Y/SUB/96-99069C/Y22/3

MARTIN MARIETTA

SITE STATUS MONITORING REPORT AND SITE RANKING FORM FOR UNDERGROUND STORAGE TANK 2331-U AT BUILDING 9201-1

OAK RIDGE Y-12 PLANT
OAK RIDGE, TENNESSEE
FACILITY ID #0-010117

May 1996

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

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

Y/SUB/96-99069C/Y22/3

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Health, Safety, Environment,
and Accountability Organization

Prepared by

Science Applications International Corporation
Under Subcontract 22B-99069C
for the
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

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SITE STATUS MONITORING REPORT

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LIST OF ACRONYMS

BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
BTOC	below top of casing
CAP	Corrective Action Plan
GRO	gasoline range organic
LEL	lower explosive limit
MSL	mean sea level
OVM	organic vapor meter
TDEC	Tennessee Department of Environment and Conservation
TPH	total petroleum hydrocarbon
TWA	time weighted average
UEFPC	Upper East Fork Poplar Creek
UST	underground storage tank

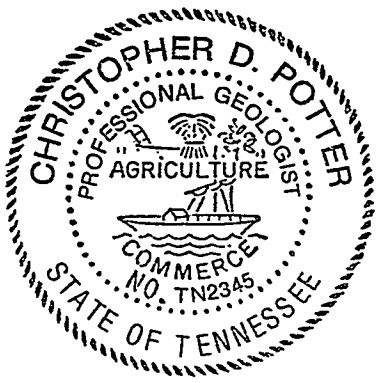
SIGNATURE PAGE FOR THE
SITE STATUS MONITORING REPORT AND
THE SITE RANKING FORM
FOR THE UNDERGROUND STORAGE TANK 2331-U,
AT BUILDING 9201-1

I certify under penalty of law, including but not limited to penalties for perjury, that the information contained in this report and on any attachments, is true, accurate, and complete to the best of my knowledge, information, and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for intentional violations.

See Attached Certification		
Owner/Operator (Print)	Signature	Date
Christopher D. Potter	TN 2345	5/7/96
P.E. or P.G. (Print)	Signature TN Lic./Reg. #	Date

If a P.E. signs this report, please indicate the area of expertise.

(Print or Type)



(P.E./P.G. Stamp/Seal)

County of Anderson State of Tennessee

Subscribed and Sworn to before me this

7 day of May, 1996.

Suzanne Knotts
Notary Public

NOTARY PUBLIC STATE OF TENNESSEE AT LARGE.
MY COMMISSION EXPIRES: Dec. 22, 1999.
BONDED THRU NOTARY PUBLIC UNDERWRITERS.

My Commission expires (Notary Seal)

CERTIFICATION STATEMENT FOR THE SITE STATUS MONITORING REPORT AND SITE RANKING FORM FOR THE UNDERGROUND STORAGE TANK 2331-U, AT BUILDING 9201-1

I certify that this document and all enclosures were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

U.S. Department of Energy
Owner and Operator

By:

R.J. Spence
Department of Energy, Y-12 Site Manager

5/21/96
Date Signed

DINAH L. SEXTON NOTARY PUBLIC AT LARGE EXP. 10-4-98 KNOX COUNTY, TENNESSEE

Lockheed Martin Energy Systems, Inc.
Co-Operator

By:

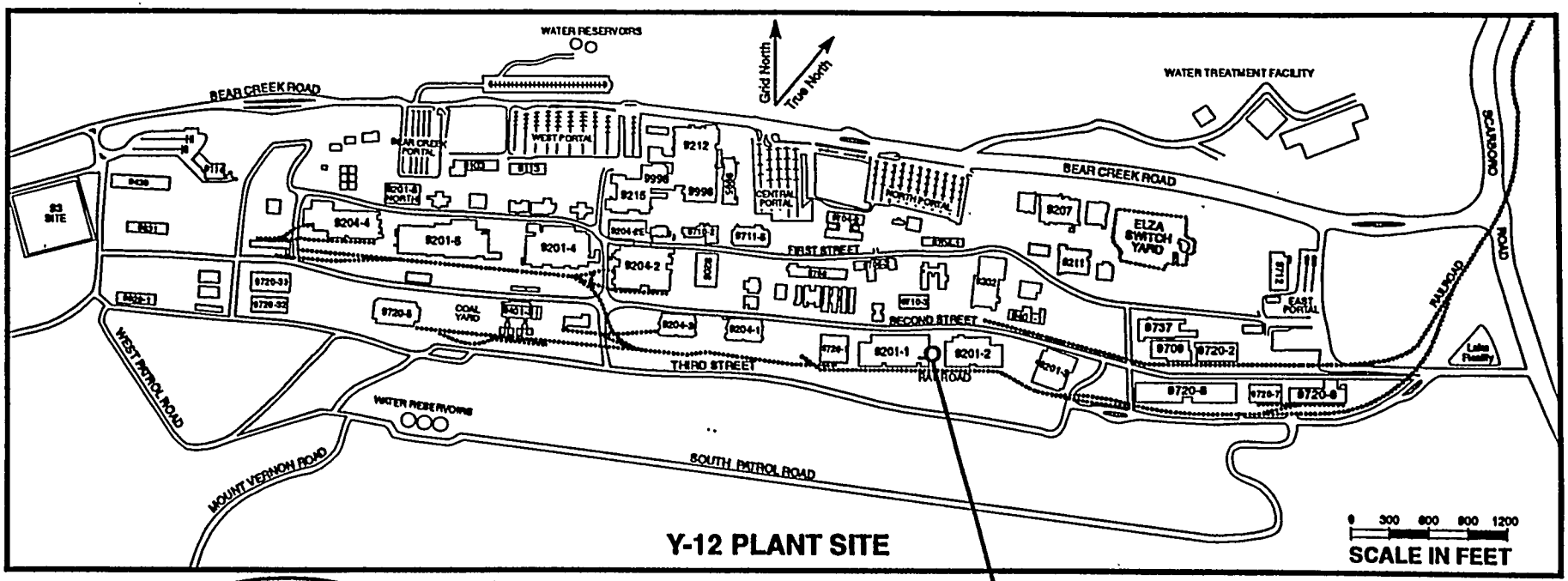
T.R. Butz
Lockheed Martin Energy Systems, Inc.
Y-12 Plant Manager

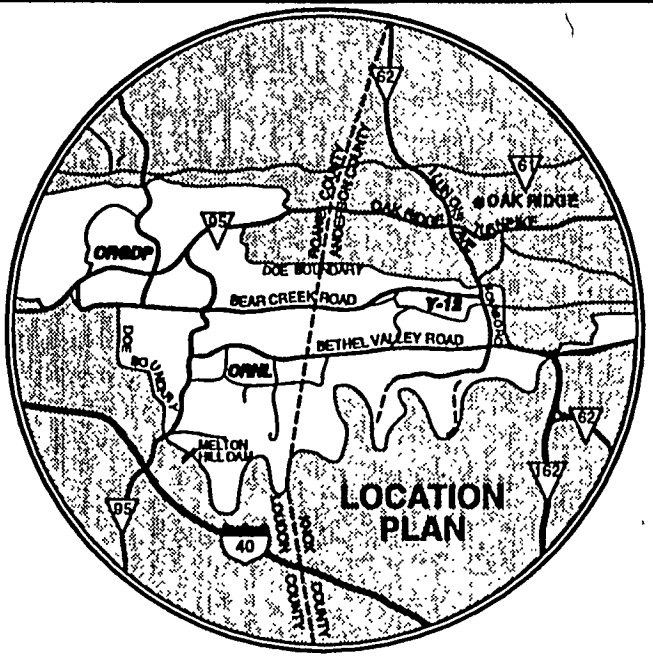
5/16/96
Date Signed

DINAH L. SEXTON NOTARY PUBLIC AT LARGE EXP. 10-4-98 KNOX COUNTY, TENNESSEE

NOTARY
(Stamp/Seal)

Note: Both signatures have been notarized per requirements.





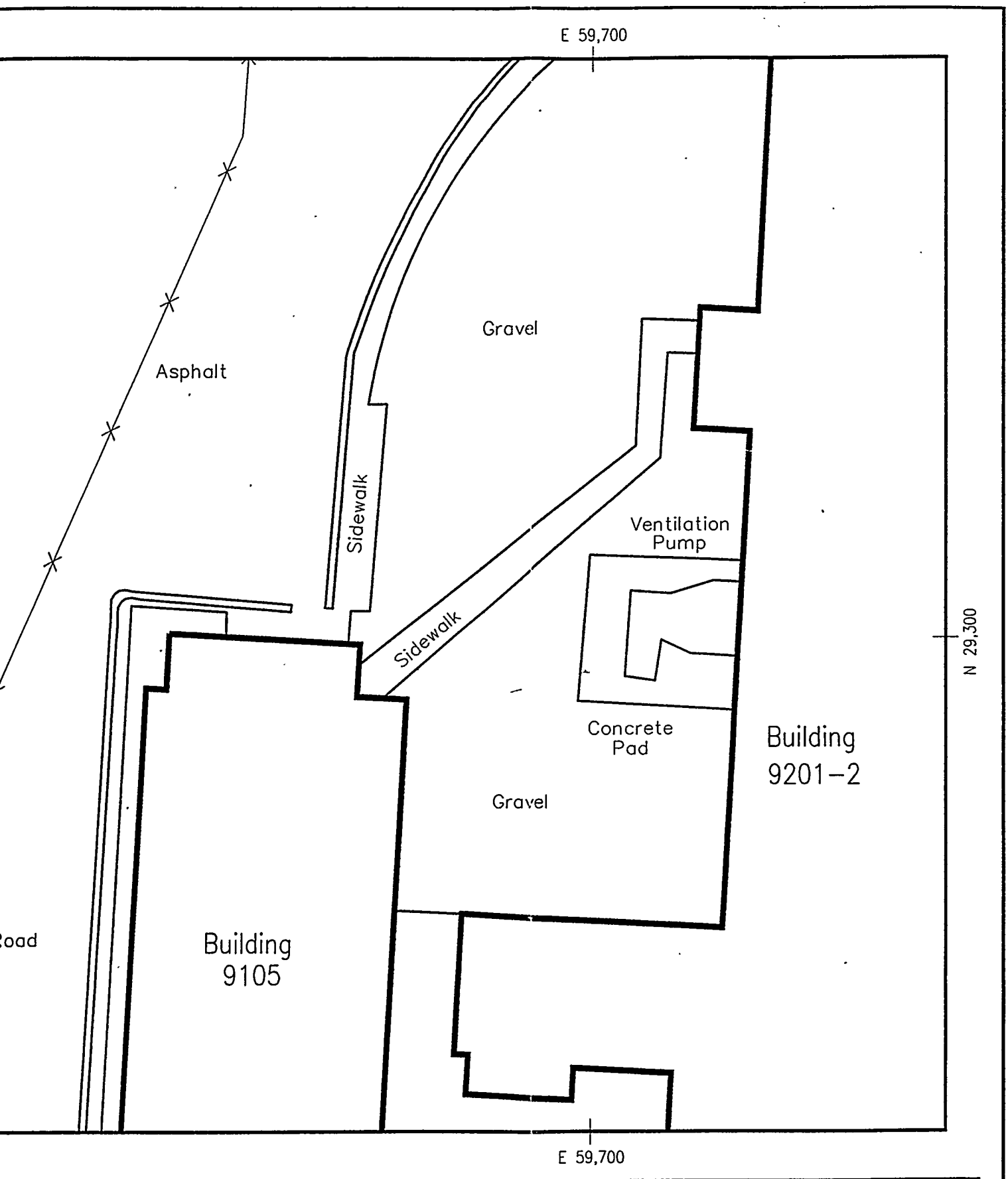
BUILDING 9201-1 SITE

MARTIN MARIETTA ENERGY SYSTEMS, INC.
ENVIRONMENTAL MANAGEMENT DEPARTMENT

LOCATION OF THE BUILDING 9201-1 SITE AT THE Y-12 PLANT

Figure 1-1. Location of the Building 9201-1 Site at the Y-12 Plant

1-031792-077



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Environmental Management Department

FIGURE 1-2

Building 9201-1 Site
Site Map

2. GROUNDWATER MONITORING

2.1 Groundwater Measurement, Sample Collection, and Analysis

2.1.1 Well Locations

Seven wells identified by TDEC have been measured and sampled as part of the Monitoring Only program for the site. These wells include GW-193, GW-657, GW-707, GW-708, GW-808, GW-809, and GW-810. The locations of these wells are presented in Figure 2-1. Well installation reports and construction details for monitoring wells GW-193, GW-657, GW-707, and GW-708 are presented in the CAP for the Site [*Corrective Action Plan for Underground Storage Tank 2331-U at the Building 9201-1 Site, Appendix C*, Y/SUB-92-99928C/3 (Energy Systems 1992)]. Well installation reports and construction details for monitoring wells GW-808, GW-809, and GW-810 that were installed in July 1993 are presented in the Corrective Action Baseline Report for the Site [*Corrective Action Baseline Report for Underground Storage Tank 2331-U, Building 9201-1, Appendix A*, Y/SUB/94-99069C/Y15/2 (Energy Systems 1994)].

2.1.2 Groundwater Measurement and Sampling

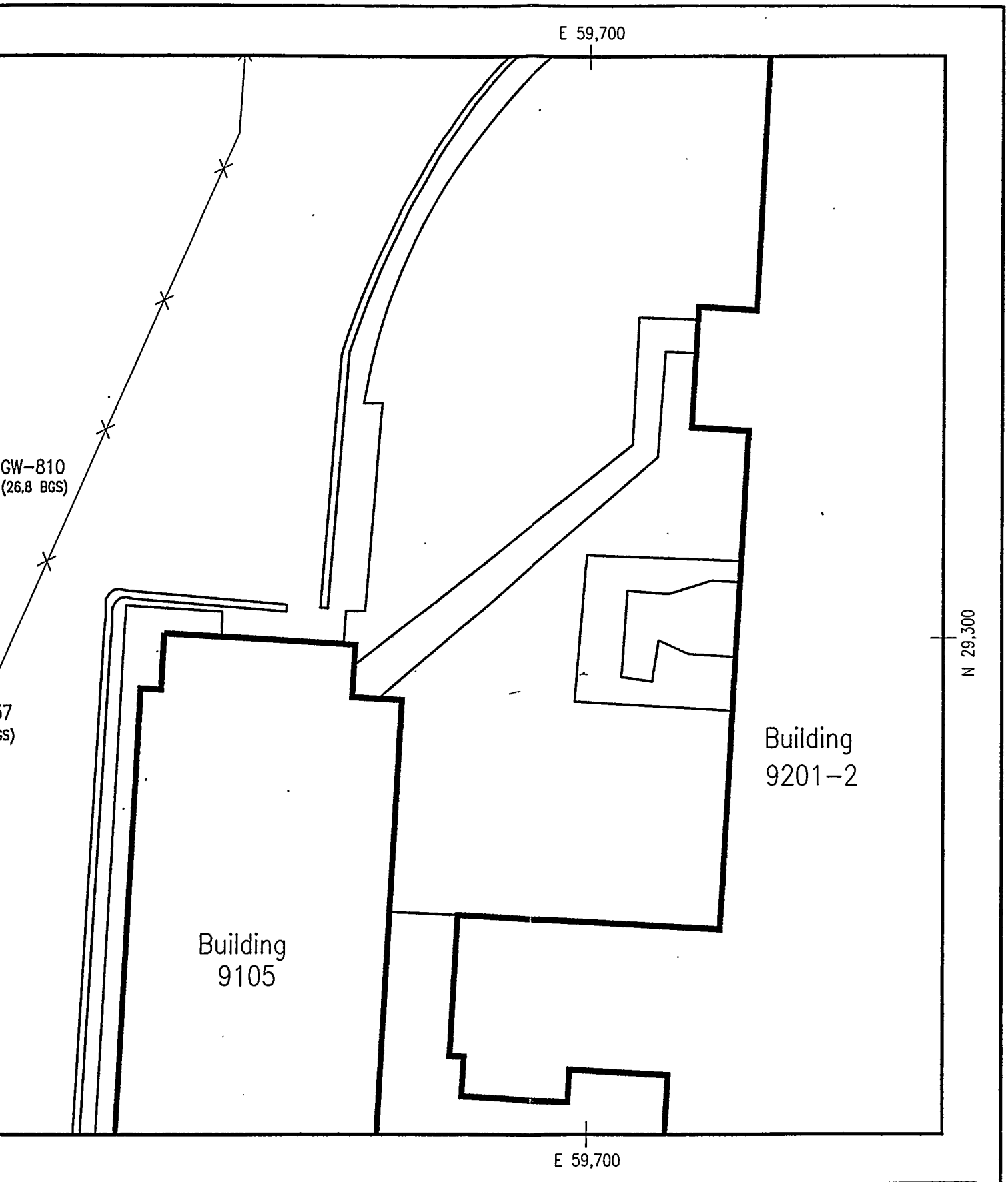
Current groundwater level measurement and sampling of the monitoring wells at the Building 9201-1 Site occurred on April 18, 1996. The previous round of site status monitoring occurred on October 19, 1995. Water levels were measured to the nearest 0.01 ft using an electronic water level indicator. Each well was then purged of three well volumes prior to sampling. Field measurement of pH, conductivity, temperature, and dissolved oxygen was conducted during purging to ensure representativeness for sampling. No measurable free product or petroleum odors were noted during water level measurement or sampling in any of these wells. Samples were collected using a bailer and transferred into pre-cleaned glass containers with zero headspace.

2.1.3 Sample Analysis

Groundwater samples were analyzed for total petroleum hydrocarbons-gasoline range organics (TPH-GRO), and for benzene, toluene, ethylbenzene, and xylenes (BTEX) at the Y-12 Plant Environmental Laboratory (a TDEC Division of UST approved laboratory).

2.2 Potentiometric Data

Potentiometric data for monitoring wells at the Building 9201-1 Site from the two most recent site status monitoring measurement events are presented in Table 2-1. Figures 2-2 and 2-3 present potentiometric contour maps from these two events. These figures indicate an irregular potentiometric surface with locally variable groundwater flow directions. A localized water table high southeast of the former UST site (around wells GW-707 and GW-657) appears to be reasonably persistent. This water table high may be related to a subsurface feature (e.g., fracture) or may reflect a small difference in head between unconsolidated and bedrock wells.



ing Well Location
Ground Surface (BGS)

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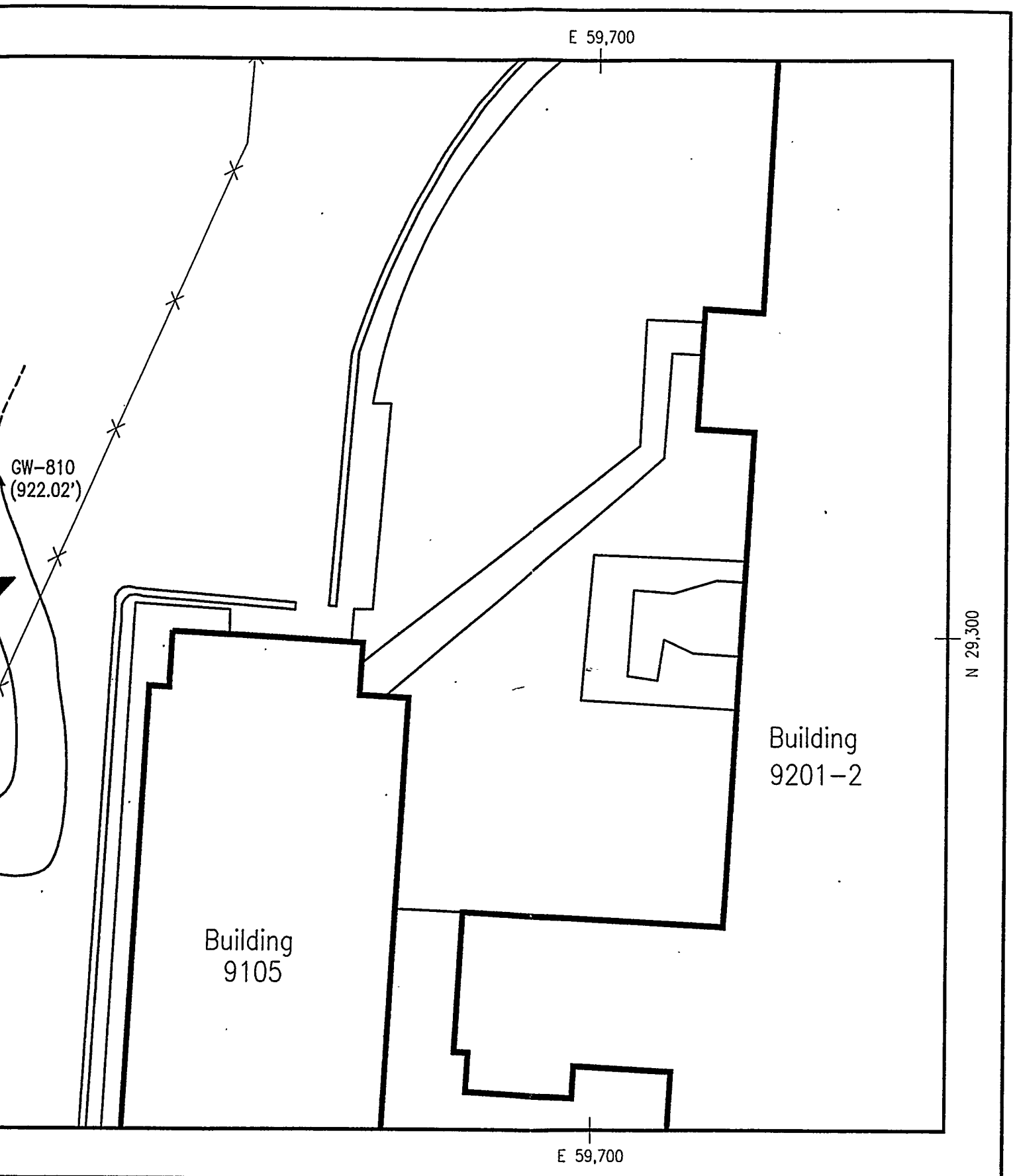
FIGURE 2-1

Building 9201-1 Site
Monitoring Well Location Map

Table 2-1. Water level measurements at the Building 9201-1 Site for the periods of April 1996 and October 1995

Monitoring well number	Date measured	Well depth (from TOC)	Top of casing (ft-MSL)	Top of casing to water level (ft-BTOC)	Potentiometric surface elevation (ft-MSL)
GW-193	10/19/95	21.0	934.00	8.44	925.56
	04/18/96	21.0	934.00	9.50	924.50
GW-657	10/19/95	15.2	930.53	6.18	924.35
	04/18/96	15.2	930.53	6.23	924.30
GW-707	10/19/95	16.6	930.91	5.89*	925.02
	04/18/96	16.6	930.91	8.60	922.31
GW-708	10/19/95	13.1	930.87	4.83	926.04
	04/18/96	13.1	930.87	4.70	926.17
GW-808	10/19/95	36.1	930.75	8.02	922.73
	04/18/96	36.1	930.75	7.61	923.14
GW-809	10/19/95	36.0	931.04	8.27	922.77
	04/18/96	36.0	931.04	7.82	923.22
GW-810	10/19/95	26.1	931.44	9.42	922.02
	04/18/96	26.1	931.44	9.53	921.91

Notes:
MSL = mean sea level
BTOC = below top of casing
TOC = top of casing
* = Apparent transcription error in field notes (water depth and water column height transposed)



etric Contour

otentiometric
ve MSL)

Flow Direction

▲GW-193 Groundwater Monitoring Well Locations

(925.29') Water Level Measurement May 1995

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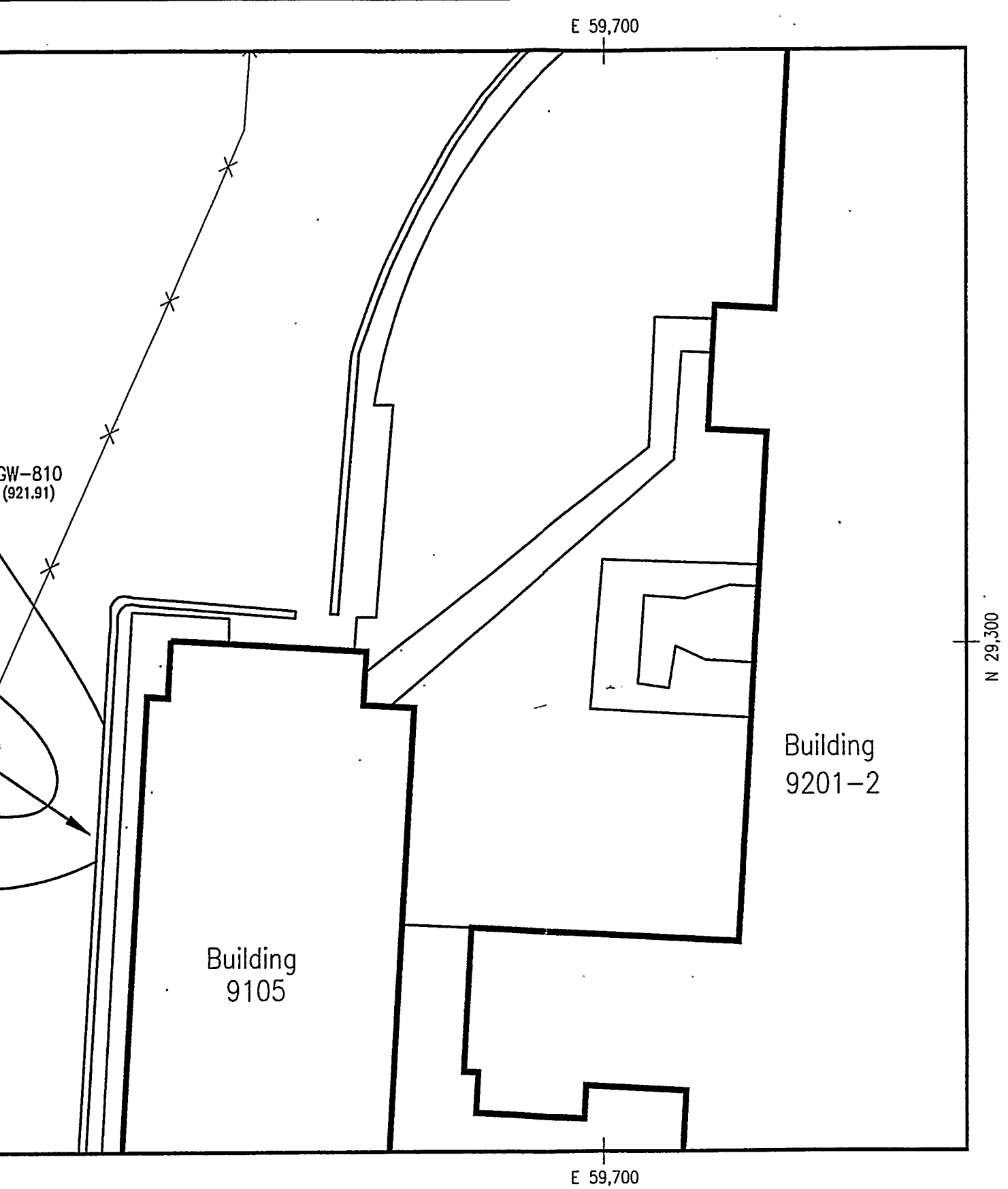
Environmental Management Department

FIGURE 2-2

Building 9201-1 Site
Groundwater Potentiometric
Contour Map October 1995



Well Location
t 1996
tric Contour

otentiometric Contour

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Environmental Management Department

FIGURE 2-3

Building 9201-1 Site Groundwater
Potentiometric Contour Map April 1996

Studies of the Y-12 Plant hydrogeology indicate that an overall south/southeasterly hydraulic gradient is present in the unconsolidated and bedrock intervals at the Building 9201-1 Site (HSW 1994). Seasonal variation in groundwater elevations is relatively small, but does produce an apparent northeasterly deflection of the water table in the vicinity of GW-707 and GW-810. However, the overall flow direction, for any petroleum contaminants entering groundwater from the former UST depicted for both periods of measurement, is from north to south/southeast across the site.

2.3 Groundwater Analytical Data

Analytical data for groundwater sampled at the site during site status monitoring are presented in Table 2-2. Original analytical laboratory results for environmental and quality control samples are presented in Appendix A. Quality control sampling (trip blank) for this round of site status monitoring indicate no cross-contamination of the samples for the analytes of interest occurred. Analytical results for this round of site status monitoring did not indicate any significant change in the level of contamination as compared to historical monitoring data. Some contaminant levels in GW-708 were slightly elevated as compared to the last round of site status monitoring data. However, contaminant levels in GW-193 were slightly lower than found during the previous round of sampling.

Benzene and TPH-GRO values for GW-193 and GW-708 continued to exceed the applicable Closure Action Levels of 0.07 ppm for benzene and 1.0 ppm for TPH. Both of these wells have historically produced values in excess of these Closure Action Limits. These results produce no change in the horizontal area of groundwater contamination as defined by the comprehensive monitoring data. Analytical results for GW-657, GW-707, GW-808, GW-809, and GW-810 show no groundwater contamination detected above analytical quantitation limits, which are below the applicable Closure Action Levels. These data indicate that groundwater contamination has not migrated downgradient to the location of these wells, and suggest that the area of groundwater contamination is relatively stable over time.

These results are consistent with previous monitoring results and the calculated hydraulic gradient, velocity, and conductivity from slug testing of wells GW-193 and GW-707 (Energy Systems 1992). It is expected that contaminant levels will generally fall off because of natural attenuation. The processes of natural attenuation (dilution/dispersion and degradation) result in decreases in contaminant concentrations. However, the rate of the concentration decreases will likely be slow because site specific conditions limit dispersion and mixing with uncontaminated groundwater.

Table 2-2. Analytical results for groundwater samples collected during site status monitoring

Sampling event	Sampling date	TPH-GRO[1] (ppm)	Benzene (ppm)	Ethylbenzene (ppm)	Toluene (ppm)	Xylenes (ppm)
			GW-193			
Site status monitoring	04-18-96	*1.800	*0.220	0.200	0.030	0.120
Site status monitoring	10-19-95	*3.900	*0.520	0.480	0.045	0.300
Site status monitoring	05-04-95	*2.400	*0.350	0.280	0.077	0.200
Site status monitoring	12-14-94	*3.000	*0.620	0.320	0.230B[2]	0.360B
			GW-657			
Site status monitoring	04-18-96	<0.100	0.010U[4]	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J[3]	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	<0.100	0.010U	0.010U	0.010U	0.010U
			GW-707			
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	0.010U

Table 2.2 (continued)

Sampling event	Sampling date	TPH-GRO[1] (ppm)	Benzene (ppm)	Ethylbenzene (ppm)	Toluene (ppm)	Xylenes (ppm)
			GW-708			
Site status monitoring	04-18-96	*9.600	*0.680	0.590	0.068	0.760
Site status monitoring	10-19-95	*6.700	*0.670	0.620	0.075	0.630
Site status monitoring	05-04-95	*6.400	*0.500	0.430	0.062	0.930
Site status monitoring	12-14-94	*5.300	*0.820	0.610	0.094B	1.200B
			GW-808			
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	<.010B
			GW-809			
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	0.010U

Table 2.2 (continued)

Sampling event	Sampling date	TPH-GRO[1] (ppm)	Benzene (ppm)	Ethylbenzene (ppm)	Toluene (ppm)	Xylenes (ppm)
			GW-810			
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	0.010U

[1] TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics.
[2] B = Indicates the analyte was found in the associated blank as well as in the sample.
3 J = Value estimated for contaminant.
4 U = Contaminant was not detected above quantitation limit during the analysis.
* Denotes contamination above the applicable closure action levels for the site.

3. VAPOR MONITORING

3.1 Monitoring Methods and Locations

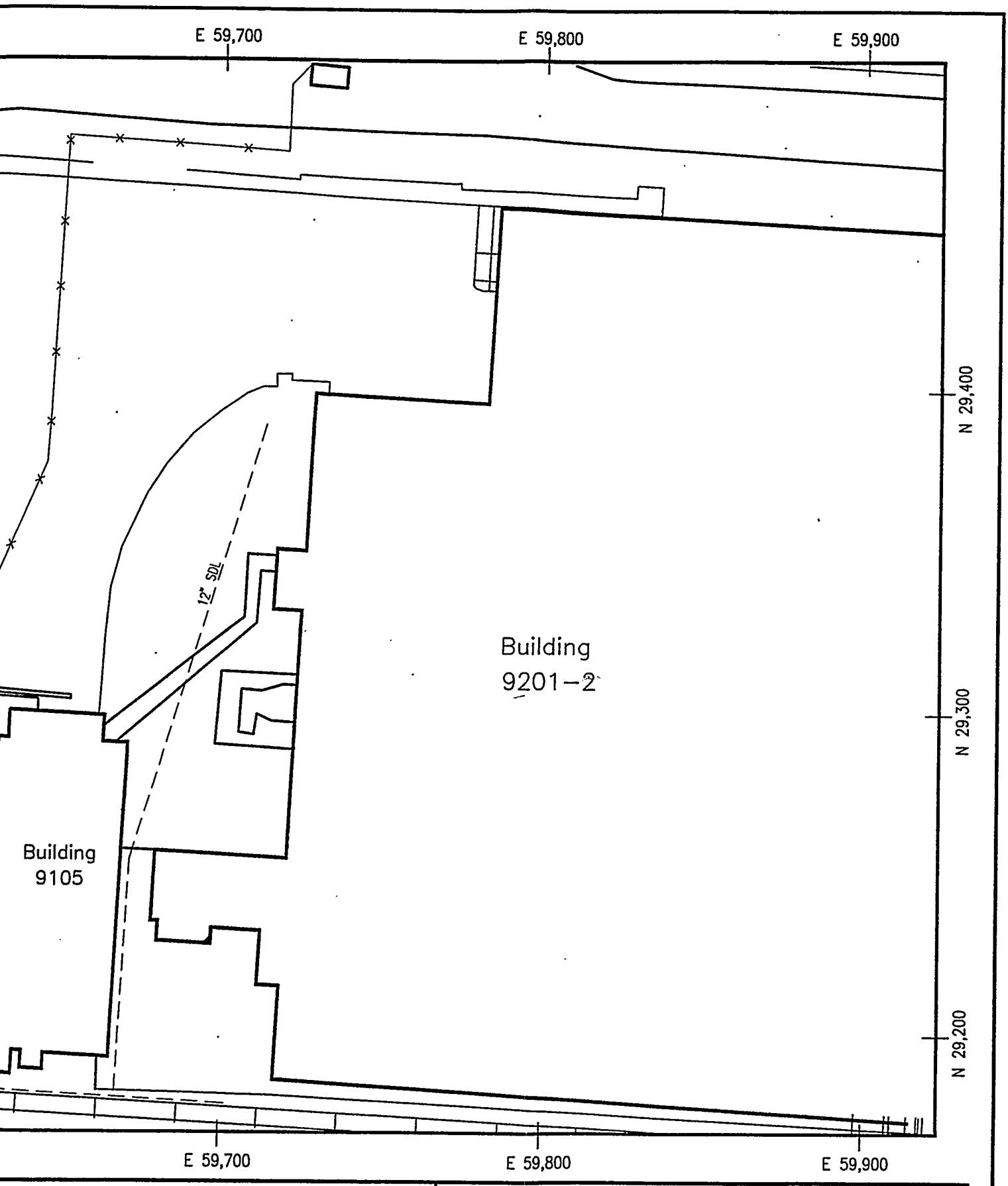
Site status vapor monitoring has been conducted as part of the Monitoring Only program at seven access points along subsurface stormwater and sewer drainage lines that cross the Building 9201-1 Site. However, none of the subsurface utilities present at the site crosses the groundwater plume defined by the most recent data. The locations of vapor monitoring locations are illustrated in Figure 3-1.

At each utility location, the internal atmosphere was monitored using direct reading instruments. Organic vapors were measured using a Thermo Environmental™ organic vapor meter (OVM) (serial number M249385). Oxygen and lower explosive limit (LEL) were monitored with an MSA-260 combination meter (serial number M218197).

3.2 Vapor Monitoring Results

The results of site status vapor monitoring conducted April 16, 1996 at the Building 9201-1 Site are presented in Table 3-1. Measured oxygen percentages are within the range of normal air concentrations. LEL readings of 0% indicate that an explosion hazard does not exist within any of the monitored utilities. Organic vapor readings were all at 0.0 ppm except at sampling location 409 where readings ranged from 0.3 to 0.5 ppm above background and at location C-4019 where readings ranged from 0.0 to 8.1 ppm above background. Results from previous rounds of monitoring have predominantly shown no detectable concentrations of organic vapors. However, during the May 1995 monitoring effort, concentrations of organic vapors were detected at up to 1.8 ppm in 1 location (C-4021), and up to 0.6 ppm at locations 402A, 409, C4019, and C-4111. Organic vapor results and groundwater analytical results are not directly comparable for any site status monitoring event. The temporal variability of the occurrence of organic vapors suggests that these are related to either conditional (i.e., seasonal, temperature-related, etc.) off-gassing of the Building 9201-1 groundwater contamination plume, or a transient non-UST source.

The 8.1 ppm organic vapor reading detected during the current round of monitoring poses no hazard and is considered to be of limited significance.



SDL — Underground Stormwater Drainage Line

SSL — Sanitary Underground Sewer Line

⊗ Vapor Monitoring Location

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Environmental Management Department

FIGURE 3-1

Building 9201-1 Site
Vapor Monitoring Sampling
Location Map

Table 3-1. Vapor monitoring results for the Building 9201-1 Site, April 16, 1996

Sampling location	O_2 %	LEL %	Organic vapors (ppm)	Background organic vapors (ppm)
402A	20.8	0	0.0	0.0
409	20.8	0	0.0	0.3-0.5
C-4019	20.8	0	0.0	0.0-8.1
C-4021	20.8	0	0.0	0.0
C-4112	20.8	0	0.0	0.0
C-4111	20.8	0	0.0	0.0
C-4024	20.8	0	0.0	0.0

REFERENCES

Energy Systems (Martin Marietta Energy Systems, Inc.) 1992. *Corrective Action Plan for Underground Storage Tank 2331-U at the Building 9201-1 Site*, Y/SUB-92-99928C/3.

Energy Systems 1994. *Corrective Action Baseline Report for Underground Storage Tank 2331-U, Building 9201-1*, Y/SUB/94-99069C/Y15/2.

HSW Environmental Consultants, Inc. 1994. *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/P1.

TDEC (Tennessee Department of Environment and Conservation) 1994. *Underground Storage Tank Reference Handbook*, Second Edition.

APPENDIX A
LABORATORY ANALYTICAL RESULTS FOR SITE STATUS MONITORING

CORRECTION REPORT

05/02/96 13:35:27 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090005	8601	APPROVED

DATE SAMPLED: 04/18/96 09:25:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-193 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1, FACILITY ID # 0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 13:31:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		1800		ug/L
71432	Benzene		220		ug/L
100414	Ethylbenzene		200		ug/L
108883	Toluene		30		ug/L
1330207	Xylene		120		ug/L
N1672	GRO Quantitation Limit		200		ug/L
N1912	BTEX Quantitation Limit		20		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

CORRECTION REPORT

05/02/96 13:35:36 Y-12 ANALYTICAL SERVICES ORGANIZATION PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090006	8601	APPROVED

DATE SAMPLED: 04/18/96 14:32:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-657 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

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PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 14:16:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

CORRECTION REPORT

05/02/96 13:35:44 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
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DATE SAMPLED: 04/18/96 14:17:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-707 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/20/96 16:31:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

CORRECTION REPORT

05/02/96 13:35:55 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090009	8601	APPROVED

DATE SAMPLED: 04/18/96 09:32:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-708 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID #0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 16:04:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		9600		ug/L
71432	Benzene		680		ug/L
100414	Ethylbenzene		590		ug/L
108883	Toluene		68		ug/L
1330207	Xylene		760		ug/L
N1672	GRO Quantitation Limit		500		ug/L
N1912	BTEX Quantitation Limit		50		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

CORRECTION REPORT

05/02/96 13:36:18 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090010	8601	APPROVED

DATE SAMPLED: 04/18/96 11:20:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-808 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 16:53:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

CORRECTION REPORT

05/02/96 13:36:25 Y-12 ANALYTICAL SERVICES ORGANIZATION PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090012	8601	APPROVED

DATE SAMPLED: 04/18/96 11:19:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-809 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 17:29:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

CORRECTION REPORT

05/02/96 13:36:31 Y-12 ANALYTICAL SERVICES ORGANIZATION PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090013	8601	APPROVED

DATE SAMPLED: 04/18/96 14:15:00 DATE NEEDED: 04/25/96 LOCATION: UST GW-810 CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 18:12:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

CORRECTION REPORT

05/02/96 13:36:38 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090015	8601	APPROVED

DATE SAMPLED: 04/18/96 08:30:00 DATE NEEDED: 04/25/96 LOCATION: EQUIPMENT RINSE CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 05/01/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX VOA Analysis, BTEX Compounds (SW846 8020) REPLICATE: 1 STATUS: CANCELLED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: APPROVER:
THIS TEST WAS CANCELLED BY 4RW

TEST: GRO TPH Gasoline Range Organics Including BTEX REPLICATE: 1 STATUS: APPROVED
PREP MTH: PROC MTH: SW846 8020 PHASE: TIME ANALYZED: 04/21/96 18:48:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		<10		ug/L
1330207	Xylene		<10		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

*** LAST PAGE ***

OFFICIAL REPORT

04/25/96 15:09:46 Y-12 ANALYTICAL SERVICES ORGANIZATION

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090016	8601	APPROVED

DATE SAMPLED: 04/18/96 08:00:00 DATE NEEDED: 04/25/96 LOCATION: TRIP BLANK CHARGE #: S2205F26
DATE RECEIVED: 04/18/96 DATE COMPLETED: 04/25/96 PROJECT CODE: CASE: U03130
SAMPLER: 13303 SAMPLE DESCRIPTION: GRAB FINAL APPROVAL:

COMMENTS: UST PROGRAM E. INGRAM

TEST: VOA624 Volatile Organics by GC/MS (EPA 624) REPLICATE: 1 STATUS: APPROVED
PREP MTH: EPA624 PROC MTH: EPA 624 PHASE: TIME ANALYZED: 04/23/96 11:00:00 APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
74873	Chloromethane		10 U		ug/L
74839	Bromomethane		10 U		ug/L
75014	Vinyl chloride		10 U		ug/L
75003	Chloroethane		10 U		ug/L
75694	Trichlorofluoromethane		10 U		ug/L
75092	Methylene chloride		10 U		ug/L
75354	1,1-Dichloroethene		10 U		ug/L
75343	1,1-Dichloroethane		10 U		ug/L
156605	trans-1,2-Dichloroethene		10 U		ug/L
67663	Chloroform		10 U		ug/L
107062	1,2-Dichloroethane		10 U		ug/L
71556	1,1,1-Trichloroethane		10 U		ug/L
56235	Carbon tetrachloride		10 U		ug/L
75274	Bromodichloromethane		10 U		ug/L
110758	2-Chloroethylvinyl ether		10 U		ug/L
78875	1,2-Dichloropropane		10 U		ug/L
10061015	cis-1,3-Dichloropropene		10 U		ug/L
79016	Trichloroethene		10 U		ug/L
124481	Dibromochloromethane		10 U		ug/L
79005	1,1,2-Trichloroethane		10 U		ug/L
71432	Benzene		10 U		ug/L
10061026	trans-1,3-Dichloropropene		10 U		ug/L
75252	Bromoform		10 U		ug/L
127184	Tetrachloroethene		10 U		ug/L
79345	1,1,2,2,-Tetrachloroethane		10 U		ug/L
108883	Toluene		10 U		ug/L
108907	Chlorobenzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L

*** LAST PAGE ***

APPENDIX B
SITE RANKING FORM
MAY 1996

UST SITE RANKING FORM

Facility ID Number: 0-010117

Facility Name: Oak Ridge Y-12 Plant

Facility Address: Building 9201-1 Site

Geologic and Hydrogeologic Factors

1	Minimum depth to the water table		
	<5.0 feet (GW-708 4.51 ft)	50	
	5.1 to 10.0 feet	45	
	10.1 to 15.0 feet	40	
	15.1 to 30.0 feet	35	
	30.1 to 50.0 feet	25	
	50.1 to 75.0 feet	15	
	75.1 to 100.0 feet	10	
	>100.0 feet	5	
		Score	50

2	Minimum distance between water table and contaminated soil		
	<5.0 feet (at water table)	50	
	5.1 to 10.0 feet	45	
	10.1 to 15.0 feet	40	
	15.1 to 30.0 feet	35	
	30.1 to 50.0 feet	25	
	50.1 to 75.0 feet	15	
	75.1 to 100.0 feet	10	
	>100.0 feet	5	
	(After overexcavation no soil samples above applicable TDEC cleanup levels)	Score	0

3	Soil permeability		
	>10^-4 cm/sec	30	
	10^-4 to 10^-6 cm/sec (GW-193 2.38 X 10^{-4})	20	
	<10^-6 cm/sec	10	
		Score	20

4	Calculated ground water flow rate		
	<10 feet/day	3	
	10 to 40 feet/day	6	
	40 to 90 feet/day	12	
	90 to 130 feet/day	18	
	130 to 260 feet/day	24	
	>260 feet/day	30	
	Karst (Maynardville Limestone)	30	
		Score	30

Receptor Factors

5	Basements		
	<50.0 feet from known contamination	150	
	50.1 to 100.0 feet from known contamination (approx. 55 ft to Building 9201-1)	75	
	100.1 to 200.0 feet from known contamination	50	
	200.1 to 300.0 feet from known contamination	25	
	>300.1 feet	0	
		Score	75

6	Sanitary sewers		
	<50.0 feet from known contamination (approx. 36 ft to delineated GW contamination)	75	
	50.1 to 100.0 feet from known contamination	40	
	100.1 to 200.0 feet from known contamination	20	
	200.1 to 300.0 feet from known contamination	10	
	>300.1 feet	0	
		Score	75

7	Storm water sewers		
	<50.0 feet from known contamination (approx. 10 ft to delineated GW contamination)	50	
	50.1 to 100.0 feet from known contamination	30	
	100.1 to 200.0 feet from known contamination	10	
	200.1 to 300.0 feet from known contamination	5	
	>300.1 feet	0	
		Score	50

8	Other subsurface utilities		
	<50.0 feet from known contamination (approx. 36 ft from chilled water lines)	30	
	50.1 to 100.0 feet from known contamination	20	
	100.1 to 200.0 feet from known contamination	10	
	200.1 to 300.0 feet from known contamination	5	
	>300.1 feet	0	
		Score	30

9	Public water supply source		
	<.1 miles	300	
	.1 to .25 miles	200	
	.25 to .5 miles	100	
	>.51 miles (approx. 2.2 miles to pumping station at Melton Hill Lake)	0	
		Score	0

10	Private water supply source		
	<.1 miles	200	
	.1 to .25 miles	150	
	.25 to .5 miles	100	
	>.51 miles (approx. 2.4 miles to a private well in Wiltshire Estates, Oak Ridge)	0	
		Score	0

11	Distance to surface water		
	<.1 miles (approx. 12o ft to Upper East Fork Poplar Creek)	25	
	.1 to .25 miles	15	
	.25 to .5 miles	5	
	>.51 miles	2	
	Visibly impacted surface water from a petroleum product	200	
		Score	25

Contaminant Factors

12	Contaminant concentration	A. Max. Contam. Levels	B. App. Cleanup Levels	C. Cont. Conc. Ratio A/B
	Benzene in ground water (GW-708 04/18/96*)	0.68 ppm	0.07 ppm	9.71
	TPH in ground water (GW-708 04/18/96*)	9.6 ppm	1.0 ppm	9.6
	BTX in soil (Tank Pit West 3/94*)	2.4 ppm	250 ppm	0.01
	TPH in soil (Tank Pit West 3/94*)	240 ppm	500 ppm	0.48

* Reflects most recent data per TDEC instruction

13	Benzene in ground water		
	<1.0	0	
	1.1 to 10.0	25	
	10.1 to 50.0	50	
	50.1 to 100.0	100	
	100.1 to 500.0	200	
	>500.1	300	
		Score	25

14	TPH in ground water		
	<1.0	0	
	1.1 to 10.0	20	
	10.1 to 50.0	40	
	50.1 to 100.0	80	
	100.1 to 500.0	120	
	>500.1	200	
		Score	20

15	BTX in soil		
	<1.0	0	
	1.1 to 5.0	25	
	5.1 to 10.0	50	
	10.1 to 50.0	100	
	>50.1	200	
		Score	0

16	TPH in soil		
	<1.0	0	
	1.1 to 5.0	20	
	5.1 to 10.0	40	
	10.1 to 50.0	80	
	>50.1	100	
		Score	0

17	Total site score	400

DISTRIBUTION

HEALTH, SAFETY, ENVIRONMENT, AND ACCOUNTABILITY ORGANIZATION

E. M. Ingram (2)
R. L. Johnson Jr.
L. W. McMahon
File-EMD-RC

MECHANICAL OPERATIONS ORGANIZATION

R. C. Wright

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

C. Head
E. C. Leming/J. D. Harless

U.S. DEPARTMENT OF ENERGY

S. L. Lee
R. J. Spence/L. M. Sparks
W. B. Mansel

A. K. Lee/DOE-OSTI (2)
Y-12 Central Files