94	1158	1212	Cinch chains around the annular cement column just below the
(cont.)			conductor casing and attempt to pull out: casing begins to inch
			upward when struck with a sledge, but otherwise holds fast.
	1212	1304	Break for lunch. Call to HSEA seeking guidance/direction. HSEA
			directs to over wash the casing. Crew departs for washover
			equipment. Oversite departs for office.
1-11-94	0802	0816	Arrive at GW-110 site. Crew has rigged up a 24.5-ft long section
			of 8.25-in. inside diameter (ID), 9.5-in. OD washover pipe on a
			1.0 ft subadapter; total length = 25.5 ft, table height = 2.9 ft. Drill
			crew arrives.
	0816	0823	Start drill rig, warming up.
	0823	0855	Cooling fan is not turning, indicating a possible problem with the
			double pump. Shut off rig. Crew checks pump; pump is fine.
			Problem may be with ice in a hydraulic line. Will allow rig to warm
			up longer.
	0855	0909	Start drill rig; cooling fan is turning now. The earlier problem is
			apparently resolved.
	0909	0948	Commence over wash with compressed air only. Over wash
			casing from 2.0 ft (bottom of casing excavation) to 15.6 ft BGS.
			Cuttings from 2.0 ft to 3.0 ft BGS consist of dark yellowish-orange
			(10 YR 6/6) to light brown (5 YR 5/6), moist, clayey subsoil with
			rare medium dark gray (N4) cement fragments. Breathing zone
			analysis (BZA) at 3.5 ft BGS = 0.3 ppm (background = 0.0 ppm).
			Detect odor (like that encountered when cutting conductor casing)
			at 5.0 ft BGS: BZA = 3.0 ppm (max.), 1.0-1.5 ppm (steady).
			Advised crew not to linger at borehole collar. Cuttings from 3.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-110
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-11-94			to 5.6 ft BGS are pale brown (5 YR 5/2), dry, clayey subsoil
(cont.)			containing abundant medium dark gray (N4) cement fragments.
			Encounter water at 7.2 ft BGS. Few cuttings return after hitting
			water. LEL reading at 8.6 ft BGS = <1% (4.5 ppm). Small blow-
			outs occur in casing excavation and on ground surface as much
			as 8 ft from borehole collar. Air paths are quickly plugged. BZA
			at 11.2 ft BGS = 0.2 ppm. Cuttings from 5.6 ft to 15.6 ft BGS consist
			of dark yellowish-orange (10 YR 6/6) to dusky yellow (5 Y 6/4),
			moist, clayey subsoil with abundant medium dark gray (N4)
			cement fragments.
	0948	1000	At 15.6 ft BGS. Trip out: casing has dropped down approximately
			2 ft. Attach chain and extract 3.2 ft of 6 5/8-in. OD steel casing
			(total of 4.4 ft of casing removed from borehole). Extracted casing
			has a 0.6 ft section of twisted stainless-steel casing extending from
			the down-hole end. The up-hole end of stainless steel casing
			remaining in borehole is unencased and is located at about
			4.5 ft BGS.
	1000	1018	Attach chain to stainless and attempt to pull: will not come out and
			driller is concerned about ripping the stainless-steel casing apart.
	1018	1020	Trip back into borehole. Circulate water.
	1020	1037	Continue over wash. Over wash casing from 15.6 ft to 22.6 ft BGS.
			BZA at 16.6 ft BGS = 0.2 ppm. Cuttings from 15.6 ft to 22.6 ft BGS
			consist primarily of medium gray (N5) cement fragments and light
			olive gray (5 Y 5/2), weathered and stained, thinly laminated shale
			in moderate yellowish-brown (10 YR 5/4) mud.
	1037	1053	At 22.6 ft BGS, clean out borehole. Trip out, rig down washover
			pipe. Unable to see the stainless-steel well casing.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-110
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-11-93	1053	1132	Use a spotlight to look for the casing, but borehole has filled with
(cont.)			water. Use a weighted tape and long pole to "feel" for the casing,
			unsuccessfully.
	1132	1205	Break for lunch.
	1205	1253	Continue trying to locate the casing within the borehole with poor
			results.
	1253	1255	Call to B. Thedford (HSEA), report status. Bill directs to grout the
			borehole as is. Tag bottom of hole at 14.0 ft BGS (8.6 ft of cave-
			in). Calculate a borehole volume to 4.0 ft BGS of 4.9 cubic ft,
			equivalent to 4.2 sacks of Type I cement.
	1255	1325	Crew departs to gather grouting supplies.
	1325	1404	Run PVC tremie pipe into borehole to 10.0 ft BGS. Mix and pump-
			tremie 6 sacks (7.1 cubic ft) of neat Type I Portland cement into the
			borehole. Circulate water.
	1404	1438	Pull out tremie pipe. Clean up. Prepare rig for demobilization.
			Move rig offsite. Secure site and depart.
1-12-94	0757	0805	Arrive at GW-110 site. Tag cement level at 7.3 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 1.6 cubic ft, equivalent to
			1.4 sacks of Type I cement. Depart site.
	0839	0858	Return to GW-110 site with drill crew. Mix and pump-tremie
			2 sacks (2.4 cubic ft) of neat, Type I Portland cement into borehole.
			Circulate water.
	0858	0905	Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-110
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-13-94	0722	0726	Arrive at GW-110 site. Tag cement level at 3.4 ft BGS. Borehole
			is ready to be capped. Depart.
	1230	1245	Borehole is capped with clay soil.
			P&A of GW-110 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-114
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 5

LOCATION: Bear Creek Road

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Jeff Monger, Randy Phillips, Mark Baker

DRILL: Ingersoll-Rand XL-750

DATE: START: 1-14-94

FINISH: 1-24-94

METHOD: A

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-14-94	0755	0825	Arrive at GW-114 site. Drill rig is positioned over the well. The
			concrete pad has been broken and removed. Awaiting crew. The
			well consists of 2.37-in. outside diameter (OD) stainless-steel
			well casing (stick-up = 3.6 ft) within a section of 6 5/8-in. OD steel
			conductor casing (stick-up = 3.3 ft). At 0.5 ft above the ground
			surface, the steel casing ends and the conductor casing is 6.0-in.
			OD PVC casing extending to an unknown depth. The
			stainless-steel well casing is pinched shut at 1.7 ft below top of
			casing (BTOC); unable to tag bottom with a weighted tape.
	0825	0845	Crew arrives, starts drill rig: warm up. Crew performs pre-work
			equipment inspection.
	0845	0930	Cut off the steel conductor casing (a total of 2.8 ft of 6 5/8-in. OD
			casing removed). Organic vapors at well collar = 1.0 ppm, lower
			explosive limit (LEL) = <1% (5.5 ppm). Cut off 1.9 ft of stainless-
			steel casing, new stick-up = 1.7 ft. Tag bottom of well (hard) at
			118.3 ft BTOC = 116.6 ft below ground surface (BGS).
			Note: the Subsurface Data Base (Y/TS-881/R1) reports the total
			depth of GW-114 to be 120.0 ft. W. Thedford (HSEA) onsite.
	0930	0940	Raise mast. Rig up a 16.9-ft long section (length includes
			subadapter) of 5.5-in. OD, 4.25-in. inside diameter (ID) washover
			pipe. Table height = 2.6 ft. Background radiation at site: alpha
			= 0 cpm, beta/gamma = 50 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-114
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-14-94	0940	1011	Commence over wash with compressed air only. Over wash
(cont.)			casing from 0.0 ft to 10.4 ft BGS. Breathing zone analysis (BZA)
			at 3.3 ft BGS = 0.0 ppm (background). Observe strong
			ammonia-like, acrid odor in dust beginning at 4.0 ft BGS, BZA =
			0.0 ppm. Ammonia-like odor observed through to14.0 ft BGS.
			LEL reading at 6.5 ft = <1% (3.5 ppm). Circulation is sporadic
			below 6.5 ft BGS, regained fully by 13.0 ft BGS. LEL reading at
			10.3 ft BGS = <1% (3.0 ppm). Cuttings from 0.0 ft to 14.0 ft BGS
			consist primarily of medium light gray (N6) to light gray (N7)
			cement fragments, and white (N9) PVC fragments with occasional
			occurrences of light brown (5YR 5/6) to moderate brown
			(5YR 4/4), moist, clayey soil.
	1011	1038	At 14.0 ft BGS. Trip out. The stainless-steel casing has dropped
			down to approximately 2.5 ft BGS. Attach chain to casing and
			extract 7.6 ft of unencased (no grout) 2.37-in. OD stainless-steel
			casing. Casing is twisted at several locations, casing has been
			twisted off of remaining casing. Tag bottom of borehole at 14.0 ft
			BGS; however, also encountered top of remaining well casing at
			about 11 ft BGS. Discuss options with W. Thedford. Plan to ream
			the borehole to expose fresh soil/rock, trying to get as deep as
			possible.
	1038	1058	Crew departs for reaming bit. W. Thedford departs. Screen
			cuttings from 0.0 ft to 14.0 ft BGS (see Well Cuttings Field
			Screening/Disposal Sheet).
	1058	1117	Crew returns. Rig down washover pipe, extract a total of
			approximately 9 ft of 6.0-in. OD PVC casing along with the
			washover pipe.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-114
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-14-94	1117	1122	Rig up a 10 5/8-in. diameter tricone bit on a subadaptor; length =
(cont'd)			6.2 ft, table height remains at 2.6 ft.
	1122	1244	Break for lunch, awaiting W. Thedford.
	1244	1325	Start drill rig. Commence reaming borehole with compressed air
			only. Ream from 0.0 ft to 20.6 ft BGS. BZA at 5.6 ft BGS =
			0.0 ppm. Ratty drilling at 6.5 ft and again at 12.5 ft BGS. Reaming
			bit appears to be deflecting to one side by 10.5 ft BGS. BZA at
			15.6 ft BGS = 0.0 ppm. Very ratty drilling at 18.6 ft BGS:
			encounter top of rock. Cuttings from 0.0 ft to 18.6 ft BGS are
			moderate brown (5YR 3/4) to moderate reddish-brown (10R 4/6),
			moist, clayey soil with pale yellowish-orange (10YR 8/6) residual
			chert fragments; and medium dark gray (N4) cement fragments
			(cement fragments absent by 15.0 ft BGS). Cuttings from 18.6 ft
			to 20.6 ft BGS consist of pale yellowish-brown (10YR 6/2),
			massive pelmicrite. Rock fragments are predominantly fresh,
			only rare weathered component.
	1325	1400	Hydraulic hose behind control panel bursts. Spill control measures
			taken: place extra plastic sheeting on ground with oil-absorbent
			pads to soak up excess hydraulic fluid. Plug ends of hose: main
			hose that supplies hydraulic fluid to nine-spool controls came out
			of its fitting. Hose had recently been replaced. Probably in excess
			of 2-3 gallons of fluid lost; however, none went down-hole.
	1400	1430	Crew begins sopping up excess oil on drill rig and plastic sheeting.
			Oil-soaked pads and oil-covered soil placed in plastic bags. Tools
			collected to be steam-cleaned. Screen cuttings from reaming
			operation, 0.0 ft to 20.6 ft BGS (see Well Cuttings Field Screening/
			Disposal Sheet).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-114
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-14-94	1430	1500	Crew removes burst hydraulic hose, and constructs more
(cont.)			permanent plugs for the ends. W. Thedford recommends that
			since the reaming bit likely has deviated from the borehole that the
			hole be grouted as is. Plan to grout borehole once drill rig is
			operational. Clean up, secure site, and depart. Note: both
			cuttings composites measured in excess of action level for pH
			(10.5). K. Jago (HSEA) directed that cuttings be scattered on site
			and note that source of high pH is cured cement fragments in
			cuttings composite.
1/21/94	0920	0942	Arrive at GW-114 site. Crew is onsite filling drill rig with hydraulic
			fluid (burst hydraulic hose replaced on 1/20/94). Start drill rig and
			dozer, warm up.
	0942	1037	Trip tools out of borehole. It was necessary to drill out of hole as
			debris had fallen in behind bit. Connection broke at drill head, had
			to break reaming bit/subadaptor assembly free manually. De-ice
			carousel. Tag bottom of borehole at 6.5 ft BGS (14.1 ft of debris/
			collapse).
	1037	1051	Call to K. Jago (HSEA), report excessive amount of borehole
			collapse. K. Jago directs to grout the borehole as is. Calculate a
			borehole volume to 4.0 ft BGS of 1.5 cubic ft, equivalent to
			1.3 sacks of Type I cement. If borehole is only bridged at 6.5 ft
			BGS, the maximum borehole volume from 20.6 ft to 4.0 ft BGS is
			10.3 cubic ft equivalent to 8.7 sacks of Type I cement.
	1051	1119	Move drill rig off-site. Crew departs to gather grouting materials.
	1119	1140	Crew returns. Attempt to push through a possible bridge at 6.5 ft
			BGS; unable to push through. Mix and pour 3 sacks (3.5 cubic ft)
			of neat, Type I Portland cement into the borehole. Cement level

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-114
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-21-94	1119	1140	at approximately 2.0 ft BGS, appears to be holding steady. Crew
(cont'd)			to remain and finish cleaning up the site. Oversight departs.
1-24-94	0749	0754	Arrive at GW-114 site. Tag cement level at 2.5 ft BGS. Borehole
			is ready to be capped. Depart.
	0837	0847	Return to GW-114 site. Borehole is capped with clay soil.
			P&A of GW-114 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-570

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Chestnut Ridge, South Side

DRILLERS: R. Phillips/H. Hall - Highland Drilling Co.
J. Monger/D. Williford/J.Young

HELPERS: - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-18-94

FINISH: 5-20-94

METHOD: A

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-18-94	1309	1340	Arrive at GW-570 site. The drill rig is onsite, positioned over the well. The majority of the crew is onsite, waiting for delivery of the washover pipe. The crew has cut off 1.0 ft of the 2.37-in. outside diameter (OD) stainless steel casing, new stick-up = 0.4 ft. Measure the water level at 109.1 ft below ground surface (BGS). Tag the bottom of the well (firm) at 137.3 ft BGS. NOTE: The Subsurface Data Base (Y/TS-881/R1) reports the total depth (TD) of well GW-570 to be 137.8 ft, and the screened interval to be 92.8 ft to 112.8 ft BGS.
	1340	1410	W. Thedford (HSEA) onsite. Conducts site-specific health and safety briefing for personnel already on location. Background radiation scan of location: alpha = 0 cpm, beta/gamma = 40-60 cpm.
	1410	1441	H. Hall (Highland) arrives with washover pipe. W. Thedford (HSEA) briefs H. Hall. Crew assembles washover pipe and rigs up first section; length of washover pipe = 24.1 ft (includes a 1.75-ft long subadapter), dimensions of cutting bit = 6 3/4-in. OD, 4 1/2-in. inside diameter (ID), table height = 2.5 ft.
	1441	1502	Commence over wash with compressed air only. Over wash casing from 0.0 ft to 21.6 ft BGS. Breathing zone analysis (BZA) at 1.5 ft BGS = 0.0 ppm (background). Lower explosive limit (LEL) reading at 3.6 ft BGS < 1% (10.0 ppm). BZA at 10.6 ft and at 19.5 ft BGS read 0.1 ppm and 0.0 ppm, respectively. Cuttings from 0.0 ft to 1.0 ft are: grayish-brown (5YR 3/2) to dusky

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-570
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-18-94			yellowish-brown (10YR 2/2) topsoil with light gray (N7) cement
(cont.)			fragments. Cuttings from 1.0 ft to 21.6 ft BGS consist of
			moderate reddish-brown (10R 4/6) to light brown (5YR 5/6),
			moist, clayey residuum with rare white (N9) and pale yellowish-
			orange (10YR 8/6) residual chert; and light gray (N7) cement
			fragments (decreasing in abundance with increasing depth).
	1502	1529	At 21.6 ft BGS. Trip washover pipe to ground surface; well
			casing is no longer in sight. Tag bottom of borehole; tape stops
			on a ledge at 21.4 ft BGS, then drops into casing where it
			eventually stops at approximately 120 ft BGS. Look in borehole
			with a flashlight; borehole is void of any well casing. At the
			bottom of the hole (21.4 ft BGS) can see sheared/open well
			casing. Also, the original well bore (including the annular
			cement and casing) is seen to deflect to the side of the borehole
			made by the washover pipe. The borehole made by the
			washover pipe appears to be pretty well plumb.
	1529	1555	Withdraw washover pipe from borehole. Observe twisted
			stainless steel casing, cement fragments, and clay inside.
			Trying to contact HSEA for guidance. Secure carousel and
			lower mast as a safety precaution.
	1555	1603	
			Finally contacted K. Jago (HSEA). Report status. Since we
			would not be able to recover any more casing, and it would be
			impossible to rearn/drill the borehole and casing to TD, Kevin
			directs to grout the hole as is (and make an effort to get cement
			into still-open casing below borehole). Plan to grout tomorrow.
			Secure site and depart.
5-19-94	0806	0854	
			Arrive at GW-570 site. Calculate a borehole volume to 4.0 ft
			BGS of 4.4 cubic ft, equivalent to 3.7 sacks of Type I cement;

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-570
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-19-94			casing volume (120 ft to 21.6 ft BGS) of 2.2 cubic ft, equivalent
(cont.)			to 1.8 sacks of cement (total cement use anticipated = 5.5 sacks,
			6.6 cubic ft).
	0854	0913	Crew arrives. Oversight briefs new Highland Drilling Co. field
			supervisor, J. Young. Crew conducts prework equipment
			inspections. Start rig, raise mast.
	0913	0933	Trip washover pipe back into borehole, break connection, and rig
			down.
	0933	0947	Run PVC tremie pipe into borehole. Once-open well casing has
			been plugged with debris that fell into hole when rigging down
			washover pipe. Tremie pipe to 19.0 ft BGS.
	0947	1005	Mix and pump-tremie 4 sacks (4.7 cubic ft) of neat, Type I
			Portland cement into the borehole. Cement level to ground
			surface.
	1005	1012	Pull out tremie pipe. Clean up. Secure site and depart.
5-20-94	1017	1051	Arrive at GW-570 site. Tag cement level at 3.5 ft. Cap remaining
			borehole with clay soil.
			P&A of well GW-570 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. M-04

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Russell Jones/Randy Phillips - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 10-12-93

FINISH: 10-21-93

METHOD: B

LOGGED BY: Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-12-93	0840	0902	Arrive at M-04 site. Drill rig is set up over the well, crew has rigged
			up a 6 1/8-in. diameter tricone bit on a 25-ft drill rod; length of
			bit = 0.5 ft, table height = 2.8 ft. Drill rig has been adequately
			steam-cleaned. Tag bottom of well at 35.5 ft below top of casing
			(BTOC) = 33.9 ft below ground surface (BGS). Background
			radiation at location: alpha = 0 cpm, beta/gamma = 60 cpm.
	0902	0906	Trip tools into well.
	0906	0916	Encounter muddy water and organic debris at 18.0 ft BGS,
			suspect end of casing. Commence reaming open interval. Ream
			to 38.5 ft BGS. Hard drilling (bottom of well) at 34.5 ft BGS.
			Cuttings from approximately 18 ft to 38.5 ft BGS consist primarily
			of medium dark gray (N4) thinly laminated shale. Also returned
			grayish-black (N2) decaying organic debris, including partially
			decomposed squirrel carcass. Breathing zone monitoring for
			entire interval was 0.0 ppm.
	0916	0919	At 38.5 ft BGS, clean out borehole.
	0919	0925	Trip out, unthread bit. Casing appears to be loose. Calculate
			three sacks of Type I cement required to grout open interval.
	0925	0943	Mix and pour (dry hole) 3 sacks (3.5 cubic ft) of neat, Type I
			Portland cement into the borehole. Liquid grout to about 5 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-04
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-12-93	0943	1133	Clean up. Screen cuttings composite (see Well Cuttings Field
(cont.)			Screening/Disposal Sheet). Depart site.
10-13-93	0835	0853	Arrive at M-04 site. Crew performs pre-work equipment check.
			Warming drill rig.
	0853	0909	Hydraulic leak develops in hose. Place oil-absorbent pads on spill
			area. Remove hose for replacement.
	0909	1100	W. Thedford (HSEA) onsite. Waiting for replacement hose.
	1100	1306	Replacement hose arrives; hose has wrong fittings. Depart for
			new replacement hose. Break for lunch. Cement level in well is
			at 23.0 ft BGS.
	1306	1333	Second replacement hose onsite: also has wrong fittings. Highland
			Field Supervisor to get correct replacement hose. Oversight
			departs.
10-14-93	0858	0905	Arrive at M-04 site. Crew onsite, waiting. Casing is not loose, as
			had previously been stated. Crew rigs up a 24.5-ft section of-
			8.25-in. Inside diameter (ID), 9.5-in. Outside diameter (OD)
			washover pipe on a 1.0-ft subadapter; total length = 25.5 ft, table
			height = 3.0 ft.
	0905	0950	Commence over wash. Over wash casing from 0.0 ft to 22.0 ft
			BGS. Washover pipe begins rubbing on casing at 13.0 ft BGS.
			Tripped out washover pipe, but casing is still secure. Cuttings from
			0.0 ft to 22.0 ft BGS consist of moderate yellowish-brown
			(10YR 5/4), clayey, silty soil and subsoil with medium light gray
			(N6) cement fragments. Breathing zone monitoring is 0 ppm over
			entire interval.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-04
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-14-93	0950	0957	At 22.0 ft BGS. Clean out borehole.
(cont.)			
	0957	1005	Trip out and rig down washover pipe.
	1005	1015	Extract a total of 21.0 ft of 6.5-in. OD steel casing. Will not ream as
			washover pipe came within 1 ft of open interval cement (cement
			level measured at 23.0 ft BGS, over wash casing to 22.0 ft BGS).
			Hole is dry.
	1015	1033	Calculate 12 sacks of Type I cement required to grout borehole.
			Lower mast and move drill rig off site.
	1033	1119	Mix and pour 7 sacks (8.3 cubic ft) of neat, Type I Portland cement
			into borehole. Liquid grout to ground surface.
	1119	1140	Clean up, secure site, and depart.
10-19-93	1133	1138	At M-04 site. Tag cement level at 5.2 ft BGS. Calculate a borehole
			volume to 4.0 ft BGS of 0.6 cubic ft, equivalent to 0.5 sacks of Type I
			cement. Depart.
	1309	1323	Return to M-04 site. Mix and pour 2 sacks (2.4 cubic ft) of neat,
			Type I cement into borehole. Liquid grout to 0.6 ft BGS. Depart.
10-20-93	1555	1600	At M-04 site. Tag cement level at 1.2 ft BGS. Borehole is ready to
			be capped. Depart.
10-21-93	1415	1430	Borehole is capped with clay soil.
			P&A of M-04 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. M-05

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 7

LOCATION: Gum Branch Road Functional Area

DRILLERS: Hubert Hall/John Young - Highland Drilling Co.

HELPERS: Randy Phillips/Greg Anderson - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 10-29-93

FINISH: 11-9-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-29-93	1030	1100	Arrive at M-05 site. Drill rig is positioned over well. Inspect rig:
			appears to be adequately steam-cleaned. Tag bottom of well
			(soft) at 165.0 ft below top of casing (BTOC) = 163.4 ft below
			ground surface (BGS). Water level is at 16.5 ft BGS.
	1100	1122	Using a portable bandsaw, cut off 1.3 ft of the casing stick-up.
			New stick-up = 0.3 ft. Background radiation at site: alpha =
			10 cpm, beta/gamma = 70 cpm.
	1122	1138	Raise mast on drill rig. Thread a 6 1/8-in. diameter tricone bit onto
			a 25-ft drill rod; length of bit = 0.5 ft, table height = 2.5 ft.
	1138	1152	Trip into well casing. Black water returns plus iron oxide scale:
			breathing zone analysis (BZA) = 0.0 ppm. Lower explosive limit
			(LEL) reading = 0%.
	1152	1222	Encounter resistance along with muddy returns at 43.5 ft BGS
			(suspect bottom of casing). Commence reaming open interval.
			Ream from 43.5 ft to 98.0 ft BGS. Large quantities of water
			produced between 43.5 ft and 48.0 ft BGS. Rare cuttings returned
			between 48.0 ft and 73.0 ft BGS. Cuttings from 43.5 ft to 73.0 ft
			BGS are predominantly pale yellowish- brown (10 YR 6/2),
			weathered and stained, thinly laminated shale with common light
			brown (5 YR 5/6) to moderate reddish-brown (10 R 4/6) iron oxide
			flakes; and minor grayish-red (10 R 4/2), thinly laminated shale.
			Encounter a hard obstruction at 92.8 ft BGS. Cuttings from 73.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-29-93			to 98.0 ft BGS consist of light olive gray (5Y 5/2) weathered shale;
(cont.)			occasional medium gray (N5) shale; and brownish-gray (5YR 4/1),
			massive micrite/intramicrite. BZA throughout interval = 0.0 ppm.
	1222	1225	At 98.0 ft BGS. Pull bit back to 73.0 ft BGS.
	1225	1306	Secure table bushings against movement due to high water
			discharge. Break for lunch.
	1306	1349	Continue reaming open interval. Ream to 166.8 ft BGS. BZA at
			110.0 ft and 132.0 ft BGS = 0.0 ppm. Obvious lithologic change
			(top of fresh rock) at 133.0 ft BGS. Cuttings from 98.0 ft to 133.0 ft
			BGS are a continuation of 73.0 ft to 98.0 ft interval with the addition
			of pinkish-gray (5 YR 8/1) calcite fragments. Interval still consists
			mostly of weathered shale. BZA at 158.0 ft BGS = 0.0 ppm.
			Returns become muddy at 162.0 ft BGS (sediment). Hard drilling
			(bottom of well) at 164.5 ft BGS. BZA at 165.0 ft BGS = 0.0 ppm.
			Cuttings from 133.0 ft to 166.8 ft BGS consist of: medium dark gray
			(N4) to medium bluish-gray (5B 5/1) and grayish-red (10R 4/2),
			thinly laminated shale and brownish-gray (5 YR 4/1), massive
			micrite/intramicrite. Interval also contains pinkish-gray (5YR 8/1)
			calcite in limestone beds.
	1349	1352	At 166.8 ft BGS. Clean out borehole.
	1352	1408	Trip bit 100 ft off bottom of borehole.
	1408	1502	Winterize equipment Clean up. Screen cuttings composite from
			43.5 ft to 166.8 ft BG .see well Cut ngs Field Screening/Disposal
			Sheet). Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-1-93	0751	0848	Arrive at M-05 site. Crew arrives and conducts pre-work equipment
			check. Warming equipment.
	0848	0915	Trip bit back to bottom of borehole. Bit stops at 166.6 ft BGS
			(0.2 ft of fill). No need to clean out borehole any further.
	0915	0947	Begin tripping out tools. B. Thedford (HSEA) onsite.
	0947	1025	B. Thedford shuts down operations: contractually, Highland must
			provide a 3-man crew. Waiting for the third man to arrive.
	1025	1041	G. Anderson (Highland) arrives onsite. Oversight gives new
			helper site-specific health and safety briefing. B. Thedford and
			R. Phillips (Highland) conduct tool box safety meeting.
	1041	1108	Continue tripping tools out of borehole. Calcuiate a borehole
			volume to 43.5 ft BGS (suspected bottom of casing) of 24.6 cubic ft,
			equivalent to 20.9 sacks of Type I cement. Unthread bit.
	1108	1129	Run 16, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe into borehole to 158.0 ft BGS.
	1129	1230	Mix and pump-tremie 21 sacks (24.8 cubic ft) of neat, Type I
			Portland cement into the borehole.
	1230	1244	Pull out tremie pipe. Clean up, secure site, and depart.
11-2-93	0753	0904	Arrive at M-05 site. Tag cement: tape first encounters soft
			cement at 53.0 ft BGS (approximately 10 ft below suspected
			bottom of casing), then stops at 56.0 ft BGS. Crew arrives,
			conducts pre-work equipment check and replaces battery in
			backhoe. K. Jago (HSEA) approves over washing casing with

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-2-93			less than 24-hr cure on open interval cement. B. Thedford onsite.
(cont.)			
	0904	0916	Steam-clean washover pipe.
	0916	0932	Rig up washover pipe: 8.25-in. inside diameter (ID), 9.5 -in. OD,
			24.5 ft in length. Washover pipe on a 1.0 ft subadapter (total
			length = 25.5 ft), table height = 2.5 ft.
	0932	0956	Commence over wash with compressed air only. Over wash
			casing from 0.0 ft to 23.0 ft BGS. Washover pipe is cutting cement.
			Cut through cement at 2.5 ft BGS. BZA at 1.0 ft BGS = 1.3 ppm
			(due to residual alcohol antifreeze in rig piping). BZA at 8.0 ft BGS
			= 0.8 ppm. Encounter weathered rock at 11.0 ft BGS. Cuttings
			from 2.5 ft to 11.0 ft BGS consist of dark yellowish-brown (10 YR
			4/2), clayey topsoil with occasional fragments of cement and
			weathered shale. BZA at 13.0 ft BGS = 2.4 ppm. Encounter
			groundwater at 16.0 ft BGS. BZA at 18.0 ft BGS = 1.0 ppm.
			Cuttings from 11.0 ft to 23.0 ft are moderate yellowish-brown
			(10 YR 5/4) to dusky yellow (5Y 6/4), weathered and stained, thinly
			laminated shale (staining increases below the water level).
	0956	1003	At 23.0 ft BGS. Clean out borehole. Rotate washover pipe to
			loosen casing.
	1003	1040	Break connection, trip out washover pipe.
	1040	1111	Burn lifting holes in casing collar. Attach chain to casing and pull.
			Extract a total of 43.1 ft of 6.5-in. OD steel casing in 2 pieces. Total
			casing removed (including stick-up cut off earlier) = 44.4 ft.
	1111	1116	Steam-clean and rig up a 10 5/8-in. tricone bit on a subadapter;
			length = 6.2 ft, table height remains at 2.5 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-2-93	1116	1137	Commence reaming borehole. Ream from 0.0 ft to 57.0 ft BGS.
(cont.)			Poor to zero circulation until 17.0 ft BGS. BZA at 7.0 ft BGS = 2.4
			(residual alcohol antifreeze). Encounter water at 16.0 ft BGS.
			Cuttings from 17.0 ft to 28.7 ft BGS are moderate yellowish-brown
			(10 YR 5/4) to grayish-orange (10 YR 7/4), weathered and stained,
			thinly laminated shale. BZA at 33.0 ft BGS = 0.2 ppm. Ratty drilling
			at 42.0 ft, then large quantities of water produced. BZA at 50.0 ft
			BGS = 0.0 ppm. Cuttings from 28.7 ft to 57.0 ft BGS consist of
			dusky yellow (5Y 6/4) to light olive gray (5Y 5/2) weathered shale;
			dusky blue green (5 BG 3/2) to medium dark gray (N4), thinly
			laminated shale; and dark gray (M3), massive, intraclasitic
			biomicrite/pelmicrite with some white (N9) calcite in the limestone
			beds.
	1137	1145	At 57.0 ft BGS. Clean out borehole. Observe odor of partially
			cured cement while cleaning borehole.
	1145	1202	Trip out: lots of debris falling in behind bit, have to drill out of the
			borehole. Rig down bit and subadapter assembly. Tag bottom of
			borehole at 50.7 ft BGS (6.3 ft of fill). Will not try to clean further,
			driller thinks any more cleaning will bring more debris into borehole.
			Calculate a borehole volume to 4.0 ft BGS of 29.0 cubic ft,
			equivalent to 24.5 sacks of Type I cement.
	1202	1237	Break for lunch.
	1237	1245	Run PVC tremie pipe into borehole to 47.0 ft BGS.
	1245	1354	Mix and pump-tremie 25 sacks (29.5 cubic ft) of neat, Type I
			Portland cement into the borehole. Cement/water level at
			approximately 15 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-2-93	1354	1430	Pull out tremie pipe. Clean up (including trash pick-up), secure
(cont.)			site, and depart.
11-3-93	0654	0702	Arrive at M-05 site. Tag cement level at 42.0 ft BGS. Water level
			is at 16.0 ft BGS. This corresponds to large-quantity water
			production zone encountered while reaming, suspect a void.
			Suggest using Hole Plug™ to bridge the void. Calculate a
			minimum borehole volume to 35.0 ft BGS of 4.3 cubic ft,
			equivalent to 6.3 sacks of Hole Plug™. Depart site.
	1453	1518	Return to M-05 site. K. Jago (HSEA) has approved the use of
			Hole Plug™ to bridge void. Wait on crew.
	1518	1531	Crew arrives, gathers Hole Plug™.
	1531	1548	Slowly pour 9 sacks (6.2 cubic ft) of Hole Plug™ into the
			borehole. Level of unhydrated Hole Plug™ = 34.7 ft BGS. Hole
			Plug™ to hydrate with water standing in borehole over night.
			Depart site.
11-4-93	0745	0840	Arrive at M-05 site. Tag hydrated Hole Plug™ level at 32.7 ft BGS
			(Hole Plug™ swelled 2.0 ft). Calculate a borehole volume to 4.0
			ft BGS of 17.8 cubic ft, equivalent to 15.1 sacks of Type I cement.
			Wait on crew.
	0840	0846	Run PVC tremie pipe into borehole to 29.0 ft BGS.
	0846	0938	Mix and pump-tremie 19 sacks (22.4 cubic ft) of neat, Type I
			Portland cement into the borehole. Water level = 16.5 ft BGS.
	0938	0951	Pull out tremie pipe. Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-05
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-4-93	1503	1512	Return to M-05 site. Tag cement level (soft) at 32.0 ft BGS (Tape
(cont.)			eventually stops on Hole Plug ™ at 32.7 ft BGS). Almost none of
			the cement stayed in the borehole. S. Jones (HSEA) had given
			approval for more Hole Plug™ to be used if necessary.
	1512	1525	Slowly pour 12 sacks (8.3 cubic ft) of Hole Plug™ into borehole,
			measure unhydrated Hole Plug™ level at 20.3 ft BGS.
	1525	1543	Fill borehole with potable water. Water level is dropping. Decide
			to bring Hole Plug™ level up above the original groundwater level
			(16.5 ft BGS).
	1543	1557	Pour an additional 8 sacks (5.5 cubic ft) of Hole Plug™ into
			borehole. Unhydrated Hole Plug™ level at 14.7 ft BGS. Water
			in borehole appears to be holding steady. Depart site.
11-5-93	0755	0842	Arrive at M-05 site. Tag hydrated Hole Plug™ level at 14.4 ft BGS
			(Hole Plug™ swelled 0.3 ft). Water level is at 10.0 ft BGS.
			Calculate a borehole volume to 4.0 ft BGS of 6.5 cubic ft,
			equivalent to 5.5 sacks of Type I cement. Crew arrives.
	0842	0904	Mix (thick) and pump-tremie 8 sacks (9.4 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100% cement.
	0904	0914	Clean up and depart site.
11-8-93	1052	1057	At M-05 site. Tag cement level at 3.6 ft BGS. Borehole is ready
			to be capped.
11-9-93	1010	1030	Borehole is capped with clay soil.
			P&A of M-05 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. M-06

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPER: Randy Phillips - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 10-26-93

FINISH: 11-2-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-26-93	0758	0830	Arrive at M-06 site. Drill rig is positioned over the well, but not set
			up. Crew arrives, conducts pre-work equipment check. Tag
			bottom of well (soft) at 161.4 ft below top of casing (BTOC) =
			159.4 ft below ground surface (BGS). Determine that crew does
			not have enough drill rods onsite to ream to the bottom of the well.
	0830	0930	R. Phillips (Highland) departs for additional drill rods. Driller
			raises mast on drill rig. Inspect drill rig: appears to be adequately
			steam-cleaned. S. Jones (HSEA) arrives, confirms well (M-06) to
			be decommissioned, issues burn permit. Sniff casing collar with
			monitoring instruments [organic vapors = 0.0 ppm, lower explosive
			limit (LEL) = 0%] prior to cutting off 1.4 ft of the casing stick-up
			(new casing stick-up = 0.6 ft) and burning lifting holes. Background
			radiation at location: beta/gamma = 50 cpm.
	0930	1015	R. Phillips returns with 2 additional drill rods. Steam-clean a
			6 1/8-in. diameter tricone bit and the additional drill rods. Thread
			the 6 1/8-in. diameter bit onto a 25-ft drill rod; length of the
			bit = 0.5 ft, table height = 2.0 ft.
	1015	1018	Trip into well casing. Encounter black, foul-smelling water at
			22.0 ft BGS: breathing zone analysis (BZA) = 0.0 ppm.
	1018	1047	At 23.5 ft BGS (end of first drill rod). Crew realizes that they do
			not have the table wrench for making and breaking rod connections.
			R. Phillips departs for wrench.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-26-93	1047	1054	R. Phillips returns with wrench. Add drill rod.
(cont.)			
	1054	1057	Continue tripping into well. Continued foul-smelling water returns:
			BZA = 0.3 ppm. Begin to have muddy, rust-colored returns at
			40.0 ft BGS, assume bottom of casing at 40.0 ft BGS. Reaming
			open interval. Ream to 48.5 ft BGS. Cuttings from 40.0 ft to 48.5 ft
			BGS are generally light olive gray (5Y 5/2) to olive gray (5Y 3/2)
			weathered shale with light brown (5YR 5/6) staining, with rare
			medium dark gray (N4) fresh shale. Have large quantities of
			discharge water production.
	1057	1146	At 48.5 ft BGS. Shut off drill rig. Secure table bushings against
			movement due to high water discharge.
	1146	1222	Continue reaming open interval. Ream from 48.5 ft to 164.5 ft
			BGS. Monitor breathing zone, highest BZA reading from 73.5 ft to
			91.0 ft BGS: 0.5 ppm. Water cleared slightly at 91.0 ft BGS:
			suspect top of fresh bedrock. Cuttings from 48.5 ft to 91.0 ft BGS:
			the same as the 40.0 ft to 48.5 ft interval. Encounter hard drilling
			(bottom of well) at 162.5 ft BGS. Cuttings from 91.0 ft to
			164.5 ft BGS consist predominantly of grayish-red (5R 4/2), thinly
			laminated shale with minor brownish-gray (5YR 4/1), massive
			oomicrite occurring in the last 3 ft of the interval.
	1222	1227	At 164.5 ft BGS. Clean out borehole.
	1227	1308	Trip out, unthread bit Tag bottom of borehole at 164.4 ft BGS.
			Calculate a borehole volume to 40.0 ft BGS (suspected bottom of
			casing) of 24.9 cubic ft, equivalent to 21.1 sacks of Type I cement.
	1308	1350	Break for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-26-93	1350	1403	Crew gathers grouting supplies.
(cont.)			
	1403	1421	Run PVC tremie pipe into borehole to 158.0 ft BGS.
	1421	1527	Mix and pump-tremie 21 sacks (24.8 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water.
	1527	1547	Pull out tremie pipe. Clean up, secure site, and depart.
10-27-93	0800	0833	Arrive at M-06 site. Tag cement level at 62.1 ft BGS. Crew arrives,
			conducts pre-work equipment check.
	0833	0902	Get washover pipe from last well site. Steam-clean washover
			pipe.
	0902	0913	Rig up washover pipe: 24.5 ft long, 8.25-in. inside diameter (ID),
			9.5-in. OD, subadapter = 1.0 ft (for a total of 25.5 ft), table
			height = 2.1 ft.
	0913	0945	Commence over wash. Over wash casing from 0.0 ft to 23.4 ft
			BGS. Encounter cement at 1.0 ft BGS. Cuttings from 0.0 ft to
			1.0 ft BGS are grayish-brown (5YR 3/2) to dusky brown
			(5YR 2/2), dry to slightly moist, clayey surface soil. Drilled through
			the cement plug at 4.4 ft BGS. BZA at 3.0 ft BGS = 0.0 ppm. Slight
			moisture at 16.0 ft BGS. BZA at 18.4 ft BGS = 0.0 ppm. Encounter
			water at 23.0 ft BGS. Cuttings from 4.4 ft to 23.4 ft BGS consist
			primarily of pale yellowish-brown (10YR 6/2) to light olive gray
			(5Y 5/2) weathered, stained, thinly laminated shale. Begin to
			have pale brown (5YR 5/2) to grayish-red (10R 4/2) shale
			fragments below 16.0 ft BGS.
	0945	0950	At 23.4 ft BGS. Clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-27-93	0950	1005	Trip out and rig down washover pipe.
(cont.)			
	1005	1013	Attach chain to casing and easily pull out of borehole. Casing is too
			long to extract from hole in one piece. Shut off drill rig.
	1013	1050	Awaiting burn permit.
	1050	1130	B. McMaster (HSEA-UT) onsite, issues burn permit. Cut off casing
			and extract a total of 39.9 ft of 6.5-in. OD steel casing in 2 pieces.
			Total casing extracted from this well (including previously removed
			stick-up) = 41.3 ft.
	1130	1212	Break for lunch.
	1212	1220	Steam-clean large reaming bit and subadapter assembly.
	1220	1226	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter;
			length = 6.2 ft, table height = 4.2 ft.
	1226	1254	Commence reaming borehole. Ream from 0.0 ft to 62.4 ft BGS.
			BZA at 9.0 ft BGS = 0.2 ppm. Encounter water at 23.2 ft BGS. BZA
			at 31.2 ft BGS = 0.2 ppm. Possible top of fresh rock at 39.2 ft BGS.
			Cuttings from 0.0 ft to 39.2 ft BGS consist of pale yellowish-brown
			(10YR 6/2) to light olive gray (5Y 5/2), weathered and stained,
			thinly laminated shale. Bit drops from 45.0 ft to 47.0 ft BGS: have
			large quantities of discharge water production. BZA at 52.0 ft and
			56.2 ft BGS = 0.0 ppm. Very hard drilling: 56.8 ft to 57.2 ft BGS.
			Cuttings from 39.2 ft to 62.4 ft BGS are medium dark gray (N4) to
			medium bluish-gray (5B 5/1), thinly laminated shale and brownish-
			gray (5YR 4/1), massive, fossiliferous micrite and oomicrite. Have
			rare cement fragments this interval (probably from higher location).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-27-93	1254	1258	At 62.4 ft BGS. Clean out borehole.
(cont.)			
	1258	1325	Trip out, rig down bit and subadapter assembly. Tag bottom at
			60.8 ft BGS (1.6 ft of fill). Calculate a borehole volume to 4.0 ft BGS
			of 35.2 cubic ft, equivalent to 29.8 sacks of Type I cement.
	1325	1337	Lower mast on drill rig, move rig off location.
	1337	1348	Crew gathering grouting supplies.
	1348	1354	Run PVC tremie pipe into borehole to 59.0 ft BGS.
	1354	1523	Mix and pump-tremie 29 sacks (34.2 cubic ft) of neat, Type I
			Portland cement into borehole.
	1523	1535	Water level at 18.0 ft BGS. Pull out tremie pipe. Clean up, secure
			site, and depart.
10-28-93	0753	0843	Arrive at M-06 site. Tag cement level at 38.8 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 21.6 cubic ft, equivalent to 18.3
			sacks of Type I cement. Drill crew arrives.
	0843	0849	Run PVC tremie pipe into borehole to 29.0 ft BGS.
	0849	1014	Mix and pump-tremie 19 sacks (22.4 cubic ft) of neat, Type I
			Portland cement into borehole. Circulate water then approximately
			50% cement.
	1014	1047	Pull out tremie pipe. Clean up, secure site, and depart.
10-29-93	0758	0802	Arrive at M-06 site. Tag cement level at 18.2 ft BGS (water level
			is approximately 1.0 ft higher). Calculate a borehole volume to

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-29-93			4.0 ft BGS of 8.8 cubic ft, equivalent to 7.5 sacks of Type I cement.
(cont.)			Depart.
11-1-93	1332	1417	At M-06 site. Mix and pour 9 sacks (10.6 cubic ft) of neat, Type I
			Portland cement into borehole. Liquid grout to ground surface.
	1417	1422	Clean up and depart site.
11-2-93	0758	0803	At M-06 site. Tag cement level at 4.0 ft BGS. Borehole is ready
			to be capped. Depart.
	1430	1445	Return to M-06 site. Cap borehole with clay soil/gravel.
			P&A of M-06 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 4

LOCATION: Gum Branch Road Functional Area
DRILLER: Hubert Hall - Highland Drilling Co.
HELPER: Randy Phillips - Highland Drilling Co.
DRILL: Ingersoll-Rand T4W

DATE: START: 10-22-93
FINISH: 10-28-93
METHOD: B
LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-22-93	0803	0812	Arrive at M-07 site. Casing stick-up = 0.2 ft (crew has cut off 1.4 ft of the casing at an earlier date). Also at an earlier date, the crew spread a load of gravel around the wellhead in an apparent sinkhole and pushed in a 4.0-ft section of 11.25-in. inside diameter (ID), 12.0-in. outside diameter (OD) conductor casing to a stick-up of 0.2 ft. Tag bottom of well (soft) at 32.5 ft below ground surface (BGS). Water level is at 6.0 ft BGS. Drill rig is positioned over the well, appears to be adequately steam-cleaned.
	0812	0838	Drill crew arrives onsite. Crew conducts pre-work equipment check. Background beta/gamma scan of location = 40 cpm.
	0838	0900	Raise drill rig mast. Thread a 6 1/8-in. diameter tricone bit onto a 25-ft drill rod; length of bit = 0.5 ft, table height = 3.4 ft.
	0900	0910	Trip into casing. Encounter dark water at 6.0 ft BGS: breathing zone analysis (BZA) = 0.0 ppm. BZA at 29.0 ft BGS = 0.0 ppm.
	0910	0915	Begin to get muddy returns at 32.5 ft BGS (sediment), begin reaming open interval. Ream from 32.5 ft to 37.5 ft BGS. Encounter hard rock (bottom of well) at 36.0 ft BGS. Cuttings from 32.5 ft to 37.5 ft BGS consist of moderate yellowish-brown (10 YR 5/4) weathered shale; brownish-black (5 YR 2/1), massive biomicrite; and medium light gray (N6) to brownish-gray (5 YR 4/1), massive, very fine-grained, cherty dolostone.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-22-93	0915	0918	At 37.5 ft BGS. Clean out borehole.
(cont.)			
	0918	0922	Trip out tools, casing begins to come with bit. Unthread bit. Run
			weighted tape into casing: stops in mud at 25.0 ft BGS.
	0922	0937	Shut off drill rig, discuss options for continuing with drill crew. Since
			casing is obviously loose, it makes sense to pull it and ream
			borehole with a larger bit. However, the drill crew is concerned
			about washing out and enlargening the sinkhole/void (the timbers
			on which the drill rig supports lie are already sinking slightly). Plan
			to re-timber rig supports, pull casing, then ream to 37.5 ft BGS
			(reamed depth of 6 1/8-in. dia. bit), and finally, grout the borehole.
	0937	0950	Re-timber drill rig jacks (place a double thickness of timbers under
			rear jacks) and place timbers under rig tires as added precaution.
	0950	1043	Waiting on burn permit. R. Phillips (Highland) goes to get burn
			permit. Steam-clean a 10 5/8-in. diameter tricone bit on a
			subadapter.
	1043	1057	Burn permit onsite, burn lifting holes in casing.
	1057	1122	Attach hook to casing and pull out. Extract a total of 36.2 ft of
			6.5-in. OD steel casing (which means that the casing extended to
			the apparent total depth of the well). Total casing recovered from
			well (including original stick-up cut-off) = 37.6 ft.
	1122	1130	Rig up with a 10 5/8-in. diameter tricone bit/subadapter assembly:
			total length = 6.2 ft, table height = 3.5 ft. Call to K. Jago (HSEA)
			for guidance, who recommends: assume a 10.0-ft open interval,
			ream to 47 ft BGS, and grout the borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-22-93	1130	1206	Break for lunch.
(cont)			
	1206	1215	Add drill rod to bit and subadapter assembly.
	1215	1223	Commence rearning borehole. Ream from 0.0 ft to 27.7 ft BGS.
			Observe foul odor at 13.7 ft BGS, BZA = 0.2 ppm. Lose circulation
			at about 25 ft BGS.
	1223	1228	At 27.7 ft BGS. Driller working bit up and down to try and regain
			circulation. Cuttings from 0.0 ft to 27.7 ft BGS consist mostly of
			moderate yellowish-brown (10 YR 5/4), weathered, thinly laminated
			shale; brownish-black (5 YR 2/1), massive biomicrite and oomicrite;
			and medium dark gray (N6) to brownish-gray (5 YR 4/1), massive
			dolostone with minor very pale orange (10 YR 8/2) weathered
			dolostone.
	1228	1245	Shut off drill rig. R. Phillips (Highland) goes to coordinate bringing
			the other Highland Drilling Co. drill rig to their pipeyard for inspection.
	1245	1259	Rig back on, continue trying to restore circulation. The ground
			around the wellhead suddenly begins to subside and collapse.
			Trip out of the borehole, rig down bit and subadapter assembly.
			Subsidence crater continues to grow larger reaching maximum
			dimensions of approximately 5 ft in diameter and 8-10 ft deep.
	1259	1320	Lower mast on drill rig and move drill rig away from well location as
			precautionary measure.
	1320	1350	Call to S. Jones (HSEA), report status. Steve thinks incident may
			be reportable, but will discuss with B. Thedford and K. Jago (both

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-22-93			of HSEA). Crew moves drill rig to next location. Crew pulls out
(cont)			conductor casing: any remnant of the borehole is lost to the
			collapse.
	1350	1400	B. Thedford calls: it has been determined that the incident is not
			reportable, but that the crew should go on standby until a decision
			is made on further decommissioning of the well. Oversight departs
			to attend meeting with HSEA personnel.
			Note: A decision was made that since the borehole had been lost
			to collapse, further decommissioning would consist of placing an
			approximate 200% crater volume excess gravel into the subsidence
			crater (to allow for additional subsidence) then to grade the site
			level.
10-25-93	1500	1515	Crew dumps gravel capping material into subsidence crater.
10-28-93	1023	1035	Pack gravel into crater with backhoe. Spread out excess gravel
			and dress up location with front bucket.
			P&A of M-07 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. M-08

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 6

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Mark Baker/John Young - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 10-18-93

FINISH: 11-2-93

METHOD: B

LOGGED BY: V.R. Harness/T.J. Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-18-93	1012	1027	Technical oversight by V.R. Harness - SAIC. Arrive at M-08 site.
			Drill rig is positioned over the well. Tag bottom of well (soft) at
			155.5 ft below ground surface (BGS). Casing stick-up = 2.5 ft.
			Top 5.5 ft of casing is loose. No one is available to issue a burn
			permit. Crew removes loose casing section.
	1027	1132	Crew takes casing to their shop to cut and burn lifting holes into
			it.
	1132	1221	Crew returns to site, re-threads top casing piece onto the rest of
			the casing in the ground. Conduct pre-work equipment check.
			Oversight inspects drill rig: appears to be adequately steam-
			cleaned. Try to start drill rig.
	1221	1224	Drill rig will not start, crew suspects fuel line problems. Crew to
			remain and repair. Oversight departs.
10-19-93	0830	0842	Technical oversight assumed by Timothy Coffey-SAIC. Arrive at
			M-08 site. Drillers conducting pre-work equipment check. New
			casing stick-up = 0.7 ft. Thread a 6 1/8-in. diameter tricone bit
			onto a drill rod: length of bit = 0.5 ft, table height = 2.7 ft.
			Background beta/gamma scan reads 40 cpm. B. Thedford
			(HSEA) onsite, states: contractually, a Highland supervisor must
			be onsite during all drilling operations.
	0842	0919	Waiting for Highland supervisor.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-19-93	0919	0927	J. Young (Highland) arrives. Trip bit into casing. Encounter water
(cont.)			at 20.8 ft BGS.
	0927	0955	Continue tripping into casing. Begin to get muddy returns at 42.0
			ft BGS: assume bottom of casing. Begin reaming of open interval.
			Ream from 42.0 ft to 162.8 ft BGS. Return water clears and begin
			to see rock fragments in returns at 55.8 ft BGS: suspect top of
			bedrock. Cuttings from 42.0 ft to 55.8 ft BGS are predominantly
			moderate brown (5YR 3/4), clayey subsoil or residuum with rare
			weathered shale fragments. Breathing zone monitoring reads
			0.0 ppm for entire interval. Encounter sediment (and trash:
			electrical tape among the trash items) at 155.5 ft BGS. Encounter
			the bottom of the well (hard drilling) at 159.8 ft BGS. Cuttings from
			55.8 ft to 159.8 ft BGS consist of moderate yellowish-brown (10YR
			5/4), weathered shale and medium gray (N5), fresh, thinly lami-
			nated shale; plus organic detritus consisting mainly of rotten
			leaves and pine needles. Cuttings from 159.8 ft to 162.8 ft BGS
			consist of medium dark gray (N4) to medium bluish-gray (5B 5/1),
			thinly laminated shale; and brownish-gray (5YR 4/1), occasionally
			fossiliferous, massive oomicrite. Also in this interval: very pale
			orange (10YR 8/2), massive, oolitic dolomite.
	0955	0958	At 162.8 ft BGS. Clean out borehole.
	0958	1024	Trip out rods, unthread bit. Unable to tag bottom due to wet tape
			clinging to borehole wall. Calculate a borehole volume from
			162.8 ft to 42.0 ft BGS (suspected bottom of casing) of 24.7 cubic
			ft = 0.9 cubic yds. Cement (1.0 cubic yd) ordered, delivery
			scheduled for 1230 hrs. Screen cuttings from 55.8 ft to 162.8 ft
			BGS (see Well Cuttings Field Screening/Disposal Sheet).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-19-93	1024	1047	Run PVC tremie pipe into borehole to 138 ft BGS. B. Thedford
(cont.)			(HSEA) departs.
	1047	1212	Waiting on cement. Break for lunch.
	1212	1234	Cement truck arrives at site. Off-load cement from truck into tub,
			pump-tremie cement into borehole. Circulate water.
	1234	1249	Pull out tremie pipe. Clean up, secure site, and depart.
10-20-93	0935	1015	Arrive at M-08 site. Tag cement level at 54.0 ft BGS (12.0 ft below
			suspected casing bottom). Procedures state to cement the
			reamed open interval to casing prior to removing casing. Call to
			K. Jago (HSEA) seeking approval to deviate from procedures by
			removing casing, then reaming to present cement level: deviation
			approved. Crew goes to move washover pipe to M-08 site.
	1015	1030	Steam-clean washover pipe.
	1030	1040	Crew conducts pre-work equipment check. Background
			beta/gamma scan of site reads 40 cpm.
	1040	1048	Rig up with a 24.5-ft long section of 8.25-in. inside diameter (ID),
			9.5-in. OD washover pipe with a 1.0 ft subadapter; total
			length = 25.5 ft, table height = 2.7 ft.
	1048	1124	Commence over wash with compressed air only. Over wash
			casing from 0.0 ft to 22.8 ft BGS. Encounter top of weathered
			bedrock at approximately 6 ft BGS. Cuttings from 0.0 ft to 6.0 ft
			BGS are dark yellowish-brown (10YR 4/2) to grayish-brown (5YR
			3/2), clayey surface soil with fragments of medium gray (N 5)
			thinly laminated shale (from the reaming of the open interval).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-20-93			Breathing zone analysis (BZA) at 2.8 ft BGS = 0.0 ppm. Begin to
(cont'd)			see minor blowouts at the surface when bit reaches 8.0 ft BGS.
			Pathways to surface are quickly sealed. Cuttings from 6.0 ft to
			22.8 ft BGS consist of dark yellowish-orange (10YR 6/6) to dusky
			yellow (5Y 6/4) to grayish olive (10Y 4/2), dry, thinly laminated
			weathered shale. Also observed infrequent metal fragments
			from this interval. BZA at 12.8 ft and 21.5 BGS = 0.3 ppm and 0.4
			ppm, respectively.
	1124	1130	At 22.8 ft BGS, rotate washover pipe to loosen casing.
	1130	1148	Trip out and rig down washover pipe. Casing appears to be fairly
			loose in the hole.
	1148	1215	Attach clamp to casing and attempt to pull: casing comes out
			easily. Extract a total of 49.0 ft of 6.5-in. OD steel casing in two
			pieces. None of the casing appears to have been encased in
			cement.
	1215	1239	Technical oversight resumed by Victor Harness-SAIC. Perform
			rad screening of extracted casing: beta/gamma = 60 cpm, alpha
			= 0 cpm. Break for lunch.
	1239	1240	Rig up with 10 5/8-in. diameter tricone bit on a subadapter;
			length = 6.2 ft, table height = 2.7 ft.
	1240	1304	Commence reaming borehole. Ream from 0.0 ft to 54.0 ft BGS.
			Encounter bedrock at 48.0 ft BGS. Cuttings from 0.0 ft to 54.0 ft
			BGS consist primarily of moderate yellowish-brown (10YR 5/4),
			weathered, silty shale.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-20-93	1304	1314	At 54.0 ft BGS. Clean out borehole.
(cont'd)			
	1314	1340	Trip out, rig down bit and subadapter. Calculate a borehole
			volume to 4.0 ft BGS of 30.8 cubic ft = 1.1 cubic yds. Cement
			delivery (1.5 cubic yds) scheduled for 1400 hrs. Run PVC tremie
			pipe into borehole to 38.0 ft BGS.
	1340	1502	Awaiting grout delivery.
	1502	1532	Cement truck onsite. Pour into tub, pump-tremie cement into
			borehole. Circulate water, no cement at surface. Pull out tremie
			pipe. Clean up secure site, and depart.
10-21-93	0704	0710	At M-08 site. Tag cement level at 27.6 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 14.5 cubic ft = 0.5 cubic yds,
			equivalent to 12.3 sacks of Type I cement. Depart.
10-28-93	1050	1054	At M-08 site. Re-tag cement level in borehole: tape stops at 24.5
			ft BGS (3.1 ft of fill/collapse in bottom of bore. Re-calculate a
			borehole volume to 4.0 ft BGS of 12.7 cubic ft, equivalent to 10.8
			sacks of Type I cement. Depart site.
	1309	1340	Return to M-08 site. Mix and pour 10 sacks (11.8 cubic ft) of neat,
			Type I Portland cement into the borehole. Liquid grout to the
			ground surface.
	1340	1348	Clean up, depart site.
10-29-93	0805	0808	At M-08 site. Tag cement level at 9.2 ft BGS. Calculate a borehole
			volume to 4.0 ft of 3.2 cubic ft, equivalent to 2.7 sacks of Type I
			cement. Depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 6

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-1-93	1422	1442	At M-08 site. Mix and pour 5 sacks (5.9 cubic ft) of neat Type I Portland cement into the borehole; liquid cement to the ground surface.
	1422	1447	Clean up and depart site.
11-2-93	0803	0805	At M-08 site. Tag cement level at 3.0 ft BGS. Borehole is ready to be capped. Depart site.
	1430	1445	Borehole is capped with clay soil.
			P&A of M-08 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. M-09

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 4

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson/Randy Phillips - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 10-7-93

FINISH: 10-14-93

METHOD: B

LOGGED BY: Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-7-93	0756	0843	Arrive at M-09 site. Drill rig, positioned over well location, has been adequately steam-cleaned. Background radiation: alpha = 10 cpm, beta/gamma = 60 cpm. Tag bottom of the well (soft) at 158.0 ft below top of casing (BTOC) = 157.2 ft below ground surface (BGS). Original casing stick-up was 1.6 ft: 0.8 ft has been cut off to perform plugging and abandonment. Crew threads a 6 1/8-in. diameter tricone bit onto a 25-ft drill rod; length of the bit is 0.5 ft, table height = 3.6 ft.
	0843	0856	Trip tools into well casing. Breathing zone analysis (BZA) at 21.9 ft BGS = 3 ppm (background), 0% lower explosive limit (LEL). Encounter water at 46.9 ft BGS: BZA = 0 ppm above background, 0% LEL.
	0856	0913	Encounter resistance at 80.0 ft BGS. Commence reaming open interval (assume bottom of casing at 80.0 ft BGS). Ream from 80.0 ft to 160.0 ft BGS. Hard drilling (bottom of well) at 158.4 ft BGS. BZA = 0 ppm above background for entire interval. Cuttings from 80.0 ft to 160.0 ft BGS consist of medium gray (N5) to medium dark gray (N4), thinly laminated shale, along with greenish-black (5GY 2/1) silty shale and fragments of vinyl tape.
	0913	0915	At 160.0 ft BGS. Clean out borehole: note what may be dead formation oil in returns.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-7-93	0915	0956	Trip out tools, unthread bit. Calculate a borehole volume from
(cont.)			160.0 ft to 80.0 ft BGS (suspected bottom of casing) of 15.7 cubic ft,
			equivalent to 13.1 sacks of Type I cement. Crew gathering
			grouting supplies.
	0956	1029	Run PVC tremie pipe into borehole to 128.0 ft BGS.
	1029	1050	Mix and pump-tremie 13 sacks (15.3 cubic ft) of neat, Type I
			Portland cement into borehole. Circulate water.
	1050	1157	Pull out tremie pipe. Clean up. Finish screening cuttings composite
			(see Well Cuttings Field Screening/Disposal Sheet). Secure site
			and depart.
10-8-93	0735	0836	Arrive at M-09 site. Tag cement level at 48.5 ft BGS, measure
			water level at 31.0 ft BGS. Crew arrives
	0836	0858	Rig up a 24.5-ft section of 9.5-in. OD, 8.25-in. inside diameter (ID)
			washover pipe on a 1.0-ft subadapter; total length = 25.5 ft, table
			height = 3.7 ft.
	0858	0923	Commence overwash. Overwash casing from 0.0 ft to 24.7 ft BGS.
			Washover pipe cutting through annular cement from 0.0 ft to
			3.0 ft BGS: medium light gray (N6). Encounter a small amount of
			moisture at 18.0 ft BGS. Cuttings from 3.0 ft to 24.7 ft BGS are dark
			yellowish-orange (10YR 6/5) to moderate yellowish-brown
			(10 YR 5/4), silty clay with weathered shale fragments of same
			color. BZA throughout interval never exceeded 0 ppm above
			background (10 ppm).
	0923	0926	At 24.7 ft BGS. Clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-8-93	0926	0936	Trip out and rig down washover pipe.
(cont.)			
	0936	1037	Attach winch cable hook to casing, and attempt to pull: unable to
			pull casing out. W. Thedford (HSEA) onsite; issues a burn permit.
	1037	1104	Weld a lifting bell onto the casing collar.
	1104	1113	Attempt to pull casing: casing comes out easily. Extract a total of
			33.5 ft of 6.5-in. OD steel casing. Total casing (including 0.8 ft
			cut-off of original stick-up) in well is 34.3 ft.
	1113	1118	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter;
			length of assembly = 6.2 ft, table height = 3.8 ft.
	1118	1144	Commence reaming borehole with compressed air only. Ream
			from 0.0 ft to 50.0 ft BGS. Encounter water at 27.0 ft BGS. Drill
			rods bouncing at 39.0 ft BGS, suspect competent bedrock.
			Cuttings from 0.0 ft to 39.0 ft consist of moderate yellowish-brown
			(10 YR 5/4) silty clay and weathered and stained shale plus minor
			cement fragments. Cuttings from 39.0 ft to 50.0 ft BGS consist
			primarily of medium dark gray (N4) thinly laminated shale. BZA
			throughout interval = 0 ppm above background.
	1144	1149	At 50.0 ft BGS. Clean out borehole. Note odor of partially cured
			cement; BZA reads 10 ppm above background momentarily, then
			0 ppm above background.
	1149	1201	Trip out tools, rig down bit and subadapter assembly. Calculate
			a borehole volume of 30.8 cubic ft, equivalent to 26.1 sacks of
			Type I cement.
	1201	1312	Break for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
10-8-93	1312	1327	Lower mast on drill rig, move rig off site. Crew gathering grouting
(cont.)			supplies.
	1327	1418	Bore is dry and clean. Mix and pour 15 sacks (17.7 cubic ft) of
			neat, Type I Portland cement into the borehole. Circulate
			cement.
	1418	1504	Clean up, secure site, and depart.
10-11-93	0825	0932	Arrive at M-09 site. Tag cement level at 9.0 ft BGS. Plan to add
			3 more sacks of cement to top-off borehole.
	0932	0936	Mix and pour 3 sacks (3.5 cubic ft) of neat, Type I Portland
			cement into borehole. Liquid grout to 3.5 ft BGS.
	0936	0954	Clean up, secure site, and depart.
10-13-93	0828	0835	At M-09 site. Tag cement level at 3.5 ft BGS. Borehole is ready
			to be capped. Depart site.
10-14-93	1014	1027	M-09 is capped with clay soil.
			P&A of M-09 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. M-10

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Randy Phillips/Russell Jones - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 9-28-93

FINISH: 10-5-93

METHOD: B

LOGGED BY: Timothy Coffey/ Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-28-93	1235	1251	Technical oversight by T.J. Coffey. Arrive at M-10 site. Drill rig is positioned over well, crew is onsite waiting. Well casing is 6 5/8-in. outside diameter (OD) steel casing. Inside the well casing is a section of 4.5-in. OD PVC casing approximately 1.5 ft in length. Tag the bottom of the well at 105.1 ft below top of casing (BTOC) = 104.3 ft below ground surface (BGS). Bottom is soft: possible sediment accumulation. Water level is greater than 17 ft BGS.
	1251	1255	Inspect drill rig: rig appears to have been adequately steam-cleaned. Crew has threaded a 6 1/8-in. diameter tricone bit onto a drill rod; length of bit = 0.5 ft, table height = 3.4 ft. W. Thedford (HSEA) onsite as MMES representative. T. McDermott (SMS) onsite to observe P&A procedures.
	1255	1258	Trip bit into well casing. Encounter water at 21.0 ft BGS.
	1258	1304	Continue tripping bit into well. Observe shale returns beginning at about 24.0 ft BGS. Commence reaming of open interval. Ream to 47.1 ft BGS.
	1304	1308	With bit at 47.1 ft BGS and connection made, begin circulating compressed air. Compressed air and water returns blow the table bushings approximately 12 ft into the air. Driller not using water to drill, well is producing more water than expected. Replace table bushings and secure with winch cable hook.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-28-93	1308	1311	Continue reaming open interval. Ream from 47.1 ft to 72.1 ft BGS.
(cont.)			
	1311	1314	At 72.1 ft BGS. Add drill rod. Discuss table bushing blow-out with
			W. Thedford (HSEA) who determines that the incident is not
			reportable.
	1314	1316	Continue reaming open interval. Ream from 72.1 ft to 97.1 ft BGS.
			Observed a musty odor throughout entire interval: breathing zone
			analysis detected no organic vapors.
	1316	1326	Continue reaming open interval. Ream from 97.1 ft to approximately
			107.1 ft BGS. Begin to see large amounts of black organic detritus
			in returns at 102.0 ft BGS. Bit encounters resistance at 103.0 ft
			BGS, PVC fragments at surface.
	1326	1330	At 107.1 ft BGS. Clean out borehole.
	1330	1336	Begin tripping out tools.
	1336	1342	W. Thedford (HSEA) interrupts operations to conduct an impromptu
			safety meeting. Bill discusses the table bushing blow-out incident
			and corrective measures: driller should keep table wrench on pipe
			joint when starting to circulate drilling air/fluids. He reiterates: we
			are not in a production mode, take extra time, and work safely.
	1342	1356	Finishing tripping tools out of the well. Tag the bottom of the
			borehole at 108.0 ft BGS. Calculate a borehole volume to 24.0 ft
			BGS (presumed bottom of surface casing) of 17.2 cubic ft, equivalent
			to 14.6 sacks of Type I cement. Cuttings from 24.0 ft to 108.0 ft
			consist primarily of: grayish-red (5R 4/2) and dark gray (N3), thinly
			laminated shale; and dark greenish-gray (5G 4/1) and light olive
			gray (5Y 6/1), banded, glauconitic, sandy siltstone. The topmost

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-28-93			and bottommost intervals contained black (N1) organic detritus,
(cont.)			and the bottommost interval also had white (N9) PVC fragments
			and moderate blue-green (5BG 4/6) soft rubber fragments (plug
			gaskets).
	1356	1408	Crew departs for cement. Screen cuttings composite from 24.0 ft
			to 108.0 ft BGS (see Well Cuttings Field Screening/Disposal
			Sheet).
	1408	1415	Crew returns and runs 1.5-in. OD PVC tremie pipe into borehole to
			78.5 ft BGS.
	1415	1423	Oversight gives site-specific health and safety briefing to M. Baker
			(Highland) who will be used intermittantly on this project.
	1423	1520	Mix and pump-tremie 15 sacks (17.7 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water then
			approximately 25% cement.
	1520	1530	Pull out tremie pipe. Clean up, secure site, and depart.
9-29-93	0703	0707	Arrive at M-10 site. Tag cement level at 15.6 ft BGS (8.4 ft above
			presumed bottom of surface casing). Depart.
9-30-93	0938	0952	Technical oversight assumed by Victor Harness - SAIC. Arrive at
			M-10 site. Drill crew and B. Thedford (HSEA) onsite. Crew has
			performed pre-work equipment check already. Background scan
			of site: beta/gamma = 50 cpm, alpha = 20 cpm.
	0952	0957	Trip into casing with a 6 1/8-in. diameter tricone bit on a drill rod.
			Encounter water at 13.0 ft BGS. Drill through partially cured
			cement from 15.6 ft to 22.6 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-30-93	0957	1003	At 22.6 ft BGS, clean out borehole. Trip out.
(cont.)			
	1003	1015	Rig up with a 24.5-ft section of 8.25-in. inside diameter (ID), 9.5-in.
			OD, washover pipe on a 1.0-ft subadapter; total length = 25.5 ft,
			table height = 3.0 ft.
	1015	1043	Commence over wash. Over wash casing from 0.0 ft to 22.5 ft
			BGS. Encounter weathered rock and cured cement at 15.5 ft
			BGS. Cuttings from 0.0 ft to 15.5 ft are moderate reddish-brown
			(10R 4/6), silty, cherty clay soil. Rate of advance slowed at this
			point. Cuttings from 15.5 ft to 22.5 ft consist of moderate olive
			brown (5Y 4/4) clay soil and residuum with very pale orange
			(10YR 8/2) cement fragments. Breathing zone monitoring reads
			0.0 ppm for entire interval.
	1043	1105	At 22.5 ft BGS. Clean out borehole. Trip out and rig down
			washover pipe. Casing dropped down about 1.5 ft, no need to
			ream borehole.
	1105	1140	Burn lifting holes in casing attempt to pull: extract 21.1 ft of 6.5-in.
			OD steel casing. Tag bottom of borehole at 22.0 ft BGS.
	1140	1230	Break for lunch.
	1230	1250	Lower mast on drill rig, move rig off location. Calculate a borehole
			volume to 4.0 ft BGS of 9.1 cubic ft, equivalent to 7.7 sacks of Type
			I cement.
	1250	1311	Mix and pour (borehole is open and dry) 10 sacks (11.8 cubic ft)
			of neat, Type I Portland cement into the borehole. Liquid grout to
			ground surface.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. M-10
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
9-30-93	1311	1318	Clean up, secure site, and depart.
(cont.)			
10-4-93	0859	0901	At M-10 site. Tag cement level at 2.5 ft BGS. Borehole is ready
			to be capped. Depart site.
10-5-93	1227	1302	Borehole M-10 is capped with clay soil.
			P&A of M-10 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-06

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 2

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson/Randy Phillips - Highland Drilling

DRILL: Ford 555 Backhoe

DATE: START: 11-5-93

FINISH: 11-5-93

METHOD: See Report Text

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-5-93	0929	0938	Arrive at OR-06 location. The subsurface data base (Y/TS-881)
			reports the status of well OR-06 to be active, however there is no
			above-ground evidence to confirm the well's existence. Prior to
			decommissioning the well, it must be located. The plan will be: to
			dig a shallow pit with the backhoe, looking for well construction
			materials or evidence that plugging and abandonment (P&A) had
			taken place. Staked location is along a drainage ditch, approxi-
			mately 3.5 ft off the edge of Gum Branch Road. Background
			radiation at site: alpha = 0 cpm, beta/gamma = 60 cpm.
	0938	1020	Begin excavating a pit around the staked location. Dimensions of
			the pit: approximately 4 or 5 ft in radius, 3.0 ft deep. Monitoring
			for radiation and organic vapors. Encounter weathered shale
			rock (in-place and apparently undisturbed) at about 2.5 ft below
			ground surface. No evidence of well construction materials or
			P&A materials were observed; no penetrations (boreholes) through
			the weathered rock were observed. Monitoring results: organic
			vapors = 0.0 ppm, lower explosive limit (LEL) = 0%; radiation:
			alpha = 0 cpm, beta/gamma = 100 cpm (background = 60 cpm).
	1020	1025	Call to S. Jones (HSEA), report status/observations. S.Jones is
			satisfied with attempt to locate well OR-06, he directs to re-fill pit
			and consider the well to be decommissioned.
	1025	1045	Re-fill pit and compact the soil. Reconstruct drainage ditch at
			roadside.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-06
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-5-93	1045	1104	Get backhoe bucket of gravel and reconstruct road edge. Complete.
(cont.)			Depart site.
			P&A of well OR-06 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-07

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Valley at Hagwood Road

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: R. Jones/R. Phillips/J. Monger-Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 11-19-93

FINISH: 12-6-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-19-93	0843	0848	Arrive at OR-07 site. Drill rig is positioned over well. Crew is cleaning out the pressure-relief valve for the drill rig nine-spool (hydraulic controls).
	0848	0858	Start up drill rig. Working various control levers on the nine-spool; accessories still don't seem to be working very well.
	0858	0954	Shut off drill rig. Call to Highland office for a replacement valve. Waiting for valve. W. Thedford (HSEA) arrives.
	0954	1006	S. Gilbert (Highland) brings new valve. Replace old valve. Give site-specific H&S briefing to Jeff Monger (Highland).
	1006	1015	Raise mast on drill rig. Working control levers on nine-spool; still not working very well.
	1015	1046	Shut off rig. Check out double pump; pump is worn out. Crew will stay and remove pump for repairs. Oversight departs. P&A activities on well OR-07 will commence when pump repairs are complete.
12-2-93	0800	1825	Note: P&A activities further delayed due to repairs made to drill rig exhaust system and oversight coverage scheduling difficulties. Arrive at OR-07 site. Crew arrives, begins to replace leaking part on the drill rig exhaust system. Tag the bottom of the well (soft)

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-2-93			at 99.0 ft below top of casing (BTOC) = 96.0 ft below ground
(cont.)			surface (BGS). The subsurface data base (Y-TS-881) reports the
			total depth of OR-07 to be 100.0 ft. Measure 39.0 ft of 2.0-in.
			outside diameter (OD) PVC casing (including stick-up). Water
			level measured at 14.0 ft BGS.
	0825	0831	Crew performs prework equipment check. Inspect drill rig; appears
			to be adequately steam-cleaned.
	0831	0838	Start up drill rig, allow to warm up. Background radiation at
			location: alpha = 0 cpm, beta/gamma = 50 cpm.
	0838	0851	Rig up a 25-ft long drilling rod; thread a 6.5-in. diameter tricone bit
			onto the rod. Length of the bit = 0.7 ft, table height = 2.6 ft. Cut off
			casing stick-up flush with the ground surface.
	0851	1019	Commence reaming the borehole and drilling out the casing in one
			pass (with HSEA approval) with compressed air only. Ream from
			0.0 ft to 102.1 ft BGS. Breathing zone analysis (BZA) at 1.0 ft BGS
			= 0.3 ppm (background = 0.0 ppm). Lower Explosive Limit (LEL)
			reading at 3.0 ft BGS <1% (1.2 ppm) (background). Returns
			become dusty at 8.5 ft BGS; suspect top of weathered bedrock.
			Cuttings from 0.0 ft to 1.5 ft BGS: grayish-brown (5YR 3/2), moist,
			clayey topsoil. Cuttings from 1.5 ft to 8.5 ft BGS are moderate
			yellowish-brown (10YR 5/4), to dark yellowish-brown (10YR 4/2),
			moist, clayey subsoil with medium dark gray (N4) cement and
			white (N9) PVC fragments. BZA at 10.0 ft BGS = 0.2 ppm. Return
			dust changes color at 13.0 ft BGS; suspect top of competent
			bedrock. Cuttings from 8.5 ft to 13.0 ft BGS consist primarily of
			light olive gray (5Y 5/2), dark yellowish-orange (10YR 6/6), and
			grayish-red (10R 4/2), weathered and stained, thinly laminated
			shale with minor amounts of subsoil and cement fragments. Dust

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-2-93			abates momentarily at 17.0 ft BGS (moisture). LEL at 17.5 ft BGS
(cont.)			is <1% (1 ppm). Cuttings from 13.0 ft to 98.1 ft BGS are blackish-
			red (5R 2/2), thinly laminated shale and dark greenish-gray (5G 4/
			1), and light olive gray (5Y 6/1), banded and bedded, sandy,
			glauconitic siltstone. These two lithologies vary in predominance
			in each collected sample, but overall each make up approximately
			50% of the entire interval. Increasing amounts of medium dark
			gray (N4), thinly laminated shale near the end of the interval.
			Results of BZA at the following locations:
			32.0 ft BGS = 0.4 ppm
			44.0 ft BGS = 0.3 ppm
			59.5 ft BGS = 0.4 ppm
			69.0 ft BGS = 0.5 ppm
			82.0 ft BGS = 0.0 ppm
			91.0 ft BGS = 0.0 ppm
			Vary hard drilling momentarily at 98.9 ft BGS. BZA at 99.5 ft BGS
			= 0.0 ppm. Cuttings from 98.1 ft to 102.1 ft BGS consist primarily
			of medium dark gray (N4) to medium bluish-gray (5B 5/1), thinly
			laminated shale.
	1019	1022	At 102.1 ft BGS. No water zones encountered. Clean out
			borehole.
	1022	1039	Trip out, unthread bit. Tag bottom of borehole at 101.9 ft BGS
			(0.2 ft of fill). No need to clean out borehole any further. Calculate
			a borehole volume to 4.0 ft BGS of 22.6 cubic ft, equivalent to
			19.1 sacks of Type I cement.
	1039	1053	Run PVC tremie pipe into the borehole to 66.0 ft BGS. Gather
			grouting supplies.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-07
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-2-93	1053	1130	Mix and begin to pump-tremie 14 sacks (16.5 cubic ft) of neat,
(cont.)			Type I Portland cement into the borehole.
	1130	1137	Tremie becomes plugged with cement at approximately 10 ft
			BGS. Remove all of the tremie pipe from the borehole.
	1137	1144	Complete the grouting of the borehole to the surface. Circulate
			100% cement.
	1144	1200	Clean up. Secure site and depart for lunch.
12-3-93	0754	0805	Arrive at OR-07 site. Tag cement level at 10.4 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 1.5 cubic ft, equivalent to
			1.3 sacks of Type I cement. Crew arrives.
	0805	0817	Crew gathers grouting supplies.
	0817	0829	Mix and pour approximately 2.5 sacks (3.0 cubic ft) of neat, Type I
			Portland cement into the borehole. Fill to ground surface. Depart
			site.
12-6-93	0801	0803	At OR-07 site. Tag cement level at 1.7 ft BGS. Borehole is ready
			to be capped. Depart.
	1045	1055	Return to OR-07 site. Cap borehole with clay soil.
			P&A of OR-07 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-08

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Valley at Hagwood Road

DRILLER: John Young - Highland Drilling Co.

HELPERS: Hubert Hall/Randy Phillips - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 12-6-93

FINISH: 12-8-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-6-93	0822	0833	Arrive at OR-08 site. Crew onsite, performing pre-work equip-
			ment checks. Inspect drill rig (see Equipment Decontamination
			Inspection summary).
	0833	0900	Start drill rig, allow to warm-up. Heavy rain over weekend has
			made the site soft and muddy: crew is re-timbering under the jack
			supports. Tag bottom of well at 90.1 ft below top of casing (BTOC)
			= 87.1 ft below ground surface (BGS). The Subsurface Data Base
			(Y/TS-881) reports the total depth of OR-08 to be 100.0 ft. Water
			is running over the casing edge at 3.0 ft above ground surface
			(artesian flow). Measure a total of 45.0 ft. of 2.0-in. outside
			diameter (OD) PVC casing. Background radiation at site: Beta/
			gamma = 50-70 cpm, no alpha measurement, too wet.
	0900	0912	Raise mast. Cut casing off flush with ground surface.
	0912	0917	Rig up a 25-ft long drill rod. Thread a 6.5-in. diameter tricone bit
			onto the rod; length of bit = 0.7 ft, table height = 3.4 ft.
	0917	0938	Commence drilling out casing and reaming borehole in one pass
			(approved by HSEA). Having trouble keeping bit on the casing.
			Ream from 0.0 ft to 13.5 ft BGS. Breathing zone analysis (BZA)
			at 2.5 ft BGS = 0.1 ppm (background). BZA at 9.3 ft BGS =
			0.4 ppm. Observe steam at borehole collar: organic vapors at
			collar = 0.3 ppm. Poor cuttings circulation between 10.0 ft and
			13.5 ft BGS. Encounter weathered rock at 13.5 ft BGS. Cuttings

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-6-93			from 0.0 ft to 13.5 ft BGS are: moderate yellowish-brown (10 YR
(cont.)			5/4) to pale brown (5YR 5/2), wet, clayey soil/fill material with
			undifferentiated gravel in the top 0.5 ft.
	0938	0957	At 13.5 ft BGS. Trip out of borehole: PVC casing has been pushed
			to side of hole. Attach clamp to casing and extract 1.7 ft. Unable
			to remove anymore casing.
	0957	1007	Lower mast. Re-position drill rig over well.
	1007	1018	Raise mast. Table height = 3.3 ft. Trip bit back into borehole.
	1018	1141	At 13.5 ft BGS, continue drilling out casing/reaming borehole.
			Ream to 101.4 ft BGS. Encounter top of competent rock at
			approximately 17.0 ft BGS. Cuttings from 13.5 ft to 17.0 ft BGS:
			moderate yellowish-brown (10YR 5/4) to dusky brown (5YR 2/2)
			weathered and stained shale and sandy shale with very pale
			orange (10YR 8/2) cement fragments. BZA at 18.4 ft BGS =
			0.5 ppm. Encounter a small amount of moisture at 27.0 ft BGS.
			BZA at 27.4 ft BGS = 0.1 ppm. Encounter additional moisture at
			32.4 ft BGS. BZA at 39.0 ft BGS = 0.2 ppm. Cuttings from 17.0 ft
			to 47.4 ft BGS consist of: blackish-red (5R 2/2), thinly laminated
			shale; light olive gray (5Y 6/1) and greenish-black (5G 2/1),
			massive to bedded (banded), glauconitic sandy siltstone; and
			medium dark gray (N4), thinly laminated shale of alternating
			predominance. Moderate orange pink (10R 7/4) calcite fragments
			were observed occasionally in this interval. Additional moisture at
			49.0 ft BGS. BZA at 49.4 ft BGS = 0.2 ppm. BZA at 56.4 ft BGS
			= 0.2 ppm. BZA at 70.4 ft BGS = 0.1 ppm. BZA at 82.4 ft BGS =
			0.1 ppm. BZA at 94.0 ft BGS = 0.0 ppm. Encounter moisture at
			95.4 ft BGS. Cuttings from 47.4 ft to 101.4 ft BGS are: blackish-
			red (5R 2/2) and medium dark gray (N4) shale in decreasing

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-6-93			amounts; and brownish-gray (5YR 4/1) to dark greenish-gray
(cont.)			(5GY 4/1), massive micrite/intramicrite with pinkish-gray (5YR 8/1)
			calcite veinlets. Near the bottom of the interval, the amount of
			limestone increases.
	1141	1147	At 101.4 ft BGS. Clean out borehole: hole appears to be making
			a little bit of water now, although no water zones (except for slightly
			moist areas) were observed.
	1147	1201	Trip out. Tag bottom of borehole at 99.7 ft BGS (1.7 ft of fill).
			Additional attempts of cleaning borehole would only bring in more
			fill. Calculate a borehole volume to 4.0 ft BGS of 22.0 cubic ft,
			equivalent to 18.7 sacks of Type I cement.
	1201	1238	Break for lunch.
	1238	1258	Gather grouting supplies and move to site.
	1258	1310	Secure carousel and lower mast.
	1310	1313	Run PVC tremie pipe into the borehole to 79.0 ft BGS.
	1313	1355	Mix and pump-tremie 12 sacks (14.2 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then 100%
			cement.
	1355	1415	Pull out tremie pipe. Clean up. Secure site and depart.
12-7-93	0752	0815	Arrive at OR-08 site. Tag cement level at 13.9 ft BGS (water fills
			borehole to ground surface). Calculate a borehole volume to 4.0 ft
			BGS of 2.3 cubic ft, equivalent to 1.9 sacks of cement. Crew
			arrives.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-08
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-7-93	0815	0844	Mix and pump-tremie 3 sacks (3.5 cubic ft) of neat, Type I Portland
(cont'd)			cement into the borehole. Circulate water, then 100% cement.
	0844	0845	Clean up. Crew to remain onsite and steam-clean and demobilize
			the drill rig. Oversight departs.
12-8-93	0750	0757	Arrive at OR-08 site. Tag cement level at 1.7 ft BGS. Borehole is
			ready to be capped. Waiting for crew.
	0757	0810	Crew arrives. Borehole is capped with clay soil.
			P&A of OR-08 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-09

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Bear Creek Valley at Hagwood Road

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson/ Randy Phillips - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 11-12-93

FINISH: 11-18-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-12-93	0815	0838	Arrive at OR-09 site. Crew is waiting and drill rig is positioned over well. Casing stick-up (2.8 ft) has been cut off flush with the ground surface. Inspect drill rig: adequately steam-cleaned. Tag bottom of well at 97.4 ft below ground surface (BGS). Note: Subsurface data base (Y/TS-881) reports total depth of well OR-09 to be 100.0 ft. Background radiation at location: alpha = 0 cpm, beta/gamma = 60 cpm. Crew has already rigged up a 25-ft drill rod and threaded a 6.5-in. diameter tricone bit to it. Length of bit = 0.7 ft, table height = 2.5 ft.
	0838	1042	Commence reaming borehole and drilling out casing in one pass with compressed air only. Ream from 0.0 ft to 102.2 ft BGS. Cuttings from 0.0 ft to 0.5 ft BGS: dusky yellowish-brown (10 YR 2/2), moist, clayey topsoil with abundant organic material. Top of weathered rock at 9.0 ft BGS. Cuttings from 0.5 ft to 9.0 ft BGS: dark yellowish-orange (10 YR 6/6), dry, silty subsoil with minor amount of weathered shale and PVC fragments. Encounter slight moisture at 9.0 ft BGS. Breathing zone analysis (BZA) at 5.0 ft BGS = 0.0 ppm. Lower Explosive Limit (LEL) reading at 12.8 ft BGS = less than 1%. Top of fresh bedrock encountered at about 13 ft BGS. Cuttings from 9.0 ft to 13.0 ft BGS are generally very pale orange (10 YR 8/2) to light greenish-gray (5GY 8/1), weathered and stained, thinly laminated shale. Shale stained to light brown (5YR 5/6). Cuttings from 13.0 ft to 102.2 ft BGS consist primarily of medium dark gray (N4), thinly laminated shale. Beginning at

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-12-93			approximately 33.2 ft BGS, grayish-red (10R 4/2) shale is observed.
(cont.)			The grayish-red shale continues to about 73.2 ft BGS. Below
			73.2 ft BGS brownish-black (5YR 2/1), massive micrite appears
			and increases in amount. By the end of the interval (102.2 ft
			BGS), the medium dark gray shale and the micrite occur in
			approximately equal amounts. Moderate blue-green (5BG 4/6),
			soft rubber fragments first appear at 98.2 ft BGS. PVC fragments
			returned all the way to the bottom of the well: the well is probably
			a screened well. BZA at the following locations:
			19.2 ft: 0.0 ppm
			27.0 ft: 0.0 ppm
			37.0 ft: 0.0 ppm
			59.0 ft: 0.0 ppm
			79.0 ft: 0.0 ppm
			95.0 ft: 0.0 ppm.
			Moisture encountered: from 40.2 ft to 42.5 ft BGS, at 63.5 ft BGS,
			and at 69.5 ft BGS. Water encountered at 77.5 ft BGS and
			continues to end of borehole. Hard drilling (bottom of well) at
			100.0 ft BGS.
	1042	1052	At 102.2 ft BGS. Clean out borehole.
	1052	1114	Trip out. Tag bottom of borehole at 100.8 ft BGS (1.4 ft of fill in
			borehole). Calculate a borehole volume to 4.0 ft BGS of 22.3
			cubic ft, equivalent to 18.9 sacks of Type I cement.
	1114	1120	Move water truck onto site and prepare to grout borehole.
	1120	1130	Run PVC tremie pipe into the borehole to 97.0 ft BGS.
	1130	1222	Break for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-09
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-12-93	1222	1323	Mix and pump-tremie 14 sacks (16.5 cubic ft) of neat, Type I
(cont.)			Portland cement into the borehole. Circulate water then 100%
			cement. Note: While screening cutting composite, HNu batteries
			went dead. Headspace analysis with OVA M-108 read 10 ppm (in
			excess of action level). Call to K. Jago (HSEA) who directed to
			re-seal and test again. Re-test with a different HNu read 0.0 ppm,
			with same OVA read 3.7 ppm.
	1323	1344	Pull out tremie pipe. Clean up. Secure site and depart.
11-15-93	0801	0837	Arrive at OR-09 site. Tag cement level at 18.0 ft BGS. Water level
			measured at 16.0 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			3.2 cubic ft, equivalent to 2.7 sacks of Type I cement. Crew arrives.
	0837	0900	Mix (thick) and pour 4 sacks (4.7 cubic ft) of neat, Type I Portland
			cement into the borehole. Liquid grout to ground surface.
	0900	0913	Clean up, secure site, and depart.
11-16-93	1518	1520	At OR-09 site. Tag cement level at 4.9 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 0.6 cubic ft, equivalent to 0.5
			sacks of Type I cement.
	1520	1530	Mix and pour 1 sack (1.2 cubic ft) of neat, Type I Portland cement
			into the borehole. Liquid grout to ground surface. Depart site.
11-17-93	0730	0735	At OR-09 site. Tag cement level at 1.0 ft BGS. Borehole is ready
			to be capped.
11-18-93	1530	1545	Borehole is capped with clay soil.
			P&A of OR-09 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-21

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson/Randy Phillips - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 11-10-93

FINISH: 11-12-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-10-93	0801	0851	Arrive at OR-21 site. Drill rig is positioned over the well, appears
			to be adequately steam-cleaned. Drill crew arrives, warming up
			equipment. Crew conducts pre-work equipment checks. Tag
			bottom of well at 96.7 ft below top of casing (BTOC) = 94.9 ft below
			ground surface (BGS). Subsurface data base (Y/TS-881) reports
			the total depth of well OR-21 to be 100.0 ft. Water level measured
			at 14.4 ft BGS. Measured length of casing in the well = 39.3 ft.
			Background radiation scan of location: alpha = 0 cpm, beta/
			gamma = 40 cpm.
	0851	0857	Cut off casing stick-up [2.0-in. outside diameter (OD) PVC,
			schedule 80 casing] flush with the ground surface. Rig up a 25-ft
			drill rod. Thread a 6.5-in. diameter tricone bit onto the drill rod;
			length of bit = 0.7 ft, table height = 2.8 ft.
	0857	1027	Commence reaming borehole and milling casing in one pass
			using compressed air only. Ream from 0.0 ft to 101.9 ft BGS.
			Encounter cement from 1.8 ft to 3.5 ft BGS. Cuttings from 0.0 ft
			to 1.8 ft BGS are grayish-brown (5YR 3/2) to dusky brown
			(5 YR 2/2), moist top soil and undifferentiated gravel of
			approximately 1.0-in. diameter. Breathing Zone Analysis (BZA)
			at 1.5 ft BGS = 0.0 ppm. Lower explosive limit (LEL) reading at
			3.0 ft BGS = <1% (1 ppm). Encounter weathered bedrock at 3.5
			ft BGS. Cuttings from 1.8-ft to 3.5 ft BGS consist of moderate
			yellowish-brown (10YR 5/4), dry subsoil with medium dark gray

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-21
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-10-93			(N4) cement fragments. Encounter a small amount of moisture
(cont.)			from 5.5 ft to 7.5 ft BGS. BZA at 7.0 ft BGS = 0.0 ppm, BZA at 13.5
			ft BGS = 0.0 ppm. LEL scan at 17.9 ft BGS = <1% (1 ppm).
			Encounter fresh bedrock at approximately 18.5 ft BGS. Cuttings
			from 3.5 ft to 18.5 ft BGS are predominantly moderate yellowish-
			brown (10YR 5/4) to moderate brown (5 YR 3/4), weathered and
			stained, laminated shale and siltstone. Interval also contains
			minor amounts of PVC and cement fragments. Encounter water
			at 35.9 ft BGS. Water has a foul odor; BZA = 0.0 ppm. Cuttings
			from 18.5 ft to 47.9 ft BGS consist of very dusky red (10R 2/2),
			thinly laminated shale; and dark greenish-gray (5GY 4/1) and light
			olive gray (5Y 6/1), laminated, banded, glauconitic sandy siltstone
			plus PVC fragments. PVC fragments stops shortly after
			encountering water (approximately 36.0 ft BGS). Prolific water
			returns by 42.0 ft BGS. BZA at 24.9 ft BGS = 0.0 ppm, LEL scan
			at 29.9 ft BGS = <1% (1 ppm). Cuttings from 47.9 ft to 101.09 ft
			BGS are a continuation of the previous interval with the addition of
			brownish-black (5YR 2/1), massive micrite with blebs of sparite.
			Occasional occurrences of pinkish-gray (5YR 8/1) crystalline
			calcite was observed in the interval. BZA at the following locations:
			53.9 ft : 0.0 ppm
			66.5 ft: 0.0 ppm
			82.9 ft: 0.2 ppm (sulfur odor)
			98.0 ft: 0.0 ppm
			Observe moderate blue-green (5BG 4/6) soft rubber fragments
			beginning at 91.0 ft BGS.
	1027	1031	At 101.9 ft BGS. Clean out borehole.
	1031	1051	Trip out, unthread bit. Tag bottom of borehole at 101.9 ft BGS.
			Calculate a borehole volume to 4.0 ft BGS of 22.5 cubic ft,
			equivalent to 19.1 sacks of Type I cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-21
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-10-93	1051	1110	Drill crew gathering grouting supplies.
(cont.)			
	1110	1120	Crew returns, lowers mast on drill rig, and moves rig off location.
	1120	1130	Run PVC tremie pipe into borehole to 89.0 ft BGS.
	1130	1210	Break for lunch.
	1210	1300	Mix and pump-tremie 15 sacks (17.7 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate water, then
			approximately 50% cement.
	1300	1320	Pull out tremie pipe. Clean up. Crew to remain and steam-clean
			equipment. Oversight departs.
11-11-93	0751	0835	Arrive at OR-21 site. Tag cement level at 17.7 ft BGS. Water level
			is at 14.0 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			3.2 cubic ft, equivalent to 2.7 sacks of Type I cement. Crew
			arrives.
	0835	0855	Mix and pour 4 sacks (4.7 cubic ft) of neat, Type I Portland cement
			into the borehole. Liquid grout level to approximately 1.0 ft BGS.
	0855	0927	Clean up, secure site, and depart.
11-12-93	0804	0808	At OR-21 site. Tag cement level at 2.8 ft BGS. Borehole is ready
			to be capped. Depart site.
	1245	1300	Borehole is capped with clay soil.
			P&A of OR-21 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-22

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Gum Branch Road Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson/Randy Phillips - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 11-8-93

FINISH: 11-10-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-8-93	1100	1136	Arrive at OR-22 site. Well is reportedly not screened, and no other construction details are known. Crew has just moved rig to location. Tag bottom of well (soft) at 99.6 ft below top of casing (BTOC) = 96.8 ft below ground surface (BGS). Set up site. Due to the well's close proximity to the road, the road immediately adjacent to the well will be inside the exclusion zone. If a car comes along the road, we plan to interrupt operations to allow them to pass through.
	1136	1248	Crew departs for traffic cones, additional flagging, and cementing supplies. Break for lunch.
	1248	1304	Crew returns, continue setting up site. Inspect drill rig: appears to be adequately steam-cleaned. Background radiation at location: alpha = 0. pm, beta/gamma = 60 cpm. Remove 2.7 ft of the casing stick-up. Raise mast on drill rig.
	1304	1307	Rig up a 25-ft drill rod. Thread a 6.5-in. diameter tricone bit onto the drill rod; length of the bit is 0.7 ft, table height = 3.0 ft.
	1307	1500	Commence reaming borehole and milling PVC casing in one pass (approved by HSEA) with compressed air only. Ream borehole from 0.0 ft to 101.7 ft BGS. Begin to see cement fragments at 1.0 ft BGS. Cuttings from 0.0 ft to 1.0 ft BGS are grayish-brown (5YR 3/2) to dusky brown (5YR 2/2), moist, clayey topsoil with undifferentiated gravel fragments of about 1.0-in. diameter.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-22
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-8-93			Breathing zone analysis (BZA) at 3.0 ft BGS = 1.0 ppm (max.).
(cont.)			Lower explosive limit (LEL) scan at 4.0 ft BGS: <1% (1 ppm).
			Encounter what appears to be weathered rock at 8.7 ft BGS.
			Cuttings from 1.0 ft to 8.7 ft BGS consist of moderate yellowish-
			brown (10YR 5/4), dry subsoil with medium dark gray (N4) cement
			fragments and white (N9) PVC fragments. BZA at 12.0 ft BGS =
			1.2 ppm. Encounter top of fresh rock at 13.0 ft BGS: cuttings from
			8.7 ft to 13.0 ft are moderate yellowish-brown (10YR 5/4) to light
			olive gray (5Y 5/2), weathered and stained, thinly laminated shale.
			PVC fragments also returned this interval. Encounter a small
			amount of moisture at 16.7 ft BGS as the dust abates. LEL scan
			at 17.7 ft BGS <1% (1 ppm). Cuttings from 13.0 ft to 101.7 ft BGS
			consist generally of blackish-red (5R 2/2) and dark gray (N3),
			thinly laminated shale alternating in predominance; also present,
			occasionally, is dark greenish-gray (56Y 4/1) and light brownish-
			gray (5YR 6/1), banded, laminated, glauconitic, sandy siltstone.
			PVC fragments in returns cease below about 31 ft BGS. Observe
			occasional pinkish-gray (5 YR 8/1) caicite vein material fragments
			scattered throughout the interval in thin beds of brownish-black
			(5 YR 2/1), massive micrite. BZA results at the following depths:
			21.7 ft = 0.2 ppm
			26.7 ft = 0.1 ppm
			42.7 ft = 0.0 ppm
			55.7 ft = 0.0 ppm
			68.0 ft = 0.0 ppm
			83.7 ft = 1.0 ppm
			98.0 ft = less than 1 ppm.
			Prolific water returns at 37.0 ft BGS.
	1500	1503	At 101.7 ft BGS. Clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-22
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-8-93	1503	1530	Trip out, unthread bit, Tag bottom of borehole at 101.7 ft BGS.
(cont.)			Calculate a borehole volume to 4.0 ft BGS of 22.5 cubic ft,
			equivalent to 19.0 sacks of Type I cement.
	1530	1540	Run PVC tremie pipe into borehole to 87.0 ft BGS.
	1540	1713	Mix and pump tremie 20 sacks (23.6 cubic ft) of neat, Type I
			Portland cement. Tremie pipe clogs up after 16 sacks: pull out
			tremie pipe and continue pump-tremie of cement with pump hose
			only. Circulate water, then 100% cement.
	1713	1726	Clean up. Lower mast on drill rig. Secure site and depart.
11-9-93	0812	0833	Arrive at OR-22 site. Tag cement level at 8.5 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 1.0 cubic ft, equivalent to
			0.9 sacks of Type I cement. Steamcleaner, which is being used
			as water source, is off site being repaired (freeze damage). Plan
			to top-off borehole at 1100 hrs. Oversight departs.
	1114	1133	Oversight returns to OR-22 site. Steamcleaner still not back at
			site. Waiting.
	1133	1240	Break for lunch. Steam cleaner returns to site.
	1240	1250	Mix and pour 2 sacks (2.4 cubic ft) of neat, Type I Portland cement
			into the borehole. Fill to ground surface.
	1250	1253	Clean up, secure site, and depart.
11-10-93	0758	0801	At OR-22 site. Tag cement level at 1.2 ft BGS. Borehole is ready
			to be capped. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. OR-22
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
11-10-18	1315	1320	Return to OR-22 site. Cap borehole with clay soil.
(cont.)			
			P&A of OR-22 is complete.

APPENDIX B
PLUGGING AND ABANDONMENT DIAGRAMS

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1012

LOCATION: S3 Ponds Functional Area

COORDINATES: N31114 E51185

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 8-27-93

FINISH: 9-7-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

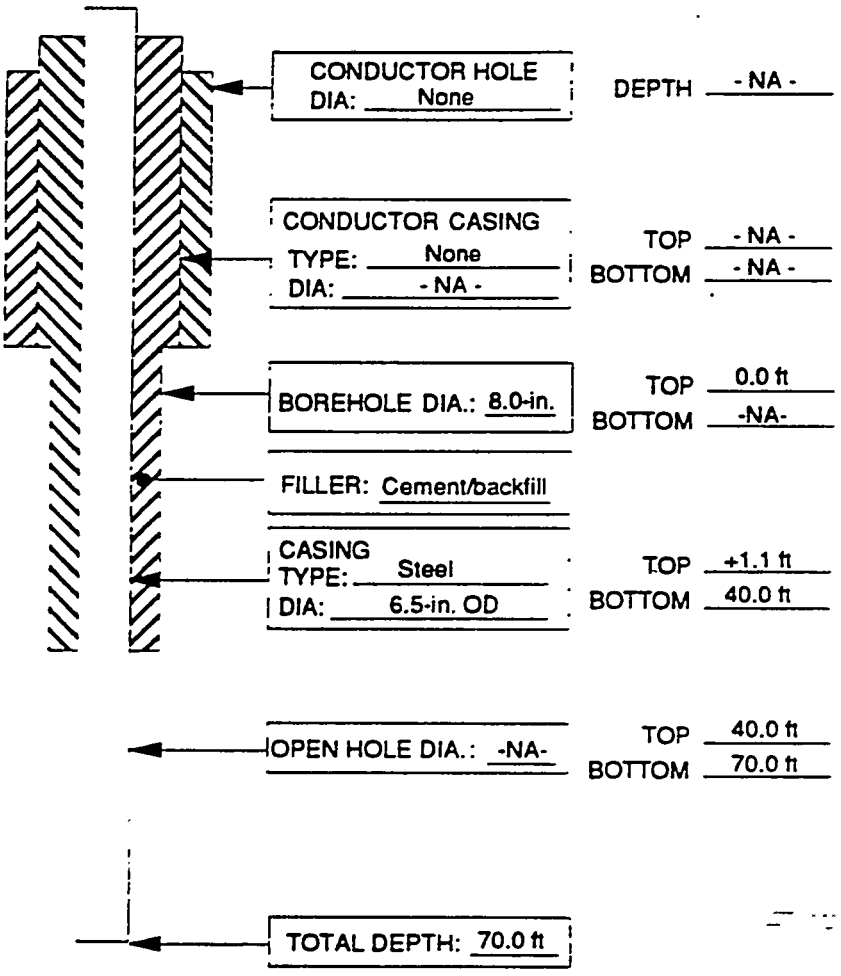
HELPERS: Randy Phillips/Russell Jones

REASON FOR P&A: Loss of well security/substandard well construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



- NA -: Not Applicable/Not Available

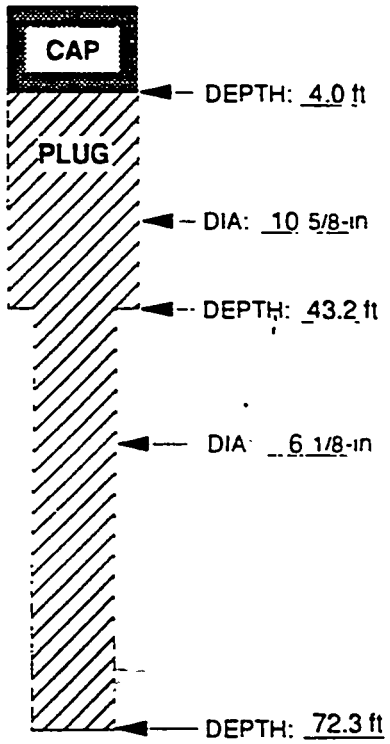
P&A SUMMARY

REAMED DIA: 6 1/8-in./10 5/8-in.

DRILLED/REAMED DEPTH: 72.3 ft/43.2 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1016

LOCATION: S3 Ponds Functional Area

COORDINATES: N31278 E 51451

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 8-24-93

FINISH: 9-3-93

PREPARED BY: T. Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

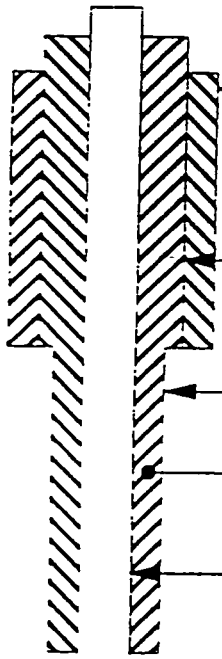
HELPERS: Steve Brown/Russell Jones

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: 8.0 in.
TOP 0.0 ft
BOTTOM -NA-

FILLER: Cement/backfill

CASING
TYPE: Steel
DIA: 6.5-in. OD
TOP +0.6 ft
BOTTOM 32.0 ft

OPEN HOLE DIA.: -NA-
TOP 32.0 ft
BOTTOM 63.0 ft

TOTAL DEPTH: 63.0 ft.

-NA-: Not Applicable/Not Available

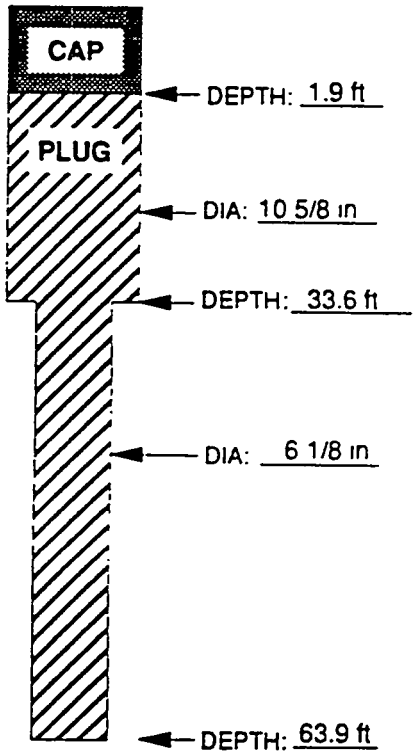
P&A SUMMARY

REAMED DIA: 6 1/8 in./10 5/8 in.

DRILLED/REAMED DEPTH: 63.9 ft/33.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1018

LOCATION: S3 Ponds Functional Area

COORDINATES: N31207 E 51345

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 9-10-93

FINISH: 9-17-93

PREPARED BY: T.J. Coffey/ V.R. Harness-SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

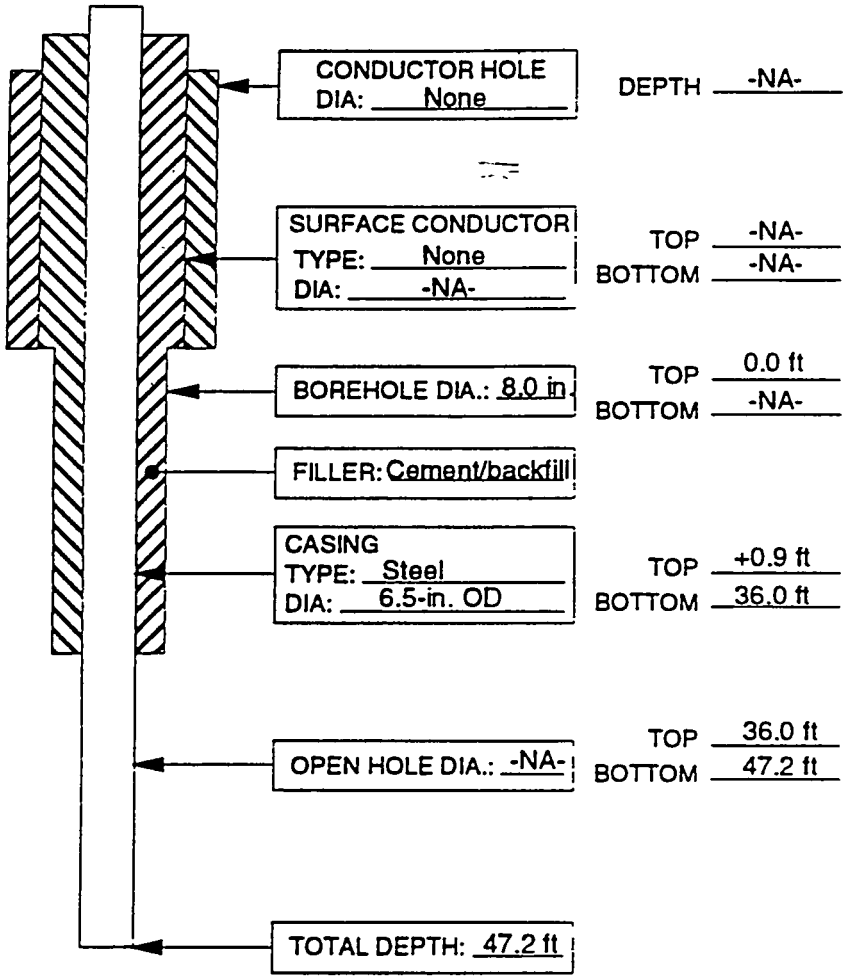
HELPERS: Randy Phillips/Russell Jones

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



-NA-: Not Applicable/Not Available

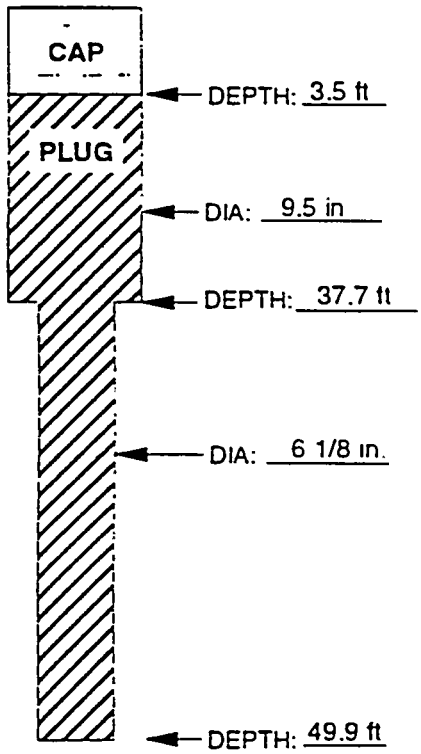
P&A SUMMARY

REAMED DIA: 6 1/8 in./9.5 in.

DRILLED/REAMED DEPTH: 49.9 ft/37.7 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1019

LOCATION: S3 Ponds Functional Area

COORDINATES: N31149 E51346

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 9-9-93

FINISH: 9-17-93

PREPARED BY: Timothy Coffey - SAIC

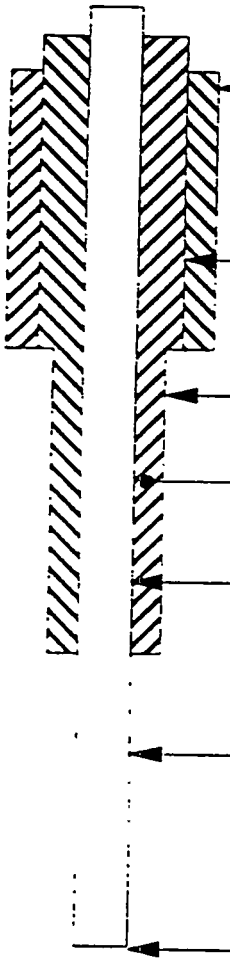
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall HELPER: Russell Jones

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B DEVIATIONS FROM METHOD: Over wash well casing and ream with 10 5/8-in. dia. bit to well TD due to short open interval, approved by W. Thedford (HSEA).

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA.: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: - NA - TOP - NA - BOTTOM - NA -

BOREHOLE DIA.: 8.0 in. TOP 0.0 ft BOTTOM 40.0 ft

FILLER: Backfill/cement

CASING TYPE: Steel DIA: 6.5-in. OD TOP +1.0 ft BOTTOM 40.0 ft

OPEN HOLE DIA.: - NA - TOP 40.0 ft BOTTOM 43.5 ft

TOTAL DEPTH: 43.5 ft

- NA -: Not Applicable/Not Available

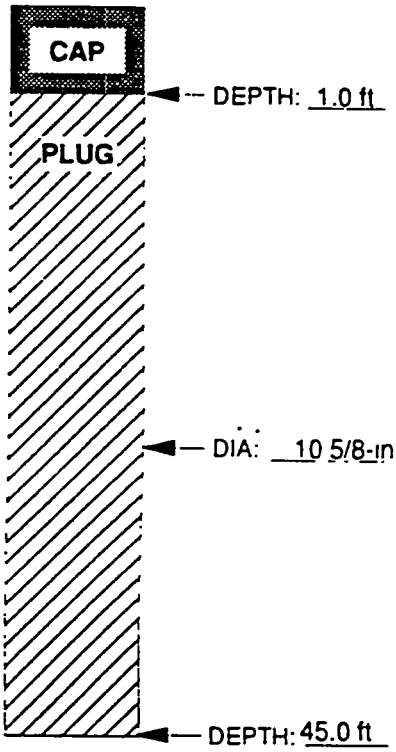
P&A SUMMARY

REAMED DIA: 9.5 in.

DRILLED/REAMED DEPTH: 45.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1020

LOCATION: S3 Ponds Functional Area

COORDINATES: N31336 E 51453

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 8-20-93

FINISH: 8-24-93

PREPARED BY: T. Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

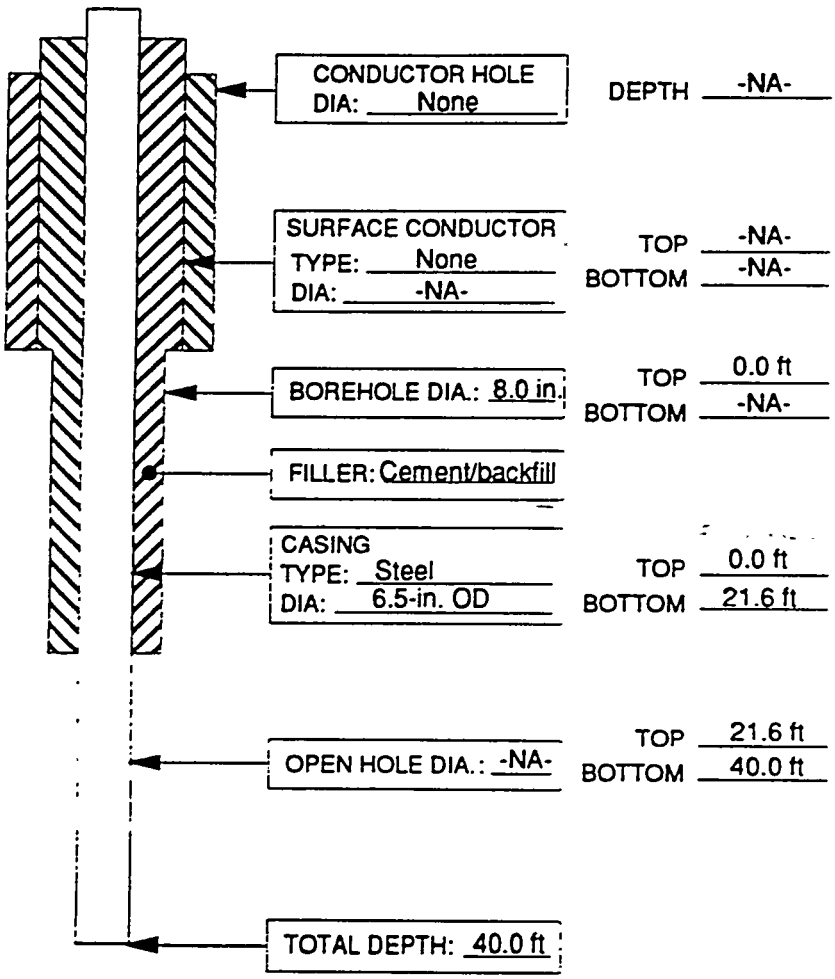
HELPERS: Steve Brown/Russell Jones

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



-NA-: Not Applicable/Not Available

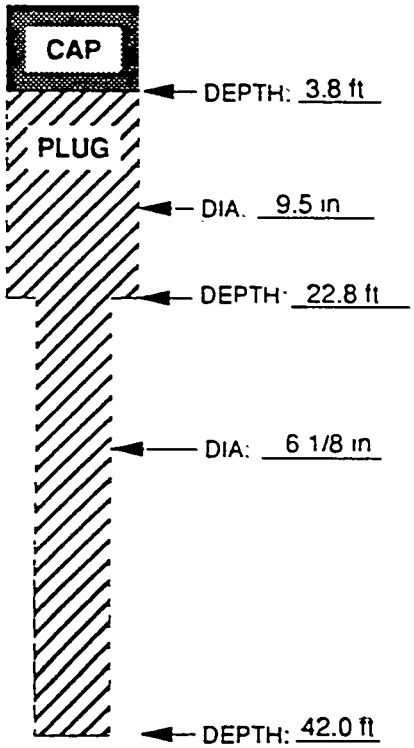
P&A SUMMARY

REAMED DIA: 6 1/8 in./9.5 in.

DRILLED/REAMED DEPTH: 42.0 ft/22.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1026

LOCATION: S3 Ponds Functional Area

COORDINATES: N30860 E51059

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 9-15-93

FINISH: 9-21-93

PREPARED BY: Timothy Coffey/ V.R. Harness - SAIC

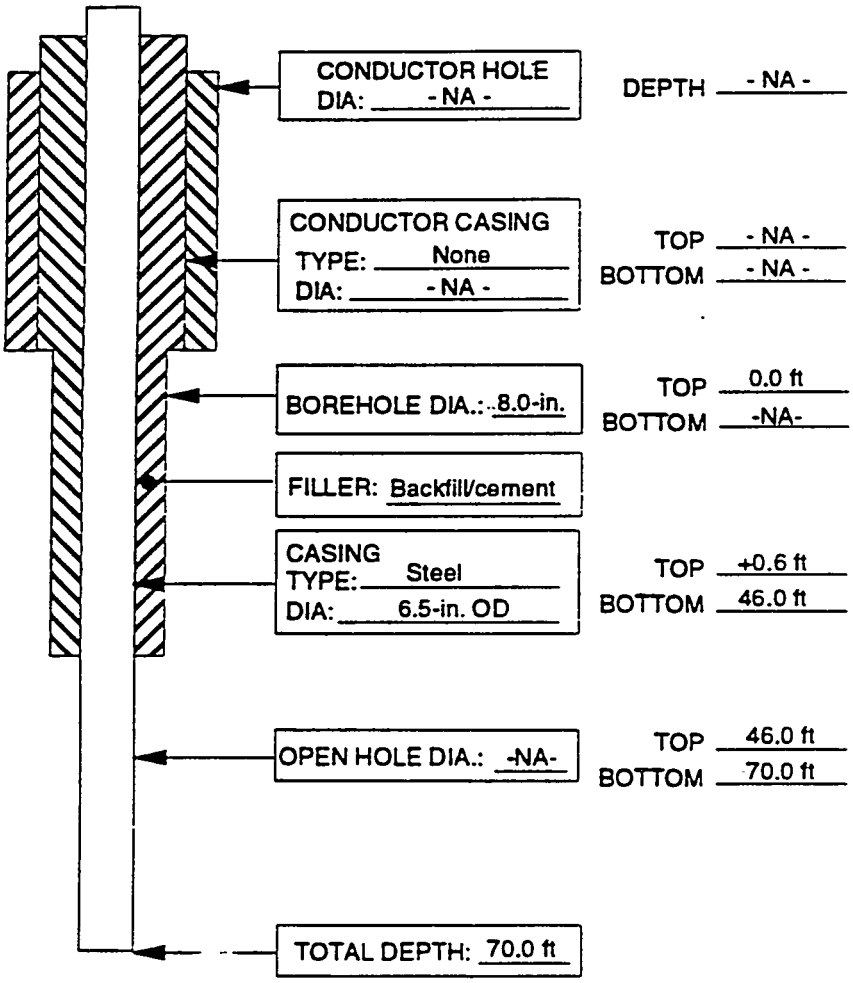
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall HELPERS: Randy Phillips/Russell Jones

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



- NA -: Not Applicable/Not Available

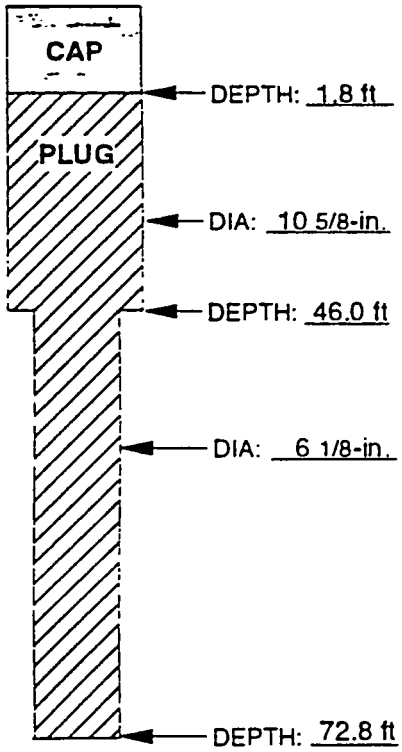
P&A SUMMARY

REAMED DIA: 6 1/8-in./10 5/8-in.

DRILLED/REAMED DEPTH: 72.8 ft/46.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1047/CO-1

LOCATION: Bear Creek Road

COORDINATES: N 28535 E 38325

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-13-93

FINISH: 12-16-93

PREPARED BY: T.J. Coffey -SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: Hubert Hall/John Young

HELPERS: Randy Phillips/Jeff Monger/Donald Key

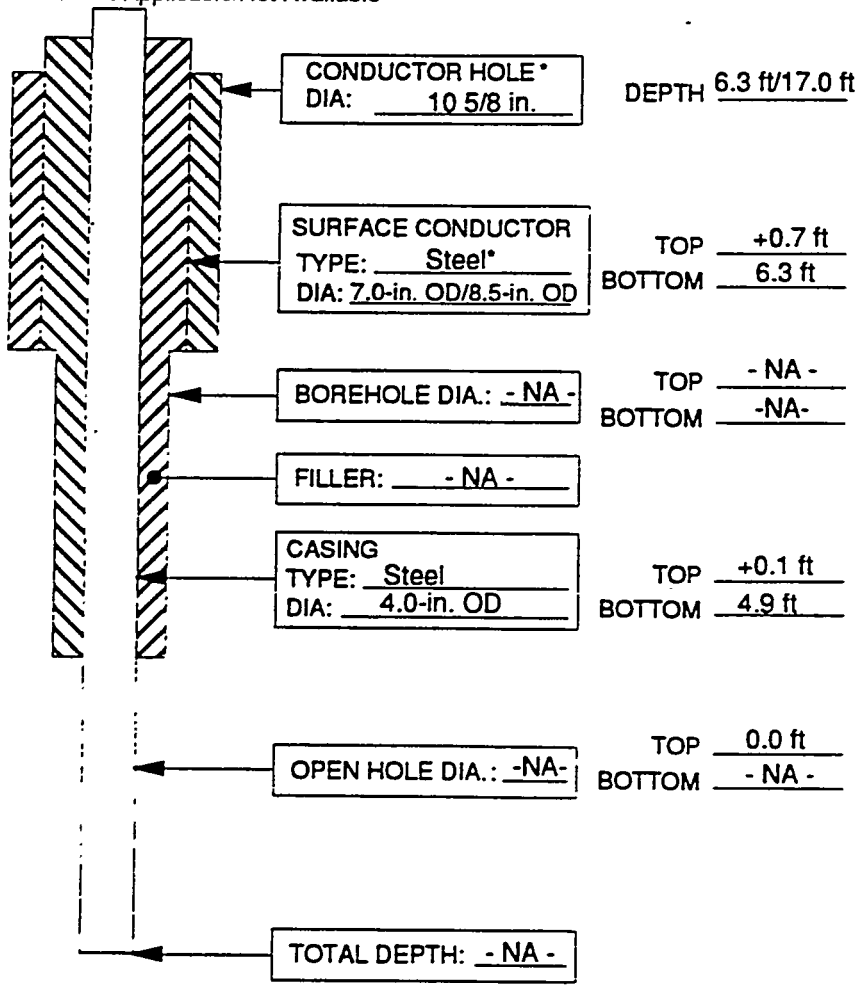
REASON FOR P&A: Loss of well security, substandard construction.

P&A: METHOD: D

DEVIATIONS FROM METHOD: Borehole reamed to 10 5/8-in., steel conductor casing used to aid P&A; borehole grouted prior to complete reaming.

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations.
-NA-: Not Applicable/Not Available



*Steel conductor casings (first 7.0-in. OD, then 8.5-in. OD) were installed to aid in P&A activities.

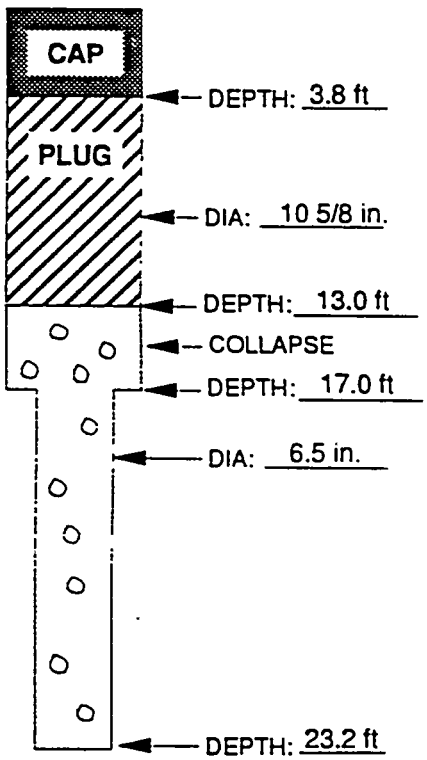
P&A SUMMARY

REAMED DIA: 6.5 in./10 5/8 in.

DRILLED/REAMED DEPTH: 23.2 ft/17.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1047A/CO-3

LOCATION: Bear Creek Road

COORDINATES: None

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-16-93

FINISH: 12-22-93

PREPARED BY: Timothy Coffey/SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

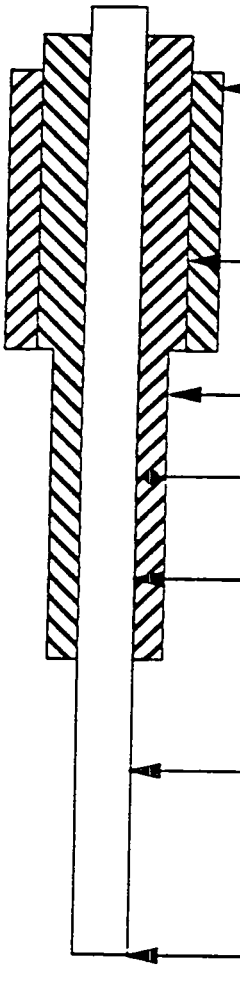
HELPERS: Randy Phillips/Jeff Monger

REASON FOR P&A: Loss of well security, substandard well construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Install 7.0-in. OD steel conductor casing to keep top of borehole open.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR*
TYPE: Steel
DIA: 7.0-in. OD
TOP +0.9 ft
BOTTOM 6.1 ft

BOREHOLE DIA.: - NA -
TOP 0.0 ft
BOTTOM - NA -

FILLER: - NA -

CASING
TYPE: Steel
DIA: 4.0-in. OD
TOP +0.4 ft
BOTTOM 4.7 ft

OPEN HOLE DIA.: - NA -
TOP - NA -
BOTTOM - NA -

TOTAL DEPTH: - NA -

- NA - : Not Applicable/Not Available
* Conductor casing installed to aid P&A activities.

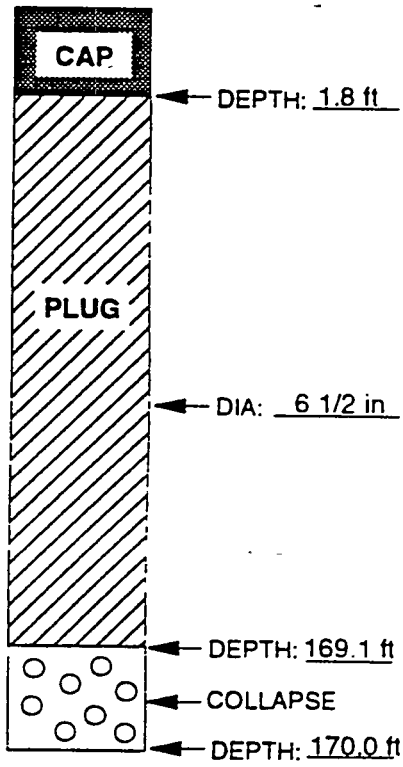
P&A SUMMARY

REAMED DIA: 6 1/2 in.

DRILLED/REAMED DEPTH: 170.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



ORNL-DWG 91M-1661

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1081

LOCATION: Oak Ridge Sludge Farm

COORDINATES: N 23392 E 55966

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-27-94

FINISH: 2-3-94

PREPARED BY: Timothy Coffey/SAIC

DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand T4W

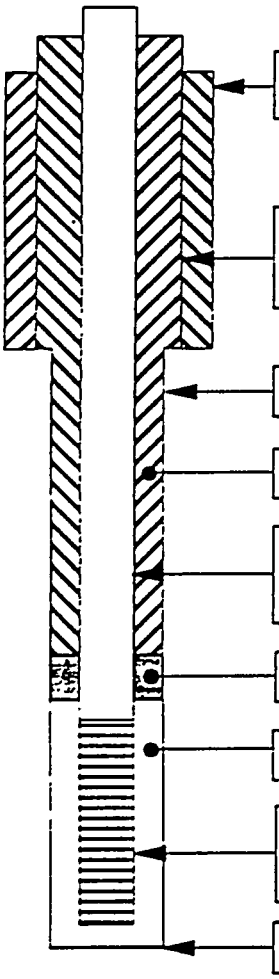
DRILLER: Hubert Hall HELPERS: R. Phillips/J. Monger/M. Baker/D. Key

REASON FOR P&A: Damaged well head

P&A: METHOD: A DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: Steel DIA: 4.75-in. OD TOP +1.7 ft BOTTOM 2.3 ft

BOREHOLE DIA.: - NA - TOP 0.0 ft BOTTOM 38.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: SS/#304 DIA: 2.37-in. OD TOP +2.3 ft BOTTOM 28.0 ft

SEAL: Bentonite TOP 25.0 ft BOTTOM 27.0 ft

FILTER PACK: Sand TOP 27.0 ft BOTTOM 38.0 ft

SCREEN TYPE: SS/sw/.01 DIA: 2.37-in. OD TOP 28.0 ft BOTTOM 38.0 ft

TOTAL DEPTH: 38.0

- NA - : Not Applicable/Not Available

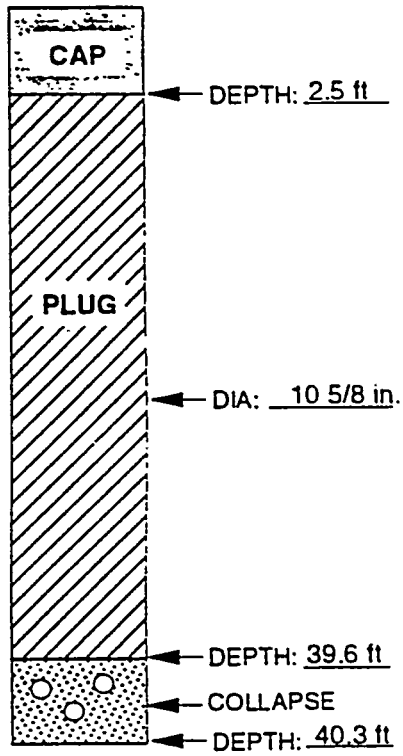
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 40.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



ORNL-DWG 91M-1661

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1083

LOCATION: Oak Ridge Sludge Farm

COORDINATES: N 23309 E 52550

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-2-94

FINISH: 2-4-94

PREPARED BY: Timothy Coffey/SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

HELPERS: Randy Phillips/Jeff Monger

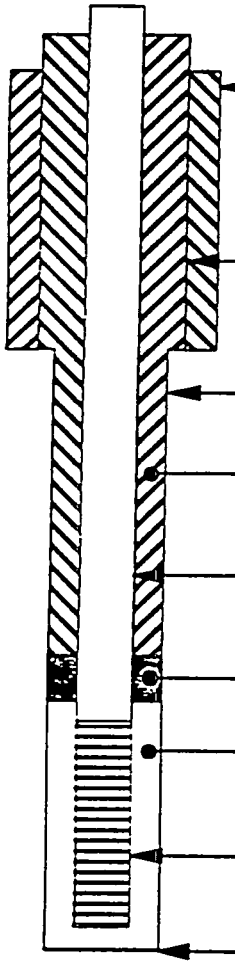
REASON FOR P&A: Damage to well head

P&A: METHOD: A

DEVIATIONS FROM METHOD: Terminated reaming of borehole short of total depth of well to prevent possible damage to bit with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: Steel
DIA: 4.75-in. OD
TOP +1.5 ft
BOTTOM 2.5 ft

BOREHOLE DIA.: - NA -
TOP 0.0 ft
BOTTOM 58.5 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +2.3 ft
BOTTOM 48.5 ft

SEAL: Bentonite
TOP 46.5 ft
BOTTOM 47.0 ft

FILTER PACK: Sand
TOP 47.0 ft
BOTTOM 58.5 ft

SCREEN
TYPE: SS/sw/.01
DIA: 2.37-in. OD
TOP 48.5 ft
BOTTOM 58.5 ft

TOTAL DEPTH: 58.5

- NA - : Not Applicable/Not Available

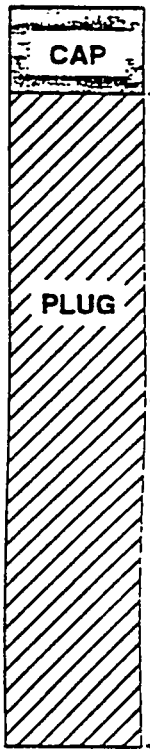
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 57.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



DEPTH: 3.9 ft

DIA: 10 5/8 in.

DEPTH: 57.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1097

LOCATION: S3 Ponds Functional Area

COORDINATES: N31151 E51300

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 9-8-93

FINISH: 9-18-93

PREPARED BY: V.R. Harness - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Russell Jones

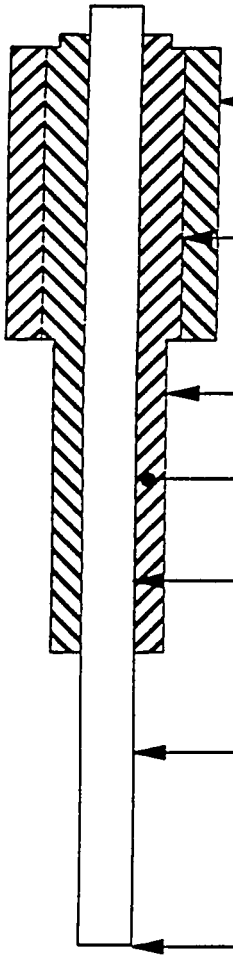
HELPER: Hubert Hall/Steve Brown

REASON FOR P&A: Well security compromised; substandard construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Casing drilled out and bore reamed in one pass. Approved by Steve Jones (HSEA).

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA.: -NA-. DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 6.0-in. TOP 0.0 ft BOTTOM 40.0 ft

FILLER: None

CASING TYPE: PVC/#40 DIA: 4.5-in. OD TOP +1.0 ft BOTTOM 20.0 ft

OPEN HOLE DIA.: 3.0-in. TOP 20.0 ft BOTTOM 40.0 ft

TOTAL DEPTH: 40.0 ft

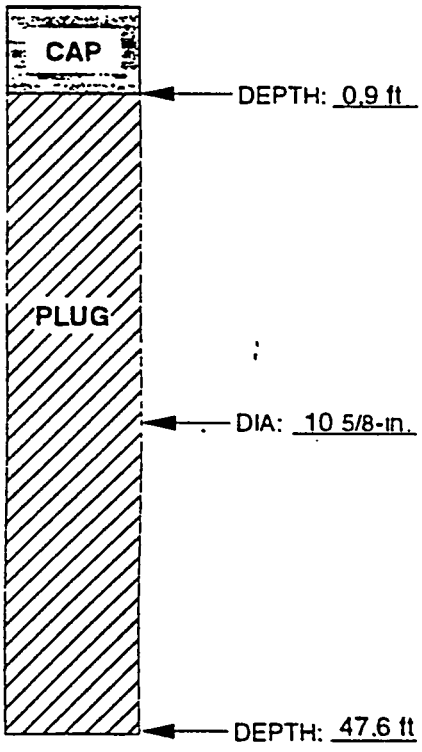
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 47.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 42-DC

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30416 E31729

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 10-4-93

FINISH: 10-7-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

HELPERS: Russell Jones/Scott Gilbert

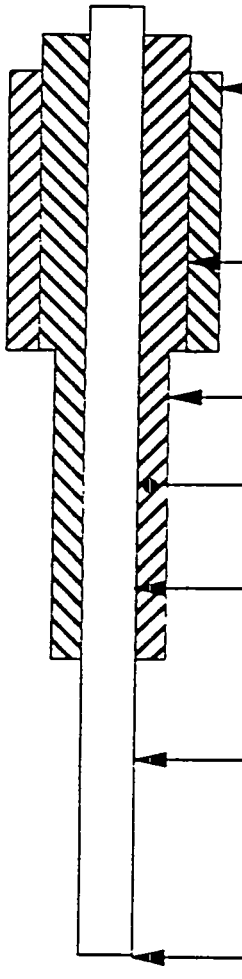
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: - NA - TOP - NA - BOTTOM - NA -

BOREHOLE DIA.: - NA - TOP 0.0 ft BOTTOM 28.5 ft

FILLER: Backfill/cement

CASING TYPE: Steel DIA: 6.5-in. OD TOP +1.1 ft BOTTOM 28.5 ft

OPEN HOLE DIA.: 4.0 in. TOP 28.5 ft BOTTOM 98.3 ft

TOTAL DEPTH: 98.3 ft

- NA -: Not Applicable/Not Available

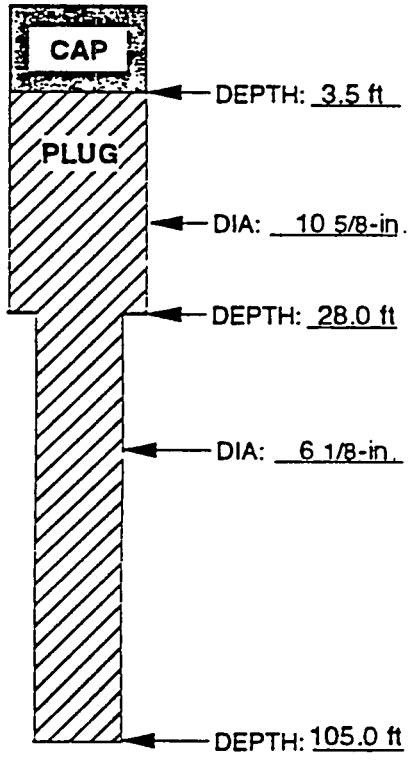
P&A SUMMARY

REAMED DIA: 6 1/8-in./10 5/8-in.

DRILLED/REAMED DEPTH: 105.0 ft/28.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-01

LOCATION: Exxon Nuclear Site

COORDINATES: N 28750 E 22011

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-11-94

FINISH: 1-11-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: -NA-

DRILLER: Randy Phillips

HELPERS: -NA-

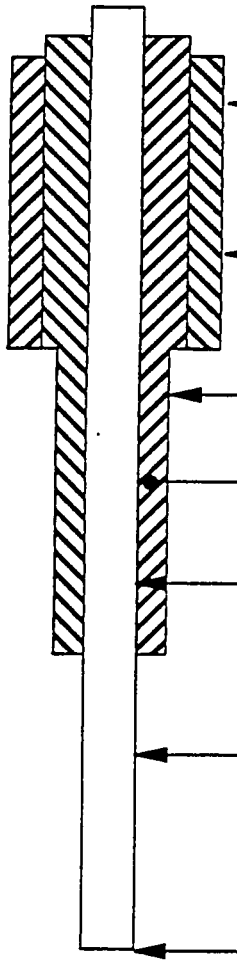
REASON FOR P&A: Well is unaccounted for/above-ground components missing or destroyed.

P&A: METHOD: -NA-

DEVIATIONS FROM METHOD: -NA-

No evidence of well found at surveyed location/No P&A activities.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: -NA-
TOP -NA-
BOTTOM -NA-

FILLER: -NA-

CASING
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

OPEN HOLE DIA.: NX
TOP 0.0 ft
BOTTOM 250.3 ft

TOTAL DEPTH: 250.3

-NA-: Not Available/Not Applicable

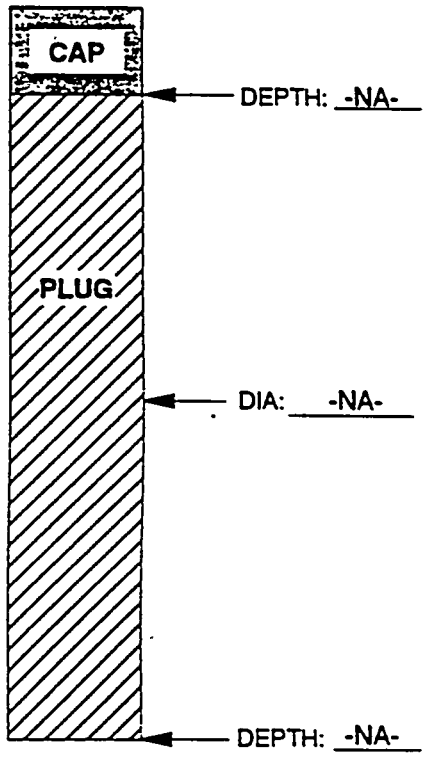
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: -NA-

CAP MATERIAL: -NA-



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-06

LOCATION: Exxon Nuclear Site

COORDINATES: N29990 E22040

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-2-94

FINISH: 3-7-94

PREPARED BY: Timothy Coffey/SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLERS: R. Phillips/H. Hall

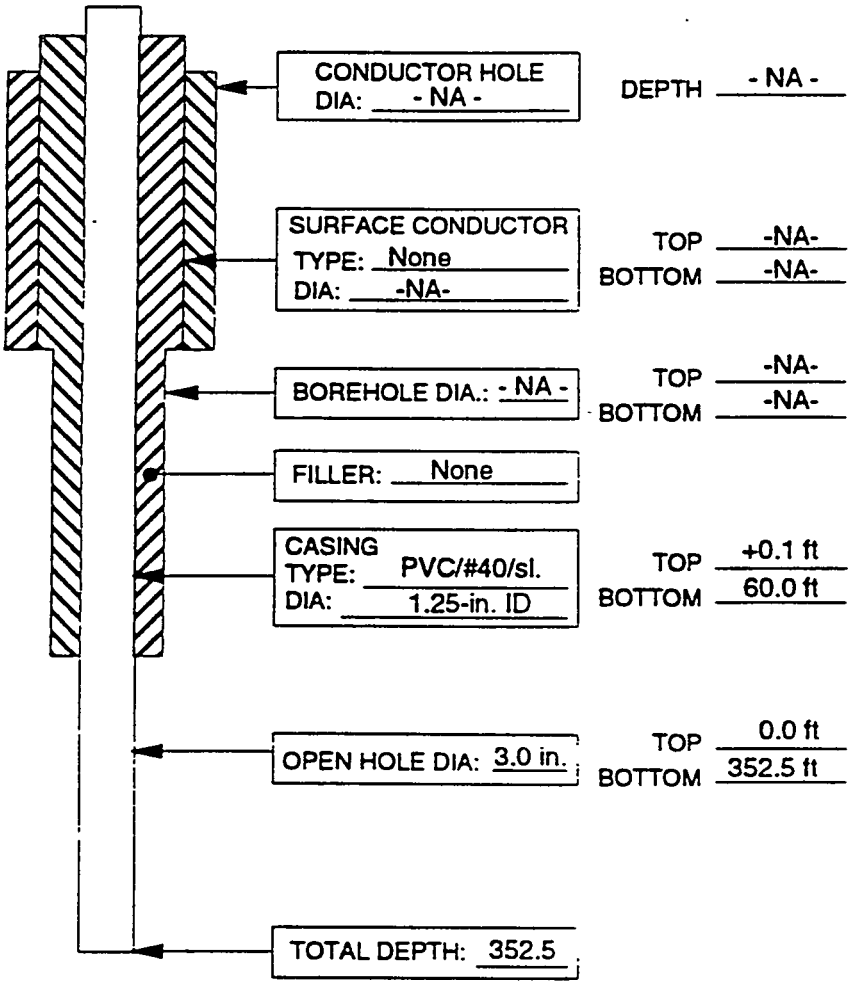
HELPERS: J. Monger/D. Williford

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Grouted bottom of borehole before conditioning, reamed to approximately 40 ft below TOFR with HSEA approval.

WELL CONSTRUCTION SUMMARY



- NA - : Not Applicable/Not Available

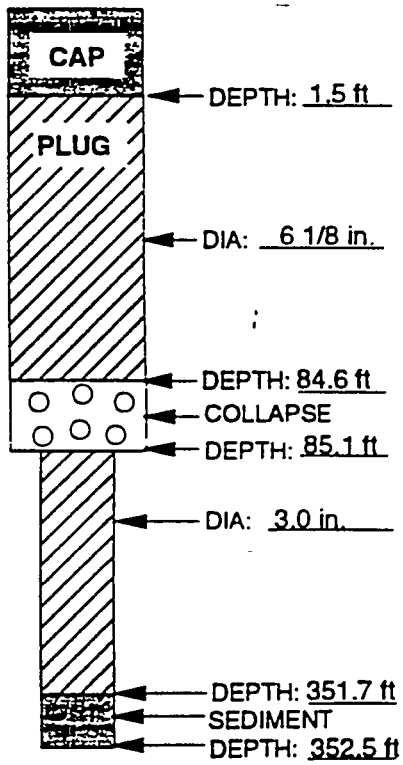
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 85.1 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-07

LOCATION: Exxon Nuclear Site

COORDINATES: N30188 E22037

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-4-94

FINISH: 3-9-94

PREPARED BY: Timothy Coffey/SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLERS: J. Young/H. Hall/R. Phillips

HELPERS: J. Monger/D. Williford/B. Parks

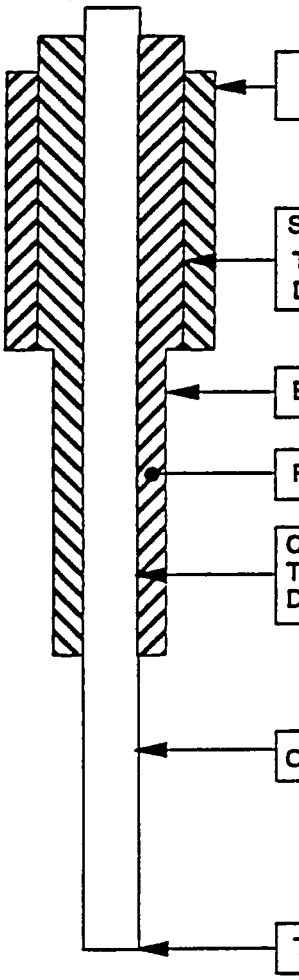
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Grouted bottom of borehole before conditioning, ream borehole to approximately 20 ft below TOFR with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations due to incomplete database record.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: - NA - TOP -NA- BOTTOM -NA-

FILLER: None

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +1.8 ft BOTTOM 58.0 ft

OPEN HOLE DIA: 3.0 in. TOP 0.0 ft BOTTOM 351.9 ft

TOTAL DEPTH: 351.9

- NA - : Not Applicable/Not Available

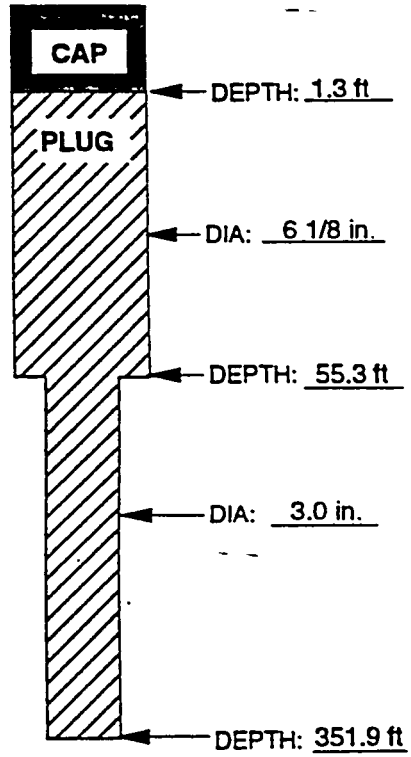
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 55.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-09

LOCATION: Exxon Nuclear Site

COORDINATES: N30589 E22039

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-8-94

FINISH: 3-16-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand T4W

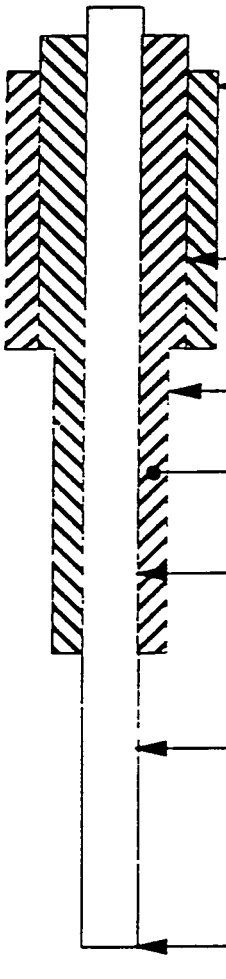
DRILLERS: H. Hall/R. Phillips HELPERS: J. Monger/D. Key

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D DEVIATIONS FROM METHOD: Grouted bottom of borehole, including unknown amount of casing in borehole, before conditioning; reamed to approximately 20 ft below TOFR with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: - NA - TOP -NA- BOTTOM -NA-

FILLER: Bentonite Gel

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +0.6 ft BOTTOM -NA-

OPEN HOLE DIA: 3.0 in. TOP 0.0 ft BOTTOM 343.0 ft

TOTAL DEPTH: 343.0

- NA - : Not Applicable/Not Available

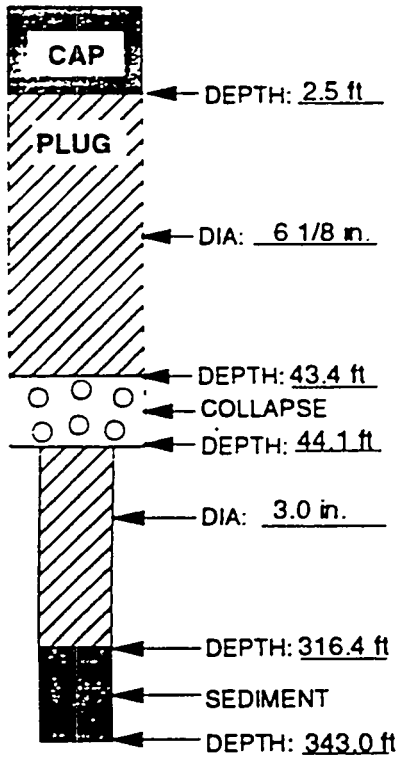
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 44.1 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-10

LOCATION: Exxon Nuclear Site

COORDINATES: N30755 E22025

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-16-94

FINISH: 3-22-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand T4W

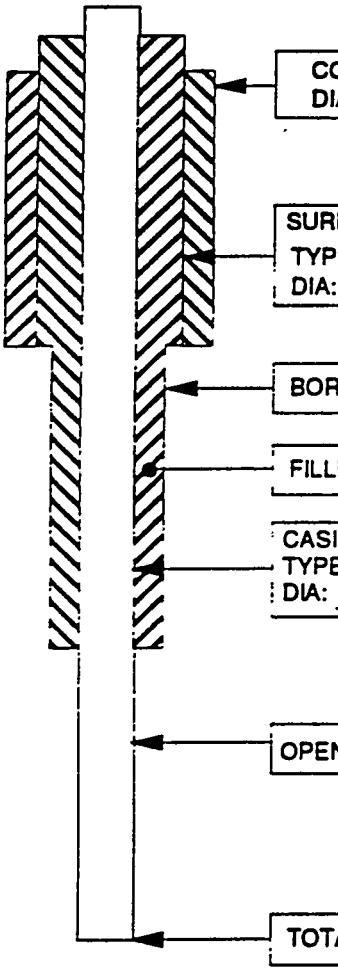
DRILLERS: R. Phillips/H. Hall HELPERS: J. Monger/D. Williford

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D DEVIATIONS FROM METHOD: Grouted "open interval" without conditioning borehole; reamed to 22.5 ft below TOFR; continue P&A activities with less than 24-hr grout cure with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: - NA - TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +1.1 ft BOTTOM 58.9 ft

OPEN HOLE DIA: 3.0 in. TOP 0.0 ft BOTTOM 349.0 ft

TOTAL DEPTH: 349.0

- NA - : Not Applicable/Not Available

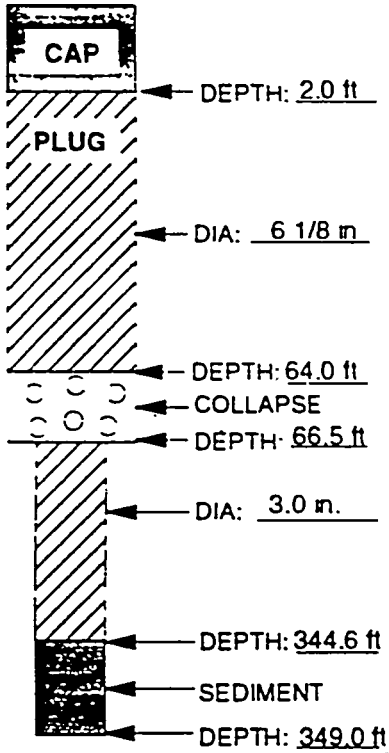
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 66.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-14

LOCATION: Exxon Nuclear Site

COORDINATES: N30585 E21312

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-21-94

FINISH: 3-23-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLER: R. Phillips

HELPERS: D. Williford, J. Gallaher, J. Monger, M. Nance, C. Guettner

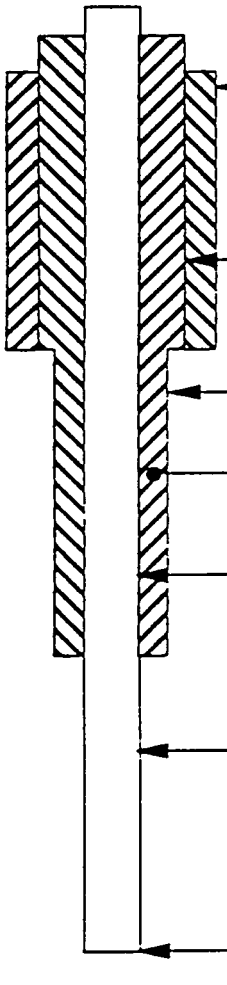
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: - NA - TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 4.5-in. OD TOP +2.4 ft BOTTOM 17.8 ft

OPEN HOLE DIA: 3.0 in. TOP 0.0 ft BOTTOM 102.0 ft

TOTAL DEPTH: 102.0

- NA - : Not Applicable/Not Available

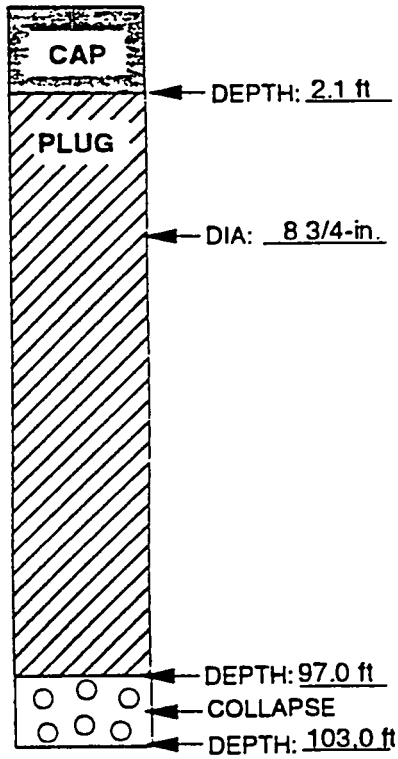
P&A SUMMARY

REAMED DIA: 8 3/4-in.

DRILLED/REAMED DEPTH: 103.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-15

LOCATION: Exxon Nuclear Site

COORDINATES: N30584 E21601

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-18-94

FINISH: 3-22-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

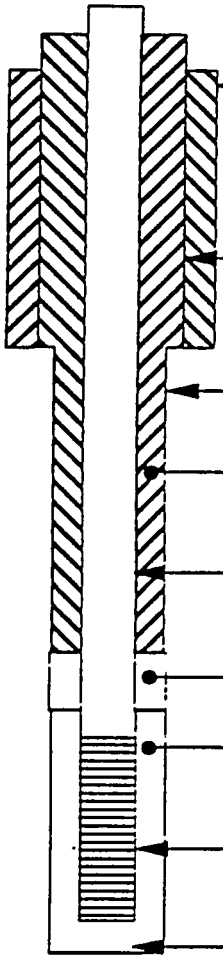
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: 3.0-in.
TOP 0.0 ft
BOTTOM 100.2 ft

FILLER: -NA-

CASING
TYPE: PVC
DIA: 1.0-in. ID
TOP +0.6 ft
BOTTOM 40.5 ft

SEAL: -NA-
TOP -NA-
BOTTOM -NA-

FILTER PACK: -NA-
TOP -NA-
BOTTOM -NA-

SCREEN:
TYPE: PVC/sl.
DIA: 1.0-in. ID
TOP 40.5 ft
BOTTOM 100.2 ft

TOTAL DEPTH: 100.2

- NA - : Not Applicable/Not Available

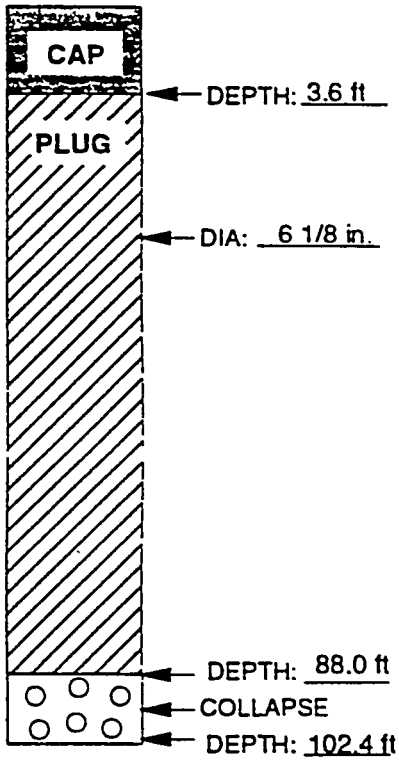
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 102.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-17

LOCATION: Exxon Nuclear Site

COORDINATES: N30187 E20408

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-18-94

FINISH: 4-20-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

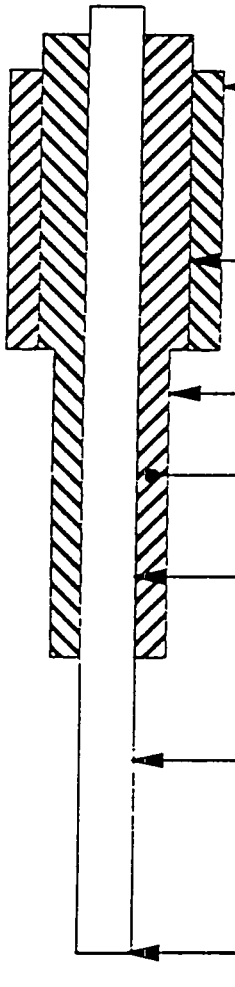
REASON FOR P&A: Loss of well security

P&A: METHOD: D

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +1.0 ft BOTTOM 19.1 ft

OPEN HOLE DIA.: 3.0 in. TOP 0.0 ft BOTTOM 100.4 ft

TOTAL DEPTH: 100.4

- NA - : Not Applicable/Not Available

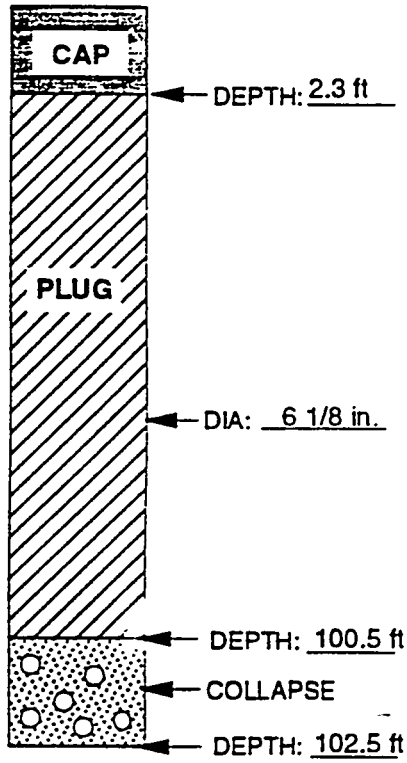
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 102.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-18

LOCATION: Exxon Nuclear Site

COORDINATES: N30186 E20799

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-19-94

FINISH: 4-22-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

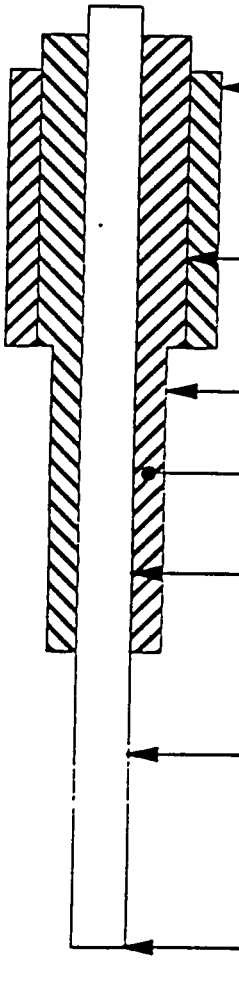
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +1.3 ft BOTTOM 58.8 ft

OPEN HOLE DIA.: 3.0 in. TOP 0.0 ft BOTTOM 100.2 ft

TOTAL DEPTH: 100.2

- NA - : Not Applicable/Not Available

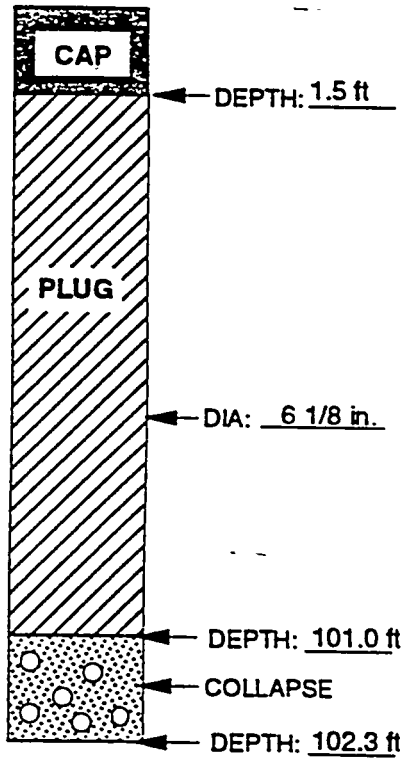
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 102.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-19

LOCATION: Exxon Nuclear Site

COORDINATES: N30184 E21200

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-23-94

FINISH: 3-31-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLERS: H. Hall/R. Phillips

HELPERS: J. Monger/D. Williford

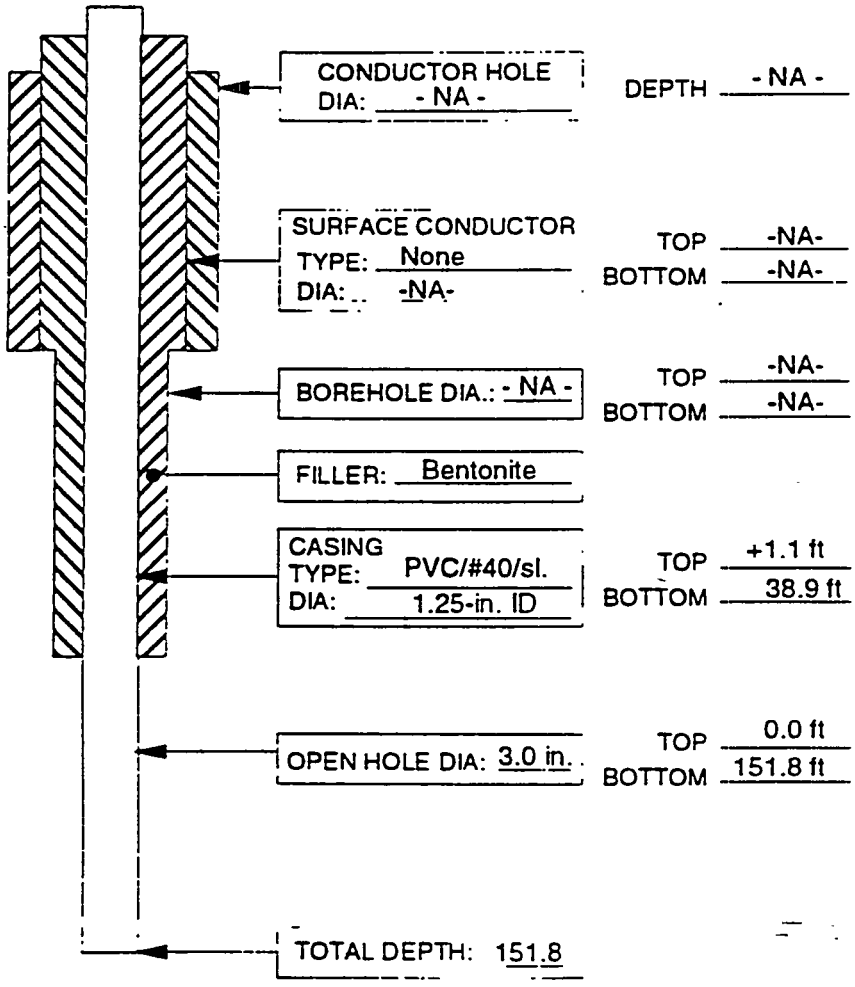
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Grouted "open interval" without conditioning borehole; ream to 20.3 ft below TOFR with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



- NA - : Not Applicable/Not Available

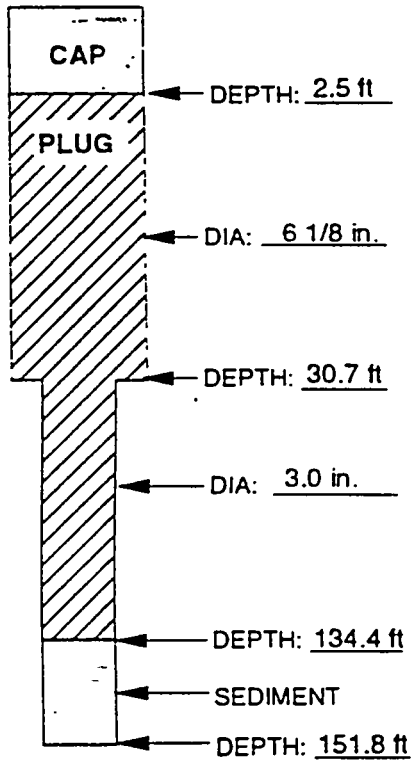
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 30.7 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-22

LOCATION: Exxon Nuclear Site

COORDINATES: N30475 E 20247

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-11-94

FINISH: 5-16-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

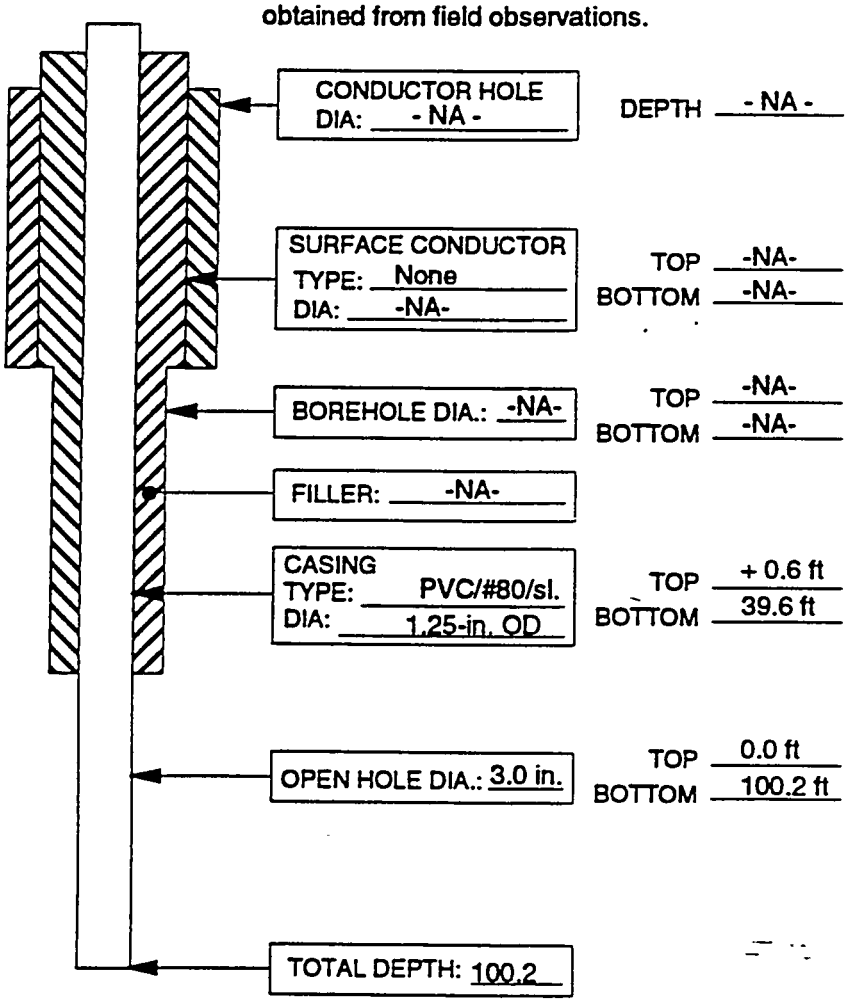
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: Some of the information in this section obtained from field observations.



- NA - : Not Applicable/Not Available

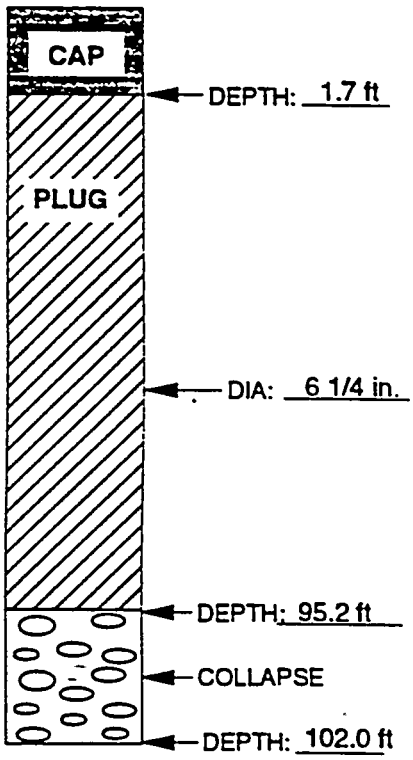
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 102.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-23

LOCATION: Exxon Nuclear Site

COORDINATES: N30524 E20763

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-29-94

FINISH: 3-31-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

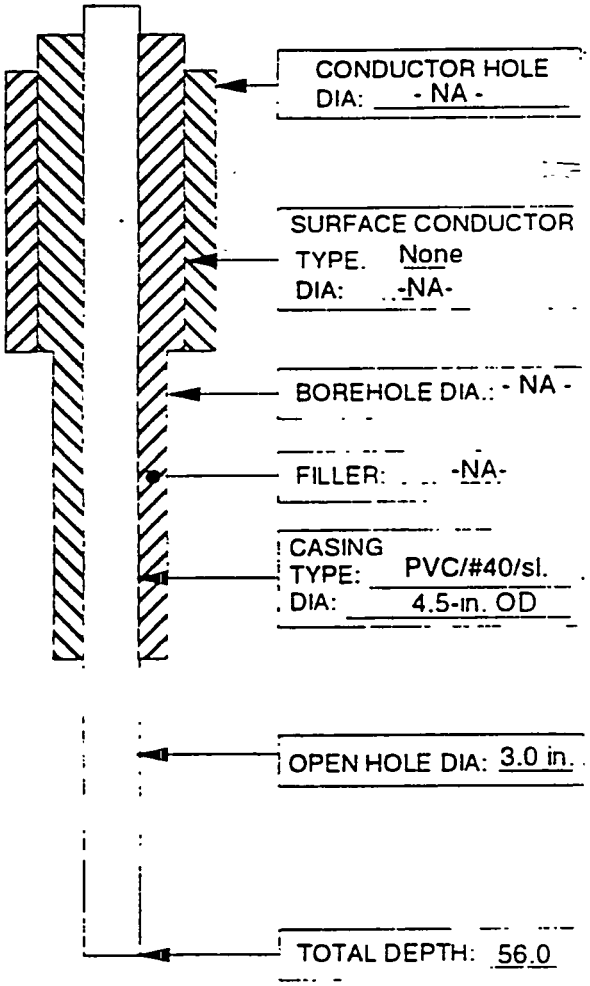
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR
TYPE. None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: - NA -
TOP -NA-
BOTTOM -NA-

FILLER: -NA-

CASING
TYPE: PVC/#40/sl.
DIA: 4.5-in. OD
TOP +0.5 ft
BOTTOM 17.9 ft

OPEN HOLE DIA: 3.0 in.
TOP 0.0 ft
BOTTOM 56.0 ft

TOTAL DEPTH: 56.0

- NA - : Not Applicable/Not Available

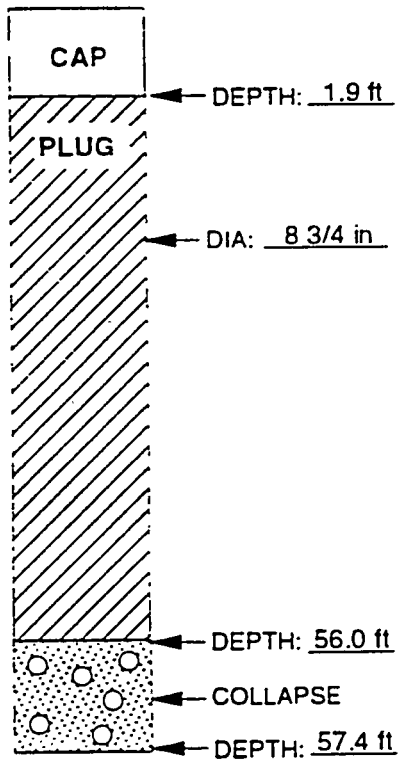
P&A SUMMARY

REAMED DIA: 8 3/4 in.

DRILLED/REAMED DEPTH: 57.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil/cuttings



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-35

LOCATION: Exxon Nuclear Site

COORDINATES: N30054 E19796

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-11-94

FINISH: 4-14-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

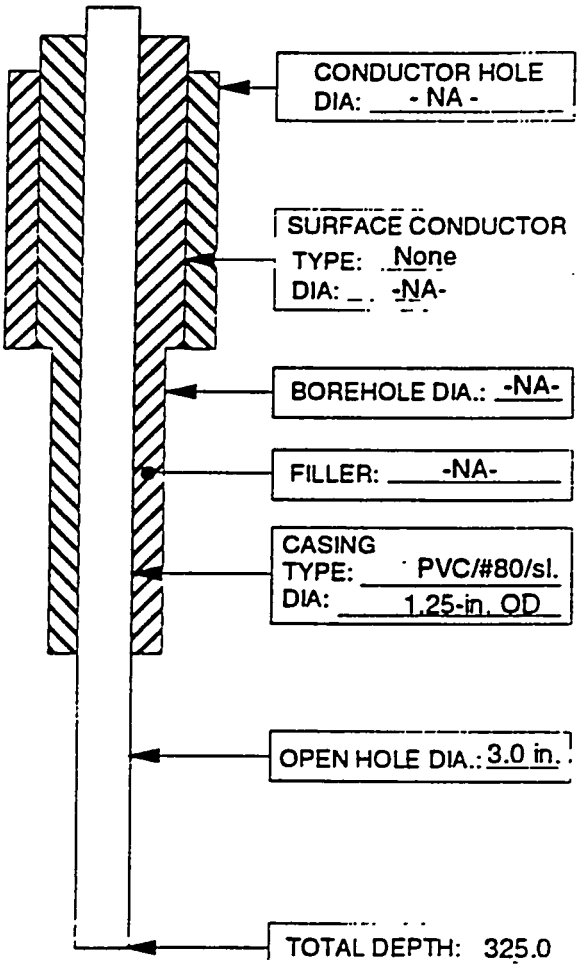
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Grouted "open interval" to a point 20 ft below TOFR, reamed borehole to 47.8 ft BGS with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



- NA - : Not Applicable/Not Available

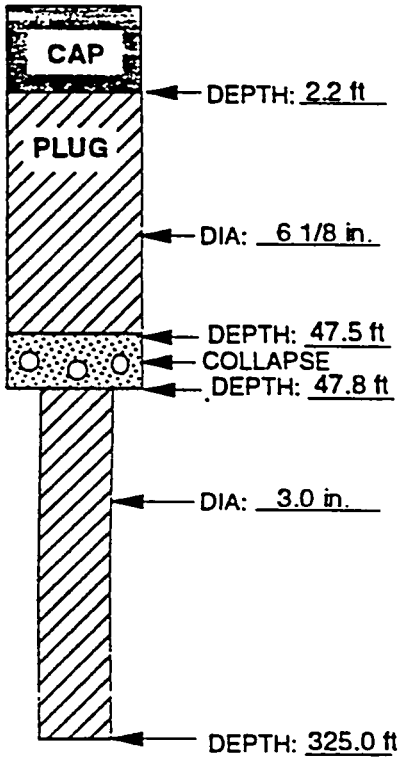
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 47.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-47

LOCATION: Exxon Nuclear Site

COORDINATES: N30327 E21175

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-25-94

FINISH: 3-31-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand T4W

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

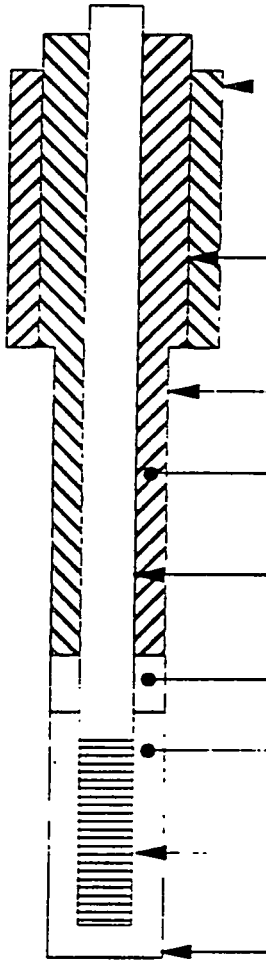
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Casing milled while reaming borehole with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: 3.0 in.
TOP 0.0 ft
BOTTOM 50.0 ft

FILLER: -NA-

CASING
TYPE: PVC/sl.
DIA: 1.25-in. ID
TOP +2.0 ft
BOTTOM 50.0 ft

SEAL: -NA-
TOP -NA-
BOTTOM -NA-

FILTER PACK: -NA-
TOP -NA-
BOTTOM -NA-

SCREEN
TYPE: PVC/sl.
DIA: 1.25-in. ID
TOP +2.0 ft
BOTTOM 50.0 ft

TOTAL DEPTH: 50.0

- NA - : Not Applicable/Not Available

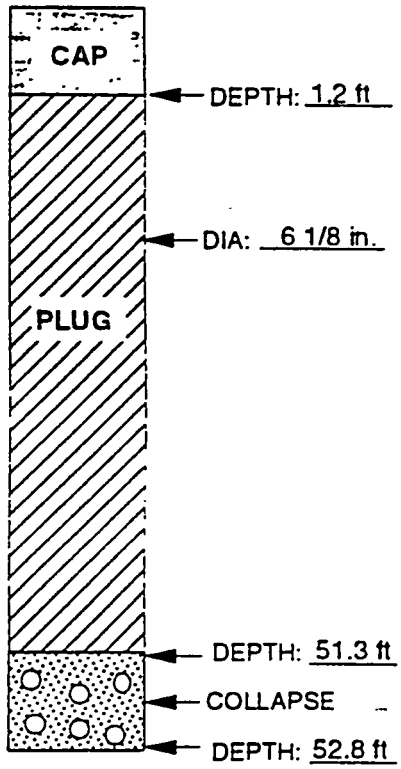
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 52.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BC-63

LOCATION: Exxon Nuclear Site

COORDINATES: N29941 E19794

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-3-94

FINISH: 5-5-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

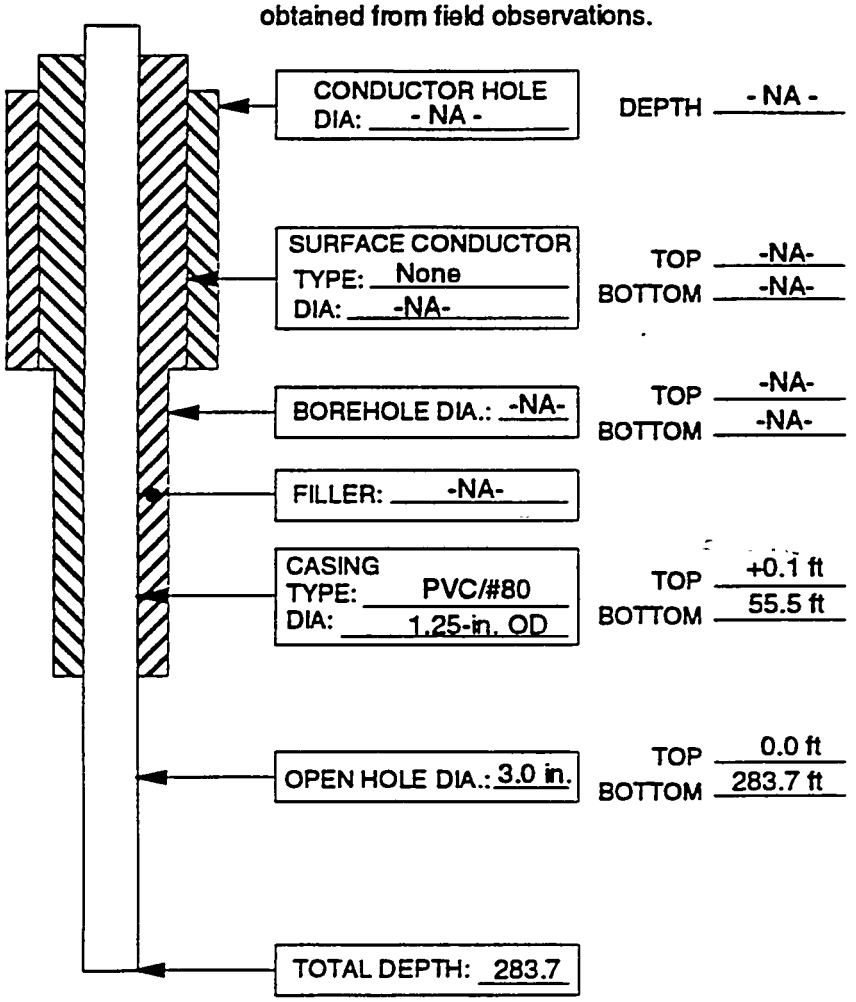
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Unable to grout "open interval" due to obstruction; borehole reamed to 20.1 ft below TOFR with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some of the information in this section obtained from field observations.



- NA - : Not Applicable/Not Available

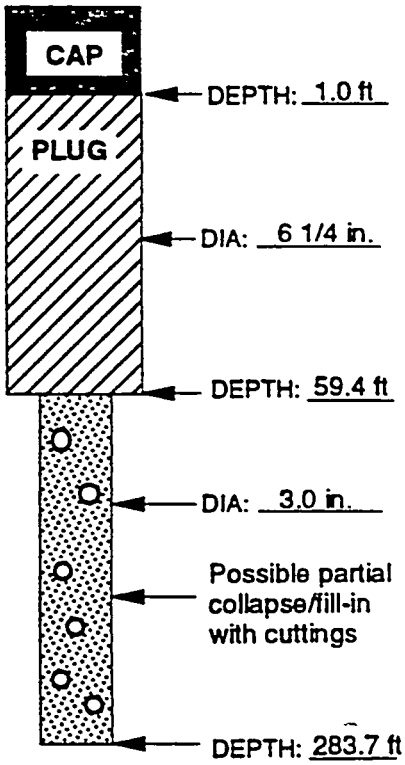
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 59.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-01

LOCATION: Exxon Nuclear Site

COORDINATES: N30404 E20460

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3-30-94

FINISH: 5-10-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand XL-750

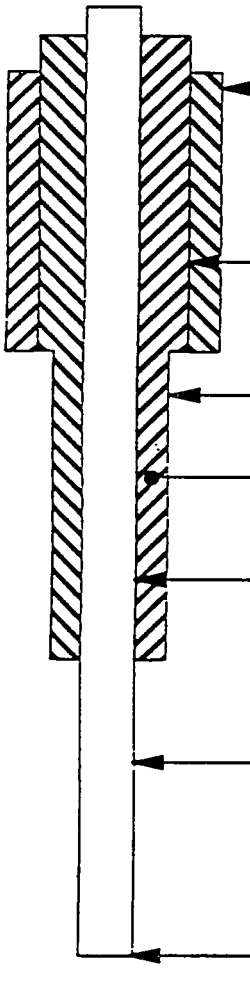
DRILLERS: R. Phillips/H. Hall HELPERS: J. Monger/D. Williford

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D DEVIATIONS FROM METHOD: Open interval grouted without conditioning the borehole; ream to 2.9 ft below bottom of casing with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. OD TOP +2.1 ft BOTTOM 37.9 ft

OPEN HOLE DIA.: 3.0 in. TOP 0.0 ft BOTTOM 135.5 ft*

TOTAL DEPTH: 135.5*

- NA - : Not Applicable/Not Available

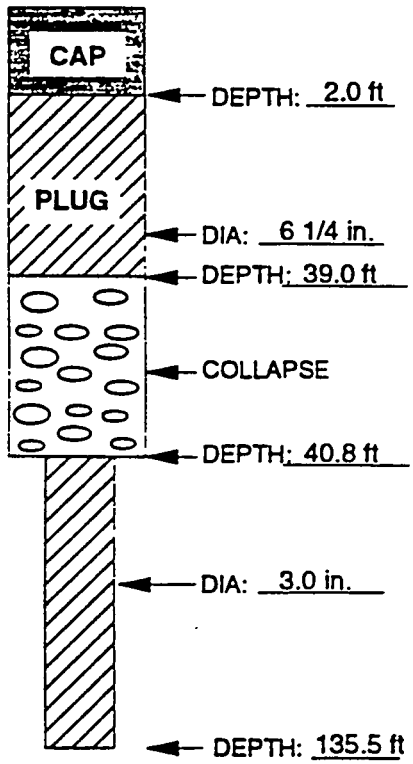
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 40.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



*Tagged depth with weighted tape after removing casing from borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-02

LOCATION: Exxon Nuclear Site

COORDINATES: N30261 E20280

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-14-94

FINISH: 4-18-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

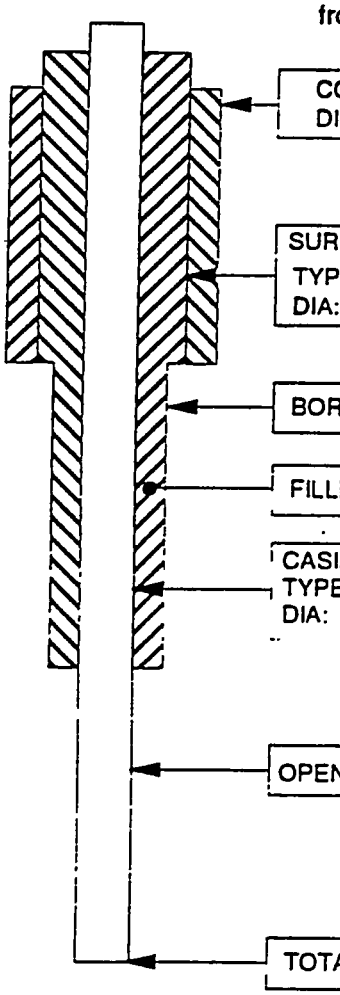
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Grout "open interval" without conditioning borehole; ream to 5.4 ft below bottom of casing with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +2.7 ft BOTTOM 37.2 ft

OPEN HOLE DIA.: 3.0 in. TOP 0.0 ft BOTTOM 178.0 ft

TOTAL DEPTH: 178.0

- NA - : Not Applicable/Not Available

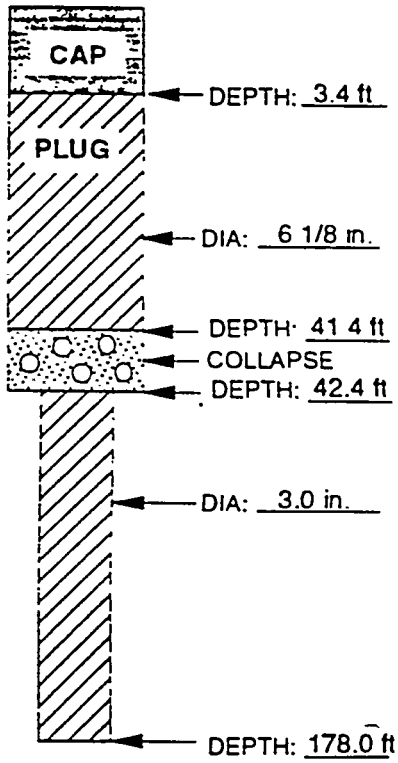
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 42.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-03

LOCATION: Exxon Nuclear Site

COORDINATES: N30473 E20132

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-16-94

FINISH: 5-20-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

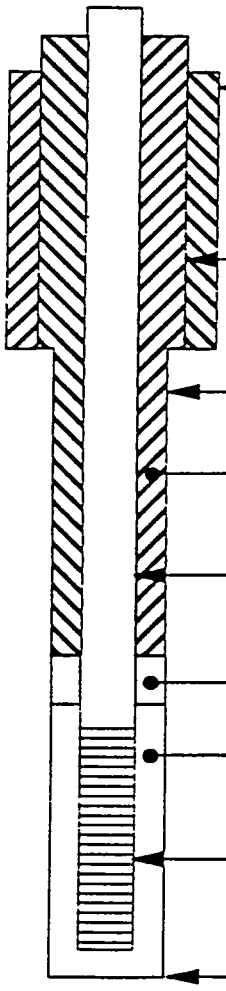
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Recover 4.0 ft of casing; drill up remaining casing while reaming borehole with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 5.0 in. TOP 0.0 ft BOTTOM 57.6 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#80 DIA: 1.25-in. OD TOP +2.9 ft BOTTOM -NA-

SEAL: -NA- TOP -NA- BOTTOM -NA-

FILTER PACK: Gravel TOP 3.6 ft BOTTOM 57.6 ft

SCREEN TYPE: PVC/#40/sl. DIA: 1.25-in. OD TOP -NA- BOTTOM 57.6 ft

TOTAL DEPTH: 57.6

56.8 ft = tagged depth (includes sediment accumulation), 57.6 ft is observed depth of well (observed while reaming).

-NA-: Not Applicable/Not Available

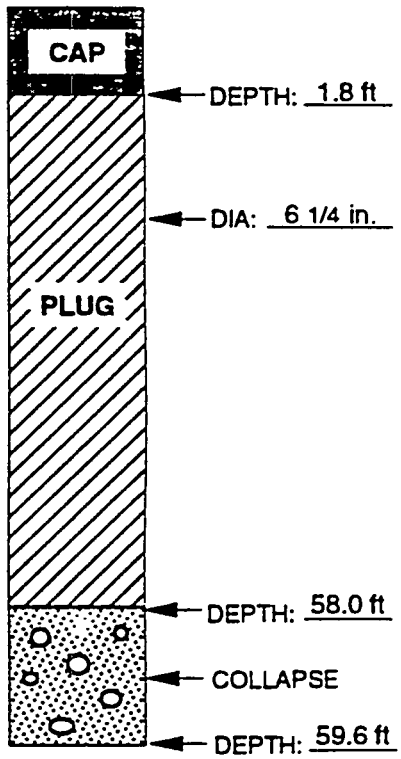
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 59.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-04

LOCATION: Exxon Nuclear Site

COORDINATES: N30504 E20121

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 6-21-94

FINISH: 6-23-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall

HELPERS: R. Phillips/J. Monger

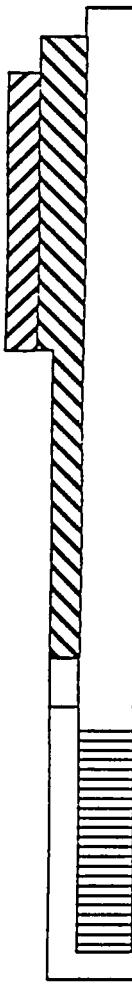
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Drill up PVC casing and ream borehole to fresh material in one pass with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: 8.0 in.
TOP 0.0 ft
BOTTOM 60.2 ft

FILLER: Cement/open

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 4.5-in. OD
TOP +2.2 ft
BOTTOM -NA-

SEAL: -NA-
TOP -NA-
BOTTOM -NA-

FILTER PACK: Sand
TOP 50.2 ft
BOTTOM 60.2 ft

SCREEN
TYPE: PVC/#40/sl.
DIA: 4.5-in. OD
TOP -NA-
BOTTOM 60.2 ft

TOTAL DEPTH: 60.2

-NA-: Not Applicable/Not Available

P&A SUMMARY

REAMED DIA: 8 3/4 in.

DRILLED/REAMED DEPTH: 61.2 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil

DEPTH: 3.0 ft

DIA: 8 3/4 in.

DEPTH: 52.6 ft

COLLAPSE

DEPTH: 61.2 ft

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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-05

LOCATION: Exxon Nuclear Site

COORDINATES: N30473 E20118

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-24-94

FINISH: 5-27-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall

HELPERS: R. Phillips/R. Collins

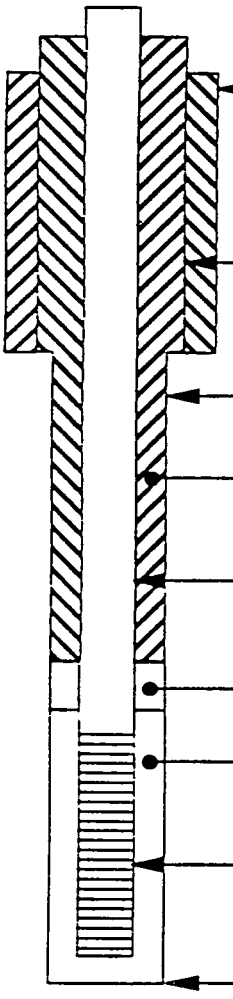
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Ream borehole and drill out casing and screen in one pass with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 5.0 in. TOP 0.0 ft BOTTOM 61.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#80 DIA: 1.25-in. OD TOP +2.6 ft BOTTOM -NA-

SEAL: -NA- TOP -NA- BOTTOM -NA-

FILTER PACK: Sand/Gravel TOP 4.0 ft BOTTOM 61.0 ft

SCREEN TYPE: PVC/#40/sl. DIA: 1.25-in. OD TOP -NA- BOTTOM 61.0 ft

55.8 ft = tagged depth (plus sediment). Actual depth observed to be 61.0 ft BGS.

TOTAL DEPTH: 61.0

-NA-: Not Applicable/Not Available

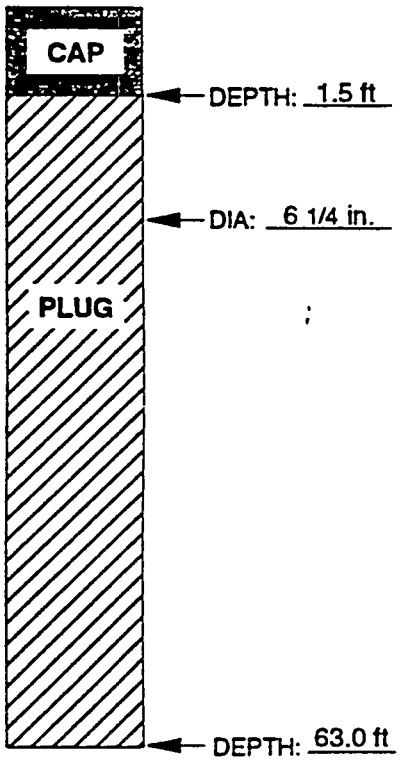
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 63.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



ORNL-DWG 91M-1658

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-06

LOCATION: Exxon Nuclear Site

COORDINATES: N30473 E20110

REFERENCE POINT FOR MEASUREMENTS: Ground surface

DATE: START: 5-23-94

FINISH: 5-25-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

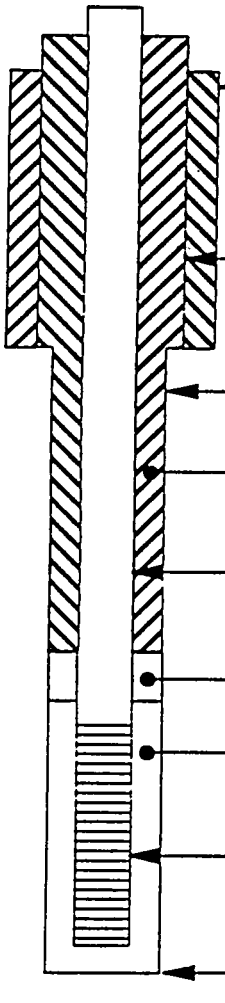
DRILLER: R. Phillips HELPERS: J. Monger/R. Collins

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C DEVIATIONS FROM METHOD: Ream borehole and drill out casing and screen in one pass with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 8.0 in. TOP 0.0 ft BOTTOM 62.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#40 DIA: 4.5-in. OD TOP +3.2 ft BOTTOM -NA-

SEAL: -NA- TOP -NA- BOTTOM -NA-

FILTER PACK: Sand/Gravel TOP 5.0 ft BOTTOM 62.0 ft

SCREEN TYPE: PVC/#40/sl. DIA: 4.5-in. OD TOP 0.0 ft BOTTOM 62.0 ft

58.5 ft = tagged depth (plus sediment), actual depth = 62.0 ft.

TOTAL DEPTH: 62.0

-NA-: Not Applicable/Not Available

P&A SUMMARY

REAMED DIA: 8 3/4 in.

DRILLED/REAMED DEPTH: 64.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil

DEPTH: 2.2 ft

DIA: 8 3/4 in.

DEPTH: 64.3 ft

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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-07

LOCATION: Exxon Nuclear Site

COORDINATES: N30473 E20102

REFERENCE POINT FOR MEASUREMENTS: Ground surface

DATE: START: 5-17-94

FINISH: 5-23-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLERS: H. Hall

HELPERS: J. Monger/D. Williford

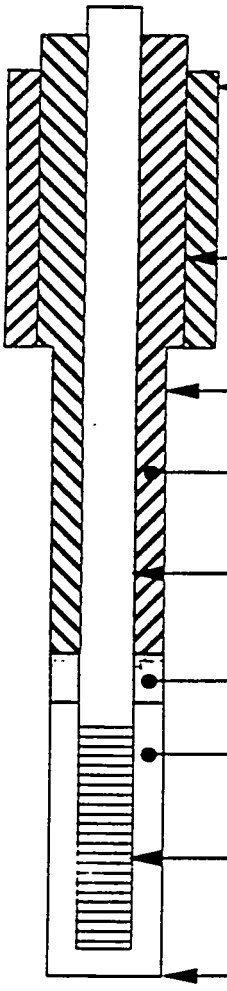
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Drilled out PVC casing and screen while reaming well bore with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 5.0 in. TOP 0.0 ft BOTTOM 61.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#80 DIA: 1.25-in. OD TOP +1.1 ft BOTTOM -NA-

SEAL: -NA- TOP -NA- BOTTOM -NA-

FILTER PACK: Gravel TOP 3.6 ft BOTTOM 61.0 ft

SCREEN TYPE: PVC/#40/sl. DIA: 1.25-in. OD TOP -NA- BOTTOM 61.0 ft

TOTAL DEPTH: 61.0

Tagged depth is not actual depth of well (sediment accumulation).

-NA-: Not Applicable/Not Available

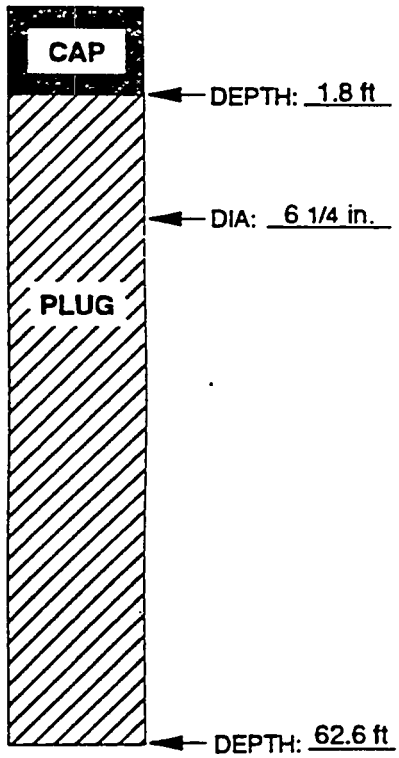
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 62.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



ORNL-DWG 91M-1658

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-08

LOCATION: Exxon Nuclear Site

COORDINATES: N30497 E20109

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-13-94

FINISH: 5-20-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

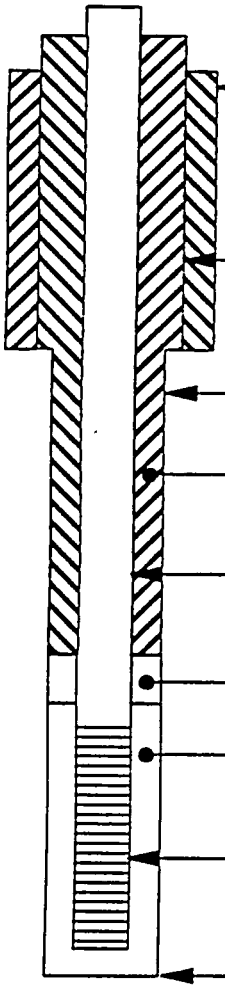
DRILLERS: R. Phillips/H. Hall HELPERS: J. Monger/D. Williford

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C DEVIATIONS FROM METHOD: PVC well casing and screen drilled up while reaming borehole with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 5.0 in. TOP 0.0 ft BOTTOM 61.7 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#80 DIA: 1.25-in. OD TOP +2.4 ft BOTTOM -NA-

SEAL: -NA- TOP -NA- BOTTOM -NA-

FILTER PACK: Sand/Gravel TOP 2.0 ft BOTTOM 61.7 ft

SCREEN TYPE: PVC/#40/sl. DIA: 1.25-in. OD TOP -NA- BOTTOM 61.7 ft

TOTAL DEPTH: 61.7

-NA-: Not Applicable/Not Available

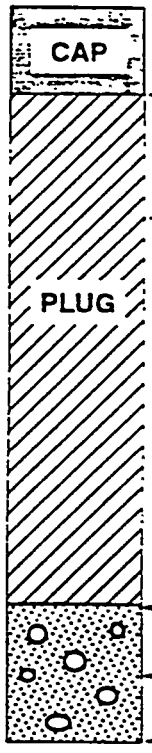
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 63.7 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



DEPTH: 3.1 ft

DIA: 6 1/4 in.

DEPTH: 62.7 ft

COLLAPSE

DEPTH: 63.7 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-09

LOCATION: Exxon Nuclear Site

COORDINATES: N30494 E20121

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-13-94

FINISH: 5-17-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

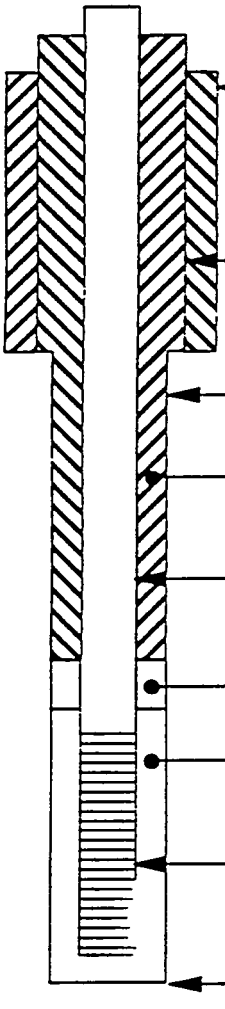
DRILLERS: R. Phillips/H. Hall HELPERS: J. Monger/D. Williford

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C DEVIATIONS FROM METHOD: Extract 12.5 ft of casing, the remaining casing milled up while reaming borehole.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 5.0 in. TOP 0.0 ft BOTTOM 61.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#80 DIA: 1.25-in. OD TOP +3.2 ft BOTTOM -NA-

SEAL: -NA- TOP -NA- BOTTOM -NA-

FILTER PACK: Gravel TOP 4.0 ft BOTTOM 61.0 ft

SCREEN TYPE: PVC/#40/sl. DIA: 1.25-in. OD TOP -NA- BOTTOM 61.0 ft

TOTAL DEPTH: 61.0

-NA-: Not Applicable/Not Available

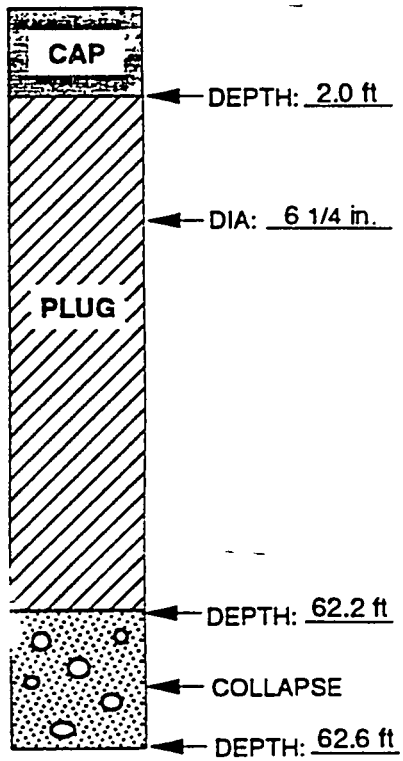
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 62.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-10

LOCATION: Exxon Nuclear Site

COORDINATES: N30524 E20121

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-9-94

FINISH: 5-11-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLER: R. Phillips

HELPERS: J. Monger/R.M. Collins

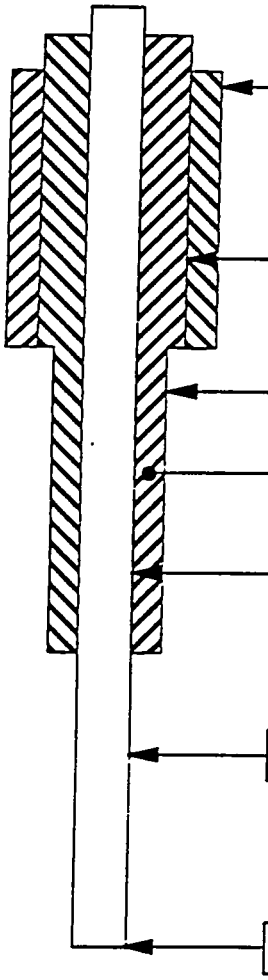
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: Reamed borehole and drilled up PVC casing in one pass with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#80 DIA: 1.25-in. OD TOP +2.3 ft BOTTOM -NA-

OPEN HOLE DIA.: 5.0 in. TOP 0.0 ft BOTTOM 55.8 ft*

TOTAL DEPTH: 55.8*

- NA - : Not Applicable/Not Available

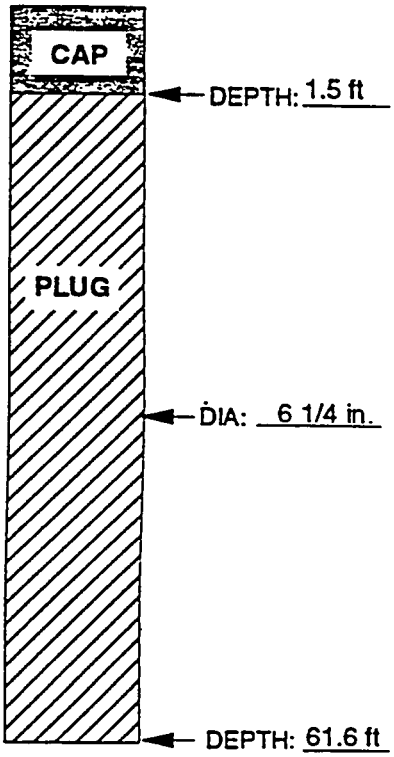
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 61.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



*Tagged depth prior to P&A activities.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGINGAND ABANDONMENT DIAGRAM

WELL NO. BCU-11

LOCATION: Exxon Nuclear Site

COORDINATES: N30520 E20107

REFERENCE POINT FOR MEASUREMENTS: Ground surface

DATE: START: 5-10-94

FINISH: 5-13-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall

HELPERS: J. Monger/R. Phillips

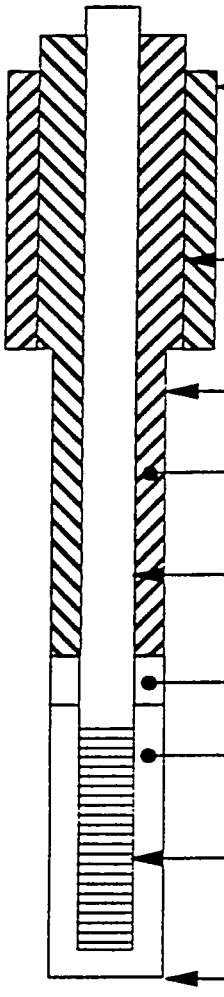
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Reaming terminated prior to reaching bottom of well (and grouted) with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: 5.0 in.
TOP 0.0 ft
BOTTOM -NA-

FILLER: Cement

CASING (WITH SCREEN)
TYPE: PVC/#80
DIA: 1.25-in. OD
TOP 0.0 ft
BOTTOM -NA-

SEAL: -NA-
TOP -NA-
BOTTOM -NA-

FILTER PACK: Gravel
TOP 3.0 ft
BOTTOM -NA-

SCREEN
TYPE: PVC/#40/sl.
DIA: 1.25-in. OD
TOP -NA-
BOTTOM -NA-

TOTAL DEPTH: -NA-

-NA-: Not Applicable/Not Available

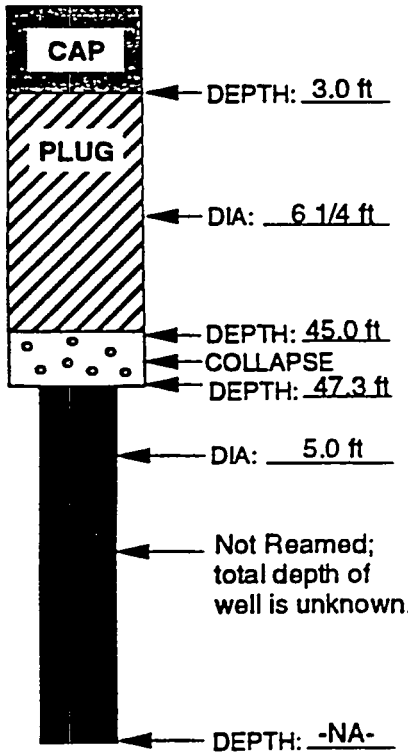
P&A SUMMARY

REAMED DIA: 6 1/4 ft

DRILLED/REAMED DEPTH: 47.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-13

LOCATION: Exxon Nuclear Site

COORDINATES: N30538 E20054

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-6-94

FINISH: 5-10-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall

HELPERS: J. Monger/R. Phillips

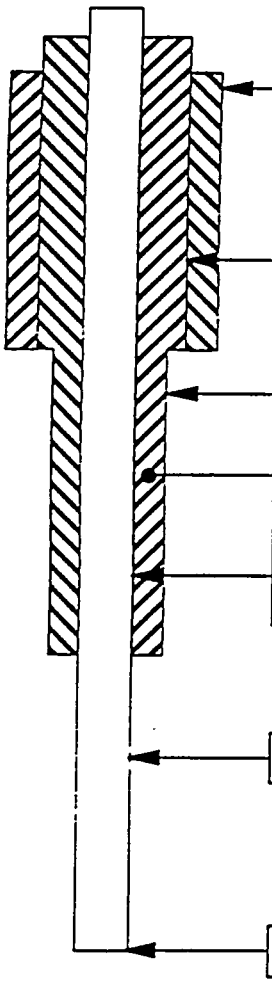
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: -NA-
TOP -NA-
BOTTOM -NA-

FILLER: -NA-

CASING
TYPE: PVC/#40
DIA: 4.5-in. OD
TOP +1.0 ft
BOTTOM 8.9 ft

OPEN HOLE DIA.: 5.0 in.
TOP 0.0 ft
BOTTOM 25.1 ft*

TOTAL DEPTH: 25.1*

- NA - : Not Applicable/Not Available

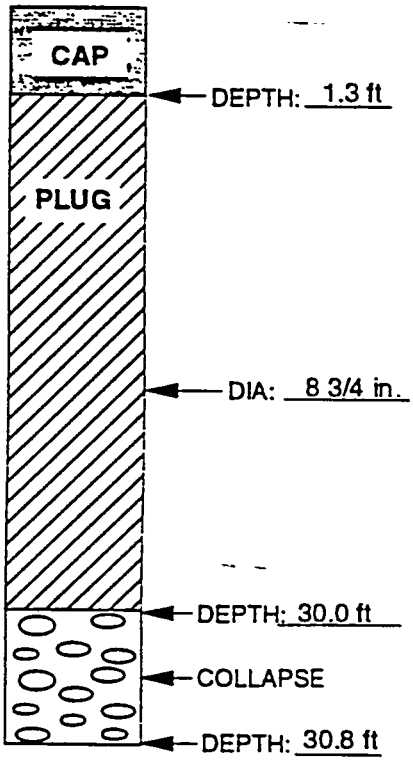
P&A SUMMARY

REAMED DIA: 8 3/4 in.

DRILLED/REAMED DEPTH: 30.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



*Tagged depth prior to P&A activities.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-16

LOCATION: Exxon Nuclear Site

COORDINATES: N30058 E19813

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-13-94

FINISH: 4-18-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

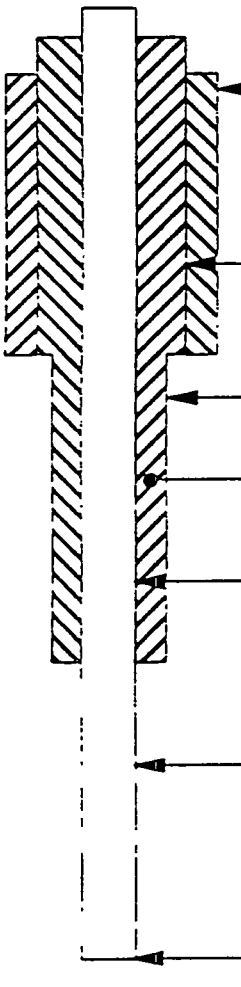
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Grout "open interval" without conditioning borehole; ream to 20.6 ft below TOFR with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING TYPE: PVC/#40/sl. DIA: 1.25-in. ID TOP +0.9 ft BOTTOM 37.5 ft

OPEN HOLE DIA.: 3.0 in. TOP 0.0 ft BOTTOM 146.3 ft

TOTAL DEPTH: 146.3

- NA - : Not Applicable/Not Available

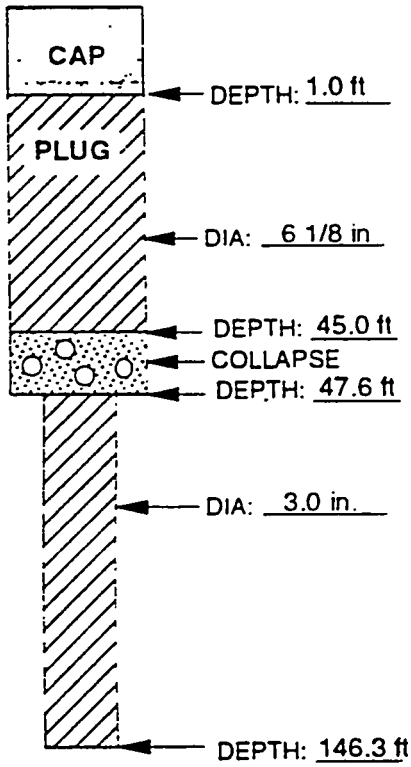
P&A SUMMARY

REAMED DIA: 6 1/8 in.

DRILLED/REAMED DEPTH: 47.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. BCU-20

LOCATION: Exxon Nuclear Site

COORDINATES: N29739 E19734

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-21-94

FINISH: 5-6-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford

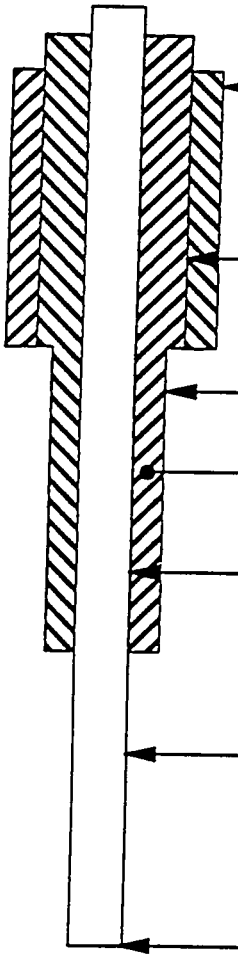
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: D

DEVIATIONS FROM METHOD: Reamed to 6.0 ft beyond tagged depth with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: -NA-

CASING* TYPE: PVC/#80/sl. DIA: 1.25-in. OD TOP +1.2 ft BOTTOM 43.3 ft

OPEN HOLE DIA.: 3.0 in. TOP 0.0 ft BOTTOM 76.6 ft**

TOTAL DEPTH: 76.6**

- NA - : Not Applicable/Not Available

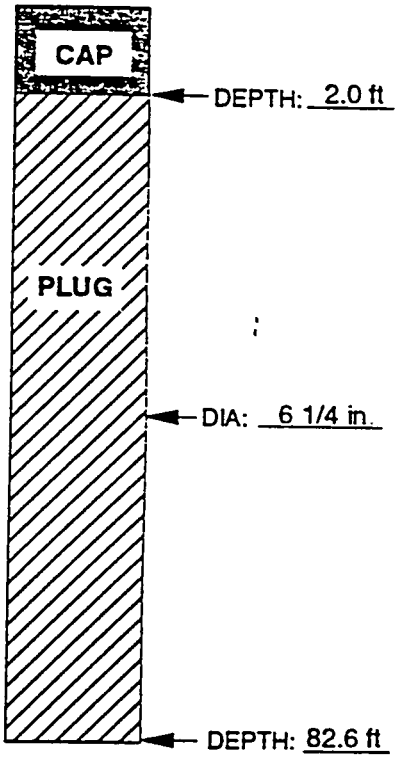
P&A SUMMARY

REAMED DIA: 6 1/4 in.

DRILLED/REAMED DEPTH: 82.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



*The bottom 5.0 ft of casing was commercially manufactured PVC screen.

**Tagged depth with weighted tape prior to P&A activities.

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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-110

LOCATION: Grassy Creek Functional Area

COORDINATES: N28745 E21995

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-10-94

FINISH: 1-13-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

HELPERS: Randy Phillips/Jeff Monger

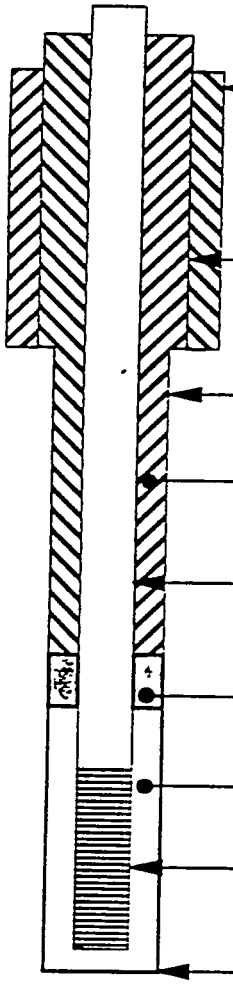
REASON FOR P&A: Damaged casing

P&A: METHOD: A

DEVIATIONS FROM METHOD: Well casing grouted without being entirely removed, with HSEA approval.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: N/A
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: Steel
DIA: 6 5/8-in. OD
TOP +2.5 ft
BOTTOM 1.9 ft

BOREHOLE DIA.: 3.0-in.
TOP 0.0 ft
BOTTOM 40.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +3.1 ft
BOTTOM 28.0 ft

SEAL: -NA-
TOP N/A
BOTTOM 27.0 ft

FILTER PACK: Sand
TOP 27.0 ft
BOTTOM 40.0 ft

SCREEN
TYPE: SS/SW/.01
DIA: 2.37-in. OD
TOP 28.0 ft
BOTTOM 38.6 ft

TOTAL DEPTH: 40.0 ft

- NA -: Not Applicable/Not Available

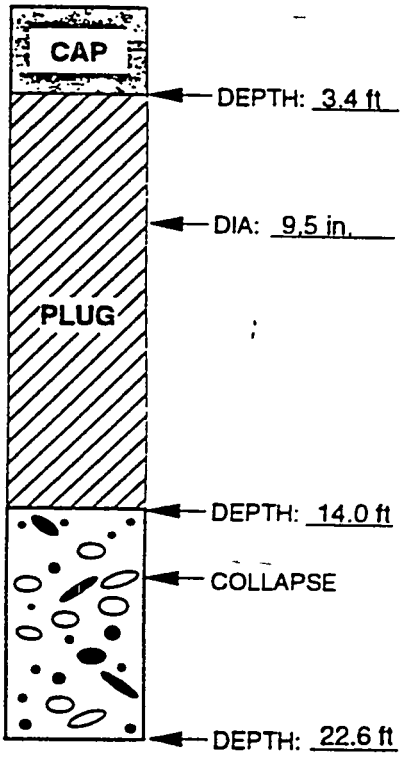
P&A SUMMARY

REAMED DIA: 9.5 in.

DRILLED/REAMED DEPTH: 22.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-114

LOCATION: Bear Creek Road

COORDINATES: N28575 E28100

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-14-94

FINISH: 1-24-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

HELPERS: Jeff Monger, Randy Phillips, Mark Baker

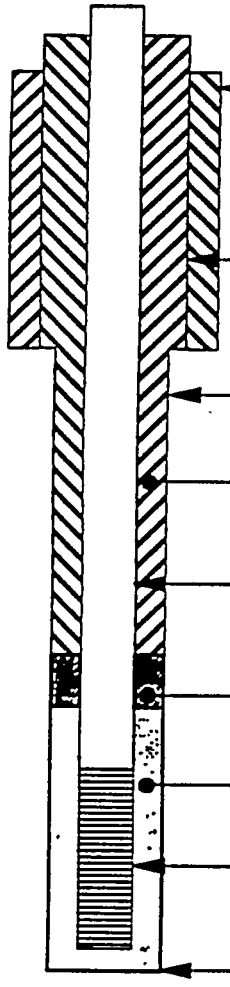
REASON FOR P&A: Damaged casing

P&A: METHOD: A

DEVIATIONS FROM METHOD: Borehole plugged without removing all of the well casing or reaming to total depth. Deviations approved by HSEA.

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE
DIA: -NA-
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: Steel
DIA: 6 5/8-in. OD
TOP +3.3 ft
BOTTOM +0.5 ft

BOREHOLE DIA.: 6.0-in.
TOP 0.0 ft
BOTTOM 120.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +3.6 ft
BOTTOM 98.0 ft

SEAL: -NA-
TOP -NA-
BOTTOM 88.6 ft

FILTER PACK: Sand
TOP 88.6 ft
BOTTOM 120.0 ft

SCREEN
TYPE: SS/SW/.01
DIA: 2.37-in. OD
TOP 98.0 ft
BOTTOM 118.8 ft

TOTAL DEPTH: 120.0 ft

- NA -: Not Applicable/Not Available

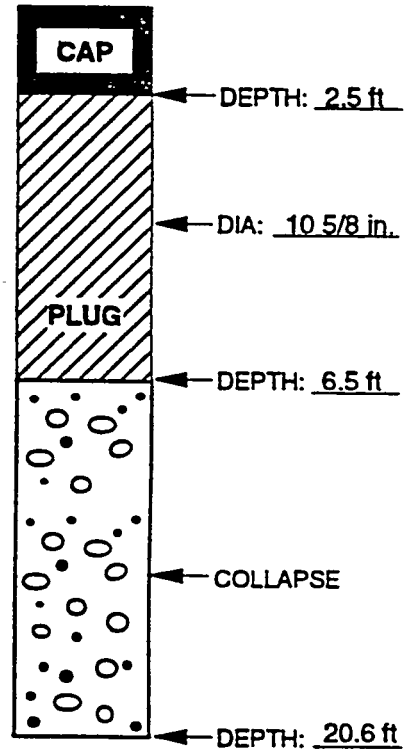
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 20.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-570

LOCATION: Chestnut Ridge, South Side

COORDINATES: N 27725 E 60818

REFERENCE POINT FOR MEASUREMENTS: Ground surface

DATE: START: 5-18-94

FINISH: 5-20-94

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DRILLERS: R. Phillips/H. Hall

HELPERS: J. Monger/D. Williford/J. Young

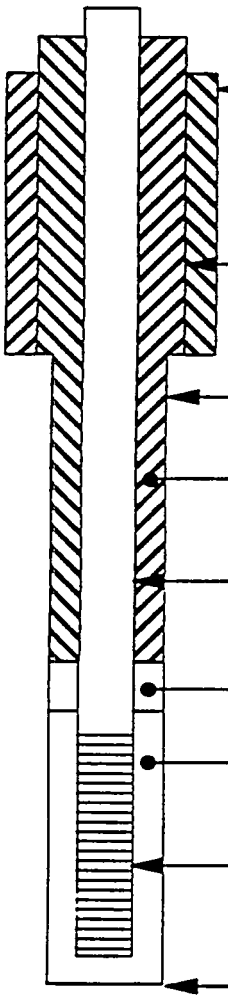
REASON FOR P&A: Well impedes construction of landfill access road.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Unable to over wash casing to TD, borehole grouted from 21.6 ft to 3.5 ft BGS.

WELL CONSTRUCTION SUMMARY

Note: All of the information in this section obtained from field observations.



- CONDUCTOR HOLE DIA: -NA- — DEPTH -NA-
- SURFACE CONDUCTOR TYPE: None DIA: -NA- — TOP -NA- BOTTOM -NA-
- BOREHOLE DIA.: 6.0 in. — TOP 0.0 ft BOTTOM 137.8 ft
- FILLER: Cement
- CASING (WITH SCREEN) TYPE: SS/#304 DIA: 2.0-in. OD — TOP +1.4 ft BOTTOM 92.8 ft
- SEAL: -NA- — TOP -NA- BOTTOM -NA-
- FILTER PACK: Sand — TOP 90.0 ft BOTTOM 112.8 ft
- SCREEN TYPE: SS/SW/.01 DIA: 2.0-in. OD — TOP 92.8 ft BOTTOM 112.8 ft
- TOTAL DEPTH: 137.8

-NA-: Not Applicable/Not Available

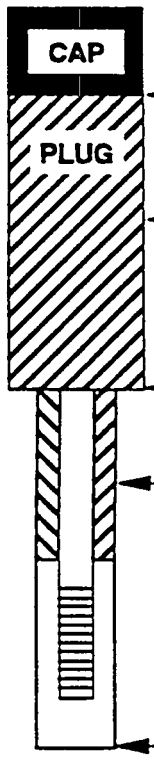
P&A SUMMARY

REAMED DIA: 6 3/4 in.

DRILLED/REAMED DEPTH: 21.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



- CAP: DEPTH: 3.5 ft; DIA: 6 3/4 ft
- PLUG: DEPTH: 21.6 ft; DIA: 6.0 in.
- DEPTH: 137.3 ft

94-001M(P)081594

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-04

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30094 E32802

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 10-12-93

FINISH: 10-21-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

HELPERS: Russell Jones/Randy Phillips

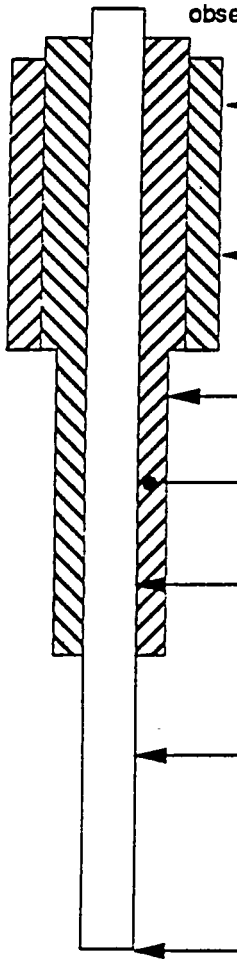
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained primarily from observations in the field.



CONDUCTOR HOLE DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: -NA-
TOP 0.0 ft
BOTTOM 19.4 ft

FILLER: Cement/Backfill

CASING TYPE: Steel DIA: 6.5-in. OD
TOP +1.6 ft
BOTTOM 19.4 ft

OPEN HOLE DIA.: -NA-.
TOP 19.4 ft
BOTTOM 34.5 ft

TOTAL DEPTH: 34.5 ft

-NA-: Not Available/Not Applicable

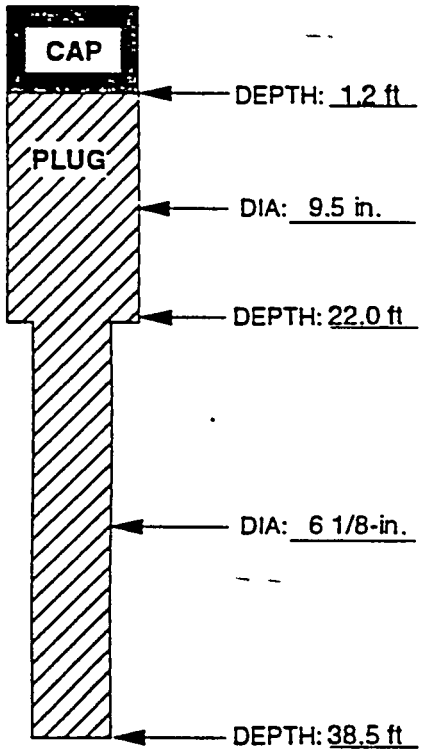
P&A SUMMARY

REAMED DIA: 6-1/8 in./9.5 in.

DRILLED/REAMED DEPTH: 38.5 ft/22.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-05

LOCATION: Gum Branch Road Functional Area

COORDINATES: N29504 E32146

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 11-29-93

FINISH: 11-9-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLERS: Hubert Hall/John Young

HELPERS: Randy Phillips/Greg Anderson

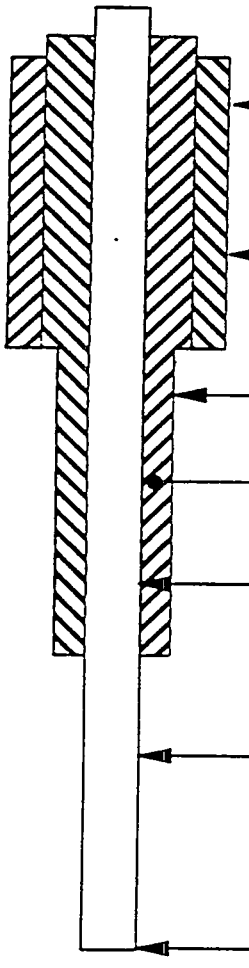
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: Over wash casing with less than 24-hr cure on open interval cement/use of Hole Plug™ to bridge voids, approved by Kevin Jago (HSEA).

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP 0.0 ft BOTTOM 42.8 ft

FILLER: Cement/Backfill

CASING TYPE: Steel DIA: 6.5-in. OD TOP +1.6 ft BOTTOM 42.8 ft

OPEN HOLE DIA.: -NA-. TOP 42.8 ft BOTTOM 164.5 ft

TOTAL DEPTH: 164.5 ft

-NA-: Not Available/Not Applicable

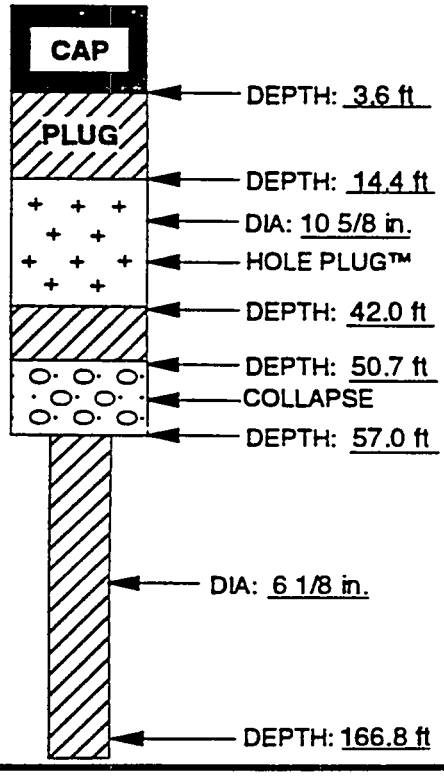
P&A SUMMARY

REAMED DIA: 6 1/8 in./10 5/8 in.

DRILLED/REAMED DEPTH: 166.8 ft/57.0 ft

PLUG MATERIAL: Cement/Hole Plug

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-06

LOCATION: Gum Branch Road Functional Area

COORDINATES: N29113 E32144

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 10-26-93

FINISH: 11-2-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

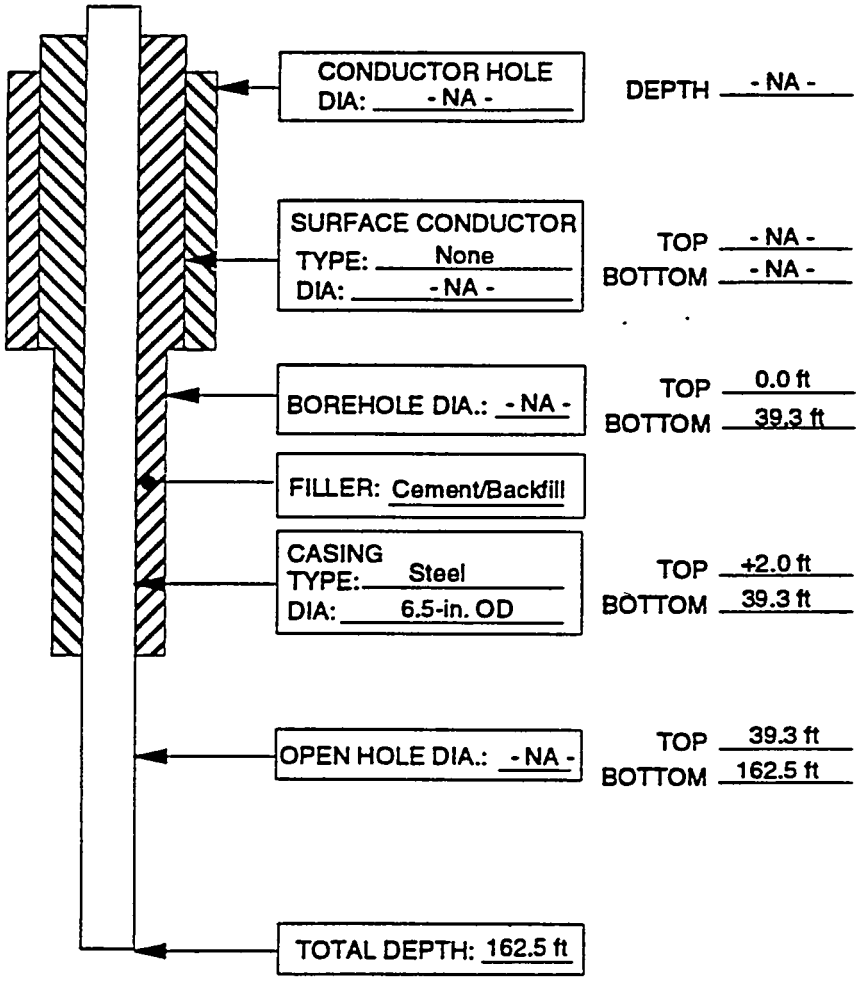
DRILLER: Hubert Hall HELPER: Randy Phillips

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B DEVIATIONS FROM METHOD: Over wash casing with less than 24-hr cure on open interval cement (approved by HSEA).

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations.



- NA -: Not Applicable/Not Available

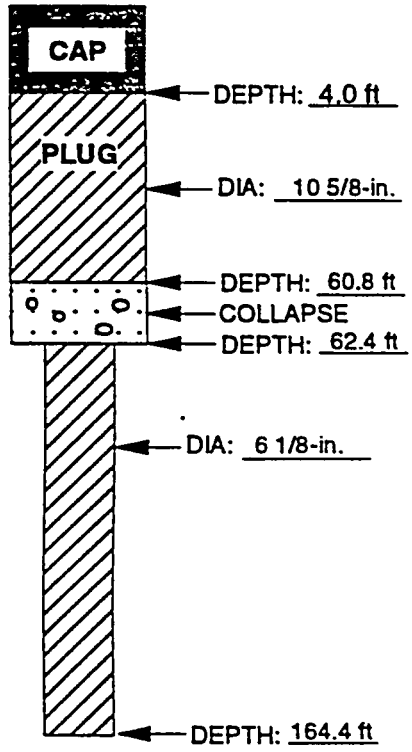
P&A SUMMARY

REAMED DIA: 6 1/8 in./10 5/8 in.

DRILLED/REAMED DEPTH: 164.4 ft/62.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil/gravel



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-07

LOCATION: Gum Branch Road Functional Area

COORDINATES: N28666 E32133

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 10-22-93

FINISH: 10-28-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand T4W

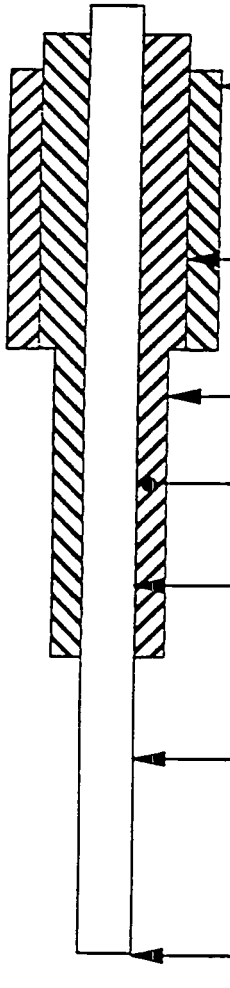
DRILLER: Hubert Hall HELPER: Randy Phillips

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B DEVIATIONS FROM METHOD: Borehole plugged without cement-grout due to collapse. Deviation approved by W. K. Jago (HSEA).

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations.



CONDUCTOR HOLE DIA: - NA - DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: - NA - TOP - NA - BOTTOM - NA -

BOREHOLE DIA.: - NA - TOP 0.0 ft BOTTOM 36.0 ft

FILLER: Backfill

CASING TYPE: Steel DIA: 6.5-in. OD TOP +1.6 ft BOTTOM 36.0 ft

OPEN HOLE DIA.: - NA - TOP 36.0 ft BOTTOM - NA -

TOTAL DEPTH: - NA -

- NA -: Not Applicable/Not Available

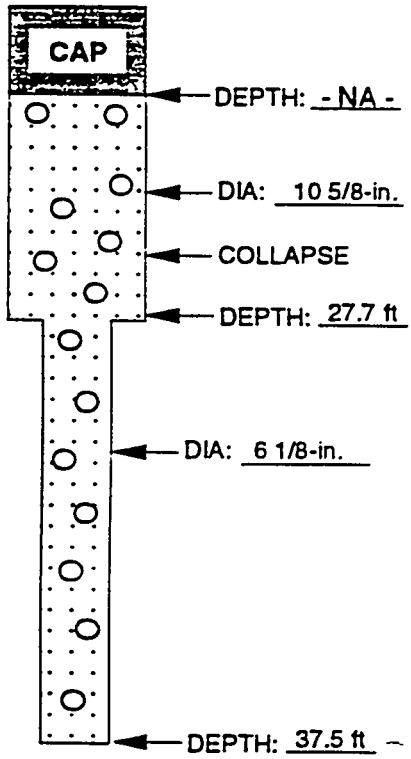
P&A SUMMARY

REAMED DIA: 6 1/8 in./10 5/8 in.

DRILLED/REAMED DEPTH: 37.5 ft/27.7 ft

PLUG MATERIAL: Collapse debris/ gravel

CAP MATERIAL: Gravel



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-08

LOCATION: Gum Branch Road Functional Area

COORDINATES: N29960 E32142

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 10-18-93

FINISH: 11-2-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

HELPERS: Mark Baker/John Young

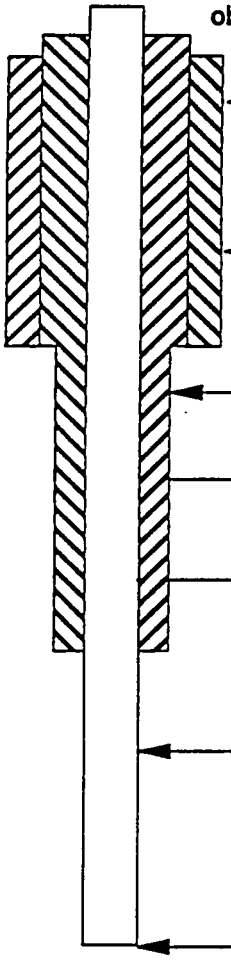
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: Over wash and extract casing with open interval not entirely cemented.

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations only.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: NONE DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP 0.0 ft BOTTOM 48.3 ft

FILLER: BACKFILL

CASING TYPE: STEEL DIA: 6.5-IN. OD TOP + 0.7 ft BOTTOM 48.3 ft

OPEN HOLE DIA.: -NA-. TOP -NA- BOTTOM -NA-

TOTAL DEPTH: 159.8 ft

-NA-: Not Available/Not Applicable

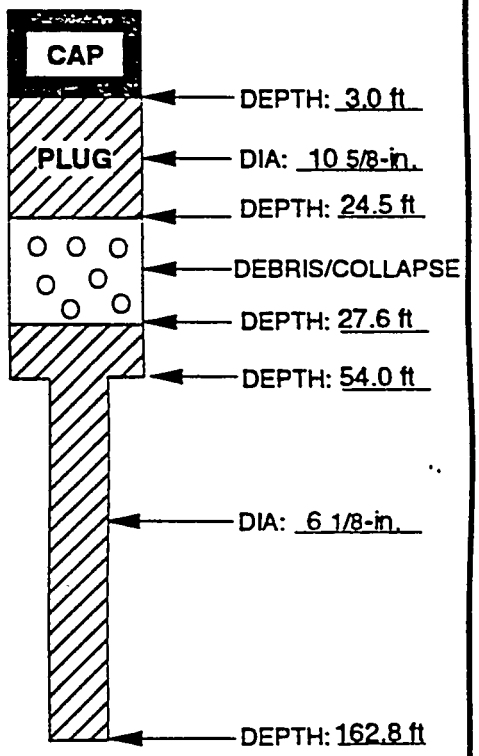
P&A SUMMARY

REAMED DIA: 6 1/8 in./10 5/8 in.

DRILLED/REAMED DEPTH: 162.8 ft/54.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-09

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30360 E32141

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 10-7-93

FINISH: 10-14-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

HELPERS: Greg Anderson/Randy Phillips

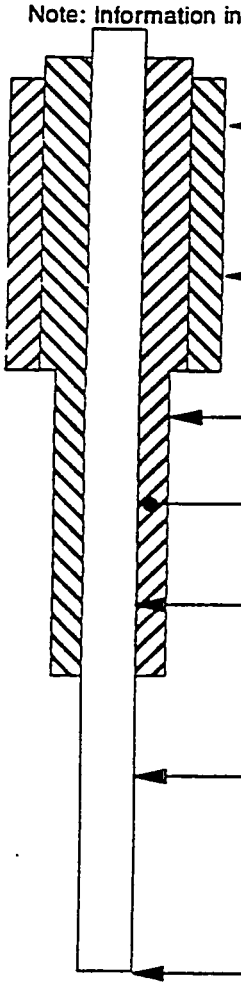
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field oberservations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP 0.0 ft BOTTOM 32.7 ft

FILLER: Cement/Backfill

CASING TYPE: Steel DIA: 6.5-in. OD TOP + 1.6 ft BOTTOM 32.7 ft

OPEN HOLE DIA.: -NA-. TOP 32.7 ft BOTTOM 158.4 ft

TOTAL DEPTH: 158.4 ft

-NA-: Not Available/Not Applicable

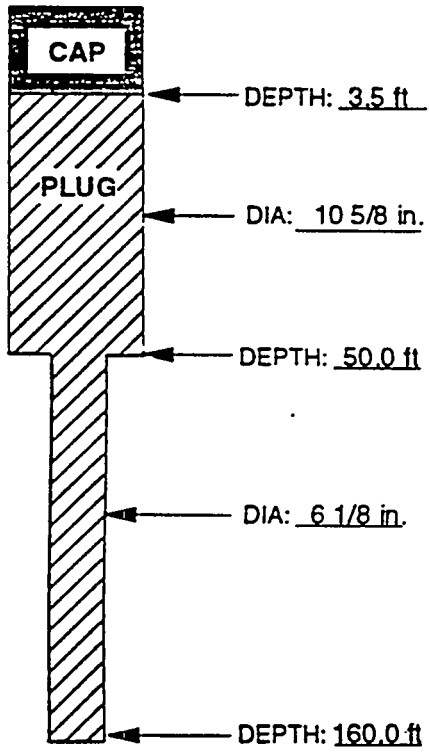
P&A SUMMARY

REAMED DIA: 6 1/8 in./10 5/8 in.

DRILLED/REAMED DEPTH: 160.0 ft/50.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. M-10

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30703 E32147

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 9-28-93

FINISH: 10-5-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

HELPER: Randy Phillips/Russell Jones

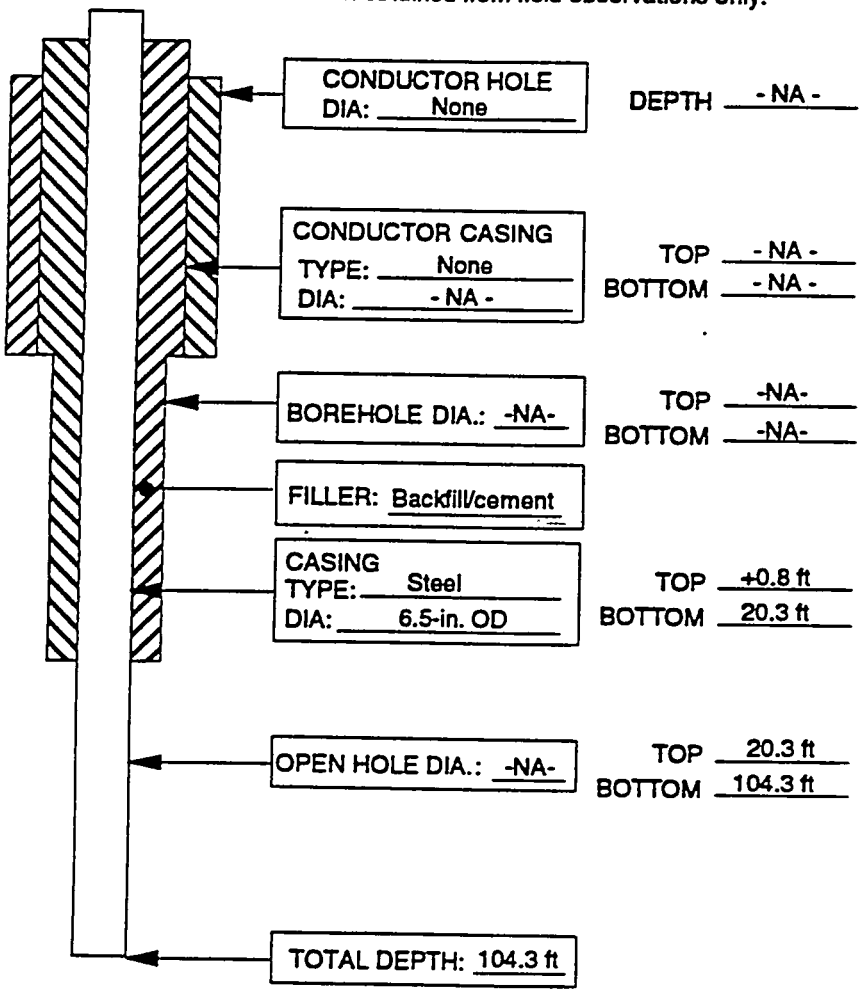
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations only.



- NA -: Not Applicable/Not Available

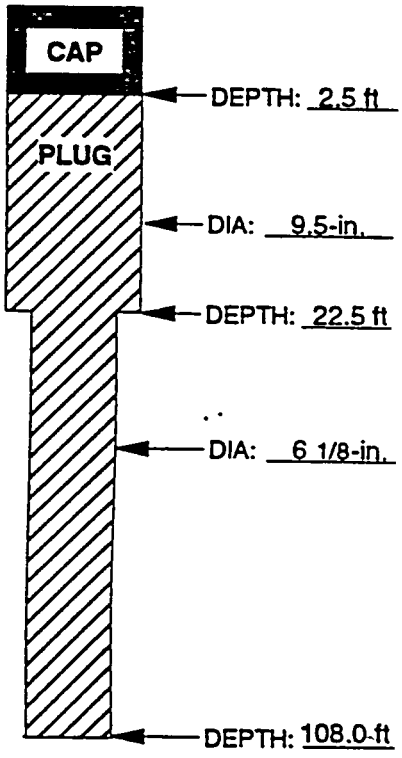
P&A SUMMARY

REAMED DIA: 6 1/8-in./9.5-in.

DRILLED/REAMED DEPTH: 108.0 ft/22.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. OR-06

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30330 E33259

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 11-5-93

FINISH: 11-5-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555 Backhoe

DRILLER: Hubert Hall

HELPERS: Greg Anderson/Randy Phillips

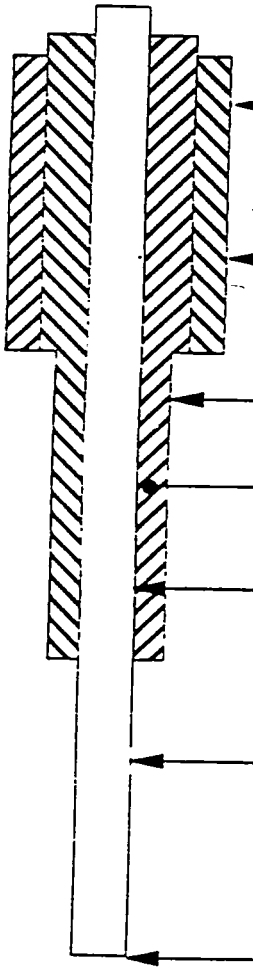
REASON FOR P&A: Well is unaccounted for/above-ground components missing or destroyed.

P&A: METHOD: - NA -

DEVIATIONS FROM METHOD: - NA -

No evidence of well or decommissioning found at surveyed location/No P&A activities

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP -NA- BOTTOM -NA-

FILLER: - NA -

CASING TYPE: - NA - DIA: TOP -NA- BOTTOM -NA-

OPEN HOLE DIA.: -NA-. TOP 0.0 ft BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

-NA-: Not Available/Not Applicable

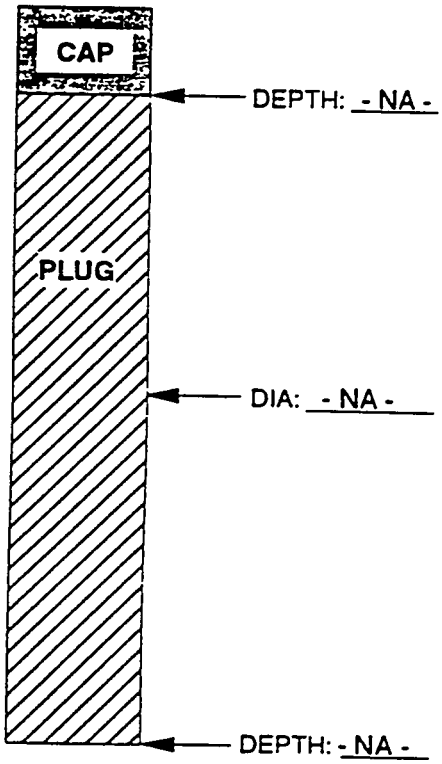
P&A SUMMARY

REAMED DIA: - NA -

DRILLED/REAMED DEPTH: - NA -

PLUG MATERIAL: - NA -

CAP MATERIAL: - NA -



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. OR-07

LOCATION: Bear Creek Valley at Hagwood Road

COORDINATES: N 30684 E 27856

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 11-19-93

FINISH: 12-6-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

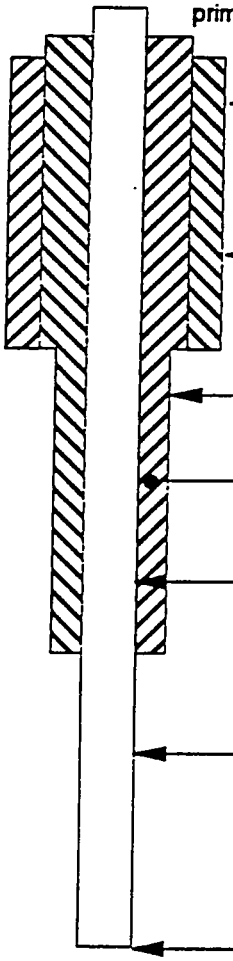
DRILLER: Hubert Hall HELPERS: Russell Jones/Randy Phillips/Jeff Monger

REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B DEVIATIONS FROM METHOD: PVC casing milled and borehole reamed to 2.1 ft beyond total depth in one pass (approved by HSEA).

WELL CONSTRUCTION SUMMARY

Note: Some of the information in this section obtained primarily from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP 0.0 ft BOTTOM 36.0 ft

FILLER: Backfill/Cement

CASING TYPE: PVC/Sch. 80 DIA: 2.0-in. OD TOP +3.0 ft BOTTOM 36.0 ft

OPEN HOLE DIA.: -NA-. TOP 36.0 ft BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

-NA-: Not Available/Not Applicable

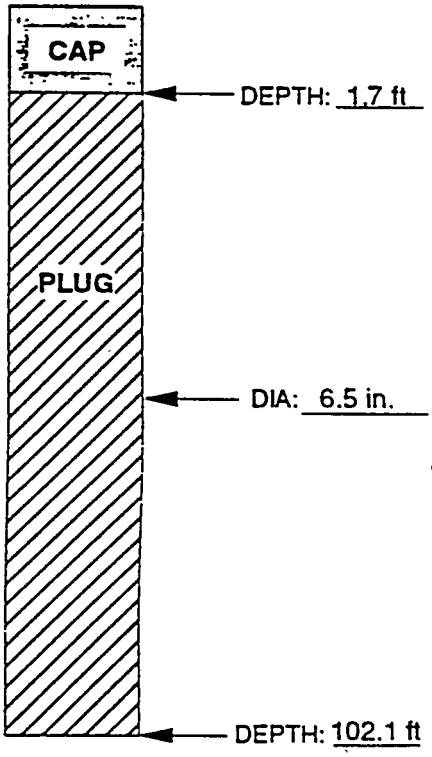
P&A SUMMARY

REAMED DIA: 6.5 in.

DRILLED/REAMED DEPTH: 102.1 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil/Cuttings



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. OR-08

LOCATION: Bear Creek Valley at Hagwood Road

COORDINATES: N 30871 E 27834

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-6-93

FINISH: 12-8-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: John Young

HELPERS: Hubert Hall/Randy Phillips

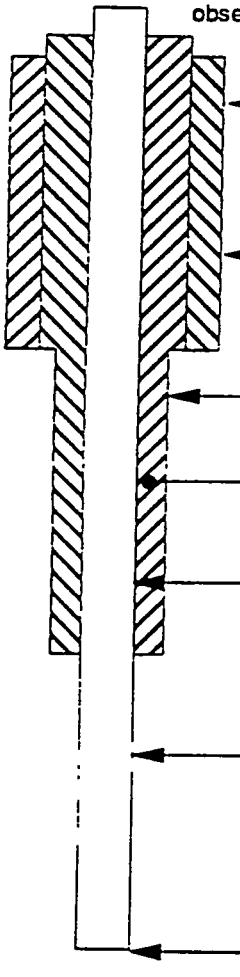
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: PVC casing milled and borehole reamed to 1.4 ft beyond total depth in one pass (approved by HSEA).

WELL CONSTRUCTION SUMMARY

Note: Some information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE DIA.: -NA-
TOP 0.0 ft
BOTTOM 42.0 ft

FILLER: Backfill/Cement

CASING TYPE: PVC/Sch. 80
DIA: 2.0-in. OD
TOP +3.0 ft
BOTTOM 42.0 ft

OPEN HOLE DIA.: -NA-
TOP 42.0 ft
BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

-NA-: Not Available/Not Applicable

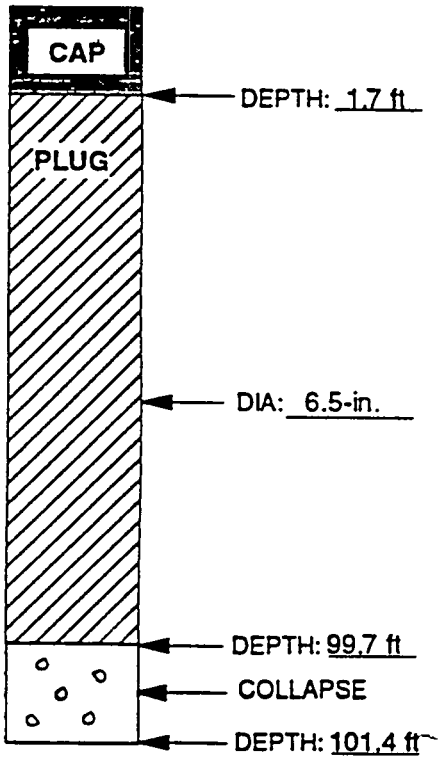
P&A SUMMARY

REAMED DIA: 6.5 in.

DRILLED/REAMED DEPTH: 101.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. OR-09

LOCATION: Bear Creek Valley at Hagwood Road

COORDINATES: N30441 E28020

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 11-12-93

FINISH: 11-18-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

HELPERS: Greg Anderson/Randy Phillips

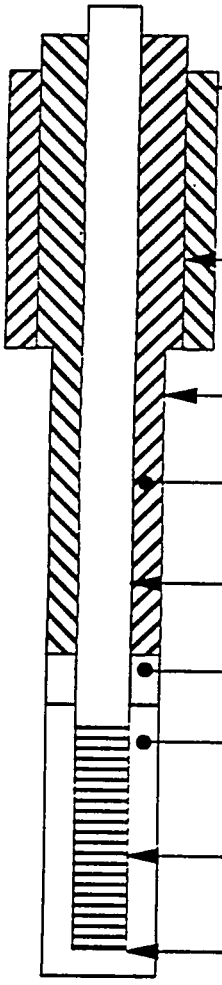
REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Casing milled and borehole reamed 2.2 ft beyond total depth in one pass (approved by HSEA).

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained primarily from field observations.



CONDUCTOR HOLE
DIA: - NA -
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: - NA -
TOP - NA -
BOTTOM - NA -

BOREHOLE DIA.: - NA -
TOP 0.0 ft
BOTTOM 100.0 ft

FILLER: Backfill

CASING
TYPE: PVC/sch. 80
DIA: 2.0-in. OD
TOP +2.8 ft
BOTTOM - NA -

SEAL: - NA -
TOP - NA -
BOTTOM - NA -

FILTER PACK: - NA -
TOP - NA -
BOTTOM - NA -

SCREEN
TYPE: PVC/sch. 80
DIA: 2.0-in. OD
TOP - NA -
BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

- NA - : Not Applicable/Not Available

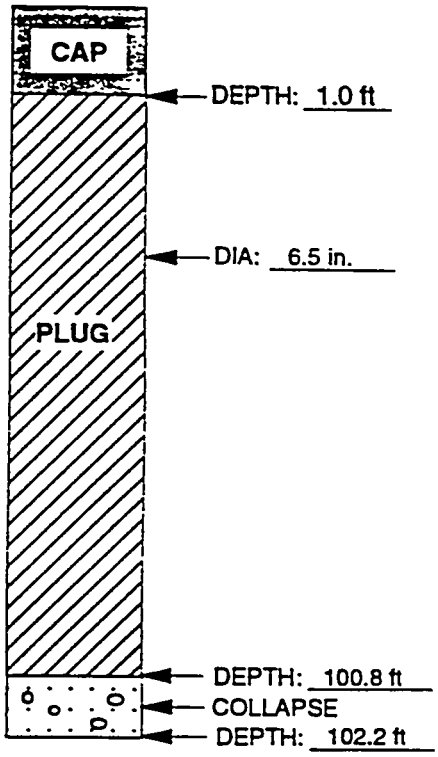
P&A SUMMARY

REAMED DIA: 6.5 in.

DRILLED/REAMED DEPTH: 102.2 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. OR-21

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30797 E33487

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 11-10-93

FINISH: 11-12-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

HELPERS: Greg Anderson/Randy Phillips

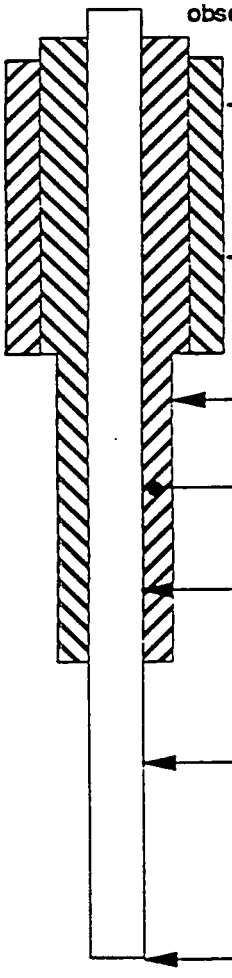
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 1.9 ft beyond TD in one pass (approved by HSEA).

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained primarily from observations in the field.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP 0.0 ft BOTTOM 37.5 ft

FILLER: Cement/Backfill

CASING TYPE: PVC; Sch. 80 DIA: 2.0-in. OD TOP + 1.8 ft BOTTOM 37.5 ft

OPEN HOLE DIA.: -NA-. TOP 37.5 ft BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

-NA-: Not Available/Not Applicable

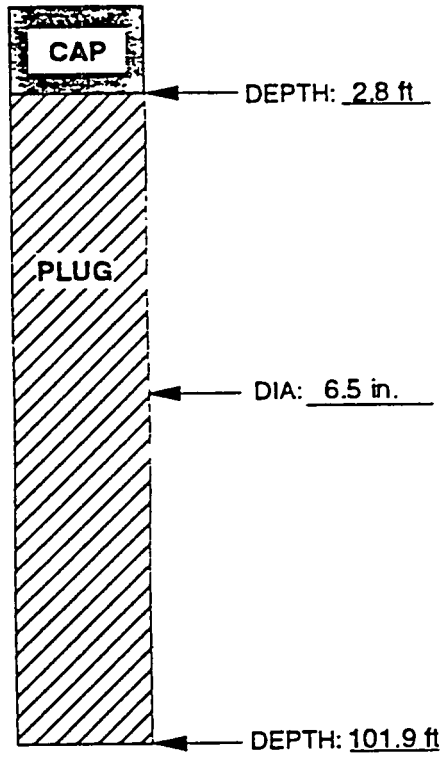
P&A SUMMARY

REAMED DIA: 6.5 in.

DRILLED/REAMED DEPTH: 101.9 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. OR-22

LOCATION: Gum Branch Road Functional Area

COORDINATES: N30614 E33377

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 11-8-93

FINISH: 11-10-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

HELPERS: Greg Anderson/Randy Phillips

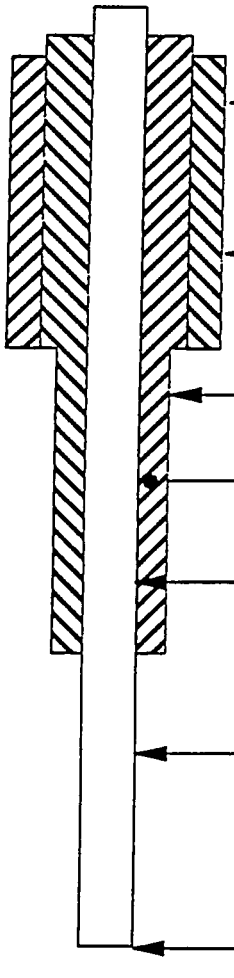
REASON FOR P&A: Loss of well security/substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: Reamed borehole to 1.7 ft beyond total depth and milled casing in one pass (approved by HSEA).

WELL CONSTRUCTION SUMMARY

Note: Information in this section obtained from field observations.



CONDUCTOR HOLE DIA: -NA- DEPTH -NA-

SURFACE CONDUCTOR TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: -NA- TOP 0.0 ft BOTTOM -NA-

FILLER: Cement/Backfill

CASING TYPE: PVC/#80 DIA: 2.0-in OD TOP +2.8 ft BOTTOM 28.2 ft

OPEN HOLE DIA.: -NA-. TOP -NA- BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

-NA-: Not Available/Not Applicable

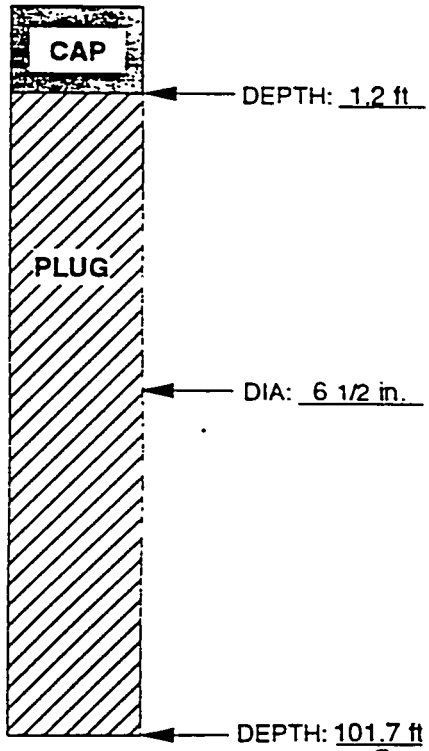
P&A SUMMARY

REAMED DIA: 6 1/2 in.

DRILLED/REAMED DEPTH: 101.7 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



APPENDIX C
WASTE MANAGEMENT PLAN

1. INTRODUCTION

The ultimate objective of monitoring groundwater is gathering data to assess potential impacts to human health and the environment. It is also the objective of the Y-12 Groundwater Protection Program (GWPP) to handle drill cuttings from the installation of groundwater monitoring wells or borings in a manner that protects the environment. The Y-12 philosophy has been and continues to be consistent with the U.S. Environmental Protection Agency (EPA) and Martin Marietta Energy Systems, Inc., (Energy Systems) E&SA guidance for managing well cuttings. Site-specific professional judgment is used to determine the potential for contamination prior to installation of each well. Factors considered in evaluating potential for site contamination include:

- previously collected sampling and analysis data,
- groundwater flow patterns,
- geologic and hydrogeologic setting, and
- purpose of well (containment plume assessment, background monitoring defining lines of compliance, etc.).

Based on the evaluation, one of two options is selected:

- stabilize material on site or
- collect for treatment or storage.

2. DRILL CUTTINGS DISPOSAL

There are two levels of drill cuttings management at the Y-12 Plant: (1) drill-site disposal and (2) containerization for waste disposal. Disposal of drill cuttings at the drill site following best management practices (BMP) is permitted if the cuttings do not exceed the field-screening criteria discussed below. If the field-screening criteria are exceeded, the cuttings must be containerized at the drill site, labeled, and handled according to Y-12 Plant waste disposal procedures. Sampling and field screening of the drill cuttings will be conducted in accordance with the procedures specified in the Energy Systems Environmental Surveillance Procedures Quality Control Program document (ESH/Sub/87/21706/1).

2.1 FIELD SCREENING

Field screening of drill cuttings will consist of measuring three parameters: radioactivity, volatile organics, and pH. The Energy Systems procedures specified in Table E.1 will be followed with some modification as described below.

Radioactivity will be measured using two separate meters: a survey meter with a pancake Geiger tube for determining beta and gamma activity and a scintillation counter with a zinc sulfide window for determining alpha activity. The meters will be passed over the surface area of the cuttings and the highest readings will be recorded.

Screening for organic vapors will be conducted on a composite sample from the cuttings generated at a single well. The sample will be collected with a hand trowel or similar tool to select cuttings from several depths. Enough cuttings will be placed in a clean 1-gal glass or metal container to half fill it. Aluminum foil will be placed over the mouth of the container to make an airtight seal. The sample will then be incubated for 1 h at 70°F or the ambient temperature, whichever is higher. Organic vapors in the headspace of the sample container will be measured by puncturing the aluminum foil and inserting the probe of an organic vapor analyzer. This instrument will have a photoionization detector with a 10.2 eV lamp and will be calibrated to isobutylene. The highest reading of the headspace vapors will be recorded.

Table C.1. Y-12 Plant field-screening criteria for drill cuttings and development water

Field analysis	Energy Systems Procedure No.	Limit
pH	ESP-307-2	4.0–10.5
Specific conductivity [a]	ESP-307-8	< 1000 µmhos/cm
Organic	ESP-307-6	< 5 ppm
Radioactivity	ESP-307-7	
beta/gamma		< 600 dpm/100 cm^2 (< 100 cpm)
alpha		< 1000 dpm/100 cm^2 (< 500 cpm)

[a] Not applicable to drill cuttings.

The pH of the cuttings will be estimated by adding one quart of deionized water to the composite sample used to determine the presence of organic vapors. The sample will be agitated until well mixed. The pH of the mixture will be determined by moistening a piece of pH paper (range 4-9 or similar) and checking the color of the paper against the color key. This pH will be recorded.

2.2 CONTAINERIZATION FOR WASTE DISPOSAL

If the cuttings from a borehole exceed any one of the field screening limits, they will be containerized at the drill site and labeled with the contents (drill cuttings), borehole number, and date. The cuttings will then be handled according to Y-12 Plant waste management procedures.

An exception to the above may be made if the cuttings only exceed the organic vapor limits. Weather permitting, those cuttings may be passively treated by aeration at the drill site to reduce the organic vapor content. Such treatment shall not exceed 5 working days. If reanalysis following aeration indicates the cuttings continue to exceed the organic vapor limits, they must be containerized and handled as above.

2.3 BEST MANAGEMENT PRACTICES FOR DRILL SITE DISPOSAL

Drill cuttings that do not exceed the field-screening criteria will be disposed of at the drill site, if practicable. BMP dictate that the cuttings be disposed in such a way as to not be unsightly or cause erosion/sedimentation impacts on nearby surface water. The cuttings shall therefore be used as part of the restoration of the drill site, to fill in low areas and tire tracks, or spread to conform to the natural topography. They will subsequently be seeded and mulched. If bedrock cuttings contain a liquid fraction, care shall be taken to ensure this liquid infiltrates or evaporates at the drill site and in no case runs off into surface waters, ephemeral drainages, or storm sewers. Drill cuttings that do not exceed the field-screening criteria but cannot be disposed of at the drill site due to its location (parking lot, yard, etc.) will be transported to a designated location and disposed of as clean fill, following BMP.

2.4 DOCUMENTATION

The results of all field-screening analyses and a description of the disposition of the drill cuttings from each borehole will be documented on a Drill Cuttings Field Screening/Disposal Sheet, an example of which is attached. These forms will be completed for each borehole by the on-site geologist who conducts the screening. A copy of each form will be provided to the Project Manager of the GWPP within 2 days of its completion.

3. DEVELOPMENT WATER DISPOSAL

There are two levels of development water management at the Y-12 Plant: (1) drill-site disposal and (2) containerization for waste disposal. Disposal of development water at the drill site following BMP is permitted if the water does not exceed the field-screening criteria discussed below. If the field-screening criteria are exceeded, the water must be containerized at the drill site, labeled, and handled according to Y-12 Plant waste disposal procedures. Sampling and field screening of development water will be conducted in accordance with the procedures specified in the Energy Systems Environmental Surveillance Procedures Quality Control Program document (ESH/Sub/87/21706/1).

3.1 FIELD SCREENING

Initial development water will be containerized until it has been screened. This is accomplished by pumping the water into drums or other suitable container(s). Screening will be conducted on grab samples taken approximately every hour after the first one-half hour of development. (An alternative to the hourly grab samples is to totally contain all the development water produced at a well, then analyze a composite sample.) If initial grab samples do not exceed the limits specified in Table E-1, development water may be pumped directly on the ground (following BMP) unless or until a subsequent grab sample exceeds the limits.

Field screening of development water will consist of measuring four parameters: radioactivity, volatile organics, specific conductivity, and pH. The Energy Systems procedures specified in Table E-1 will be followed with some modification, as described below.

Radioactivity will be measured using two separate meters: a survey meter with a pancake Geiger tube for determining beta and gamma activity and a scintillation counter with a zinc sulfide window for determining alpha activity. The meters will be passed over the surface area of the sample and the highest readings will be recorded.

Screening for organic vapors will be conducted by placing enough development water in a clean 1-gal glass or metal container to half fill it. Aluminum foil will be placed over the mouth of the container to make an airtight seal. The sample will then be incubated for 1 h at 70°F or the ambient temperature, whichever is higher. Organic vapors in the headspace of the sample container will be measured by puncturing the aluminum foil and inserting the probe of an organic vapor analyzer. This instrument will have a photoionization detector with a 10.2 eV lamp and will be calibrated to isobutylene. The highest reading of the headspace vapors will be recorded.

3.2 CONTAINERIZATION FOR WASTE DISPOSAL

If the development water from a well exceeds any one of the field screening limits, it will be containerized at the drill site and labeled with the contents (development water), well number, and date. The water will then be handled according to Y-12 Plant waste management procedures.

An exception to this may be made if the development water only exceeds the organic vapor limits. Weather permitting, the water may be passively treated at the drill site by leaving the containers open for aeration to reduce the organic vapor content. Such treatment shall not exceed 5 working days and shall not be conducted over weekends without supervision. If reanalysis following aeration indicates the development water continues to exceed the organic vapor limits, it must be containerized and handled as above.

3.3 BMP FOR DRILL-SITE DISPOSAL

Development water that does not exceed the field-screening criteria will be disposed of at the drill site if practicable. BMP dictates that the water be disposed in such a way as to not cause erosion or enter nearby surface water or storm sewers. Precautions shall therefore be taken to ensure that development water pumped onto the ground or released from containers at the drill site either infiltrates or evaporates at the site and in no case runs off into surface waters, ephemeral drainages, or storm sewers. Development water that does not exceed the field screening (i.e., within a drainage, near a storm sewer, etc.) will be transported to a designated location and disposed as clean water following BMP.

3.4 DOCUMENTATION

The results of all field-screening analyses and a description of the disposition of the development water from each well will be documented on a Development Water Field Screening/Disposal Sheet an example of which is attached. These forms will be completed for each well by the on-site geologist who conducts the screening. A copy of each form will be provided to the Project Manager of the GWPP within 2 days of its completion.

APPENDIX D
DISPOSAL AND SCREENING RECORDS

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1012 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.8*	Date/Time	8-27-93/1055	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.3 ppm	Date/Time	8-27-93/1053	(<5.0 ppm above background)
Beta/Gamma	30 cpm/60 cpm	Date/Time	9-3-93/1200	(<100 cpm above background)
Alpha	0 cpm/20 cpm	Date/Time	8-27-93/1007	(<500 cpm above background)

*Elevated pH reading due to cement fragments in cuttings.

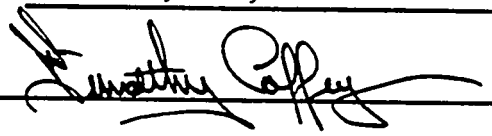
Weather: 8-27-93: Clear and warm. 9-3-93: Clear with light rain.

Temp.: 8-27-93: Mid-70's to mid-80's F. 9-3-93: Mid 70's to mid-80's F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 9-3-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1016 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe.
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.2*	Date/Time	8-26-93/1030	(4.0 - 10.5)
Organic vapors	0.0ppm/0.3 ppm	Date/Time	8-25-93/1059	(<5.0 ppm Above Background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	8-24-93/0935	(<100 cpm Above Background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm Above Background)

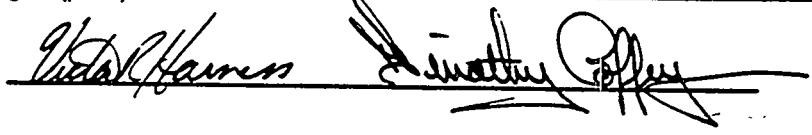
*Elevated pH reading due to cement fragments in the cuttings.

Weather: Refer to field logbooks Temp.: Refer to field logbooks

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Harness/Timothy Coffey/Victor Harness - SAIC

Signature:  Date: 8-26-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1018 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.8*	Date/Time	9-14-93/1134	(4.0 - 10.5)
Organic vapors	0.0ppm/0.4 ppm	Date/Time	9-10-93/1055	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	9-14-93/1027	(<100 cpm above background)
Alpha	10 cpm/10 cpm	Date/Time	All Readings	(<500 cpm above background)

*Elevated pH reading due to cement fragments in the cuttings.

Weather: Refer to field logbooks Temp.: Refer to field logbooks

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Harness/Timothy Coffey - SAIC

Signature: Victor Harness Timothy Coffey Date: 9-14-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1019 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	10.4	Date/Time	9-9-93/1329	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	9-9-93/1329	(<5.0 ppm above background)
Beta/Gamma	60 cpm/90 cpm	Date/Time	9-9-93/1248	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	9-9-93/1248	(<500 cpm above background)

Weather: Overcast, light drizzle Temp.: Low- to upper-70's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Hamess - SAIC

Signature: Victor R Hamess Date: 9-9-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1020 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.4	Date/Time	8-23-93/1117	(4.0 - 10.5)
Organic vapors	0.0ppm/0.2 ppm	Date/Time	8-20-93/1515	(<5.0 ppm Above Background)
Beta/Gamma	60 cpm/70 cpm	Date/Time	8-20-93/1423	(<100 cpm Above Background)
Alpha	20 cpm/20 cpm	Date/Time	8-23-93/1020	(<500 cpm Above Background)

Weather: 8-20-93: Mostly cloudy, occasional light rain. 8-23-93: clear and warm.

Temp.: 8-20-93: Upper-80's to low-90's F. 8-23-93: Mid-70's to mid-80's.

DISPOSITION: Drill-site Disposal X

Containerization (Labeled?) y / n _____

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Harness/Timothy Coffey - SAIC

Signature: Victor L Harness Timothy Coffey

Date: 8-23-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1026 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	9.1	Date/Time	9-15-93/1041	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	All Readings	(<5.0 ppm above background)
Beta/Gamma	40 cpm/80 cpm	Date/Time	9-15-93/0950	(<100 cpm above background)
Alpha	0 cpm/20 cpm	Date/Time	9-16-93/1329	(<500 cpm above background)

Weather: 9-15-93: cloudy, rain; 9-16-93: cloudy, rain

Temp.: 9-15-93: low-70's F; 9-16-93: low- to upper-60's F

DISPOSITION: Drill-site Disposal X

Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey/Victor Harness - SAIC

Signature: Timothy Coffey / Victor R. Harness

Date: 9-17-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1047/CO-1 SITE: Bear Creek Road

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.9	Date/Time	12-13-93/1640	(4.0 - 10.5)
Organic vapors	0.0ppm/2.2 ppm	Date/Time	12-13-93/1738	(<5.0 ppm above background)
Beta/Gamma	40 cpm/60 cpm	Date/Time	12-13-93/1552	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	12-13-93/1550	(<500 cpm above background)

Weather: Mostly cloudy Temp.: Low-40's to low-50's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings deposited in cuttings/return water pit.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 12-16-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1047A/CO-3 SITE: Bear Creek Road

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.7	Date/Time	12-17-93/1230	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.1ppm	Date/Time	12-16-93/1550	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	12-16-93/1225	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: 12-16-93: Cloudy, becoming partly cloudy. 12-17-93: Mostly cloudy, clearing.

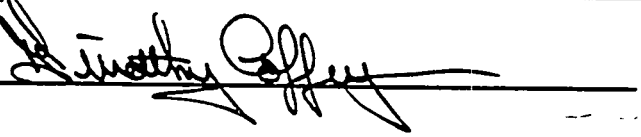
Temp.: 12-16-93: Low-40's to low-50's F. 12-17-93: Mid-40's to Mid-50's F.

DISPOSITION: Drill-site Disposal X

Containerization (Labeled?) y / n _____

Describe: Cuttings deposited in cuttings/return water pit.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: 

Date: 12-17-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1081 SITE: Oak Ridge Sludge Farm

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	12.2*	Date/Time	1-27-94/1521	(4.0 - 10.5)
Organic vapors	0.0 ppm/3.6ppm	Date/Time	1-28-94/1150	(<5.0 ppm above background)
Beta/Gamma	30 cpm/40 cpm	Date/Time	1-28-94/1048	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

*Elevated pH reading due to cement fragments in cuttings composite.

Weather: 1-27-94: Cloudy with scattered rain showers
1-28-94: Cloudy and breezy, clearing

Temp.: 1-27-94: low- to upper-40s F.
1-28-94: Mid-40s to low-50s F.

DISPOSITION: Drill-site Disposal X

Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey

Date: 1-28-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1083 SITE: Oak Ridge Sludge Farm

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	Century-Foxboro OVA Model 128 HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	12.1*	Date/Time	2-2-94/1718	(4.0 - 10.5)
Organic vapors	0.0 ppm/18.0 ppm**	Date/Time	2-3-94/1323	(<5.0 ppm above background)
Beta/Gamma	30 cpm/50 cpm	Date/Time	2-3-94/1212	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

*High pH reading due to cement fragments in cuttings composite.

Weather: 2-2-94: Clear and breezy; 2-3-94: Clear and breezy

Temp.: 2-2-94: Upper teens to low 30's F. 2-3-94: Low 20's to upper 40's F.

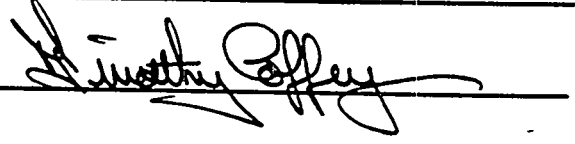
DISPOSITION: Drill-site Disposal ____ Containerization X

(Labeled?) (y) n

**Initial and subsequent headspace analyses exceeded action levels for unknown reason. See below for method of disposal.

Describe: Cuttings placed in 55-gal USDOT-approved, open-top drums and then sealed pending disposal by HSEA.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 2-4-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1097 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	8.5	Date/Time	9-8-93/1021	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	9-8-93/1021	(<5.0 ppm above background)
Beta/Gamma	60 cpm/90 cpm	Date/Time	9-8-93/0938	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	9-8-93/0938	(<500 cpm above background)

*Elevated pH reading due to cement fragments.

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings disposed of on ground.

Onsite Geologist (print): Victor R. Harness TN0025

Signature: Victor R Harness Date: 9-8-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 42-DC SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	11.1*	Date/Time	10-5-93/1428	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	10-4-93/1315	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	10-5-93-1339	(<100 cpm above background)
Alpha	0 cpm/20 cpm	Date/Time	10-4-93/1138	(<500 cpm above background)

*Elevated pH due to cement fragments in returns.

Weather: 10-4-93 Partly Clouded / 10-5-93 Partly Clouded to overcast

Temp.: 10-4-93 50-60's°F / 10-5-93 50's°F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Harness - SAIC

Signature: Victor R Harness Date: 10-5-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-06 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

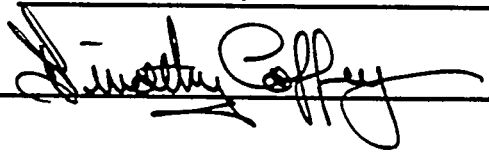
pH	10.5	Date/Time	3-3-94/1316	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.8ppm	Date/Time	3-3-94/1314	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	3-3-94/1217	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-3-94/1215	(<500 cpm above background)

Weather: Partly cloudy, clearing; windy in p.m. Temp.: Low-30's to low-50's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-3-94

94-001MS(I)/031494

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-07 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

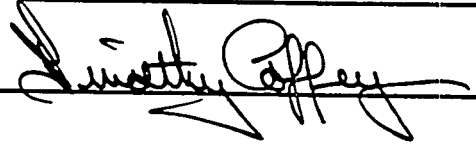
pH	10.3	Date/Time	3-7-94/1220	(4.0 - 10.5)
Organic vapors	0.0 ppm/3.4 ppm	Date/Time	3-7-94/1218	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	3-7-94/1119	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-7-94/1117	(<500 cpm above background)

Weather: Clear to partly cloudy. Temp.: Mid-30's to mid-60's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-7-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-09 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.0*	Date/Time	3-9-94/1112	(4.0 - 10.5)
Organic vapors	0.0 ppm/2.0 ppm	Date/Time	3-9-94/1110	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	3-9-94/1024	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-9-94/1022	(<500 cpm above background)

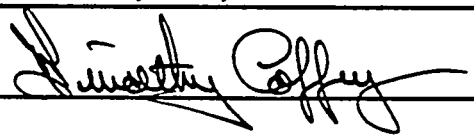
*Elevated pH reading possibly from residual cement "rind" on borehole walls after first stage cementing, however, no obvious cement fragments in cuttings composite.

Weather: Cloudy with light rain showers Temp.: Mid-30's to mid-40's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-9-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-10 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.7*	Date/Time	3-17-94/1223	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	3-17-94/1221	(<5.0 ppm above background)
Beta/Gamma	40 cpm/60 cpm	Date/Time	3-17-94/1112	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-17-94/1010	(<500 cpm above background)

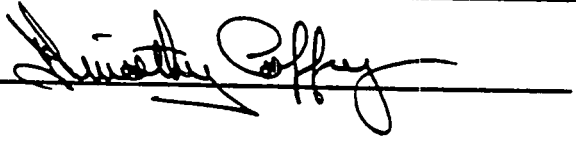
*Elevated pH reading probably due to cement "rind" on borehole wall after first-stage cementing, however, no cement cuttings observed in cuttings composite.

Weather: Clear Temp.: Low-30's to mid-50's F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-17-94

94-001MS(J)/032994

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-14 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

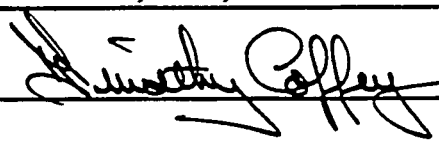
pH	9.8	Date/Time	3-21-94/1559	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	3-21-94/1557	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	3-21-94/1455	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-21-94/1453	(<500 cpm above background)

Weather: Cloudy with intermittent rain and thunderstorms Temp.: Mid-40's to mid-60's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-21-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-15 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

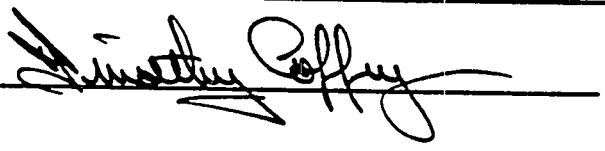
pH	7.7	Date/Time	3-18-94/1351	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	3-18-94/1349	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	3-18-94/1247	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-18-94/1245	(<500 cpm above background)

Weather: Cloudy and rainy a.m., clearing in p.m. Temp.: Low-40's to upper-60's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-18-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-17 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

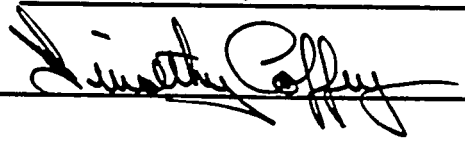
pH	9.2	Date/Time	4-18-94/1158	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.1 ppm	Date/Time	4-18-94/1156	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	4-18-94/1052	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	4-18-94/1050	(<500 cpm above background)

Weather: Clear and warm Temp.: Low 40's to upper 70's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 4-18-94

94-001MS(L)/042694

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-18 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.5	Date/Time	4-20-94/1444	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	4-19-94/1208	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	4-20-94/1336	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: 4-19-94: Clear and pleasant; 4-20-94: Clear and warm

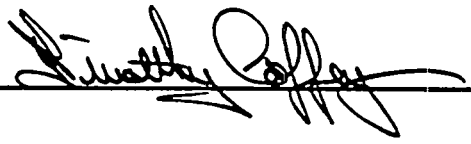
Temp.: 4-19-94: Low-50's to low 70's F.; 4-20-94: Low-50's to Low-80's F.

DISPOSITION: Drill-site Disposal X

Containerization (Labeled?) y / n _____

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: 

Date: 4-20-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-19 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.1*	Date/Time	3-25-94/1222	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.3 ppm	Date/Time	3-25-94/1220	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	3-25-94/1053	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-25-94/1051	(<500 cpm above background)

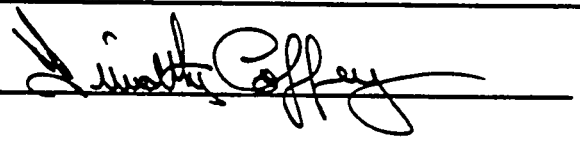
*High pH reading due to cement fragments in cuttings composite.

Weather: Cloudy with light rain. Temp.: Mid- to upper-40's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-25-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-22 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

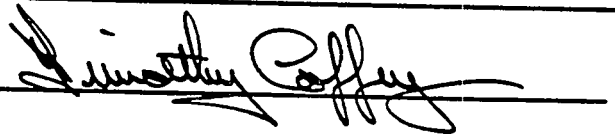
pH	8.6	Date/Time	5-12-94/1136	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	5-12-94/1134	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	5-12-94/1028	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-12-94/1026	(<500 cpm above background)

Weather: Partly cloudy, breezy Temp.: Low-50's to low-70's °F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-12-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-23 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

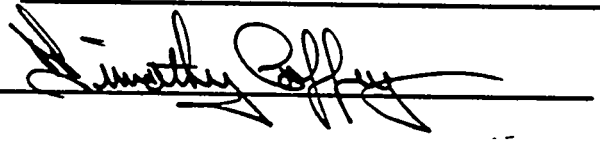
pH	9.1	Date/Time	3-29-94/1500	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	3-29-94/1457	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	3-29-94/1355	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-29-94/1352	(<500 cpm above background)

Weather: Clear to partly cloudy, windy. Temp.: Mid-30's to mid-50's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-29-94

94-001MS(K)/040594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-35 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.3	Date/Time	4-12-94/1216	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	4-12-94/1214	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	4-12-94/1110	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	4-12-94/1108	(<500 cpm above background)

Weather: Mostly cloudy with scattered light rain Temp.: Upper-50's to upper-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface. Soil contaminated by oil leak on dozer placed in plastic bags and transported and placed in USDOT-approved drum housed at Exxon Nuclear Site staging area.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 4-12-94

94-001MS(K)/070194

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-47 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

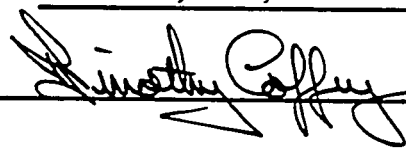
pH	9.0	Date/Time	3-25-94/1452	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.3 ppm	Date/Time	3-25-94/1449	(<5.0 ppm above background)
Beta/Gamma	60 cpm/90 cpm	Date/Time	3-25-94/1358	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	3-25-94/1356	(<500 cpm above background)

Weather: Cloudy with rain, clearing in p.m. Temp.: Mid-40's to upper-50's F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 3-25-94

94-001MS(K)/040594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BC-63 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

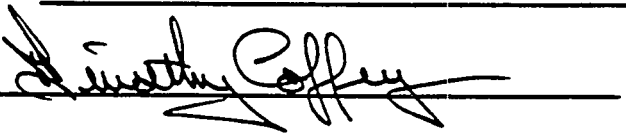
pH	8.6	Date/Time	5-3-94/1352	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	5-3-94/1350	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	5-3-94/1245	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-3-94/1243	(<500 cpm above background)

Weather: Cloudy with rain starting mid-day, sometimes heavy. Temp.: Low- to mid-50's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-3-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-01 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.1	Date/Time	5-5-94/1628	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	5-5-94/1625	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	5-5-94/1544	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-5-94/1542	(<500 cpm above background)

Weather: Partly to mostly cloudy Temp.: Mid-50's to mid-60's °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-5-94

94-001MS(M)/052694

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-02 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.9	Date/Time	4-15-94/1109	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.5 ppm	Date/Time	4-15-94/1106	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	4-15-94/1002	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	4-15-94/1000	(<500 cpm above background)

Weather: Cloudy, late a.m. T-storms Temp.: Mid-50's to low-60's F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 4-15-94

94-001MS(L)/042294

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-03 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

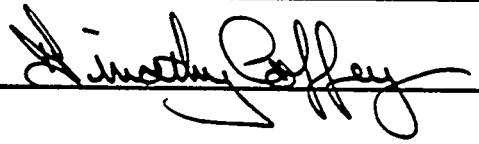
pH	10.2	Date/Time	5-16-94/1511	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.8 ppm	Date/Time	5-16-94/1509	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	5-16-94/1417	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-16-94/1415	(<500 cpm above background)

Weather: Clear Temp.: Upper-60's to upper-70's °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-16-94

94-001MS(O)/081594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-04 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	Century-Foxboro OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

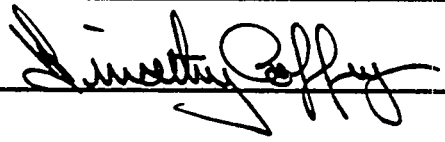
pH	10.4	Date/Time	6-21-94/1507	(4.0 - 10.5)
Organic vapors	0.0 ppm/4.4ppm	Date/Time	6-21-94/1505	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	6-21-94/1406	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	6-21-94/1404	(<500 cpm above background)

Weather: Clear, hot, and humid Temp.: Low 80s to Low 90s °F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 6-21-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-05 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model ¶2 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.9*	Date/Time	5-24-94/1149	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.8 ppm	Date/Time	5-24-94/1147	(<5.0 ppm above background)
Beta/Gamma	40 cpm/60 cpm	Date/Time	5-24-94/1043	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-24-94/1041	(<500 cpm above background)

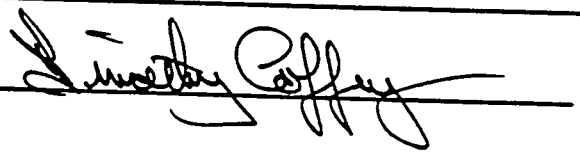
*Elevated pH reading due to cement fragments in cuttings composite.

Weather: Clear and warm. Temp.: Mid-50's to mid-80's °F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-24-94

94-001MS(P)/081594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-06 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.0*	Date/Time	5-23-94/1334	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.9 ppm	Date/Time	5-23-94/1332	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	5-23-94/1222	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-23-94/1220	(<500 cpm above background)

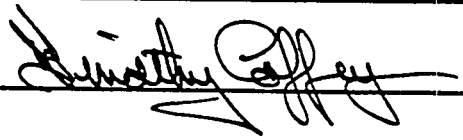
*Elevated pH reading due to cement fragments in cuttings composite.

Weather: Clear and warm. Temp.: Low-50's to low-80's °F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-23-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-07 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; with O-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.3*	Date/Time	5-17-94/1227	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.8 ppm	Date/Time	5-17-94/1225	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	5-17-94/1120	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-17-94/1118	(<500 cpm above background)

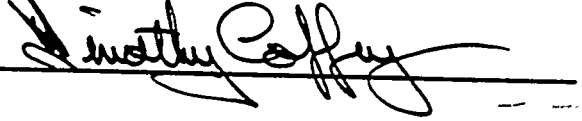
*Elevated pH reading due to cement fragments in cuttings composite.

Weather: Clear and Breezy Temp.: Mid-40's to Mid-70's F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-17-94

94-001MS(P)/081594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-08 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.8 *	Date/Time	5-16-94/1202	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.5 ppm	Date/Time	5-16-94/1200	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	5-16-94/1047	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-16-94/1045	(<500 cpm above background)

* Elevated pH reading due to cement fragments in cuttings composite from 0.0 ft to 63.7 ft BGS.

Weather: Fog early, clearing Temp.: Low-60's to upper-70's °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-16-94

94-001MS(O)/071594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-09 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

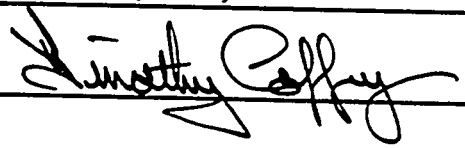
pH	9.1	Date/Time	5-13-94/1219	(4.0 - 10.5)
Organic vapors	0.0 ppm/3.4 ppm	Date/Time	5-13-94/1217	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	5-13-94/1113	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-13-94/1111	(<500 cpm above background)

Weather: Clear a.m., becoming cloudy p.m. Temp.: Upper-40's to mid-70's °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-13-94

94-001MS(N)/052694

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-10 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.1	Date/Time	5-9-94/1440	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.8 ppm	Date/Time	5-9-94/1438	(<5.0 ppm above background)
Beta/Gamma	60 cpm/90 cpm	Date/Time	5-9-94/1330	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-9-94/1328	(<500 cpm above background)

Weather: Clear Temp.: Mid-40s to mid-70s °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-9-94

94-001MS(N)/071594

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-11 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.6	Date/Time	5-10-94/1515 (4.0 - 10.5)
Organic vapors	0.0 ppm/0.5 ppm	Date/Time	5-10-94/1513 (<5.0 ppm above background)
Beta/Gamma	60 cpm/60 cpm	Date/Time	5-10-94/1409 (<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-10-94/1407 (<500 cpm above background)

Weather: Clear, becoming partly cloudy in p.m. Temp.: Low-50's to mid-70's F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-10-94

94-001MS(N)/053194

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-13 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	8.6	Date/Time	5-6-94/1319	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	5-6-94/1317	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	5-6-94/1215	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-6-94/1213	(<500 cpm above background)

Weather: Clear to partly cloudy Temp.: Low-50's to low-70's °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-6-94

94-001MS(N)/052694

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-16 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.2*	Date/Time	4-14-94/1145	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	4-14-94/1142	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	4-14-94/1030	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	4-14-94/1028	(<500 cpm above background)

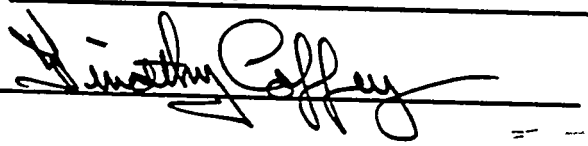
*High pH reading due to cement fragments in cuttings composite.

Weather: Clear and pleasant Temp.: Low-50's to low-80's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 4-14-94

94-001MS(L)/070194

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. BCU-20 SITE: Exxon Nuclear Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

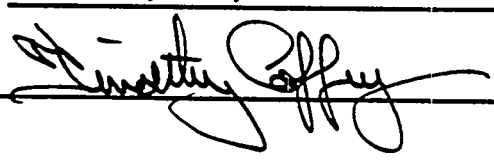
pH	9.1	Date/Time	5-4-94/1333	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	5-4-94/1331	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	5-4-94/1228	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-4-94/1226	(<500 cpm above background)

Weather: Cloudy Temp.: Low-50's to low-60's °F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-4-94

94-001MS(M)/052694

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-110 SITE: Grassy Creek Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	12.3*	Date/Time	1-11-94/1218	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.8 ppm	Date/Time	1-11-94/1215	(<5.0 ppm above background)
Beta/Gamma	40 cpm/70 cpm	Date/Time	1-11-94/1102	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	1-11-94/1058	(<500 cpm above background)

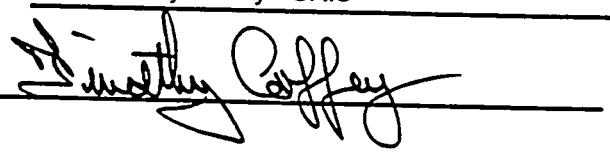
*Elevated pH reading due to cement fragments in cuttings composite.

Weather: Cloudy and cool, rain developing in p.m. Temp.: Mid 20s to mid-30s F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 1-11-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-114 SITE: Bear Creek Road

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	13.4*	Date/Time	1-14-94/1150	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	1-14-94/1148	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	1-14-94/1047	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All readings	(<500 cpm above background)

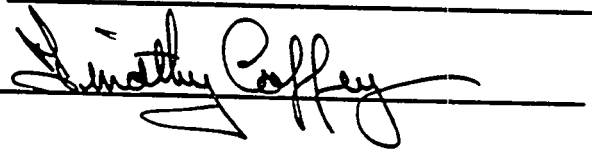
*High pH reading due to cement fragments in cuttings composite.

Weather: Snow flurries early; clearing, windy, and cold Temp.: Low 20s to low-30s F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 1-14-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-570 SITE: Chestnut Ridge, South Side

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	12.5*	Date/Time	5-18-94/1620	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.5 ppm	Date/Time	5-18-94/1618	(<5.0 ppm above background)
Beta/Gamma	40 cpm/50 cpm	Date/Time	5-18-94/1535	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-18-94/1533	(<500 cpm above background)

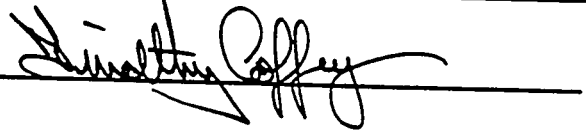
*Elevated pH reading due to abundant cement fragments (and dust) in cuttings composite.

Weather: Partly cloudy. Temp.: Low-70's °F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y / n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-18-94

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-04 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.0*	Date/Time	10-14-93/1123	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	10-14-93/1119	(<5.0 ppm above background)
Beta/Gamma	60 cpm/70 cpm	Date/Time	11-14-93/1125	(<100 cpm above background)
Alpha	0 cpm/10 cpm	Date/Time	11-14-93/11	(<500 cpm above background)

*Elevated pH due to cement fragments in cuttings composite

Weather: 10-12-93: Overcast. 10-14-93: Partly cloudy.

Temp.: 10-12-93: Upper 50s °F 10-14-93: Low- to mid-50s °F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Harness - SAIC

Signature: Victor L Harness

Date: 10-14-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-05 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.6*	Date/Time	11-2-93/1141	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.1 ppm	Date/Time	11-2-93/1140	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	11-2-93/1222	(<100 cpm above background)
Alpha	10 cpm/10 cpm	Date/Time	10-29-93/1355	(<500 cpm above background)

*Elevated pH reading due to cement fragments in cuttings composite.

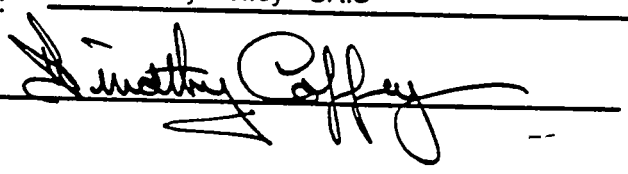
Weather: 10-29-93: Overcast, threatening rain. 11-2-93: Clear with high, thin clouds.

Temp.: 10-29-93: Low-30's to low-40's F. 11-2-93: Low-30's to low-40's F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: 

Date: 11-2-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-06 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	10.0	Date/Time	10-27-93/1121	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	10-27-93/1120	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	10-27-93/1013	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: 10-26-93: Overcast a.m., becoming clear and mild.
10-27-93: Foggy a.m., becoming partly cloudy.

Temp.: 10-26-93: Upper-50's to upper-60's F.
10-27-93: Upper-40's to mid-60's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 10-27-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-07 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS. (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	9.3	Date/Time	10-22-93/1047	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	All Readings	(<5.0 ppm above background)
Beta/Gamma	40 cpm/40 cpm	Date/Time	10-22-93/1310	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: Partly to mostly cloudy, clearing in p.m. Temp.: Upper-40's to mid-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 10-22-93

94-001MS(D)/110893

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-08 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.5	Date/Time	10-19-93/1124	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.6 ppm	Date/Time	10-20-93/1407	(>5.0 ppm above background)
Beta/Gamma	40 cpm/70 cpm	Date/Time	10-20-93/1130	(>100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(>500 cpm above background)

*Elevated pH reading due to cement fragments.

Weather: 10-19-93: Low, dense clouds early; clear to partly cloudy. 10-20-93: Mostly overcast, occasionally partly cloudy.

Temp.: 10-19-93: Low- to upper-60's F. 10-20-93: Low-60's to low 70's F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor R. Harness/Timothy Coffey - SAIC

Signature: Victor R. Harness Timothy Coffey Date: 10-20-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-09 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.7*	Date/Time	10-8-93/1500	(4.0 - 10.5)
Organic vapors	10.0 ppm/10.0 ppm	Date/Time	All Readings	(<5.0 ppm above background)
Beta/Gamma	60 cpm/90 cpm	Date/Time	10-7-93/0915	(<100 cpm above background)
Alpha	10 cpm/60 cpm	Date/Time	10-7-93/1052	(<500 cpm above background)

*Elevated pH readings due to cement fragments in cuttings composite.

Weather: 10-7-93: Mostly clear and warm. 10-8-93: Partly cloudy.

Temp.: 10-7-93: Low-70's to low-80's F. 10-8-93: Mid-70's F.

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Victor Harness - SAIC

Signature: Victor R Harness

Date: 10-8-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. M-10 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	10.2	Date/Time	9-30-93/1316	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	9-28-93/1457	(<5.0 ppm above background)
Beta/Gamma	30 cpm/60 cpm	Date/Time	9-30-93/1043	(<100 cpm above background)
Alpha	20 cpm/20 cpm	Date/Time	9-30-93/1043	(<500 cpm above background)

Weather: 9-28-93: clear and cool
9-30-93: clear and cool

Temp.: 9-28-93: low-70's F
9-30-93: low-40's to mid-50's F

DISPOSITION: Drill-site Disposal X

Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey/Victor Harness - SAIC

Signature: Timothy Coffey Victor Harness

Date: 9-30-93

94-001MS(C)/102793

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. OR-06 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	Not Measured	Date/Time	-NA-	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm*	Date/Time	All Readings	(<5.0 ppm above background)
Beta/Gamma	60 cpm/100 cpm	Date/Time	11-5-93/1000	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

*Measured directly from excavated cuttings as well as the sides and floor of excavation.

Weather: Overcast with scattered showers Temp.: Low- to upper-50's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Soil and weathered rock fragments generated during excavation of shallow pit were screened, deemed "clean," and used to refill the excavation.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 11-5-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. OR-07 SITE: Bear Creek Valley at Hagwood Road

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.2	Date/Time	12-2-93/1152	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	12-2-93/1150	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	12-2-93/1051	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	12-2-93/1049	(<500 cpm above background)

Weather: Mostly clear and cool Temp.: Low-40s to low-50s °F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

On-site Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 12-2-93

94-001MS(G)/010694

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. OR-08 SITE: Bear Creek Valley at Hagwood Road

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.6	Date/Time	12-6-93/1317	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.7 ppm	Date/Time	12-6-93/1315	(<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	12-6-93/1204	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	12-6-93/1201	(<500 cpm above background)

Weather: Cloudy/foggy a.m., becoming mostly clear p.m. Temp.: Low-40's to low 50's F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 12-6-93

94-001MS(G)/120993

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. OR-09 SITE: Bear Creek Valley at Hagwood Road

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101/ Foxboro-Century OVA Model 108
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Readings):

pH	9.4	Date/Time	11-12-93/1235	(4.0 - 10.5)
Organic vapors	0.0 ppm/10.0 ppm*	Date/Time	11-12-93/1233	(<5.0 ppm above background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	11-12-93/1130	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	11-12-93/1132	(<500 cpm above background)

*Cuttings re-sealed and re-tested with the following results: 0.0 ppm (HNu HW-101), 3.7 ppm (OVA M-108). Date and time: 11-12-93/1432.

Weather: Overcast to mostly cloudy. Temp.: Low-40's to mid-60's F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 11-12-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. OR-21 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

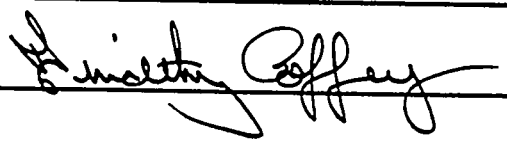
pH	10.1	Date/Time	11-10-93/1210	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	11-10-93/1208	(<5.0 ppm above background)
Beta/Gamma	40 cpm/60 cpm	Date/Time	11-10-93/1051	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	11-10-93/1053	(<500 cpm above background)

Weather: Clear. Temp.: Low-30's to mid-50's F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 11-10-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. OR-22 SITE: Gum Branch Road Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

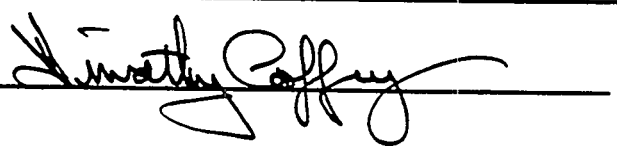
pH	9.4	Date/Time	11-8-93/1638	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.3 ppm	Date/Time	11-8-93/1636	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	11-8-93/1510	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	11-8-93/1512	(<500 cpm above background)

Weather: Clear and mild. Temp.: Low-40's to low-50's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 11-8-93

94-001MS(E)/010694

APPENDIX E
EQUIPMENT DECONTAMINATION SUMMARIES

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1047/CO-1

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Bear Creek Road

DATE: START: 12-13-93

DECONTAMINATION CREW Randy Phillips

FINISH: 12-16-93

Hubert Hall

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	12-9-93	12-13-93	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	12-9-93	12-13-93	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	12-9-93	12-13-93	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	See comments	12-15-93	Pass	TJC
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Casings: 7.0-in. OD/8.5-in. OD	See above			

COMMENTS: An 18.2-ft section of 8.5-in. OD steel casing was brought to driller's pipeyard sand-blasted and steam-cleaned probably during July, 1993.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1047A/CO-3

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Bear Creek Road

DATE: START: 12-16-93

DECONTAMINATION CREW Randy Phillips/Hubert Hall

FINISH: 12-22-93

Jeff Monger

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	12-15-93	12-16-93	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	12-15-93	12-16-93	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	12-15-93 12-16-93	12-16-93	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	12-16-93*	12-16-93	Pass	TJC
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Additional drill rods (2)	12-17-93	12-17-93	Pass	TJC

COMMENTS: * Surface/conductor casing used to keep upper portion of borehole intact while reaming original borehole installed during P&A activities.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1081

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Oak Ridge Sludge Farm

DATE: START: 1-27-94

DECONTAMINATION CREW H. Hall/R. Phillips

FINISH: 2-3-94

J. Monger/M. Baker

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	*	1-27-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	1-27-94	1-27-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	1-27-94	1-27-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Second section of washover pipe	1-27-94	1-27-94	Pass	TJC

COMMENTS: * Drill rig (Ingersoll-Rand T4W) steam-cleaned on unknown date. Drill rig scanned and "green-tagged" by T.E. Irwin (ORNL) on 12-14-93.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1083

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Oak Ridge Sludge Farm

DATE: START: 2-2-94

DECONTAMINATION CREW H. Hall/R. Phillips
J. Monger

FINISH: 2-4-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	2-1-94	2-2-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	2-1-94	2-2-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	2-1-94	2-2-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-06

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-2-94

DECONTAMINATION CREW R. Phillips/H. Hall
J. Monger

FINISH: 3-7-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-1-94	3-2-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-1-94	3-2-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-1-94	3-2-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-07

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-4-94

DECONTAMINATION CREW J. Monger/D. Williford

FINISH: 3-9-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-3-94	3-4-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-3-94	3-4-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-3-94	3-4-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-09

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-8-94

DECONTAMINATION CREW R. Phillips/J. Monger/B. Parks

FINISH: 3-16-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-7-94	3-8-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-7-94	3-8-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-7-94	3-8-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. BC-10
EQUIPMENT DECONTAMINATION INSPECTION SUMMARY	INSTALLATION ☐ P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-16-94

DECONTAMINATION CREW R. Phillips/H. Hall
J. Monger

FINISH: 3-22-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-9-94	3-16-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-9-94	3-16-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-9-94	3-16-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-14

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-21-94

DECONTAMINATION CREW R. Phillips/H. Hall
J. Monger/D. Williford

FINISH: 3-23-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-18-94	3-21-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-18-94	3-21-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-18-94*	3-21-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
*8 3/4-in. tricone bit/subadapter assembly	3-21-94	3-21-94	Pass	TJC

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-15

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-18-94

DECONTAMINATION CREW R. Phillips/H. Hall
J. Monger

FINISH: 3-22-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-17-94	3-18-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-17-94	3-18-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-17-94	3-18-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-17

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 4-18-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 4-20-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	4-15-94	4-18-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	4-15-94	4-18-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	4-15-94	4-18-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-18

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 4-19-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 4-22-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	4-18-94	4-19-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	4-18-94	4-19-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	4-18-94	4-19-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-19

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-23-94

DECONTAMINATION CREW R. Phillips/J. Monger
D. Williford

FINISH: 3-31-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-22-94	3-23-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-22-94	3-23-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-22-94*	3-23-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
*6-1/8-in. bit/subadapter assembly	3-18-94	3-23-94	Pass	TJC

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-22

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-11-94

DECONTAMINATION CREW H. Hall/J. Monger

FINISH: 5-16-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	511-94	5-12-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-11-94	5-12-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-11-94	5-12-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-23

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-29-94

DECONTAMINATION CREW R. Phillips/H. Hall
J. Monger

FINISH: 3-31-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-25-94/ 3-29-94	3-29-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-25-94/ 3-29-94	3-29-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-25-94/ 3-29-94*	3-29-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
*8 3/4 in. bit and subadapter	3-22-94	3-29-94	Pass	TJC

COMMENTS: Steam-cleaner hose broke on 3-25-94, decon completed on 3-29-94.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-35

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 4-11-94

DECONTAMINATION CREW L. Jones

FINISH: 4-14-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	4-8-94	4-11-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	4-8-94	4-11-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	4-8-94*	4-11-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
*6 1/8-in. diameter tricone bit	3-29-94	4-11-94	Pass	TJC

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-47

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-25-94

DECONTAMINATION CREW R. Phillips/H. Hall

FINISH: 3-31-94

J. Monger

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-25-94	3-25-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	3-25-94	3-25-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-25-94	3-25-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BC-63

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-3-94

DECONTAMINATION CREW J. Monger/D. Williford

FINISH: 5-5-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-2-94	5-3-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-2-94	5-3-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-2-94	5-3-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG _____ (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-01

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 3-30-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 5-10-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand T4W (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	3-30-94	3-30-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	3-30-94	3-30-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	3-30-94	3-30-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Drill Rig: Ingersoll-Rand XL-750*	5-4-94	5-5-94	Pass	TJC
Drilling Tools/Down-hole tools	5-4-94	5-5-94	Pass	TJC

COMMENTS:

* This drill rig only used for intrusive work.

P&A of "open interval" performed 3-30-94 through 3-31-94. P&A of cased interval delayed until 5-5-94 through 5-10-94 because wet weather made access difficult.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-02

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 4-14-94

DECONTAMINATION CREW R. Phillips/H. Hall
D. Williford

FINISH: 4-18-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	4-14-94	4-14-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	4-14-94	4-14-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	4-14-94	4-14-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-03

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-16-94

DECONTAMINATION CREW H. Hall/J. Monger

FINISH: 5-20-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	516-94	5-16-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-16-94	5-16-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-16-94	5-16-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-04

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 6-21-94

DECONTAMINATION CREW L. Jones

FINISH: 6-23-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	6-17-94	6-21-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	6-17-94	6-21-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	6-17-94	6-21-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-05

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-24-94

DECONTAMINATION CREW R. Phillips/J. Monger/R. Collins

FINISH: 5-27-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-23-94	5-24-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-23-94	5-24-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-23-94	5-24-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-06

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-23-94

DECONTAMINATION CREW R. Phillips/H. Hall/J. Monger

FINISH: 5-25-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-19-94	5-23-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-19-94	5-23-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-19-94	5-23-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
8 3/4-in. dia. bit/subadapter assembly	5-23-94	5-23-94	Pass	TJC

COMMENTS:

94-001MS(P)/081594

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-07

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-17-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 5-23-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-16-94	5-17-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-16-94	5-17-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-16-94	5-17-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-08

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-13-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 5-20-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	513-94	5-16-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-13-94	5-16-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-13-94	5-16-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-09

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-13-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 5-17-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-12-94	5-13-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-12-94	5-13-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-12-94	5-13-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-10

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-9-94

DECONTAMINATION CREW H. Hall/J. Monger

FINISH: 5-11-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-6-94	5-9-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-6-94	5-9-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-6-94	5-9-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-11

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-10-94

DECONTAMINATION CREW H. Hall/J. Monger

FINISH: 5-13-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-10-94	5-10-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-10-94	5-10-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-10-94	5-10-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Section of 7.0-in. OD steel casing	5-10-94	5-10-94	Pass	TJC

COMMENTS: A section of 7.0-in. OD steel conductor casing was brought to site to be used to keep the collar of the borehole open/prevent further washout: casing was run into the borehole and removed immediately because it was too small.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-13

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 5-6-94

DECONTAMINATION CREW H. Hall/J. Monger

FINISH: 5-10-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-6-94	5-6-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-6-94	5-6-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-6-94	5-6-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
8 3/4-in. diameter bit/subadaptor assembly	5-6-94	5-6-94	Pass	TJC

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-16

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 4-13-94

DECONTAMINATION CREW R. Phillips/H. Hall
J. Monger/D. Williford

FINISH: 4-18-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	4-12-94	4-13-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	4-12-94	4-13-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	4-12-94	4-13-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. BCU-20

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Exxon Nuclear Site

DATE: START: 4-21-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 5-6-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	4-20-94	4-21-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	4-20-94	4-21-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	4-20-94	4-21-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Drill Rig: Ingersoll-Rand XL-750	5-3-94	5-4-94	Pass	TJC
Drilling Tools	5-3-94	5-4-94	Pass	TJC
Down Hole Tools	5-3-94	5-4-94	Pass	TJC

COMMENTS: Drill rig and equipment decontaminated twice because P&A of BCU-20 started on 4-21-94 was interrupted (the drill rig having been moved off site), and was re-continued after approximately 13 days.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-110

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Grassy Creek Functional Area

DATE: START: 1-10-94

DECONTAMINATION CREW Randy Phillips, Jeff Monger, Hubert Hall

FINISH: 1-13-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	12-28-93	1-10-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	12-28-93	1-10-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	12-28-93	1-10-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	-NA-	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	-NA-	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	-NA-	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Washover pipe	1-10-94	1-11-94	Pass	TJC

COMMENTS:

94-001(G)/042994

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-114

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Bear Creek Road

DATE: START: 1-14-94

DECONTAMINATION CREW Jeff Monger, Randy Phillips, Hubert Hall

FINISH: 1-24-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	1-12-94	1-14-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.	1-12-94	1-14-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	1-12-94	1-14-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				
Reaming bit on subadapter	12-28-94	1-14-94	Pass	TJC

COMMENTS:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-570

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Chestnut Ridge, South Side

DATE: START: 5-18-94

DECONTAMINATION CREW H. Hall/J. Monger/D. Williford

FINISH: 5-20-94

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	5-17-94	5-18-94	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	5-17-94	5-18-94	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	5-17-94 5-18-94*	5-18-94	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS: *Washover pipe and subadapter steam cleaned on 5-18-94, all other down-hole tools steam cleaned on 5-17-94.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-07

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Bear Creek Valley at Hagwood Road

DATE: START: 11-19-93

DECONTAMINATION CREW Randy Phillips
Hubert Hall/Greg Anderson

FINISH: 12-6-93

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	11-15-93	12-2-93	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	11-15-93	12-2-93	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	11-15-93	12-2-93	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	N/A	—	—	—
WORKOVER RIG _____ (Mast, Chassis, Cables, Hoses, Etc.)	N/A	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	N/A	—	—	—
OTHER EQUIPMENT OR REINSPECTIONS (SPECIFY)				

COMMENTS:

94-001MS(G)/042794

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. OR-08

EQUIPMENT DECONTAMINATION INSPECTION SUMMARY

INSTALLATION ☐
P&A ☒

LOCATION: Bear Creek Valley at Hagwood Road

DATE: START: 12-6-93

DECONTAMINATION CREW Randy Phillips/Hubert Hall
Russell Jones/Jeff Monger

FINISH: 12-8-93

EQUIPMENT	DECON DATE	INSPECTION DATE	INSPECTION (PASS/FAIL)	INSPECTOR'S INITIALS
DRILL RIG Ingersoll-Rand XL-750 (Mast, Chassis, Cables, Carousel, Hoses, Etc.)	12-2-93	12-6-93	Pass	TJC
DRILLING TOOLS (Pipe Wrenches, Hand Tools, Lifting Bells, Clevis, Chains, Etc.)	12-2-93	12-6-93	Pass	TJC
DOWN HOLE TOOLS (Drilling Rods, Stabilizers, Washover Pipe, Bits, Etc.)	12-2-93	12-6-93	Pass	TJC
WELL CONSTRUCTION MATERIALS (Casing, Screen, Centralizers, Etc.)	- NA -	—	—	—
WORKOVER RIG (Mast, Chassis, Cables, Hoses, Etc.)	- NA -	—	—	—
DEVELOPMENT TOOLS (Tubing, Bailers, Pumps, Etc.)	- NA -	—	—	—
OTHER EQUIPMENT OR RE-INSPECTIONS (SPECIFY)				

COMMENTS:

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