Y/TS-1215

Y-12

OAK RIDGE Y-12 PLANT

LOCKHEED MARTIN

MONITORING WELL INSPECTION AND MAINTENANCE PLAN, Y-12 PLANT, OAK RIDGE, TENNESSEE (REVISED)

September 1996

Prepared by
Environmental Management Department
Health, Safety, Environment, and
Accountability Organization

Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831
Managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
Under Contract No. DE-AC05-84OR21400

MANAGED BY
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY
96-046MS/090596
UCN-13672 (28 6-95)

DISCLAIMER

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ACRONYMS AND ABBREVIATIONS

DOE	U.S. Department of Energy
ft	feet
GWPP	Groundwater Protection Program
PVC	polyvinyl chloride

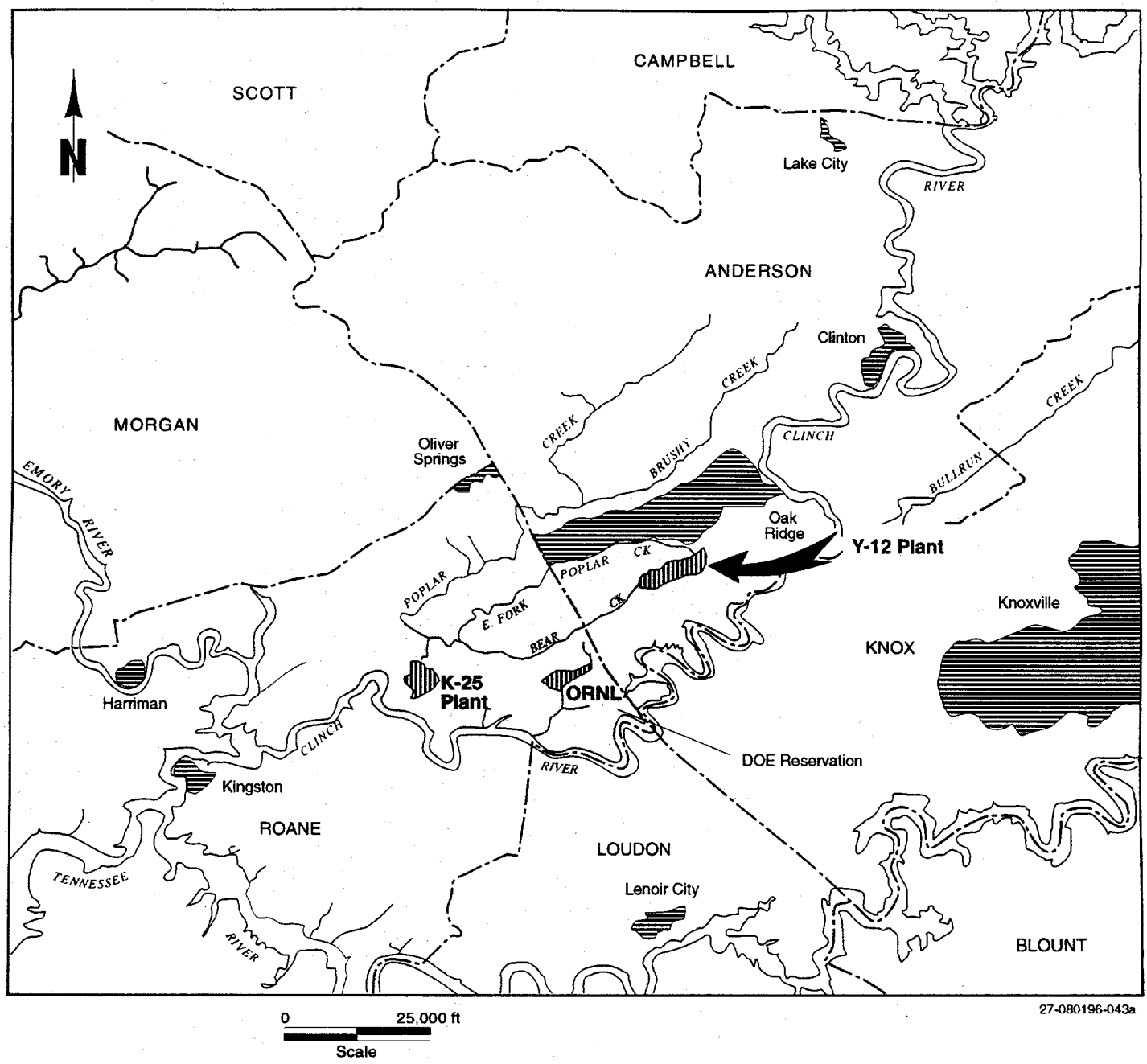
1.0 INTRODUCTION

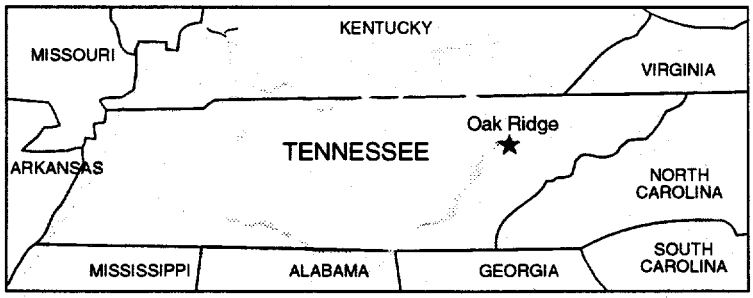
Inspection and maintenance of groundwater monitoring wells is a primary element of the Oak Ridge Y-12 Plant Groundwater Protection Program (GWPP) (AJA Technical Associates, Inc. 1996). This document is the revised groundwater monitoring well inspection and maintenance plan for the U.S. Department of Energy (DOE) Y-12 Plant in Oak Ridge, Tennessee (Figure 1-1). The plan provides a systematic program for: (1) inspecting the physical condition of monitoring wells at the Y-12 Plant and (2) identifying maintenance needs that will extend the life of each well and ensure that representative groundwater quality samples and hydrologic data are collected from the wells. Original documentation for the Y-12 Plant GWPP monitoring well inspection and maintenance program was provided in HSW, Inc. 1991a. The original revision of the plan specified that only a Monitoring Well Inspection/Maintenance Summary need be updated and reissued each year. Rapid growth of the monitoring well network and changing regulatory requirements have resulted in constant changes to the status of wells (active or inactive) listed on the Monitoring Well Inspection/Maintenance Summary. As a result, a new mechanism to track the status of monitoring wells has been developed and the plan revised to formalize the new business practices. These changes are detailed in Sections 2.4 and 2.5.

1.1 OBJECTIVES

The objectives of this plan are to:

- outline a program for the routine inspection of the physical condition of each monitoring well at the Y-12 Plant;
- identify monitoring well components (inspection items) to be inspected;
- define minimum acceptable standards for the condition of each well component;
- establish a maintenance program for those well components that do not meet these standards; and
- establish a procedure for documenting well inspections and maintenance requests.





Y-12 Plant, Oak Ridge, Tennessee

Figure 1-1. Regional Location of the Y-12 Plant

1.2 BACKGROUND

As of September 1996, 1181 monitoring wells, borings, and core holes have been installed or drilled at the Y-12 Plant in support of various groundwater quality monitoring programs, hydrologic studies, and geotechnical investigations (Jones, Thompson, and Field 1995). Of these, approximately 370 have been destroyed, abandoned, or plugged and abandoned. The balance of the monitoring wells and core holes remain in service or are scheduled for plugging and abandonment. The inspection and maintenance program described in this plan applies to existing monitoring wells and any other wells installed at the Y-12 Plant at a future date. A list of the wells to be included in the inspection program is provided in Appendix A.

2.0 TECHNICAL APPROACH

A flow-chart illustrating the Y-12 Plant monitoring well inspection and maintenance program is provided on Figure 2-1. An initial inspection of all existing monitoring wells at the Y-12 Plant was conducted between August 1991 and July 1992 (McMaster 1992). Subsequent well inspections have been performed at annual or triennial frequencies depending on the current status of the well (active or inactive). This approach will be followed for future inspections.

2.1 INSPECTION PROGRAM

Monitoring well inspections involve wells of varying age, construction, and condition. The inspection of each well will be performed in accordance with the Y-12 Plant Well Inspection Procedure (included here as Appendix B). A summary of the well construction data needed to perform each well inspection (i.e., the screen or open interval length) is provided in Appendix A. This summary is updated annually to include new wells or delete those that have been plugged and abandoned.

2.2 PERSONNEL TRAINING

The Y-12 Plant GWPP Manager or authorized designee will train the field personnel who will be performing the well inspections to familiarize them with:

- the purpose and objectives of well inspection and maintenance;
- the well inspection items;
- the well inspection procedure;
- the well-depth measurement procedure;
- the proper completion of the well inspection and maintenance documentation; and
- special conditions, which must be brought to the attention of the Y-12 Plant GWPP Manager.

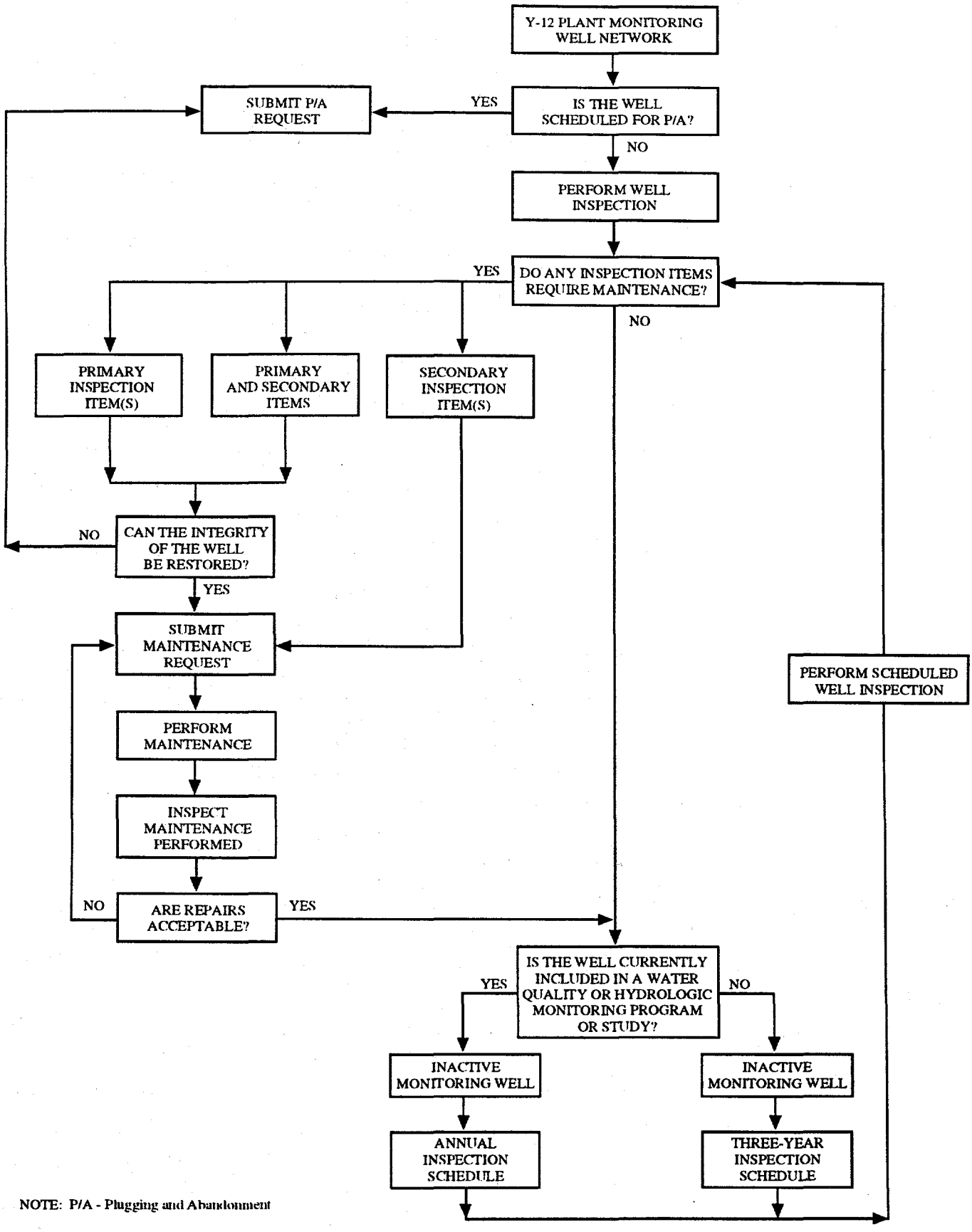


Figure 2-1. Y-12 Plant Monitoring Well Inspection and Maintenance Program

Training was provided prior to program implementation. Refresher training is required annually. Records of the well inspection training will be maintained by the Y-12 Plant GWPP Manager or designee; a copy of the form to be used to document personnel training is provided in Appendix C.

2.3 INSPECTION ITEMS

Inspection of each monitoring well includes primary and secondary inspection items. Primary inspection items are those components of a monitoring well which ensure that groundwater samples and hydrologic information collected from the wells are representative of aquifer conditions. These components include the condition of the well casing and screened or open interval of the well, well identification, and the well security. Secondary inspection items are those components of a monitoring well that generally do not affect the collection of representative groundwater quality samples or hydrologic information. Secondary inspection items include well access, the surface concrete pad, and the protective guard posts.

Field personnel performing the inspections will complete an inspection checklist for each well; a copy of the checklist is provided in Appendix D. Included on the checklist are the primary and secondary inspection items, and questions regarding the condition of each item.

2.3.1 Primary Inspection Items

Primary inspection items are:

- the condition of the well casing;
- well security;
- the condition of the screened or open interval of the well; and
- well identification.

Because these items are crucial to well integrity and representative monitoring and testing, damage to or deterioration of a primary inspection item requires immediate repair or replacement, and may result in plugging and abandonment of the well.

2.3.1.1 Well Casing

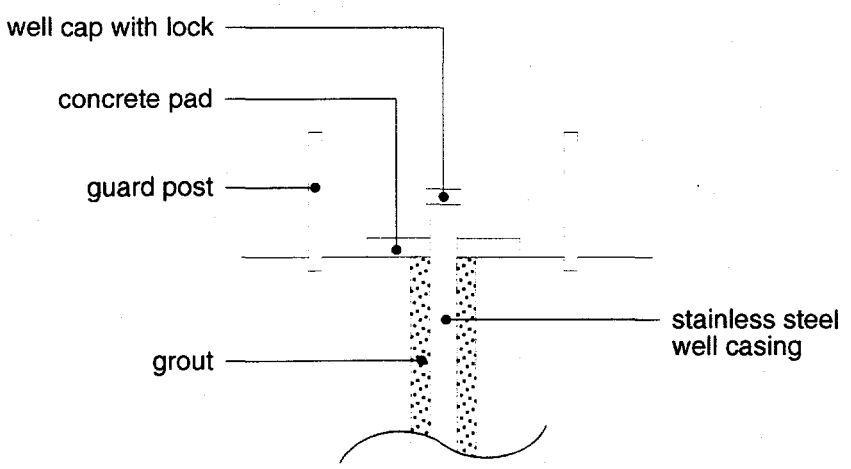
Two general types of monitoring wells are installed at the Y-12 Plant: (1) wells completed with screens and (2) wells completed with open-hole (nonscreened) intervals. Screened wells are used for monitoring groundwater in both unconsolidated and bedrock materials. Open-hole monitoring wells are used only for monitoring groundwater conditions in the bedrock zone.

Monitoring wells that are completed with screened intervals may be constructed of either stainless steel or polyvinyl chloride (PVC) well casings and screens. Wells constructed of stainless steel casing normally do not require a protective surface casing (Figure 2-2). Wells completed with PVC well casing normally require a protective surface casing to provide well security and to protect the PVC casing from damage and degradation by exposure to direct sunlight (Figure 2-3). Bedrock wells with open-hole intervals are constructed with a steel well casing and are not completed with a protective surface casing (Figure 2-4).

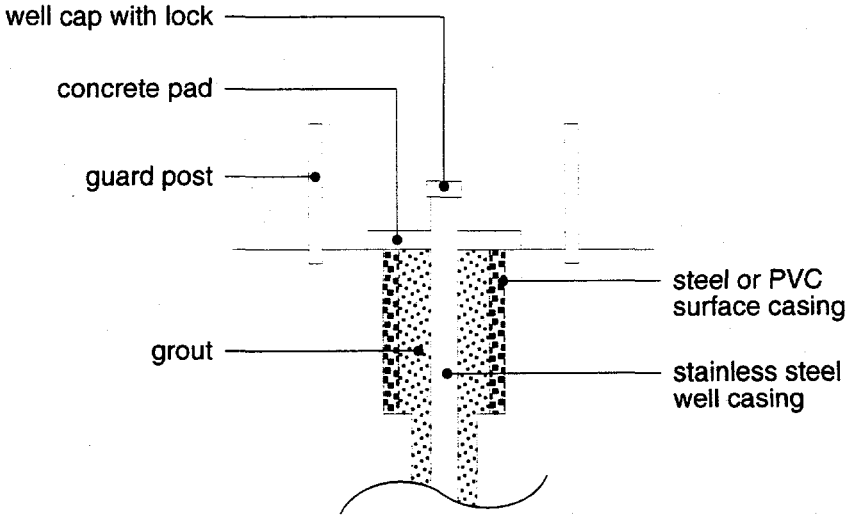
Well casings will be inspected for signs of physical deterioration that may affect the structural integrity of the well, such as cracks, corrosion, breaks, or bends. Additionally, the exposed portion of the annular grout seal will be inspected for signs of deterioration, such as a loose well casing.

In some high traffic areas of the Y-12 Plant, wells having a flush-mount design are employed (Figure 2-4). Only the uppermost part of the well casing [usually <1 foot (ft)] is exposed within the christy box. In addition to standard inspection items, flush-mount wells will be inspected to: (1) evaluate proper installation of the christy box (i.e., slightly elevated above grade with concrete sloping away from the well), (2) determine the condition of the christy box cover and fasteners, (3) determine if water has collected in the christy box, and (4) determine the condition of the water-tight cap exposed in the christy box.

Maintenance of the well casings and protective surface casings will generally involve repairs or replacement. In some cases, loose protective casings may be repaired by emplacing additional annular grout. Wells with substantial damage or deterioration of the well casing, or the annular grout seal, may require plugging and abandonment.



Unconsolidated Zone Well



Bedrock Zone Well

Note: Not To Scale

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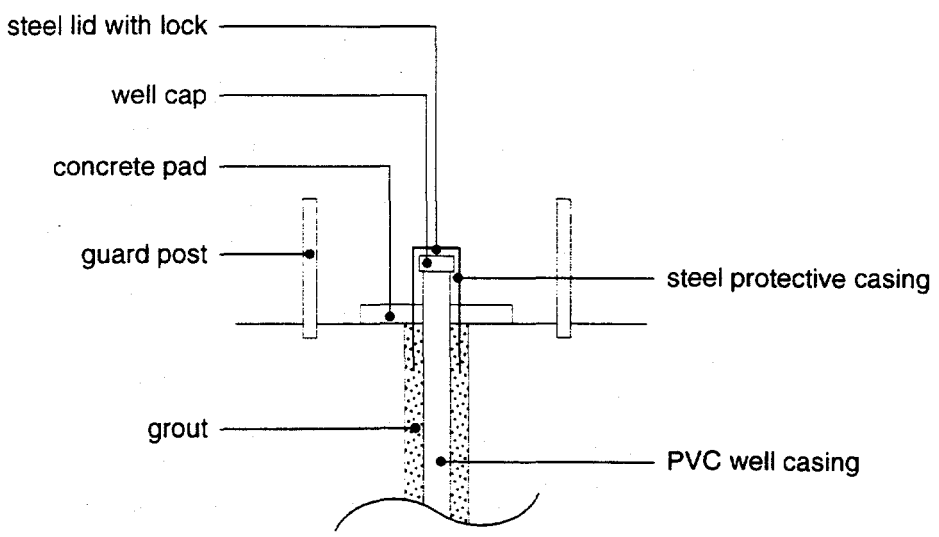
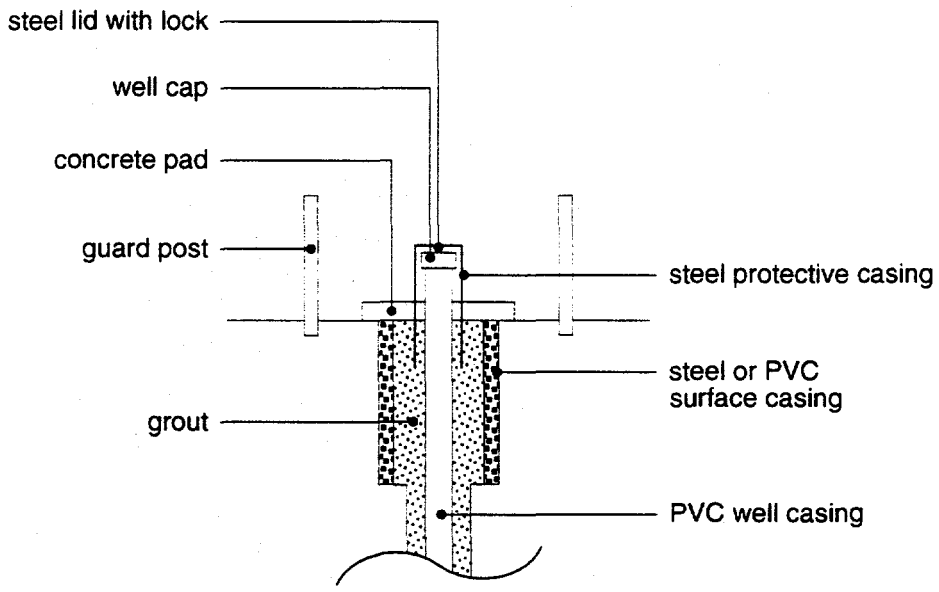
Figure 2-2. Generalized Surface Completion for Stainless Steel Cased Monitoring Wells



Unconsolidated Zone



Bedrock Zone

Note: Not To Scale

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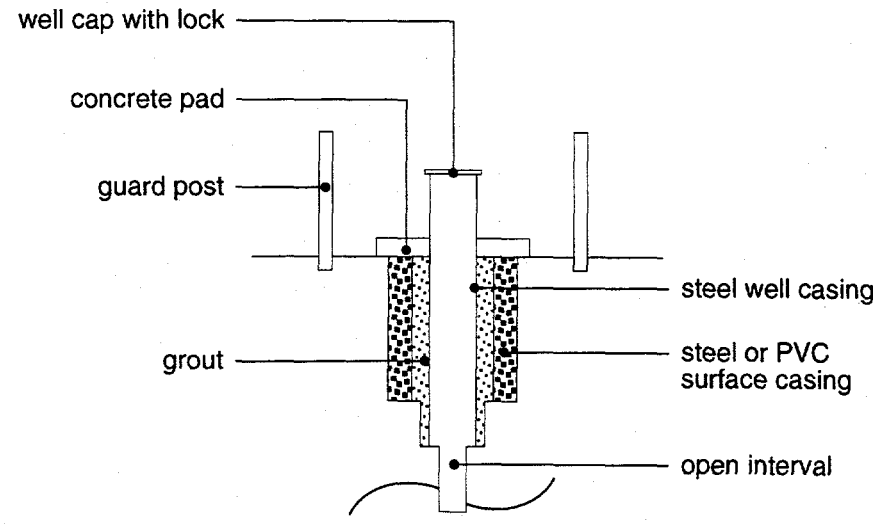
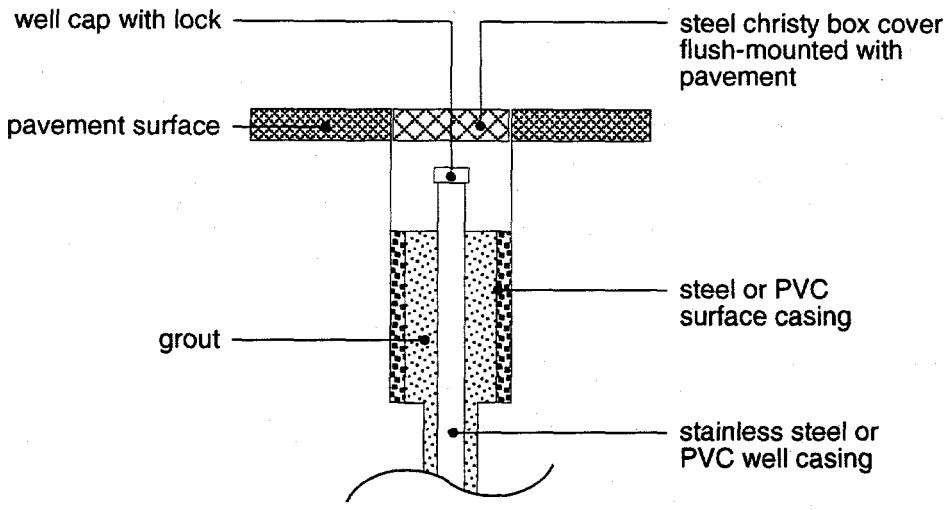
Figure 2-3. Generalized Surface Completion for PVC Cased Monitoring Wells



Open-Interval Bedrock Well



Well Completed With Flush-Mount Christy Box

Note: Not To Scale

27-080196-043 D

Figure 2-4. Generalized Surface Completion for Open-Interval Bedrock Wells and Wells Completed Using Flush-Mount Christy Boxes

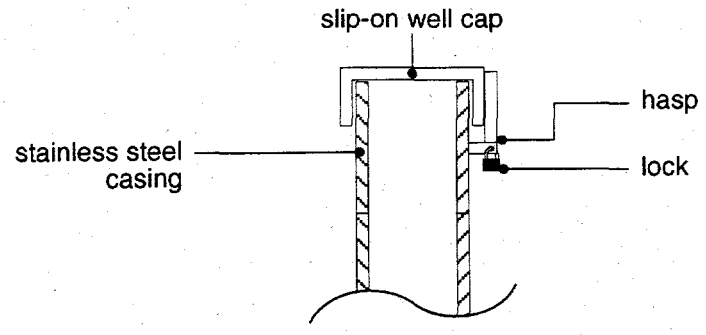
2.3.1.2 Well Security

To prevent unauthorized access and tampering, all monitoring wells at the Y-12 Plant are secured with stainless steel or brass locks. For wells with stainless steel casings, stainless steel slip-on well caps are locked to a hasp welded to the outside of the well casing (Figure 2-5). For PVC wells, a hinged stainless steel or aluminum casing lid is locked to a hasp welded to the outside of the protective casing (Figure 2-5). For open-interval bedrock wells with steel casings, a stainless steel or aluminum casing lid is locked to a hasp welded to the outside of the well casing (Figure 2-5).

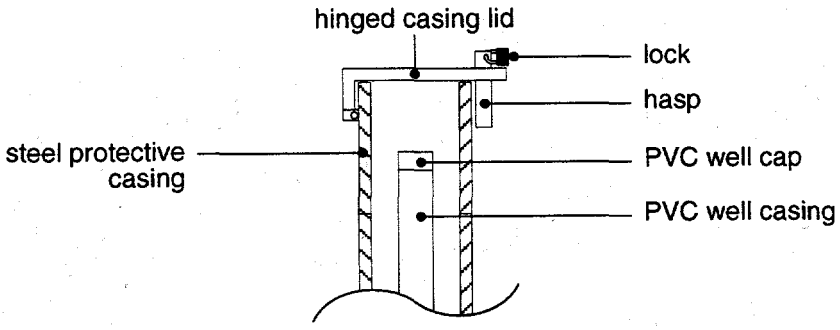
Hasps will be visually inspected for corrosion, damage, and the condition of the welds. Hasps found to be substantially corroded will be replaced. Locks will be inspected for corrosion and operation of the locking mechanism. Locks that are corroded or difficult to operate will be replaced; no lubricants will be used to improve performance of the lock mechanism because these substances may contaminate the well. If a well shows evidence of tampering (i.e., bolt-cut locks or broken hasps), the inspection personnel will notify the Y-12 Plant GWPP Manager or authorized designee.

2.3.1.3 Screened and Open-Hole Intervals

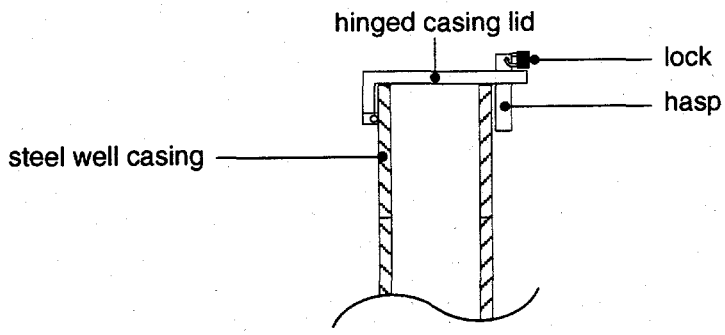
Well screen deterioration is primarily caused by chemical or bacterial incrustation (Driscol 1986) and can cause a substantial reduction in well yield. The condition of the well screen can be evaluated directly only through remote sensing (i.e., down-hole video inspection), which is beyond the scope of planned inspection activities. Thus, the physical condition of the well screens and open-hole intervals will be indirectly inspected by measuring the depth of the well from the top of the well casing and comparing this measurement to the constructed depth reported for the well. Significant differences (i.e., >1 ft) between the measured and constructed depth of the well may indicate: (1) errors in the reported constructed depth of the well, (2) accumulations of sediment or other debris in the bottom of the well, or (3) obstructions in the well (i.e., structural failure of



Stainless Steel Cased Wells



PVC Cased Wells



Steel Cased Wells

Note: Not To Scale

27-080196-043 E

Figure 2-5. Well Security Components

the well casing or screen, or caving of the bore-hole wall in an open interval). The constructed depths of existing wells (from top of well casing) are summarized in Appendix A.

Differences between the reported constructed depth and the measured depth of a well may be the result of inaccuracies or errors in the reported constructed depth of the well. For instance, an error in the reported constructed depth of the well would be clearly evident if the measured well depth is greater. Where such discrepancies are noted during the initial inspection, the well construction records will be reviewed and the depth discrepancies corrected in the computer data base prior to subsequent inspection of the wells.

The accumulation of sediments in the bottom of a well may also account for differences between the reported constructed depth and the measured depth of a well. If left unchecked, sediment accumulations may seriously affect well performance (i.e., yield) and may also result in the collection of turbid groundwater samples that do not reflect actual groundwater quality conditions.

The potential adverse effects of sediment accumulation are proportional to the length of the screen or open interval in the well. For instance, 1 ft of accumulated sediment in the bottom of a well with a 50-ft open interval would not substantially affect well performance, whereas 1 ft of sediment in the bottom of a well with a 5-ft screened interval may affect well performance. Screen or open-hole interval lengths for each well included in the inspection program are provided in Appendix A.

The amount of accumulated sediment in a well will be determined by calculating the difference between the measured and constructed well depth. Well depths will be measured from a marked reference point at the top of the well casing using a weighted steel or fiberglass measuring tape. Measurements will be performed in accordance with the Y-12 Plant Well Depth Measurement Procedure (Appendix B).

Field inspection personnel must judge whether any difference between the constructed and measured well depth is caused by an obstruction in the well, sediment or debris accumulation in the well, or an error in the reported constructed depth of the well. Gross differences (i.e., > 5 ft)

between the measured well depth and the reported constructed depth of the well may indicate an obstruction in the well. Obstructions in any well must be reported to the Y-12 GWPP Manager or authorized designee. Sediment accumulations in a well usually are indicated by a distinctive "soft" feel to the bottom of the well. Differences of < 5 ft between the measured and reported constructed well depth probably indicate errors in the reported constructed depth of the well.

If the difference between the measured and the constructed well depth is attributed to sediment accumulation, then the percentage of the screened or open interval covered by the sediment will be calculated. If this percentage exceeds 20 percent (e.g., 1 ft of sediment over a 5-ft screened interval), then the well will be scheduled for rehabilitation by the Y-12 Plant GWPP Manager or authorized designee. Well rehabilitation can be accomplished through additional development of the well to clean out the accumulated sediment. In some cases, continued accumulation of sediment may occur, and may even increase with remediation efforts. In these instances, plugging and abandonment of the well may be necessary.

2.3.1.4 Well Identification

All monitoring wells must be accurately identified. A stainless steel plate engraved with the well identification number is attached to the well casing or protective surface casing using a 1/16-inch diameter stainless steel cable and stainless steel clamp. Additional well identification may also be used (i.e., well number engraved on the well cap or painted on the protective-surface casing), but the stainless steel well identification plate is required for all active wells. The well identification plate will be inspected to ensure that the well number is legible and correct. Plates with illegible or incorrect well numbers will be replaced.

2.3.2 Secondary Inspection Items

Secondary inspection items generally do not affect the integrity of the well nor impact the quality of groundwater samples. These items include accessibility of the well, the condition of the surficial concrete pad, and the condition and location of guard posts for wells located in high

vehicle traffic areas. Deterioration or damage to a secondary inspection item generally will not require plugging and abandonment of a monitoring well.

2.3.2.1 Well Access

Each monitoring well must be accessible in all weather conditions. For some wells, access is provided by a paved or graveled road. Gravel access roads are more susceptible to damage due to heavy use or by inclement weather and require more maintenance than paved roads. Periodic inspections of both access road types are also necessary to identify conditions that preclude access to the wells (i.e., washouts or fallen trees). Access restrictions because of gates or radiological areas should be noted and communicated to the GWPP Manager. Maintenance will involve removal of any obstacles blocking well access, placement of additional gravel, regrading, and pothole repair.

2.3.2.2 Concrete Pad

Since 1986, monitoring wells at the Y-12 Plant have been completed with a surficial pad of neat cement or concrete emplaced around the outermost casing (i.e., stainless steel well casing or protective surface casing). Wells installed before 1986 may or may not have been completed with a surficial concrete pad. Maintenance requests for emplacing concrete pads at wells installed before 1986 will be evaluated on a case-by-case basis by the Y-12 Plant GWPP Manager or authorized designee.

The top of the concrete pad should be above ground level and sloped away from the well to prevent water from ponding around the well casing or protective surface casing. Inspection of the concrete pad will include identifying any damage, cracks, or deterioration and determining whether the top of the concrete pad is properly sloped. Maintenance will include patching cracks and damaged or deteriorated areas of the pad, or placing additional concrete to ensure that the pad is properly sloped.

2.3.2.3 Guard Posts

Guard posts are placed around monitoring wells that are located in vehicular traffic areas to protect the well from collision damage. Two or more posts are usually installed, and each post is painted high-traffic yellow. Placement of the posts should protect the well from all potential traffic approaches. The height of the posts should: protect the well from vehicular collision damage and allow work-over rigs and sampling vehicles to access the well casing. In general, guard-post heights of about 3 ft are suitable for both purposes. The posts will be inspected for physical damage or deterioration, paint degradation, and proper positioning. Maintenance will generally involve repainting, but damaged posts must be replaced and additional posts may be installed if conditions warrant.

2.3.3 Well Maintenance Requests

Maintenance requests are submitted to the Y-12 Plant GWPP Manager or designee using a maintenance request form; a copy of this form is provided in Appendix D. Maintenance activities are initiated with the assignment of a maintenance request number by the Y-12 Plant GWPP Manager or authorized designee. This number is recorded by the well inspection personnel on the inspection checklist form and on the corresponding maintenance request form. The type of maintenance required (e.g., install/repair guard posts) along with a detailed description of the requested maintenance activity is also recorded on the maintenance request form. The completed form is then submitted to Y-12 Plant maintenance personnel or the drilling services subcontractor. The requested maintenance is then performed and all maintenance work is described on the maintenance request form. An inspection of the maintenance work is then performed and, if the work is judged acceptable, the maintenance is approved by the Y-12 Plant GWPP Manager or authorized designee. If the maintenance work is determined to be unacceptable, a second maintenance request form is submitted, or the original request form outlining additional work may be resubmitted, and the above described process is repeated until approval by the Y-12 Plant GWPP Manager or authorized designee is obtained.

2.3.4 Well Plugging and Abandonment Requests

If the condition of a primary inspection item is beyond practical remediation, the Y-12 Plant GWPP Manager will be notified. Decisions regarding monitoring well plugging and abandonment are the responsibility of the Y-12 Plant GWPP Manager or authorized designee. If, after consultation with the field inspection personnel (and a field visit, if needed), it is determined that plugging and abandonment of the well is warranted, the Y-12 Plant GWPP Manager or authorized designee will prepare a plugging and abandonment request form; a copy of this form is provided in Appendix D. Plugging and abandonment of the well will then be scheduled and completed in accordance with established procedures (HSW, Inc. 1991b).

2.4 WELL CLASSIFICATION AND SUBSEQUENT INSPECTIONS

All existing wells are classified as active or inactive. Active wells are those wells currently included in the comprehensive groundwater quality monitoring program or listed in a facility operating or post-closure permit. Inactive wells are those wells not currently being used to monitor groundwater quality or hydrologic conditions. Active wells are inspected on an annual basis and inactive wells are inspected every three years.

Over time, the number of active and inactive monitoring wells at the Y-12 Plant may change. New monitoring wells may be installed or governing permits modified that add locations to the active well network. Alternately, future conditions may warrant changes in the active and inactive monitoring well networks. For example, a well currently classified as active may become damaged and subsequently be plugged and abandoned, and a well currently classified as inactive may be "reactivated" to replace the plugged and abandoned well. Changes in the active and inactive classification of the monitoring wells at the Y-12 Plant will affect which wells are included in the annual and triennial inspection events.

Active wells will be tracked using an Active Well Status Checklist (Appendix E). At the beginning of each calendar year, the Active Well Status Checklist will be created from the baseline

groundwater sampling and analysis plan and governing facility permits. This summary for active wells will be updated as required throughout the year to include new wells or reactivated wells as specified by addenda to the annual sampling and analysis plan. Monitoring wells that are added or reactivated into the comprehensive groundwater monitoring network must be inspected prior to sampling. All remaining existing wells not included on the Active Well Status Checklist will be classified as inactive by default.

2.5 RECORDKEEPING AND REPORTING

Detailed records of the monitoring well inspection and maintenance program at the Y-12 Plant will be maintained. These records will include the monitoring well inspection checklists, the maintenance request forms, and the plugging and abandonment request forms.

An annual well inspection and maintenance report will be issued by the Y-12 Plant GWPP to formally document the annual or triennial inspection events. The annual report will compile inspection/maintenance summaries, inspection checklists, maintenance request forms, and plugging and abandonment forms issued in each calendar year.

A record copy of this plan will be kept on file by the Y-12 Plant GWPP Manager or authorized designee. This plan will be reviewed on an annual basis for obsolescence, and the monitoring well construction summary (Appendix A) will be revised as needed to reflect well installation or plugging and abandonment actions that occurred during the year. Training records will be maintained in the record copy. A triennial review of the well inspection and maintenance plan will be documented by a memorandum denoting any changes in business practices. Updated active well status checklists will be maintained in the record copy.

As required, the Y-12 Plant GWPP Manager or authorized designee will update and reissue this plan with the information from triennial reviews. Revisions to the plan will involve incorporation of new material to reflect changing business practices or to update obsolete information.

3.0 REFERENCES

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APPENDIX A

MONITORING WELL CONSTRUCTION SUMMARY

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
1008	S3 Ponds	screen	10.00	19.90
1082	Oak Ridge Sludge Farm	screen	10.00	53.34
1084	Oak Ridge Sludge Farm	screen	10.00	147.66
1090	United Nuclear Site	screen	0.00	2.30
1111	Ash Disposal Basin	screen	7.00	9.10
1112	Ash Disposal Basin	screen	7.00	8.80
38-DC	Gum Branch Road	open	28.60	N/A
39-DC	Gum Branch Road	open	27.10	N/A
40-DC	Gum Branch Road	open	30.10	N/A
41-DC	Gum Branch Road	open	67.00	N/A
44-DC	Gum Branch Road	open	15.40	N/A
45-DC	Gum Branch Road	open	7.50	N/A
53-1A	Y-12 Plant Site	screen	5.00	25.08
54-2A	Y-12 Plant Site	screen	5.00	29.00
55-1A	Y-12 Plant Site	screen	5.00	19.77
55-1B	Y-12 Plant Site	screen	5.00	39.01
55-1C	Y-12 Plant Site	screen	5.00	76.63
55-2A	Y-12 Plant Site	screen	5.00	14.67
55-2B	Y-12 Plant Site	screen	5.00	28.68
55-2C	Y-12 Plant Site	screen	5.00	76.65
55-3A	Y-12 Plant Site	screen	5.00	15.17
55-3B	Y-12 Plant Site	screen	5.00	39.66
55-3C	Y-12 Plant Site	screen	5.00	80.08
55-4B	Y-12 Plant Site	screen	5.00	26.30
55-4C	Y-12 Plant Site	screen	5.00	73.50
55-5A	Y-12 Plant Site	screen	5.00	12.81
55-6A	Y-12 Plant Site	screen	5.00	15.12
55-7A	Y-12 Coal Pile	screen	5.00	22.30
55-8A	Y-12 Coal Pile	screen	5.00	22.00
55-8B	Y-12 Coal Pile	screen	10.00	45.00
55-9A	Y-12 Coal Pile	screen	5.00	18.50
56-1A	Y-12 Plant Site	screen	5.00	19.53
56-1C	Y-12 Plant Site	screen	5.00	75.89
56-2A	Y-12 Plant Site	screen	5.00	15.88
56-2B	Y-12 Plant Site	screen	5.00	38.87
56-2C	Y-12 Plant Site	screen	5.00	79.84

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
56-3A	Y-12 Plant Site	screen	5.00	18.48
56-3B	Y-12 Plant Site	screen	5.00	34.44
56-3C	Y-12 Plant Site	screen	5.00	56.00
56-4A	Y-12 Plant Site	screen	5.00	14.07
56-4B	Y-12 Plant Site	screen	5.00	33.42
56-6A	Y-12 Plant Site	screen	5.00	23.16
56-7A	Y-12 Plant Site	screen	5.00	22.93
56-8A	Y-12 Plant Site	screen	5.00	28.91
56-9A	Y-12 Plant Site	screen	5.00	19.35
58-1A	Y-12 Plant Site	screen	5.00	11.84
58-2A	Y-12 Plant Site	screen	5.00	11.83
59-1A	Y-12 Plant Site	screen	5.00	13.69
59-1B	Y-12 Plant Site	screen	5.00	37.52
59-1C	Y-12 Plant Site	screen	5.00	74.65
60-1A	Y-12 Plant Site	screen	5.00	23.57
60-1B	Y-12 Plant Site	screen	5.00	29.84
60-2A	Y-12 Plant Site	screen	5.00	15.42
BC-16	Exxon Nuclear Site	unknown	N/A	N/A
BC-21	Exxon Nuclear Site	unknown	N/A	N/A
BC-37	Exxon Nuclear Site	unknown	N/A	N/A
BC-38	Exxon Nuclear Site	unknown	N/A	N/A
BC-43	Exxon Nuclear Site	unknown	N/A	N/A
BC-45	Exxon Nuclear Site	unknown	N/A	N/A
BC-49	Exxon Nuclear Site	unknown	N/A	N/A
BC-61	Exxon Nuclear Site	unknown	N/A	N/A
CH-143	Kerr Hollow Quarry	open	546.00	600.20
CH-157	Sediment Disposal Basin	open	459.00	540.40
CH-185	Rogers Quarry	open	811.40	842.66
CH-189	Rogers Quarry	open	740.00	763.50
ED/Y-12 No. 2	Y-12 Plant Site	unknown	N/A	N/A
GW-001	Oil Landfarm	screen	5.00	25.47
GW-005	Oil Landfarm	screen	5.00	13.06
GW-006	Oil Landfarm	screen	5.00	42.65
GW-008	Oil Landfarm	screen	5.00	23.38
GW-010	Oil Landfarm	screen	5.00	14.68
GW-011	Oil Landfarm	screen	5.00	49.23

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-012	Oil Landfarm	screen	2.00	17.57
GW-013	Oil Landfarm	screen	2.00	12.63
GW-014	Y-12 Burial Grounds	screen	2.00	14.37
GW-015	Y-12 Burial Grounds	screen	5.00	10.22
GW-016	Y-12 Burial Grounds	screen	2.00	17.49
GW-017	Y-12 Burial Grounds	screen	5.00	63.14
GW-018	Y-12 Burial Grounds	screen	2.00	20.60
GW-040	Y-12 Burial Grounds	screen	2.00	31.60
GW-041	Y-12 Burial Grounds	screen	2.00	41.70
GW-042	Y-12 Burial Grounds	screen	2.00	30.35
GW-043	Oil Landfarm	screen	10.00	34.50
GW-044	Oil Landfarm	screen	10.00	61.20
GW-045	Y-12 Burial Grounds	screen	10.00	15.04
GW-046	Y-12 Burial Grounds	screen	10.00	20.50
GW-047	Y-12 Burial Grounds	screen	5.00	25.96
GW-048	Y-12 Burial Grounds	screen	5.00	10.31
GW-052	Y-12 Burial Grounds	screen	5.00	20.63
GW-053	Y-12 Burial Grounds	screen	5.00	33.94
GW-054	Y-12 Burial Grounds	screen	2.00	40.72
GW-055	Y-12 Burial Grounds	screen	2.00	23.07
GW-056	Y-12 Burial Grounds	screen	2.00	59.26
GW-057	Y-12 Burial Grounds	screen	2.00	25.33
GW-058	Y-12 Burial Grounds	screen	2.00	47.49
GW-059	Y-12 Burial Grounds	screen	2.00	27.46
GW-061	Y-12 Burial Grounds	screen	5.00	28.26
GW-062	Oil Landfarm	screen	2.00	54.08
GW-064	Oil Landfarm	screen	2.00	55.09
GW-065	Oil Landfarm	screen	5.00	36.68
GW-066	Oil Landfarm	screen	2.00	59.30
GW-067	Oil Landfarm	screen	5.00	20.67
GW-068	Y-12 Burial Grounds	screen	10.20	81.90
GW-069	Y-12 Burial Grounds	screen	10.20	101.96
GW-070	Y-12 Burial Grounds	screen	15.60	142.78
GW-071	Y-12 Burial Grounds	screen	20.60	221.95
GW-072	Y-12 Burial Grounds	screen	10.60	101.89
GW-073	Oil Landfarm	screen	10.00	82.32

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-074	Oil Landfarm	screen	20.60	209.34
GW-075	Oil Landfarm	screen	20.00	201.81
GW-076	Oil Landfarm	screen	10.60	83.73
GW-077	Y-12 Burial Grounds	screen	10.00	104.27
GW-078	Y-12 Burial Grounds	screen	5.00	24.05
GW-079	Y-12 Burial Grounds	screen	5.00	68.26
GW-080	Y-12 Burial Grounds	screen	5.00	32.98
GW-081	Y-12 Burial Grounds	screen	5.00	20.86
GW-082	Y-12 Burial Grounds	screen	5.00	37.40
GW-083	Y-12 Burial Grounds	screen	5.00	33.14
GW-084	Oil Landfarm	screen	5.00	30.03
GW-085	Oil Landfarm	screen	5.00	61.85
GW-086	Oil Landfarm	screen	5.00	32.86
GW-087	Oil Landfarm	screen	10.00	22.53
GW-089	Y-12 Burial Grounds	screen	2.00	26.88
GW-090	Y-12 Burial Grounds	screen	2.00	17.86
GW-091	Y-12 Burial Grounds	screen	2.00	27.81
GW-094	Y-12 Burial Grounds	screen	21.00	118.56
GW-095	Y-12 Burial Grounds	screen	21.00	158.69
GW-096	Y-12 Burial Grounds	screen	15.40	61.99
GW-097	Oil Landfarm	screen	5.00	19.97
GW-097A	Oil Landfarm	screen	5.00	22.00
GW-098	Oil Landfarm	screen	21.00	106.66
GW-100	S3 Ponds	screen	4.00	16.43
GW-101	S3 Ponds	screen	4.00	17.60
GW-105	S3 Ponds	screen	4.00	19.40
GW-106	S3 Ponds	screen	9.00	72.60
GW-107	S3 Ponds	screen	4.00	14.96
GW-108	S3 Ponds	screen	10.10	59.37
GW-109	S3 Ponds	screen	19.00	124.35
GW-112	Grassy Creek	screen	20.00	248.05
GW-113	Grassy Creek	screen	20.40	160.62
GW-115	S3 Ponds	screen	10.00	54.50
GW-117	Y-12 Burial Grounds	open	50.00	533.02
GW-118	Y-12 Burial Grounds	open	50.00	578.02
GW-119	Y-12 Burial Grounds	open	50.00	513.79

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-120	Oil Landfarm	open	50.00	183.08
GW-121	Oil Landfarm	open	50.00	603.11
GW-122	S3 Ponds	open	50.00	145.00
GW-123	S3 Ponds	open	50.00	575.10
GW-124	S3 Ponds	open	50.00	153.30
GW-125	S3 Ponds	open	50.00	554.90
GW-126	Y-12 Burial Grounds	open	50.00	158.04
GW-127	S3 Ponds	screen	4.00	25.00
GW-131	Scarboro Road	Westbay	1053.50	1099.40
GW-132	S3 Ponds	Westbay	662.50	762.40
GW-133	S3 Ponds	Westbay	544.00	602.30
GW-134	S3 Ponds	Westbay	807.00	845.10
GW-135	S3 Ponds	Westbay	1195.00	1277.40
GW-136	Gum Branch Road	open	20.10	443.44
GW-141	Landfill IV	screen	10.70	157.80
GW-142	Kerr Hollow Quarry	open	46.50	297.06
GW-143	Kerr Hollow Quarry	open	48.00	255.14
GW-144	Kerr Hollow Quarry	screen	40.00	192.86
GW-145	Kerr Hollow Quarry	screen	20.00	111.25
GW-146	Kerr Hollow Quarry	open	30.00	221.16
GW-147	Kerr Hollow Quarry	screen	15.00	71.31
GW-148	New Hope Pond	screen	5.00	13.43
GW-149	New Hope Pond	screen	10.00	49.96
GW-150	New Hope Pond	screen	5.00	13.88
GW-151	New Hope Pond	screen	10.00	98.91
GW-152	New Hope Pond	screen	5.00	19.62
GW-153	New Hope Pond	screen	10.00	62.41
GW-154	New Hope Pond	screen	5.00	13.60
GW-156	Sediment Disposal Basin	screen	10.00	159.20
GW-158	Sediment Disposal Basin	open	85.00	442.81
GW-159	Sediment Disposal Basin	screen	10.00	159.40
GW-160	Landfill III	open	30.00	237.40
GW-161	Landfill III	open	50.00	402.60
GW-162	Y-12 Burial Grounds	open	33.00	127.30
GW-163	Y-12 Burial Grounds	open	17.00	227.10
GW-164	Y-12 Burial Grounds	open	35.00	406.50

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-165	Chestnut Ridge/Deer Trap #10	open	49.00	326.00
GW-166	Chestnut Ridge/Deer Trap #10	open	5.00	386.30
GW-167	U.S. Geological Survey Sites	screen	4.10	31.81
GW-168	U.S. Geological Survey Sites	open	31.40	138.31
GW-169	U.S. Geological Survey Sites	screen	5.00	36.62
GW-170	U.S. Geological Survey Sites	open	52.90	158.64
GW-171	U.S. Geological Survey Sites	screen	4.40	32.75
GW-172	U.S. Geological Survey Sites	open	28.80	137.32
GW-173	Chestnut Ridge Security Pit	screen	10.00	167.00
GW-174	Chestnut Ridge Security Pit	screen	10.00	147.40
GW-175	Chestnut Ridge Security Pit	screen	15.80	168.50
GW-176	Chestnut Ridge Security Pit	screen	10.00	148.20
GW-177	Chestnut Ridge Security Pit	screen	10.00	145.50
GW-178	Chestnut Ridge Security Pit	screen	10.00	134.40
GW-179	Chestnut Ridge Security Pit	screen	10.00	120.70
GW-180	Chestnut Ridge Security Pit	screen	10.80	145.60
GW-181	Chestnut Ridge Security Pit	open	13.00	170.40
GW-182	Chestnut Ridge Security Pit	open	275.50	402.30
GW-183	Y-12 Fuel Station	screen	20.00	32.51
GW-184	Rogers Quarry	screen	20.00	130.48
GW-185	Rogers Quarry	open	66.50	473.00
GW-186	Rogers Quarry	screen	20.00	173.01
GW-187	Rogers Quarry	screen	15.00	164.69
GW-188	Rogers Quarry	screen	15.00	70.26
GW-189	Rogers Quarry	screen	20.00	213.14
GW-190	Y-12 Plant Site	screen	16.10	29.40
GW-191	Beta-4 Security Pit	screen	10.00	63.50
GW-192	Beta-4 Security Pit	screen	10.00	20.10
GW-193	Y-12 Plant Site	screen	10.30	21.34
GW-194	Beta-4 Security Pit	screen	5.00	15.39
GW-195	Beta-4 Security Pit	screen	6.00	25.70
GW-196	Beta-4 Security Pit	screen	5.00	29.80
GW-197	Beta-4 Security Pit	screen	5.00	19.90
GW-198	Ravine Disposal Site	screen	10.00	29.48
GW-199	Ravine Disposal Site	screen	5.00	25.52
GW-200	Ravine Disposal Site	screen	10.00	60.00

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-201	Ravine Disposal Site	screen	5.00	24.02
GW-202	Ravine Disposal Site	screen	5.00	23.90
GW-203	United Nuclear Site	screen	10.00	159.00
GW-204	Y-12 Plant Site	screen	10.00	20.40
GW-205	United Nuclear Site	screen	10.00	166.50
GW-206	U.S. Geological Survey Sites	screen	5.10	16.75
GW-207	U.S. Geological Survey Sites	open	9.60	113.35
GW-208	U.S. Geological Survey Sites	open	8.80	416.14
GW-210	U.S. Geological Survey Sites	open	20.00	130.23
GW-211	U.S. Geological Survey Sites	open	6.00	413.12
GW-212	U.S. Geological Survey Sites	screen	4.40	13.96
GW-214	U.S. Geological Survey Sites	open	15.40	433.09
GW-217	Landfill IV	screen	10.60	180.00
GW-218	Uranium Oxide Vault	screen	10.00	30.14
GW-219	Uranium Oxide Vault	screen	5.60	15.67
GW-220	New Hope Pond	screen	10.00	47.60
GW-221	United Nuclear Site	screen	10.00	160.60
GW-222	New Hope Pond	screen	5.00	27.50
GW-223	New Hope Pond	screen	10.00	92.65
GW-224	Rogers Quarry	screen	20.00	128.57
GW-225	Y-12 Old Sanitary Landfill	open	50.00	202.90
GW-226	Y-12 Old Sanitary Landfill	open	10.00	57.84
GW-227	Y-12 Old Sanitary Landfill	open	10.00	42.55
GW-228	Y-12 Old Sanitary Landfill	open	20.00	102.62
GW-229	Y-12 Old Sanitary Landfill	open	15.00	58.29
GW-230	U.S. Geological Survey Sites	open	65.40	409.69
GW-231	Kerr Hollow Quarry	screen	10.00	37.07
GW-232	U.S. Geological Survey Sites	open	10.70	413.40
GW-236	S3 Ponds	screen	5.00	20.82
GW-237	Y-12 Burial Grounds	screen	5.00	15.52
GW-238	U.S. Geological Survey Sites	open	29.00	130.09
GW-239	U.S. Geological Survey Sites	open	29.30	436.29
GW-240	New Hope Pond	screen	5.00	32.40
GW-241	Sediment Disposal Basin	screen	21.00	101.84
GW-242	Y-12 Burial Grounds	screen	6.40	20.34
GW-243	S3 Ponds	screen	27.90	75.90

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-244	S3 Ponds	screen	28.10	77.80
GW-245	S3 Ponds	screen	28.00	74.60
GW-246	S3 Ponds	screen	28.10	77.70
GW-247	S3 Ponds	screen	28.00	77.80
GW-248	Y-12 Burial Grounds	screen	11.00	64.13
GW-249	Y-12 Burial Grounds	screen	5.20	37.63
GW-250	Y-12 Burial Grounds	screen	10.40	64.55
GW-251	S2 Site	screen	9.60	49.10
GW-252	S2 Site	screen	5.00	50.30
GW-253	S2 Site	screen	9.60	49.00
GW-255	S2 Site	screen	10.00	84.10
GW-257	Y-12 Burial Grounds	screen	10.70	36.17
GW-258	Y-12 Burial Grounds	screen	10.70	51.77
GW-259	Y-12 Burial Grounds	screen	10.70	35.32
GW-261	Y-12 Salvage Yard	screen	5.40	26.10
GW-262	Y-12 Salvage Yard	screen	10.40	73.00
GW-263	Y-12 Salvage Yard	screen	5.30	33.40
GW-264	Y-12 Salvage Yard	screen	10.20	73.50
GW-265	Y-12 Salvage Yard	screen	5.60	24.90
GW-268	Y-12 Salvage Yard	screen	5.60	36.10
GW-269	Y-12 Salvage Yard	screen	5.70	31.80
GW-270	Y-12 Salvage Yard	screen	5.40	21.00
GW-271	Y-12 Salvage Yard	screen	10.40	58.80
GW-272	Y-12 Salvage Yard	screen	5.30	18.80
GW-273	Y-12 Salvage Yard	screen	5.30	35.30
GW-274	Y-12 Salvage Yard	screen	5.40	36.39
GW-275	Y-12 Salvage Yard	screen	10.40	67.48
GW-276	S3 Ponds	screen	5.30	20.80
GW-277	S3 Ponds	screen	10.40	80.15
GW-281	Y-12 Fuel Station	screen	10.00	14.57
GW-282	Y-12 Fuel Station	screen	10.00	13.25
GW-283	Y-12 Fuel Station	screen	15.00	19.40
GW-284	Y-12 Fuel Station	screen	15.00	17.31
GW-285	Y-12 Fuel Station	screen	15.00	20.58
GW-286	Y-12 Burial Grounds	screen	10.00	34.31
GW-287	Y-12 Burial Grounds	screen	5.00	14.57

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-288	Y-12 Burial Grounds	screen	10.00	61.39
GW-289	Y-12 Burial Grounds	screen	10.00	42.75
GW-290	Y-12 Burial Grounds	screen	10.00	38.20
GW-291	Y-12 Burial Grounds	screen	5.00	19.72
GW-292	East CR Waste Pile	screen	10.70	187.70
GW-293	East CR Waste Pile	open	17.00	216.20
GW-294	East CR Waste Pile	screen	10.40	129.90
GW-296	East CR Waste Pile	screen	10.50	149.50
GW-298	Landfill III	screen	10.00	188.60
GW-299	Landfill III	screen	10.80	169.20
GW-300	Landfill III	screen	10.60	147.80
GW-301	Landfill III	screen	10.00	163.50
GW-302	United Nuclear Site	screen	10.30	136.90
GW-303	Sediment Disposal Basin	open	21.00	323.80
GW-304	Sediment Disposal Basin	screen	10.00	169.20
GW-305	Landfill IV	screen	10.70	182.10
GW-306	Rust Spoil Area	screen	10.00	60.44
GW-307	Rust Spoil Area	screen	10.70	43.73
GW-308	Rust Spoil Area	screen	10.60	40.38
GW-309	Rust Spoil Area	screen	10.00	39.40
GW-310	Rust Spoil Area	screen	5.30	30.05
GW-311	Rust Spoil Area	screen	10.60	43.22
GW-312	Rust Spoil Area	screen	10.00	42.86
GW-313	Spoil Area I	screen	10.70	115.20
GW-314	Spoil Area I	screen	10.00	115.60
GW-315	Spoil Area I	screen	10.00	105.80
GW-316	Spoil Area I	screen	10.70	81.90
GW-317	Spoil Area I	screen	11.00	132.70
GW-318	Rogers Quarry	screen	10.50	82.74
GW-319	Rogers Quarry	screen	11.00	26.27
GW-320	Ash Disposal Basin	screen	10.00	112.91
GW-321	Ash Disposal Basin	screen	10.70	100.48
GW-322	Chestnut Ridge Security Pit	open	65.00	195.50
GW-323	Spoil Area I	screen	10.50	109.70
GW-324	S3 Ponds	screen	10.50	81.40
GW-325	S3 Ponds	screen	10.00	19.80

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-331	Waste Coolant Facilities	screen	5.60	30.81
GW-332	Waste Coolant Facilities	screen	5.40	25.62
GW-333	Waste Coolant Facilities	screen	10.70	28.81
GW-334	Waste Coolant Facilities	screen	5.40	30.70
GW-335	Waste Coolant Facilities	screen	5.70	16.48
GW-336	Waste Coolant Facilities	screen	5.60	25.76
GW-337	Waste Coolant Facilities	screen	5.40	25.29
GW-338	Waste Coolant Facilities	screen	5.50	20.85
GW-339	United Nuclear Site	screen	10.30	116.40
GW-342	Y-12 Burial Grounds	screen	10.00	77.60
GW-343	Y-12 Burial Grounds	open	15.00	188.30
GW-344	Y-12 Burial Grounds	open	15.00	317.90
GW-345	S3 Ponds	screen	10.00	30.53
GW-346	S3 Ponds	screen	10.00	65.17
GW-347	S3 Ponds	screen	15.80	31.34
GW-348	S3 Ponds	screen	10.40	82.70
GW-349	S2 Site	screen	15.00	26.52
GW-350	S2 Site	screen	10.00	45.91
GW-363	Landfill I	open	25.00	77.50
GW-364	Landfill I	screen	10.00	62.36
GW-365	Landfill I	open	23.30	152.55
GW-366	Landfill I	screen	10.00	103.63
GW-367	Landfill I	open	25.00	151.95
GW-368	Landfill I	open	20.00	246.87
GW-369	Landfill I	open	34.40	152.06
GW-370	Y-12 Burial Grounds	screen	10.00	35.18
GW-371	Y-12 Burial Grounds	open	15.00	127.09
GW-372	Y-12 Burial Grounds	screen	10.00	54.66
GW-373	Y-12 Burial Grounds	open	35.00	160.05
GW-374	Y-12 Burial Grounds	open	25.50	151.75
GW-375	Y-12 Burial Grounds	open	36.50	162.85
GW-376	Lysimeter Demo	open	155.00	221.95
GW-380	New Hope Pond	screen	5.40	15.09
GW-381	New Hope Pond	open	11.10	60.36
GW-382	New Hope Pond	open	48.00	173.01
GW-383	New Hope Pond	screen	5.00	25.60

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-384	New Hope Pond	open	20.20	58.70
GW-385	New Hope Pond	open	55.00	181.70
GW-400	Gum Branch Road Area	open	30.00	582.81
GW-401	Gum Branch Road Area	open	50.50	0.00
GW-402	Gum Branch Road Area	open	25.90	402.40
GW-403	Gum Branch Road Area	open	25.00	303.79
GW-404	Gum Branch Road Area	open	180.00	200.51
GW-405	Gum Branch Road Area	screen	9.90	36.22
GW-406	Gum Branch Road Area	screen	3.70	8.64
GW-407	Gum Branch Road Area	screen	10.00	42.65
GW-408	Gum Branch Road Area	screen	3.00	8.07
GW-409	Gum Branch Road Area	screen	9.90	59.90
GW-410	Gum Branch Road Area	screen	11.00	16.01
GW-411	Gum Branch Road Area	screen	5.00	10.42
GW-412	Gum Branch Road Area	screen	9.90	42.05
GW-413	Gum Branch Road Area	screen	9.90	15.48
GW-414	Gum Branch Road Area	screen	9.90	57.51
GW-415	Gum Branch Road Area	screen	9.90	30.00
GW-416	Gum Branch Road Area	screen	9.90	63.02
GW-417	Gum Branch Road Area	screen	13.60	50.13
GW-418	Gum Branch Road Area	screen	9.90	22.81
GW-419	Gum Branch Road Area	screen	10.00	50.63
GW-420	Gum Branch Road Area	screen	9.90	15.79
GW-421	Gum Branch Road Area	screen	9.90	40.35
GW-422	Gum Branch Road Area	screen	3.70	9.27
GW-423	Gum Branch Road Area	screen	9.90	41.02
GW-424	Gum Branch Road Area	screen	1.00	6.35
GW-425	Gum Branch Road Area	screen	9.90	61.56
GW-426	Gum Branch Road Area	screen	9.90	32.75
GW-427	Gum Branch Road Area	screen	9.90	49.73
GW-428	Gum Branch Road Area	screen	9.90	15.77
GW-429	Gum Branch Road Area	screen	4.00	7.36
GW-430	Gum Branch Road Area	screen	9.90	39.00
GW-431	Gum Branch Road Area	screen	7.00	9.83
GW-432	Gum Branch Road Area	screen	9.90	45.85
GW-433	Gum Branch Road Area	unknown	N/A	N/A

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-434	Gum Branch Road Area	screen	10.10	42.04
GW-435	Gum Branch Road Area	screen	5.00	10.20
GW-436	Gum Branch Road Area	screen	9.90	47.20
GW-437	Gum Branch Road Area	screen	9.90	65.35
GW-438	Gum Branch Road Area	screen	9.90	25.35
GW-439	Gum Branch Road Area	screen	9.90	62.31
GW-440	Gum Branch Road Area	screen	9.90	28.60
GW-441	Gum Branch Road Area	screen	9.90	56.40
GW-442	Gum Branch Road Area	screen	9.90	17.02
GW-443	Gum Branch Road Area	screen	10.50	52.28
GW-445	Gum Branch Road Area	screen	10.70	48.13
GW-449	Gum Branch Road Area	screen	5.00	13.11
GW-450	Gum Branch Road Area	screen	9.90	57.73
GW-451	Gum Branch Road Area	open	33.00	302.69
GW-453	Gum Branch Road Area	open	20.00	758.62
GW-455	Gum Branch Road Area	screen	20.00	184.81
GW-456	Gum Branch Road Area	screen	10.30	71.65
GW-457	Gum Branch Road Area	screen	10.29	27.15
GW-458	Gum Branch Road Area	screen	10.30	71.46
GW-459	Gum Branch Road Area	screen	10.29	28.46
GW-460	Gum Branch Road Area	screen	10.30	71.43
GW-461	Gum Branch Road Area	screen	10.79	27.33
GW-462	Gum Branch Road Area	screen	50.05	70.36
GW-463	Gum Branch Road Area	screen	10.00	57.48
GW-464	Gum Branch Road Area	screen	10.00	23.52
GW-465	Gum Branch Road Area	screen	11.10	43.14
GW-466	Gum Branch Road Area	screen	10.00	43.41
GW-467	Gum Branch Road Area	screen	20.00	61.11
GW-468	Gum Branch Road Area	open	473.50	503.43
GW-469	Gum Branch Road Area	open	N/A	N/A
GW-470	Gum Branch Road Area	screen	23.60	268.44
GW-471	Gum Branch Road Area	screen	10.00	102.54
GW-472	Gum Branch Road Area	screen	20.00	312.56
GW-473	Gum Branch Road Area	screen	19.95	90.33
GW-474	Gum Branch Road Area	screen	15.05	44.96
GW-475A	Gum Branch Road Area	screen	10.00	98.57

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-475B	Gum Branch Road Area	screen	10.00	62.47
GW-475C	Gum Branch Road Area	screen	10.50	20.70
GW-476A	Gum Branch Road Area	screen	10.20	82.15
GW-476B	Gum Branch Road Area	screen	10.40	49.21
GW-476C	Gum Branch Road Area	screen	10.40	20.14
GW-477A	Gum Branch Road Area	screen	10.40	67.20
GW-477B	Gum Branch Road Area	screen	10.60	34.52
GW-477C	Gum Branch Road Area	screen	10.40	19.46
GW-478A	Gum Branch Road Area	screen	10.40	80.33
GW-478B	Gum Branch Road Area	screen	10.40	47.03
GW-478C	Gum Branch Road Area	screen	10.20	18.48
GW-479	Gum Branch Road Area	screen	10.00	25.43
GW-480A	Gum Branch Road Area	screen	2.50	37.11
GW-480B	Gum Branch Road Area	screen	2.50	32.26
GW-480C	Gum Branch Road Area	screen	2.50	18.67
GW-481A	Gum Branch Road Area	screen	2.50	34.52
GW-481B	Gum Branch Road Area	screen	2.48	27.89
GW-481C	Gum Branch Road Area	screen	2.50	17.26
GW-482A	Gum Branch Road Area	screen	2.50	36.22
GW-482B	Gum Branch Road Area	screen	2.50	29.50
GW-482C	Gum Branch Road Area	screen	2.50	18.00
GW-483	Gum Branch Road Area	screen	10.00	27.00
GW-484	Gum Branch Road Area	screen	9.00	23.32
GW-485	Gum Branch Road Area	screen	10.00	19.99
GW-486	Gum Branch Road Area	screen	10.00	20.11
GW-487	Gum Branch Road Area	screen	10.00	20.27
GW-488	Gum Branch Road Area	screen	10.00	19.97
GW-489	Gum Branch Road Area	screen	10.00	24.55
GW-490	Gum Branch Road Area	screen	10.00	20.28
GW-491	Gum Branch Road Area	screen	10.00	20.07
GW-492	Gum Branch Road Area	screen	10.00	16.26
GW-493	Gum Branch Road Area	screen	10.00	19.69
GW-494	Gum Branch Road Area	screen	10.00	16.61
GW-495	Gum Branch Road Area	screen	3.00	9.14
GW-496	Gum Branch Road Area	screen	3.00	8.65
GW-497	Gum Branch Road Area	screen	3.00	9.40

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-498	Gum Branch Road Area	screen	3.00	7.05
GW-499	Gum Branch Road Area	screen	3.00	6.70
GW-499A	Gum Branch Road Area	screen	3.00	7.94
GW-499AA	Gum Branch Road Area	screen	N/A	N/A
GW-499AB	Gum Branch Road Area	screen	N/A	N/A
GW-499AC	Gum Branch Road Area	screen	N/A	N/A
GW-499AD	Gum Branch Road Area	screen	N/A	N/A
GW-499AE	Gum Branch Road Area	screen	N/A	N/A
GW-499AF	Gum Branch Road Area	screen	N/A	N/A
GW-499B	Gum Branch Road Area	screen	N/A	N/A
GW-499C	Gum Branch Road Area	screen	N/A	N/A
GW-499D	Gum Branch Road Area	screen	N/A	N/A
GW-499E	Gum Branch Road Area	screen	N/A	N/A
GW-499F	Gum Branch Road Area	screen	N/A	N/A
GW-499G	Gum Branch Road Area	screen	5.00	14.82
GW-499H	Gum Branch Road Area	screen	5.00	11.90
GW-499I	Gum Branch Road Area	screen	5.00	11.34
GW-499J	Gum Branch Road Area	screen	5.00	11.05
GW-499K	Gum Branch Road Area	screen	5.00	12.88
GW-499L	Gum Branch Road Area	screen	5.00	14.64
GW-499M	Gum Branch Road Area	screen	5.00	14.56
GW-499N	Gum Branch Road Area	screen	5.00	14.95
GW-499O	Gum Branch Road Area	screen	5.00	14.73
GW-499P	Gum Branch Road Area	screen	5.00	14.70
GW-499Q	Gum Branch Road Area	open	37.00	51.72
GW-499R	Gum Branch Road Area	screen	5.00	19.42
GW-499S	Gum Branch Road Area	screen	5.00	25.21
GW-499T	Gum Branch Road Area	screen	10.00	32.95
GW-499U	Gum Branch Road Area	screen	5.00	25.92
GW-499V	Gum Branch Road Area	screen	5.00	27.18
GW-499W	Gum Branch Road Area	screen	5.00	11.85
GW-499X	Gum Branch Road Area	screen	N/A	N/A
GW-499Y	Gum Branch Road Area	screen	N/A	N/A
GW-499Z	Gum Branch Road Area	screen	N/A	N/A
GW-505	Rust Garage Area	screen	10.40	15.31
GW-508	Rust Garage Area	screen	10.30	13.83

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-511	Chestnut Ridge Security Pit	screen	10.00	155.80
GW-512	Ash Disposal Basin	screen	10.00	63.01
GW-513	Ash Disposal Basin	screen	10.00	127.21
GW-514	Ash Disposal Basin	open	21.00	197.54
GW-520	Landfill I	screen	10.30	82.30
GW-521	Landfill IV	screen	10.30	138.40
GW-522	Landfill IV	screen	10.40	198.30
GW-526	S3 Ponds	open	22.00	125.11
GW-531	Lysimeter Demo	screen	15.70	40.60
GW-532	Lysimeter Demo	screen	15.70	31.15
GW-533	Lysimeter Demo	screen	10.40	32.50
GW-534	Lysimeter Demo	screen	15.05	49.62
GW-535	Lysimeter Demo	screen	15.80	22.95
GW-537	Lysimeter Demo	screen	15.00	25.05
GW-538	Lysimeter Demo	screen	15.00	44.82
GW-539	Landfill II Expansion	screen	15.90	158.30
GW-540	Landfill II Expansion	screen	10.30	174.20
GW-541	Landfill II Expansion	screen	15.70	107.10
GW-542	Landfill II Expansion	screen	15.70	79.10
GW-543	Landfill II Expansion	screen	15.60	96.20
GW-544	Landfill II Expansion	screen	15.90	111.80
GW-546	Landfill II Expansion	screen	15.80	87.00
GW-552	South Side Chestnut Ridge	open	26.50	230.90
GW-554	South Side Chestnut Ridge	open	33.50	307.99
GW-555	South Side Chestnut Ridge	open	39.35	316.87
GW-557	South Side Chestnut Ridge	screen	20.00	138.35
GW-558	South Side Chestnut Ridge	screen	15.00	87.76
GW-559	South Side Chestnut Ridge	screen	20.00	190.01
GW-560	South Side Chestnut Ridge	screen	20.00	71.75
GW-562	South Side Chestnut Ridge	screen	20.00	60.63
GW-563	South Side Chestnut Ridge	screen	30.00	97.13
GW-564	South Side Chestnut Ridge	screen	20.00	77.95
GW-567	South Side Chestnut Ridge	screen	20.00	80.73
GW-568	South Side Chestnut Ridge	unknown	N/A	N/A
GW-569	South Side Chestnut Ridge	screen	22.80	117.90
GW-576	South Side Chestnut Ridge	screen	10.00	61.21

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-601	Oil Landfarm	open	37.50	359.11
GW-602	Oil Landfarm	screen	11.80	214.20
GW-603	New Hope Pond	screen	10.30	77.11
GW-604	New Hope Pond	screen	9.90	113.73
GW-605	New Hope Pond	screen	10.00	41.61
GW-606	New Hope Pond	screen	10.00	173.41
GW-608	Chestnut Ridge Security Pits	open	72.00	223.00
GW-609	Chestnut Ridge Security Pits	screen	10.30	271.40
GW-610	Chestnut Ridge Security Pits	screen	10.30	120.00
GW-611	Chestnut Ridge Security Pits	screen	10.00	120.00
GW-612	Chestnut Ridge Security Pits	open	19.00	256.30
GW-613	S3 Ponds	screen	10.34	45.20
GW-614	S3 Ponds	screen	15.00	93.00
GW-615	S3 Ponds	open	22.50	247.60
GW-616	S3 Ponds	open	50.00	271.00
GW-617	S3 Ponds	screen	10.30	20.10
GW-618	S3 Ponds	screen	10.30	39.30
GW-619	Fire Training Facility	screen	10.80	43.30
GW-620	Fire Training Facility	screen	10.80	77.50
GW-621	Y-12 Burial Grounds	screen	15.70	42.67
GW-622	Y-12 Burial Grounds	screen	10.10	21.32
GW-623	Y-12 Burial Grounds	screen	30.20	277.40
GW-624	Y-12 Burial Grounds	screen	10.30	29.64
GW-625	Y-12 Burial Grounds	open	51.50	284.83
GW-626	Y-12 Burial Grounds	screen	10.00	80.36
GW-627	Y-12 Burial Grounds	open	16.00	272.46
GW-628	Y-12 Burial Grounds	open	52.20	290.70
GW-629	Y-12 Burial Grounds	open	49.70	314.74
GW-630	Lysimeter Demo	screen	10.70	30.42
GW-631	Rust Garage Area	screen	10.00	14.90
GW-632	Rust Garage Area	screen	10.00	14.20
GW-633	Rust Garage Area	screen	10.00	14.33
GW-634	Rust Garage Area	screen	10.00	14.70
GW-636	Oil Landfarm	open	18.50	120.84
GW-637	Oil Landfarm	screen	10.00	30.77
GW-638	Oil Landfarm	screen	5.00	14.83

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-639	Y-12 Burial Grounds	open	30.00	128.22
GW-640	Y-12 Burial Grounds	screen	11.10	49.89
GW-641	Y-12 Burial Grounds	screen	10.40	26.65
GW-642	Y-12 Burial Grounds	screen	16.20	39.30
GW-643	Y-12 Burial Grounds	screen	10.60	30.62
GW-644	Oil Landfarm	screen	10.30	25.97
GW-645	Oil Landfarm	screen	21.30	82.70
GW-646	Oil Landfarm	screen	11.10	78.40
GW-647	Oil Landfarm	screen	10.00	94.20
GW-648	Rust Spoil Area	screen	10.00	82.80
GW-649	Oil Landfarm	screen	10.40	22.95
GW-651	Y-12 Burial Grounds	screen	10.00	55.07
GW-652	Y-12 Burial Grounds	screen	16.20	33.65
GW-653	Y-12 Burial Grounds	screen	10.00	41.75
GW-654	Y-12 Burial Grounds	screen	10.00	17.83
GW-655	Y-12 Burial Grounds	screen	15.90	68.20
GW-656	Y-12 Plant Site	screen	10.00	20.59
GW-657	Y-12 Plant Site	screen	10.00	15.03
GW-658	Y-12 Fuel Station	screen	10.00	21.57
GW-659	Y-12 Fuel Station	screen	11.00	16.07
GW-661	East Fork Poplar Creek	screen	2.50	10.02
GW-662	East Fork Poplar Creek	screen	5.00	19.15
GW-663	East Fork Poplar Creek	screen	1.00	7.21
GW-664	East Fork Poplar Creek	screen	1.00	9.73
GW-665	East Fork Poplar Creek	screen	10.00	32.72
GW-666	East Fork Poplar Creek	screen	2.50	11.26
GW-667	East Fork Poplar Creek	screen	2.00	11.21
GW-668	East Fork Poplar Creek	screen	10.00	26.74
GW-672	Ash Disposal Basin	screen	10.00	30.26
GW-673	Ash Disposal Basin	open	21.00	134.81
GW-674	Ash Disposal Basin	screen	5.00	17.56
GW-676	Ash Disposal Basin	screen	10.00	20.48
GW-677	Ash Disposal Basin	screen	10.00	159.60
GW-678	Ash Disposal Basin	screen	10.00	133.60
GW-679	Ash Disposal Basin	screen	10.00	134.70
GW-680	Ash Disposal Basin	screen	10.00	121.70

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-681	Ash Disposal Basin	screen	10.00	182.40
GW-682	Ash Disposal Basin	screen	10.00	162.50
GW-683	Exit Pathway - Traverse A	screen	50.80	199.41
GW-684	Exit Pathway - Traverse A	screen	14.60	131.53
GW-685	Exit Pathway - Traverse A	open	49.80	140.53
GW-686	Coal Pile Trench	screen	10.00	15.33
GW-687	Coal Pile Trench	screen	10.00	32.30
GW-688	Coal Pile Trench	screen	10.00	55.75
GW-689	Coal Pile Trench	screen	10.00	19.66
GW-690	Coal Pile Trench	screen	10.00	52.45
GW-691	Coal Pile Trench	screen	10.00	20.50
GW-692	Coal Pile Trench	screen	10.00	52.83
GW-693	Coal Pile Trench	screen	10.00	23.46
GW-694	Exit Pathway - Traverse B	open	50.50	207.30
GW-695	Exit Pathway - Traverse B	screen	10.00	64.55
GW-696	Building 8110	screen	10.00	32.50
GW-697	Building 8110	screen	10.00	21.00
GW-698	Building 8110	screen	10.00	75.00
GW-699	Building 8110	screen	10.00	18.65
GW-700	Building 8110	screen	10.00	33.40
GW-701	Building 8110	screen	10.00	28.22
GW-702	Building 8110	screen	10.00	23.89
GW-703	Exit Pathway - Traverse B	open	47.00	184.89
GW-704	Exit Pathway - Traverse B	open	10.00	258.74
GW-705	Exit Pathway - Traverse B	open	70.00	310.51
GW-706	Exit Pathway - Traverse B	open	25.50	185.39
GW-707	Y-12 Plant Site	screen	10.00	16.65
GW-708	Y-12 Plant Site	screen	10.00	13.24
GW-709	Landfill II	screen	10.00	83.16
GW-710	Exit Pathway - Traverse W	open	204.80	747.73
GW-711	Exit Pathway - Traverse W	open	50.20	669.44
GW-712	Exit Pathway - Traverse W	open	16.00	460.98
GW-713	Exit Pathway - Traverse W	open	10.20	318.00
GW-714	Exit Pathway - Traverse W	open	29.90	147.78
GW-715	Exit Pathway - Traverse W	screen	10.00	45.65
GW-722	New Hope Pond	Westbay	569.30	646.97

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-723	Exit Pathway - Traverse C	open	103.90	447.40
GW-724	Exit Pathway - Traverse C	open	12.00	304.25
GW-725	Exit Pathway - Traverse C	open	10.00	145.29
GW-726	Bear Creek Burial Grounds	Westbay	560.10	602.62
GW-727	Bear Creek Burial Grounds	Westbay	758.30	1002.77
GW-728	Bear Creek Burial Grounds	open	9.30	308.26
GW-729	Bear Creek Burial Grounds	Westbay	1078.90	1363.24
GW-730	Bear Creek Burial Grounds	Westbay	1006.50	1428.25
GW-731	Sediment Disposal Basin	screen	10.00	178.60
GW-732	Sediment Disposal Basin	screen	10.00	192.70
GW-733	Exit Pathway - Traverse J	open	16.40	259.85
GW-734	Exit Pathway - Traverse J	open	N/A	N/A
GW-735	Exit Pathway - Traverse J	screen	10.20	81.04
GW-736	Exit Pathway - Traverse C	screen	10.10	105.07
GW-737	Exit Pathway - Traverse C	screen	10.10	91.91
GW-738	Exit Pathway - Traverse C	screen	20.20	90.22
GW-739	Exit Pathway - Traverse C	open	30.80	323.00
GW-740	Exit Pathway - Traverse C	open	24.40	192.60
GW-742	Chestnut Ridge Security Pits	open	70.00	423.20
GW-743	Chestnut Ridge Security Pits	screen	10.10	162.00
GW-744	Y-12 Grid Well	screen	10.00	69.38
GW-745	Y-12 Grid Well	screen	10.00	35.28
GW-746	Y-12 Grid Well	screen	10.25	17.37
GW-747	Y-12 Grid Well	screen	9.90	81.73
GW-748	Y-12 Grid Well	screen	10.00	29.28
GW-749	Y-12 Grid Well	screen	10.00	18.50
GW-750	Y-12 Grid Well	screen	10.00	75.30
GW-751	Y-12 Grid Well	screen	10.00	62.77
GW-752	Y-12 Grid Well	screen	10.00	18.52
GW-753	Y-12 Grid Well	screen	10.00	73.36
GW-754	Y-12 Grid Well	screen	10.00	26.96
GW-755	Y-12 Grid Well	screen	10.00	62.95
GW-756	Y-12 Grid Well	screen	10.00	19.03
GW-757	Centralized Sanitary Landfill II	screen	30.00	168.28
GW-758	Y-12 Grid Well	screen	10.00	53.25
GW-759	Y-12 Grid Well	screen	10.70	32.57

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
GW-760	Y-12 Grid Well	screen	10.00	63.21
GW-761	Y-12 Grid Well	screen	9.70	18.32
GW-762	Y-12 Grid Well	screen	10.00	61.69
GW-763	Y-12 Grid Well	screen	10.25	18.87
GW-764	Y-12 Grid Well	screen	10.00	68.10
GW-765	Y-12 Grid Well	screen	10.30	34.50
GW-766	Y-12 Grid Well	screen	10.00	48.60
GW-767	Y-12 Grid Well	screen	10.00	21.17
GW-768	Y-12 Grid Well	screen	9.90	67.58
GW-769	Y-12 Grid Well	screen	10.00	62.13
GW-770	Y-12 Grid Well	screen	10.00	21.38
GW-771	Y-12 Grid Well	screen	14.80	61.70
GW-772	Y-12 Grid Well	screen	10.10	18.30
GW-773	Y-12 Grid Well	screen	10.10	61.74
GW-774	Y-12 Grid Well	screen	9.80	28.87
GW-775	Y-12 Grid Well	screen	10.00	56.17
GW-776	Y-12 Grid Well	screen	10.00	22.11
GW-777	Y-12 Grid Well	screen	10.00	61.51
GW-778	Y-12 Grid Well	screen	10.20	24.49
GW-779	Y-12 Grid Well	screen	10.00	65.46
GW-780	Y-12 Grid Well	screen	10.00	20.18
GW-781	Y-12 Grid Well	screen	10.30	71.16
GW-782	Y-12 Grid Well	screen	10.00	38.08
GW-783	Y-12 Grid Well	screen	9.80	16.51
GW-784	Y-12 Grid Well	screen	10.00	66.70
GW-785	Y-12 Grid Well	screen	10.00	26.80
GW-786	Y-12 Grid Well	screen	9.90	66.67
GW-787	Y-12 Grid Well	screen	10.00	19.94
GW-788	Y-12 Grid Well	screen	9.70	70.03
GW-789	Y-12 Grid Well	screen	10.50	25.63
GW-790	Y-12 Grid Well	Westbay	827.80	1042.32
GW-791	Y-12 Grid Well	screen	10.00	72.45
GW-792	Y-12 Grid Well	screen	9.80	31.27
GW-793	LLWAGSF	screen	10.00	31.53
GW-794	LLWAGSF	screen	10.10	42.06
GW-795	LLWAGSF	screen	10.00	22.86

MONITORING WELL CONSTRUCTION SUMMARY

WELL NO.	LOCATION	SCREEN OR OPEN-HOLE COMPLETION	LENGTH OF SCREEN OR OPEN-HOLE INTERVAL (ft)	CONSTRUCTED DEPTH (ft below TOC)
LL/HAZ-02	Gum Branch Road	screen	20.00	N/A
LL/HAZ-03	Gum Branch Road	screen	10.00	16.99
LL/HAZ-05	Gum Branch Road	screen	15.00	25.80
LL/HAZ-07	Gum Branch Road	screen	20.00	41.51
LL/HAZ-08	Gum Branch Road	screen	20.00	33.18
LL/HAZ-09	Gum Branch Road	screen	25.00	59.96
LL/HAZ-10	Gum Branch Road	screen	20.00	41.75
LL/HAZ-13	Gum Branch Road	screen	10.00	401.27
LL/HAZ-16	Gum Branch Road	screen	15.00	24.00
LL/HAZ-17	Gum Branch Road	screen	15.00	40.00
LL/HAZ-18	Gum Branch Road	screen	5.00	22.00
LL/HAZ-19	Gum Branch Road	screen	5.00	23.5
OR-02	Gum Branch Road	unknown	N/A	N/A
OR-04	Gum Branch Road	unknown	N/A	N/A
OR-05	Gum Branch Road	unknown	N/A	N/A
OR-23	Gum Branch Road	unknown	N/A	N/A

APPENDIX B

PROCEDURES

B.1 WELL INSPECTION PROCEDURE

Oak Ridge Y-12 Plant
Groundwater Protection Program
Standard Practice Procedure

Well Inspection Procedure
G-001
Rev. 1., July 1994

Approved by: W. Kevin Jago Date: 8-17-94

Effective Date: 8-18-94

Record of Changes

Change No.	Affected Pages	Approved Date	Expiration Date	Change No.	Affected Pages	Approved Date	Expiration Date

Next 3-year review required no later than: July 1997.

CONTENTS

1.0 PURPOSE

This is a procedure intended to establish a systematic method for inspecting the physical condition of a monitor well and to identify monitor-well maintenance needs that will extend the life of the well and ensure the collection of representative groundwater quality samples and hydrologic data from the well.

2.0 APPLICABILITY

This procedure is applicable to all monitor wells located at the Y-12 Plant.

3.0 DEFINITIONS

Annular Seal - a grout seal installed between the well casing and borehole wall or outer casing.

Christy Box - steel or plastic box installed below the ground surface that allows access to the top of casing in a flush-mounted well design.

Concrete Pad - typically a neat cement or concrete pad at ground surface that surrounds the well casing or protective surface casing.

Constructed Depth - the distance from the top of the innermost well casing to the bottom of the screened or open interval as reported in: Updated Subsurface Data Base for Bear Creek Valley, Chestnut Ridge, and Parts of Bethel Valley on the U.S. Department of Energy Oak Ridge Reservation, Y/TS-881(R2), August 1994 (or most recent version).

Flush-Mounted Well - well head completion where the top of casing is below the ground surface.

Groundwater Protection Program (GWPP) - a program developed per DOE Order 5400.1 to characterize the hydrogeology and monitor and protect groundwater quality at the Y-12 Plant.

GWPP Manager - person responsible for day-to-day management of the Y-12 Plant Groundwater Protection Program or authorized designee.

Guard Posts - posts placed around a well to prevent vehicular collision damage to the well.

Hasp - a welded fastening that allows a well cap to be locked to the well casing, or a hinged steel lid to be locked to the protective casing.

Incrustation - deposition of mineral matter on the well screen and/or casing, typically through chemical or biological reactions.

Lock - a waterproof, steel or brass fastening device that secures the well cap or protective-casing lid and prevents unauthorized access to the well.

Measured Depth - the distance from the top of innermost well casing to the bottom of the well as measured in the field.

Monitor Well - a well installed to enable collection of groundwater samples and/or hydrologic data (i.e., staticwater level).

Open-Hole Interval - a portion of a monitor well that contains no well casing through which groundwater enters the well and samples are obtained.

Primary Inspection Items - those components of a monitor well that are critical to the collection of representative groundwater quality samples and hydrologic information. Primary inspection items include the well casing and screen, hasp, lock, cap, well identification, and condition of the screened or open-hole interval.

Protective Surface Casing - a section of large-diameter steel pipe that is emplaced over the surface extension of a smaller diameter well casing to provide structural protection to the well and restrict unauthorized access to the well. A weep (hole) is usually located near the base of the casing to serve as a drain and prevent water from collecting inside the protective surface casing.

Screened Interval - A portion of a monitor well that contains a slotted, perforated, or wire-wound section of casing (e.g., screen) through which groundwater enters the well and samples are obtained.

Secondary Inspection Items - those components of a monitor well which generally do not affect collection of representative groundwater quality samples or hydrologic information; these include well access, guard posts, and concrete pad.

Sediment Accumulation - accumulation of sand, silt, precipitates, or other debris in the bottom of the well.

Well Access - the means by which a well is accessible (e.g., gravel road).

Well Cap - a removable cap or hinged steel lid used to cover a well casing.

Well Casing - steel, stainless steel or PVC pipe which provides unobstructed access to the monitored interval.

Well Identification - a stainless steel plate that is engraved with the well identification number and is attached to the outermost casing.

4.0 REFERENCES

4.1 Use References

4.1.1 "Comprehensive Groundwater Monitoring Plan for the Department of Energy Y-12 Plant Oak Ridge, Tennessee," Y/SUB/90-00206C/5, September 1990.

4.1.2 "Calendar Year 1993 Groundwater Quality Report for the Bear Creek Hydrogeologic Regime, Y-12 Plant, Oak Ridge, Tennessee," Y/SUB/94-EAQ10C/1, Parts 1 and 2.

4.1.3 "Calendar Year 1993 Groundwater Quality Report for the Chestnut Ridge Hydrogeologic Regime, Y-12 Plant, Oak Ridge, Tennessee," Y/SUB/94-EAQ10C/3, Parts 1 and 2.

4.1.4 "Calendar Year 1993 Groundwater Quality Report for the Upper East Fork Poplar Creek Hydrogeologic Regime, Y-12 Plant, Oak Ridge, Tennessee," Y/SUB/94-EAQ10C/2, Parts 1 and 2.

4.1.5 "Oak Ridge Y-12 Plant Groundwater Protection Program Management Plan (Revised)," Y/SUB/93-YP507C/4, June 1993 (or most recent revision).

4.1.6 "Updated Subsurface Data Base for Bear Creek Valley, Chestnut Ridge, and Parts of Bethel Valley on the U.S. Department of Energy Oak Ridge Reservation," Y/TS-881(R2), August 1994 (or most recent revision.

4.1.7 "Monitor Well Inspection and Maintenance Plan, Y-12 Plant, Oak Ridge, Tennessee (Revised)," Y/TS-1215, July 1994.

4.2 Source References

4.2.1 Aller, Linda, Truman W. Bennett, Gene Hackett, Rebecca J. Petty, Jay H. Lehr, Helen Sedoris, and David M. Nielsen "Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells", NWWA, Dublin, Ohio, 398 p.

4.2.2 Driscoll, Fletcher G., 1986, "Groundwater and Wells", Johnson Division, St. Paul, Minnesota, 1089 p.

4.2.3 "Environmental Surveillance Procedures Quality Control Program," ESH/Sub/87/21706/1, February 1987.

4.2.4 Gass, Tyler E., Truman W. Bennett, James Miller and Robin Miller, 1980, "Manual of Water Well Maintenance and Rehabilitation Technology", NWWA, Dublin, Ohio, 247 p.

4.2.5 Nielsen, David M., 1991, "Practical Handbook of Groundwater Monitoring", Lewis Publishers, Chelsea, Michigan, 717 p.

4.2.6 U.S. Department of Energy, "Procedures for the Collection and Preservation of Groundwater and Surface Water Samples and for the Installation of Monitoring Wells", GJ/TMC-08 (Second Edition) UC-70A, October 1985.

4.2.7 U.S. Environmental Protection Agency, "Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual", Region IV, Athens, Georgia, February 1991.

4.2.8 U.S. Environmental Protection Agency, "RCRA Comprehensive Groundwater Monitoring Evaluation Document" (RCRA Groundwater Monitoring Systems), RCRA Enforcement Division, March 1988.

4.2.9 U.S. Environmental Protection Agency, "RCRA Facility Investigation (RFI) Guidance, Volumes I-IV", OSWER Directive 9502.00-6C, July 1987.

4.2.10 U.S. Environmental Protection Agency, "RCRA Groundwater Monitoring Technical Enforcement Guidance Document", OSWER-9950.1, September 1986.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Annular Seal

The downhole condition of the annular seal cannot be determined without geophysical techniques. Such evaluation is beyond the scope of this procedure.

5.2 Constructed Well Depth

The reported constructed depth of a well may require confirmation or may be inaccurate as recorded in original well construction records.

5.3 Incrustation

The downhole condition of a well screen cannot be determined without remote sensing. Such evaluation is beyond the scope of this procedure.

5.4 Limits of Tape Measure

Some wells are completed at depths (i.e., > 300 ft) that cannot be measured with a flat, weighted steel or fiberglass measuring tape. Additionally, the depth of wells which contain large water columns (i.e., greater than 100 ft) also may not be measurable with a flat, weighted measuring tape. A circular, stainless steel or coated steel measuring cable shall be used for all wells greater than a 300 ft depth and is preferable for all wells.

5.5 Measurement Accuracy

Increased depth and large water columns decrease the accuracy of the well depth measurements.

5.6 Safety

Established safety standards and requirements of Martin Marietta Corporation, DOE, and OSHA will apply to the inspection and maintenance of a monitor well. All field personnel will be provided with appropriate safety clothing, equipment, and training.

5.7 Well Access

A well may be deemed inaccessible because of site conditions or operations.

6.0 PREREQUISITES

6.1 Initial Inspection

If a well is currently scheduled for Plugging and Abandonment (P/A), inspection and maintenance of the well is not performed.

6.2 Subsequent Inspections

If a well is currently included in the comprehensive groundwater monitoring program, the well is classified as active and a well inspection is performed annually. If not, the well is classified as inactive and a well inspection is performed every three years. Wells for which the status changes from inactive to active will be inspected prior to monitoring.

7.0 TEST EQUIPMENT, TOOLS AND SUPPLIES

7.1 Documentation: Updated Subsurface Data Base (Y/TS-881/R2 or most recent revision), Well Inspection Maintenance Summary, Well Construction Data Summary, Well Inspection Checklist, Well Maintenance Request Form, Well Depth Measurement Procedure (G-002), Active Well Status Checklist, and Daily Activity Log.

7.2 Field Equipment: Well locks, keys to unlock wells, weighted steel or fiberglass measuring tape and/or cable, pens, indelible markers, and clip-board.

7.3 Personal Protective Equipment:
Required: Rubber gloves
Optional: Safety shoes, tyvek coveralls, protective eye-wear, hard hat.

7.4 Decontamination Equipment: Plastic ground cover, distilled water, wash bottles, mild detergent, and collection vessels for wash and rinse water.

8.0 ACTION STEPS

8.1 Preparation

8.1.1 Identify wells to be inspected from the Well Inspection/Maintenance Summary.

8.1.2 Review Well Location Map(s) and Well Construction Data Summary to determine:
a. the well location;
b. the constructed depth of the well; and
c. length of the screen or open-hole interval for the well.

8.2 Inspection

8.2.1 On the Well Inspection Checklist, enter the inspection number for the well. The Y-12 Plant GWPP Manager or authorized designee will assign the inspection number using the following format: two-digit number denoting the year followed by a dash followed by a three-digit number (example: 91-001). Inspection numbers for each well should be assigned consecutively (i.e., 91-001, 91-002, 91-003,...).

Complete the Well Information section of checklist using information from the Updated Subsurface Data Base (for well number) and the Well Construction Data Summary (for site, screened or open-hole interval length, and constructed well depth).

8.2.2 Verify that the monitor well is accessible by vehicle (active wells only). If construction, fencing, fallen trees, or site operation or closure activities have isolated the well, note on Well Inspection Checklist and report the finding to the Y-12 GWPP Manager or authorized designee. Otherwise, note any maintenance needs for well access road on Well Inspection Checklist.

8.2.3 Inspect guard posts for damage, physical deterioration, paint degradation, and proper positioning (active wells only). Each post should be painted high-traffic yellow, and be a height above ground that is adequate to prevent vehicular collision damage. The guard posts should be situated between the well and each

traffic approach to the well. Complete appropriate section of Well Inspection Checklist.

8.2.4 Confirm that a stainless steel plate engraved with a legible well identification number is attached to the outermost casing of the monitor well. Through a comparison with the Updated Subsurface Data Base, confirm that the well number is correct. Complete appropriate section of Well Inspection Checklist.

8.2.5 Inspect the concrete pad for cracks and deterioration (active wells only). The top of the pad should be level or slope away from the casing to prevent ponding of rain water around the well casing. Complete appropriate section of Well Inspection Checklist.

8.2.6 Inspect the lock for corrosion and operation of the locking mechanism. If a lock is corroded and difficult to open, replace it. **Do not** use any lubricant to improve lock performance. Complete appropriate section of Well Inspection Checklist.

8.2.7 Inspect the integrity of the hasps, making certain that they are firmly welded to the well cap and/or the metal casing. Complete appropriate section of Well Inspection Checklist.

8.2.8 Inspect the condition of the well cap or hinged steel lid. Complete appropriate section of Well Inspection Checklist.

8.2.9 Inspect all above-ground well casings and protective surface casings (if present) for cracks, corrosion, breaks, bends, or any other signs of deterioration that may effect structural integrity. Inspect base of protective surface casing to locate weep. Complete appropriate section of Well Inspection Checklist.

8.2.10 For flush-mounted wells, inspect traffic covers for presence of fasteners (bolts), excessive rust or deterioration, or any other notable damage. Covers should be securely bolted to the christy box.

8.2.11 For flush-mounted wells, inspect christy box for excessive rust or other damage. The concrete pad surrounding the christy box should be sloped as

to minimize the potential for water accumulation inside of the box.

8.2.12 For flush-mounted wells, inspect the water-tight well cap for tightness and condition of the rubber seal. Caps should fit securely so that they cannot be turned by hand.

8.2.13 Inspect the annular seal for cracks, if visible, and by shaking the well casing. The casing should not easily move. Complete appropriate section of Well Inspection Checklist.

8.2.14 Put on rubber gloves.

8.2.15 Remove lock and well cap.

8.2.16 Verify that an established reference mark (measuring point) is on the top of the innermost well casing. If not, establish a mark with indelible marker on the well casing for future reference and notify the Y-12 Plant GWPP Manager or authorized designee.

8.2.17 Measure the well depth from the established reference mark to the bottom of the well and record on the checklist to the nearest 0.1 foot. Perform measurement in accordance with Y-12 Plant Well Depth Measurement Procedure (G-002).

8.2.18 Compare measured well depth to the constructed depth of the well by using the equation: Sediment Accumulation = Constructed Depth - Measured Depth. The sediment accumulation divided by the screen or open-hole interval length must be less than 0.2. Complete appropriate section of Well Inspection Checklist.

8.2.19 If any shaded yes/no answer box for each item on Well Inspection Checklist is checked, complete Well Maintenance Request section of checklist noting if maintenance is needed for Primary or Secondary Inspection Item(s), or both.

Enter the maintenance request number for the well on the Well Inspection Checklist and Maintenance Request Form. The Y-12 Plant GWPP Manager or authorized designee will assign maintenance request numbers using the following format: a two-digit number denoting the year followed by a

dash followed by a three-digit number with a "P" (for Primary Inspection Item), or "S" (for Secondary Inspection Item), or "PS" (for both Primary and Secondary Inspection Items) suffix (examples: 91-001P, 91-001S, 91-001PS). Consecutive maintenance request numbers for each well should be assigned (example: 91-001P, 91-002S, 91-003S,...).

8.2.20 Sign and date Well Inspection Checklist.

9.0 ACCEPTANCE CRITERIA

If none of the inspection items require maintenance, inspection of the well is complete.

10.0 POST PERFORMANCE WORK ACTIVITIES

10.1 Documentation

Compile Well Inspection Checklists and Well Maintenance Request Forms. Transfer appropriate data from checklists and forms to the Well Inspection/Maintenance Summary. Submit all checklists, forms, and the completed Well Inspection/Maintenance Summary to the Y-12 Plant GWPP Manager or authorized designee.

10.2 Maintenance Work Inspection

The Y-12 Plant GWPP Manager or authorized designee will schedule and coordinate all well maintenance activities. When requested maintenance has been completed, obtain original Well Maintenance Request Form from Y-12 Plant GWPP Manager or authorized designee and inspect maintenance work performed.

10.3 Plugging and Abandonment Requests

If the Y-12 Plant GWPP Manager or authorized designee determines that, based upon consultations with field inspection personnel and a well site visit (if needed), a Primary Inspection Item is damaged or deteriorated beyond practical repair, the well may require plugging and abandonment. The Y-12 Plant GWPP Manager or authorized designee will prepare all Plugging and Abandonment Request Forms and schedule and coordinate all related activities.

B.2 WELL DEPTH MEASUREMENT PROCEDURE

Oak Ridge Y-12 Plant
Groundwater Protection Program
Standard Practice Procedure

Well Depth Measurement Procedure
G-002
Rev. 1., July 1994

Approved by: W. Kevin Jago Date: 8-17-94

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CONTENTS

1.0 PURPOSE

This procedure is a standardized method for determining the measured depth of a groundwater monitoring well. The measured depth of a well, when compared to the constructed depth of the well, provides an indication of sediment accumulation or obstructions within the well.

2.0 APPLICABILITY

Measuring well depth is applicable to all monitor wells located at the Y-12 Plant.

3.0 DEFINITIONS

Constructed Depth - the distance from the top of the innermost well casing to the bottom of the screened or open interval as reported in: Updated Subsurface Data Base for Bear Creek Valley, Chestnut Ridge, and Parts of Bethel Valley on the U.S. Department of Energy Oak Ridge Reservation, Y/TS-881(R2), August 1994 (or most recent revision).

Groundwater Protection Program (GWPP) - a program developed per DOE Order 5400.1 to characterize the hydrogeology and monitor and protect groundwater quality at the Y-12 Plant.

GWPP Manager - person responsible for day-to-day management of the Y-12 Plant Groundwater Protection Program or authorized designee.

Measured Depth - the distance from the top of the innermost well casing to the bottom of the well as measured in the field.

Sediment Accumulation - accumulation of sand, silt, precipitates, or other debris in the bottom of the well.

Well Cap - a removable cap used to cover a well casing.

Well Casing - steel, stainless steel, or PVC pipe which provides unobstructed access to the monitored interval.

Well Identification - a steel plate embossed with the well identification number that is attached to the outermost casing.

4.0 REFERENCES

4.1 Use References

4.1.1 "Updated Subsurface Data Base for Bear Creek Valley, Chestnut Ridge, and Parts of Bethel Valley on the U.S. Department of Energy Oak Ridge Reservation", Y/TS-881(R2), August 1994 (or most revision).

4.1.2 "Monitor-Well Inspection and Maintenance Plan, Y-12 Plant, Oak Ridge, Tennessee (Revised)", Y/TS-1215, July 1994

4.2 Source References

4.2.1 Driscoll, Fletcher G., 1986, "Groundwater and Wells", Johnson Division, St. Paul, Minnesota, 1089 p.

4.2.2 "Environmental Surveillance Procedures Quality Control Program", ESH/Sub/87/21706/1, February 1987.

4.2.3 Gass, Tyler E., Truman W. Bennett, James Miller and Robin Miller, 1980, "Manual of Water Well Maintenance and Rehabilitation Technology", NWWA, Dublin, Ohio, 247 p.

4.2.4 U.S. Environmental Protection Agency, "A Compendium of Superfund Field Operations Methods", EPA/540/P-87/001, 1987.

4.2.5 U.S. Environmental Protection Agency, "RCRA Groundwater Monitoring Technical Enforcement Guidance Document", OSWER-9950.1, September 1986.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Constructed Well Depth

The reported constructed depth of the well may require confirmation or may be inaccurate as recorded in original well construction records.

5.2 Limits of Tape Measure

Some wells are completed at depths (i.e., > 300 ft) that cannot be measured with a flat, weighted steel or fiberglass measuring tape. Additionally, the depth of wells which contain large water columns (i.e., greater than 100 ft.) also may not be measurable with a flat, weighted measuring tape. A stainless steel or coated steel measuring cable shall be used for all wells greater than a 300-foot depth and is preferable for all wells.

5.3 Measurement Accuracy

Increased depth and large water columns decrease the accuracy of the well depth measurement.

5.4 Safety

Established safety standards and requirements of Martin Marietta Corporation, DOE, and OSHA will apply to the process of obtaining the measured depth of a monitor well. All field personnel will be provided with appropriate safety clothing, equipment, and training.

5.5 Well Access

A well may be deemed inaccessible because of site conditions or operations.

6.0 PREREQUISITES

All monitor wells will have the measured depth determined during a scheduled well inspection.

7.0 TEST EQUIPMENT, TOOLS AND SUPPLIES

7.1 Documentation: Well Construction Data Summary, Updated Subsurface Data Base, Y/TS-881(R2) (or most recent version), Daily Activity Logbook, and Monitor-Well Inspection Checklist.

7.2 Personnel Protection Equipment:
Required: rubber gloves
Optional: safety shoes, tyvek coveralls, hard hat, and protective eye-wear.

7.3 Field Equipment: Keys to unlock wells, indelible marker, pen, clipboard, and weighted fiberglass or steel measuring tape(s) and/or cable (the weight will be stainless steel or other approved inert material and have a blunt end facing down).

7.4 Decontamination Equipment: plastic ground cover, de-ionized water, mild detergent, and wash and rinse water collection vessels.

8.0 ACTION STEPS

8.1 Preparation: Review Well Construction Data Summary and Updated Subsurface Data Base to obtain the constructed depth of the well and determine the well location.

8.2 Record well number and date.

8.3 Put on rubber gloves.

8.4 Remove well lock and well cap.

8.5 Locate the reference mark at the top of the innermost well casing. If a reference mark is not present, make one with indelible marker, and notify Y-12 Plant GWPP Manager or authorized designee.

8.6 Select the appropriate length measuring tape and/or cable.

8.7 Slowly lower the weight into the well until the bottom of the well is encountered as indicated by slack in the tape measure or a solid impact.

8.8 When slack or impact occurs, slowly lift the tape until the tape becomes taut. Raise and lower the tape until the point of tension release becomes clearly defined.

8.9 Hold the tape to the reference mark on the casing.

8.10 Record the measurement to the nearest 0.1 ft as the measured well depth in the Daily Activity Logbook and/or Well Inspection Checklist.

8.11 Repeat steps 8.6 - 8.9 several times to ensure an accurate measurement. Readings should remain constant (i.e., within 0.1 ft).

8.12 Remove the measuring tape from the well and decontaminate in accordance with ESP-900.

8.13 Close well cap and replace lock.

9.0 ACCEPTANCE CRITERIA

An acceptable measured depth of a well is achieved when the range of three or more consecutive measurements are within 0.1 ft.

10.0 POST-PERFORMANCE ACTIVITIES

Report to the Y-12 GWPP Manager or authorized designee those wells with significant (i.e., greater than 1 ft.) differences between the constructed well depth and the measured well depth.

11.0 RECORDS

11.1 Daily Activity Log

11.2 Well Inspection Checklist

APPENDIX C

WELL INSPECTION PERSONNEL TRAINING CERTIFICATION FORM

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

MONITORING WELL INSPECTION TRAINING CERTIFICATION

FOR 19____

The following personnel have received monitoring well inspection training:

NAME	SIGNATURE	BADGE NO.	DATE

Certification: _____ _____

(Y-12 Plant GWPP Manager) (Date)

APPENDIX D

FORMS

EXPLANATION

Inspection Checklist No.

96-001 - Unique number assigned to each well: two-digit number designating the inspection year (calendar) followed by a three-digit number.

Maintenance Request No.

96-001P - Primary maintenance required; first Maintenance Request of 1996.

96-002S - Secondary maintenance required; second Maintenance Request of 1996.

96-003PS - Primary and secondary maintenance required; third Maintenance Request of 1996.

Plugging and Abandonment Request No.

96-001P/A - First well requested to be plugged and abandoned in 1996.

D.1 WELL INSPECTION CHECKLIST

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM
WELL INSPECTION CHECKLIST
INSPECTION NO. _____

WELL INFORMATION

Well Number: _____ Screen or Open Interval Length: _____ ft

Site: _____ Constructed Depth: _____ ft

PRIMARY INSPECTION ITEMS

WELL CASINGS ☐ Steel ☐ Stainless Steel ☐ PVC	NO	YES	N/A
1. Is the steel or stainless steel well casing corroded, bent, or broken?	☐	☒	☐
2. Is the PVC well casing cracked or broken?	☐	☒	☐
3. Is a protective surface casing installed (PVC well only)?	☒	☐	☐
4. Is the protective casing corroded, bent, or broken?	☐	☒	☐
5. Is a weep located at the base of the protective casing?	☒	☐	☐
6. Is the steel, stainless steel, or PVC well casing loose?	☐	☒	☐
WELL SECURITY			
1. Does the well have a well cap or lid?	☒	☐	☐
2. Does the well have a waterproof steel/brass lock?	☒	☐	☐
3. Are the hasps firmly welded to well cap and/or metal casing?	☒	☐	☐
DOWNHOLE CONDITION			
1. Is a measurement reference point marked on the top of the well casing?	☒	☐	☐
2. *Measured depth of well from top of well casing:* _____ ft			
3. Calculate: (Constructed Depth - Measured Depth)/Screen or Open Interval Length: _____ %			
4. Is this value > 0.2 (represents % of screen or open-hole interval)?	☐	☒	☐
5. Do any obstructions occur within the well?	☐	☒	☐

SECONDARY INSPECTION ITEMS

WELL ACCESS:	NO	YES	N/A
1. Does the access road require regrading or additional gravel?	☐	☒	☐
2. Do any obstructions (locked gates, fallen trees, etc.) block access to well? Explain: _____	☐	☒	☐
WELL IDENTIFICATION:			
1. Is a stainless steel plate with engraved well number attached to the outermost casing?	☒	☐	☐
2. Is the well number legible?	☒	☐	☐
3. Is the well identification number correct?	☒	☐	☐
CONCRETE PAD:			
1. Is a concrete pad installed (active wells only)?	☒	☐	☐
2. Is the pad cracked or deteriorated?	☐	☒	☐
3. Is the pad sloped to prevent water from ponding around the casing?	☒	☐	☐
GUARD POSTS:			
1. Are the guard posts damaged?	☐	☒	☐
2. Are the guard posts positioned to prevent collision damage to well?	☒	☐	☐
3. Are the guard posts of adequate height?	☒	☐	☐
4. Is the high-traffic yellow paint degraded?	☐	☒	☐

WELL MAINTENANCE REQUEST

Complete only if any of the above shaded yes/no boxes are checked.

☐ *Primary Item(s)* ☐ *Secondary Item(s)* *Maintenance Request Number:* _____

COMMENTS

_____

_____

Inspection Date: _____ Inspected By: _____

D.2 WELL MAINTENANCE REQUEST FORM

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL MAINTENANCE REQUEST

REQUEST NO.: _____

WELL NUMBER:	SITE:
INSPECTION NUMBER:	INSPECTED BY:

MAINTENANCE TO BE PERFORMED:

☐ Build/Repair Concrete Pad	☐ Replace Cap
☐ Install/Repair Guard Posts	☐ Extend or Repair Casing*
☐ Repair/Replace Hasp(s)	☐ Well Identification*
☐ Replace Lock	☐ Well Access*
☐ Well Rehabilitation*	☐ Other*

*COMMENTS/EXPLANATION: _____

MAINTENANCE PERFORMED BY:	
DATE REQUEST SUBMITTED:	DATE WORK COMPLETED:
MAINTENANCE WORK PERFORMED:	

MAINTENANCE INSPECTED BY:	DATE INSPECTED:
INSPECTION COMMENTS:	

APPROVED BY: _____ DATE: _____

(GWPP MANAGER OR DESIGNEE)

96-046MS/090596

D.3 WELL PLUGGING AND ABANDONMENT REQUEST FORM

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

PLUGGING AND ABANDONMENT REQUEST

REQUEST NO.: _____

WELL NUMBER:	SITE:
INSPECTION NUMBER:	INSPECTED BY:

REASON FOR PLUGGING AND ABANDONMENT:

- ☐ Well Casing Damage/Deterioration
- ☐ Annular Grout Deterioration
- ☐ Loss of Well Security
- ☐ Downhole Conditions
- ☐ Site Construction, Closure, or Operation

COMMENTS/EXPLANATION: _____

APPROVED BY: _____ DATE: _____

(GWPP MANAGER OR DESIGNEE)

APPENDIX E

ACTIVE WELL STATUS CHECKLIST

Active Well Status Checklist, Calendar Year 1996

Well No.	Location	ACTIVE	CHANGE IN STATUS	WELL P&A	Effective Date of Change	Approval
55-6A	Y-12	X			1/1/96	
55-1A	Y-12	X			1/1/96	
55-1C	Y-12	X			1/1/96	
56-4C	Y-12			X	1/10/96	
55-2C	Y-12	X			1/1/96	
55-2B	Y-12	X			1/1/96	
GW-005	OL	X			1/1/96	
GW-008	OL	X			1/1/96	
GW-012	OL	X			1/1/96	
GW-040	BG	X			1/1/96	
GW-042	BG	X			1/1/96	
GW-043	OL	X			1/1/96	
GW-044	OL	X			1/1/96	
GW-046	BG	X			1/1/96	
GW-053	BG	X			1/1/96	
GW-056	BG	X			1/1/96	
GW-068	BG	X			1/1/96	
GW-069	BG	X			1/1/96	
GW-071	BG	X			1/1/96	
GW-072	BG	X			1/1/96	
GW-073	OL	X			1/1/96	
GW-074	OL	X			1/1/96	
GW-075	OL	X			1/1/96	
GW-076	OL	X			1/1/96	
GW-079	BG	X			1/1/96	
GW-080	BG	X			1/1/96	
GW-082	BG	X			1/1/96	
GW-084	OL	X			1/1/96	
GW-085	OL	X			1/1/96	
GW-095	BG	X			1/1/96	
GW-101	S3	X			1/1/96	
GW-108	S3	X			1/1/96	
GW-109	S3	X			1/1/96	
GW-115	S3	X			1/1/96	
GW-127	S3	X			1/1/96	
GW-141	L IV	X			1/1/96	
GW-142	KHQ	X			1/1/96	
GW-143	KHQ	X			1/1/96	
GW-144	KHQ	X			1/1/96	
GW-145	KHQ	X			1/1/96	
GW-146	KHQ		X		7/1/96	
GW-147	KHQ		X		7/1/96	
GW-148	NHP	X			1/1/96	
GW-149	NHP	X			1/1/96	

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Well No.	Location	ACTIVE	CHANGE IN STATUS	WELL P&A	Effective Date of Change	Approval
GW-151	NHP	X			1/1/96	
GW-153	NHP	X			1/1/96	
GW-154	NHP	X			1/1/96	
GW-156	CRSDB	X			1/1/96	
GW-158	CRSDB	X			1/1/96	
GW-159	CRSDB	X			1/1/96	
GW-160	CRBAWP	X			1/1/96	
GW-161	CRBAWP	X			1/1/96	
GW-162	BG	X			1/1/96	
GW-169	USGS		X		6/18/96	
GW-170	USGS	X			1/1/96	
GW-171	USGS	X			1/1/96	
GW-172	USGS		X		6/18/96	
GW-174	CRSP	X			1/1/96	
GW-175	CRSP		X		4/1/96	
GW-177	CRSP		X		4/1/96	
GW-184	RQ	X			1/1/96	
GW-186	RQ	X			1/1/96	
GW-187	RQ	X			1/1/96	
GW-188	RQ	X			1/1/96	
GW-191	B4		X		7/9/96	
GW-192	B4		X		7/9/96	
GW-194	B4		X		7/9/96	
GW-195	B4		X		7/9/96	
GW-203	UNC	X			1/1/96	
GW-205	UNC	X			1/1/96	
GW-207	USGS	X			1/1/96	
GW-208	USGS	X			1/1/96	
GW-217	L IV	X			1/1/96	
GW-218	UOV	X			1/1/96	
GW-220	NHP	X			1/1/96	
GW-221	UNC	X			1/1/96	
GW-222	NHP	X			1/1/96	
GW-223	NHP	X			1/1/96	
GW-230	USGS	X			1/1/96	
GW-231	KHQ	X			1/1/96	
GW-232	USGS		X		6/18/96	
GW-240	NHP	X			1/1/96	
GW-243	S3	X			1/1/96	
GW-244	S3	X			1/1/96	
GW-245	S3	X			1/1/96	
GW-246	S3	X			1/1/96	
GW-247	S3	X			1/1/96	

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Well No.	Location	ACTIVE	CHANGE IN STATUS	WELL P&A	Effective Date of Change	Approval
GW-248	BG	X			1/1/96	
GW-249	BG	X			1/1/96	
GW-250	BG	X			1/1/96	
GW-251	S2		X		7/9/96	
GW-253	S2		X		7/9/96	
GW-257	BG	X			1/1/96	
GW-274	SY	X			1/1/96	
GW-275	SY	X			1/1/96	
GW-276	S3	X			1/1/96	
GW-287	BG	X			1/1/96	
GW-290	BG	X			1/1/96	
GW-291	BG	X			1/1/96	
GW-292	ECRWP	X			1/1/96	
GW-293	ECRWP	X			1/1/96	
GW-294	ECRWP	X			1/1/96	
GW-296	ECRWP	X			1/1/96	
GW-298	CRBAWP	X			1/1/96	
GW-299	CRBAWP	X			1/1/96	
GW-300	CRBAWP	X			1/1/96	
GW-301	CRBAWP	X			1/1/96	
GW-302	UNC	X			1/1/96	
GW-305	L IV	X			1/1/96	
GW-311	RS	X			1/1/96	
GW-315	SPI	X			1/1/96	
GW-321	ADB	X			1/1/96	
GW-338	WCPA	X			1/1/96	
GW-339	UNC	X			1/1/96	
GW-363	L I	X			1/1/96	
GW-372	BG	X			1/1/96	
GW-373	BG	X			1/1/96	
GW-380	NHP	X			1/1/96	
GW-383	NHP	X			1/1/96	
GW-384	NHP	X			1/1/96	
GW-385	NHP	X			1/1/96	
GW-512	ADB	X			1/1/96	
GW-513	ADB	X			1/1/96	
GW-514	ADB	X			1/1/96	
GW-521	L IV	X			1/1/96	
GW-522	L IV	X			1/1/96	
GW-537	LDS	X			1/1/96	
GW-539	CDL VII	X			1/1/96	
GW-540	CDL VII	X			1/1/96	
GW-541	CDL VII	X			1/1/96	
GW-542	CDL VII	X			1/1/96	

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Well No.	Location	ACTIVE	CHANGE IN STATUS	WELL P&A	Effective Date of Change	Approval
GW-543	CDL VII	X			1/1/96	
GW-544	CDL VII	X			1/1/96	
GW-546	CDL VII	X			1/1/96	
GW-557	L V	X			1/1/96	
GW-560	CDL VII	X			1/1/96	
GW-562	CDL VII	X			1/1/96	
GW-564	CDL VII	X			1/1/96	
GW-603	NHP	X			1/1/96	
GW-604	NHP	X			1/1/96	
GW-605	NHP	X			1/1/96	
GW-606	NHP	X			1/1/96	
GW-608	CRSP		X		4/1/96	
GW-609	CRSP	X			1/1/96	
GW-610	CRSP		X		4/1/96	
GW-611	CRSP		X		4/1/96	
GW-612	CRSP	X			1/1/96	
GW-613	S3	X			1/1/96	
GW-614	S3	X			1/1/96	
GW-615	S3	X			1/1/96	
GW-617	S3		X		7/9/96	
GW-618	S3		X		7/9/96	
GW-619	S3		X		7/9/96	
GW-620	S3		X		7/9/96	
GW-621	EXP B	X			1/1/96	
GW-627	BG	X			1/1/96	
GW-642	BG	X			1/1/96	
GW-653	BG	X			1/1/96	
GW-683	EXP A	X			1/1/96	
GW-684	EXP A	X			1/1/96	
GW-685	EXP A	X			1/1/96	
GW-690	CPT	X			1/1/96	
GW-691	CPT	X			1/1/96	
GW-692	CPT	X			1/1/96	
GW-694	EXP B	X			1/1/96	
GW-695	EXP B	X			1/1/96	
GW-698	B8110	X			1/1/96	
GW-700	B8110	X			1/1/96	
GW-703	EXP B	X			1/1/96	
GW-704	EXP B	X			1/1/96	
GW-706	EXP B	X			1/1/96	
GW-709	L II	X			1/1/96	
GW-710	EXP W	X			1/1/96	
GW-711	EXP W	X			1/1/96	
GW-712	EXP W	X			1/1/96	

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Well No.	Location	ACTIVE	CHANGE IN STATUS	WELL P&A	Effective Date of Change	Approval
GW-713	EXP W	X			1/1/96	
GW-714	EXP W	X			1/1/96	
GW-715	EXP W	X			1/1/96	
GW-723	EXP C	X			1/1/96	
GW-724	EXP C	X			1/1/96	
GW-725	EXP C	X			1/1/96	
GW-731	CRSDB	X			1/1/96	
GW-732	CRSDB	X			1/1/96	
GW-733	EXP J	X			1/1/96	
GW-735	EXP J	X			1/1/96	
GW-738	EXP C	X			1/1/96	
GW-740	EXP C	X			1/1/96	
GW-742	CRSP		X		4/1/96	
GW-743	CRSP		X		4/1/96	
GW-744	GRID K1	X			1/1/96	
GW-745	GRID K1	X			1/1/96	
GW-746	GRID K1	X			1/1/96	
GW-747	GRID K2	X			1/1/96	
GW-748	GRID K2	X			1/1/96	
GW-749	GRID K2	X			1/1/96	
GW-750	GRID K2	X			1/1/96	
GW-751	GRID J3		X		7/9/96	
GW-752	GRID J3		X		7/9/96	
GW-757	L II	X			1/1/96	
GW-763	GRID J	X			1/1/96	
GW-766	GRID I2		X		7/9/96	
GW-767	GRID I2		X		7/9/96	
GW-769	GRID G3		X		7/9/96	
GW-770	GRID G3		X		7/9/96	
GW-775	GRID H3		X		7/9/96	
GW-776	GRID H3		X		7/9/96	
GW-779	GRID F2		X		7/9/96	
GW-780	GRID F2		X		7/9/96	
GW-781	GRID E3		X		7/9/96	
GW-782	GRID E3		X		7/9/96	
GW-783	GRID E3		X		7/9/96	
GW-786	GRID E2		X		7/9/96	
GW-787	GRID E2		X		7/9/96	
GW-788	GRID F3		X		7/9/96	
GW-789	GRID F3		X		7/9/96	
GW-791	GRID D2		X		7/9/96	
GW-792	GRID D2		X		7/9/96	
GW-793	LLWAGSF	X			1/1/96	
GW-794	LLWAGSF	X			1/1/96	

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Well No.	Location	ACTIVE	CHANGE IN STATUS	WELL P&A	Effective Date of Change	Approval
GW-795	LLWAGSF	X			1/1/96	
GW-796	L V	X			1/1/96	
GW-797	L V	X			1/1/96	
GW-798	CDL VII	X			1/1/96	
GW-799	L V	X			1/1/96	
GW-801	L V	X			1/1/96	
GW-816	EXP	X			1/1/96	
GW-817	EXP	X			1/1/96	
GW-827	CDL VI	X			1/1/96	
GW-828	OLF	X			1/1/96	
GW-829	OLF	X			1/1/96	
GW-831	ADB	X			1/1/96	
GW-832	NHP	X			5/14/96	
1090	UNC	X			1/1/96	

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