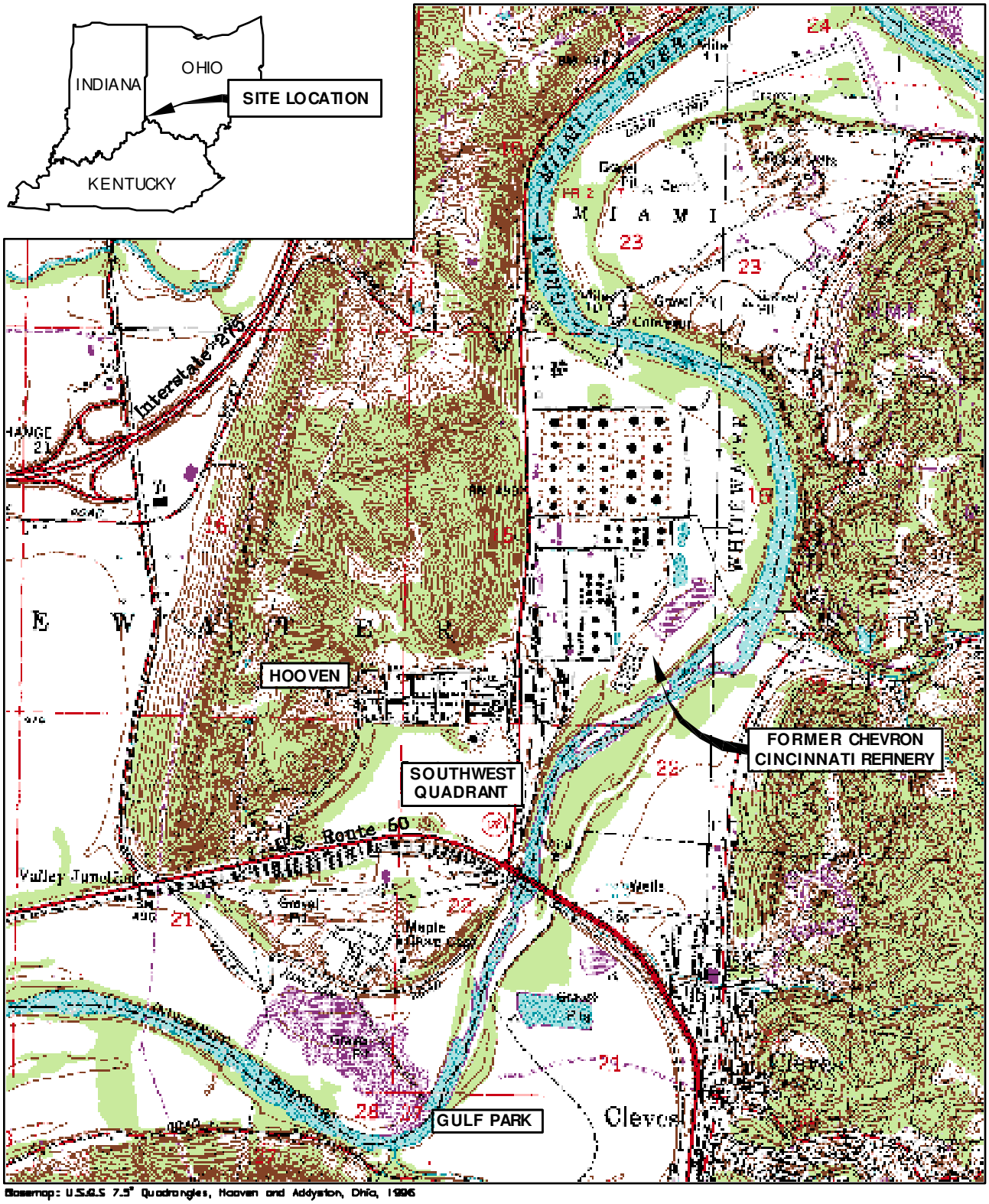
FIGURES



N

0 2,000'

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FIGURE 1-1

SITE LOCATION MAP

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: DVS	Checked By: PM	Scale: 1" = 2,000'	Date: 4/28/09	File:500USGSSITE200904

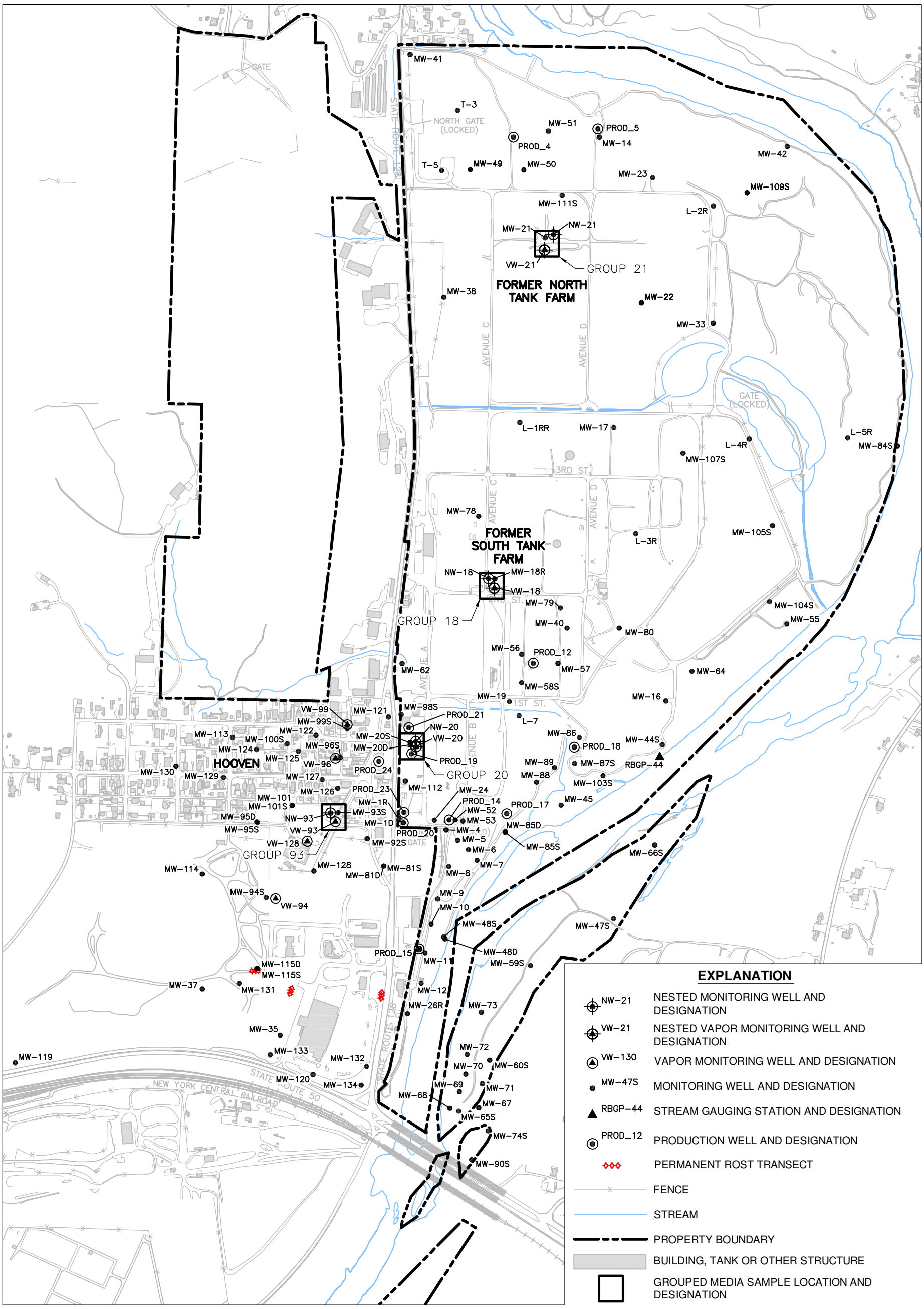

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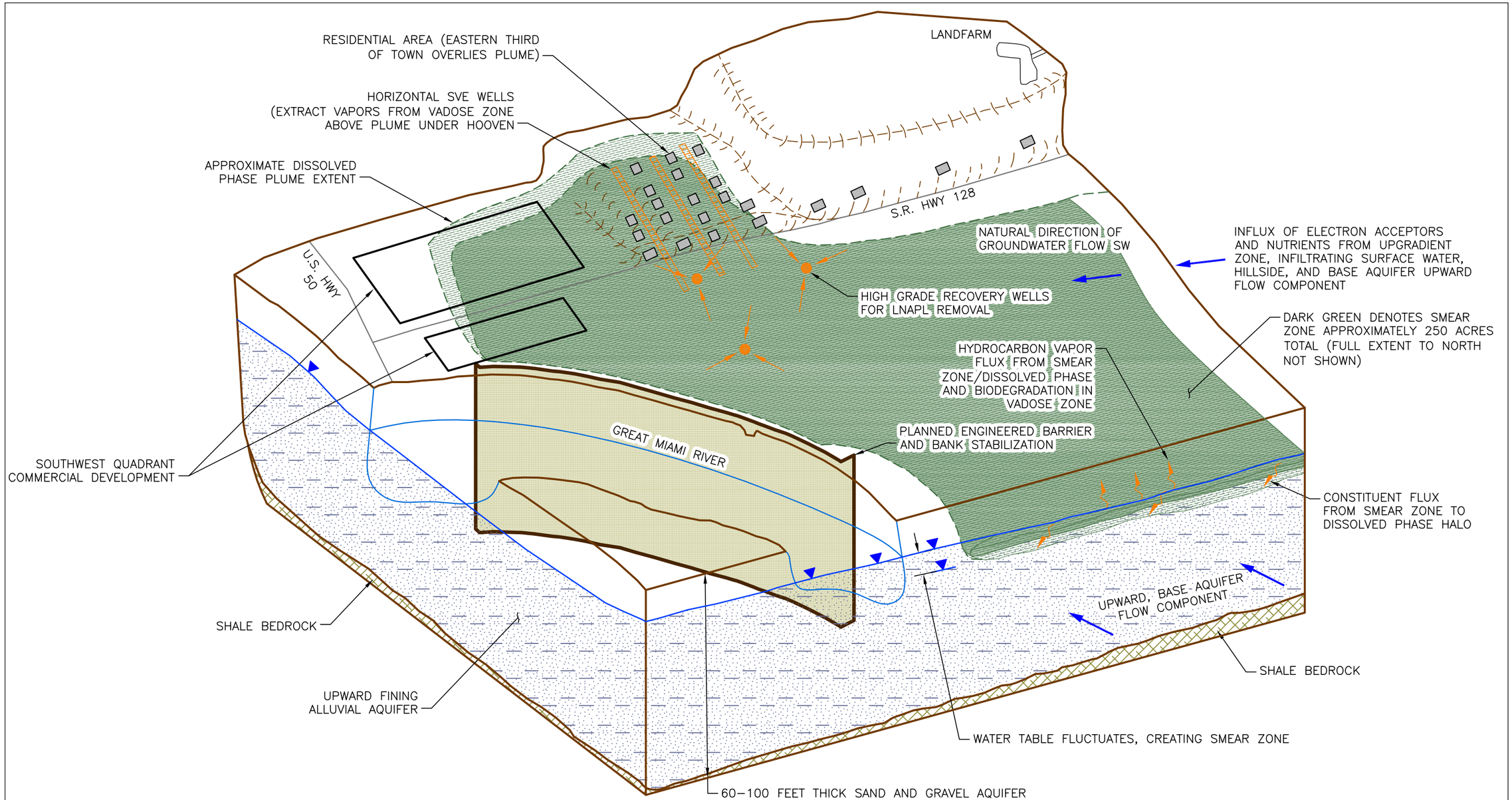
FIGURE 1-2

SITE LAYOUT MAP

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PS	Scale: 1" = 650'	Date: 10/31/08	File: 500FACILITYMAP200805



Source: Provided by Chevron Cincinnati.

EXPLANATION

HIGH-GRADE PUMPING TARGETED AREAS WITH HIGHEST RESIDUAL LNAPL SATURATION.

WATER LEVEL

DISSOLVED PHASE PLUME EXTENT

SMEAR ZONE EXTENT

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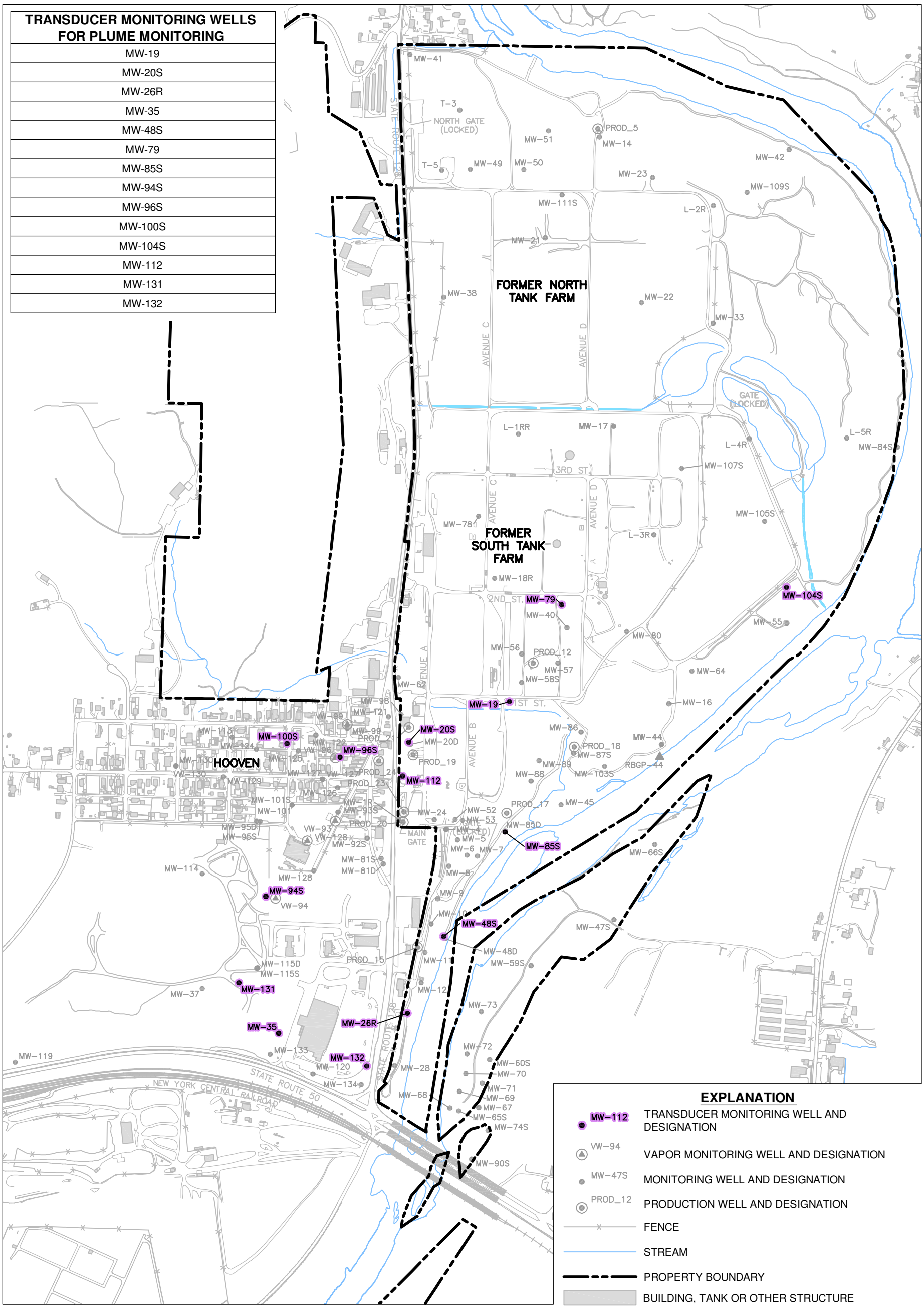
FIGURE 2-1

GROUNDWATER CONCEPTUAL SITE MODEL

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: KR	Scale: NONE	Date: 8/22/07	File: 500GWCONCSITEMODEL

TRANSDUCER MONITORING WELLS FOR PLUME MONITORING
MW-19
MW-20S
MW-26R
MW-35
MW-48S
MW-79
MW-85S
MW-94S
MW-96S
MW-100S
MW-104S
MW-112
MW-131
MW-132



N

0 650'

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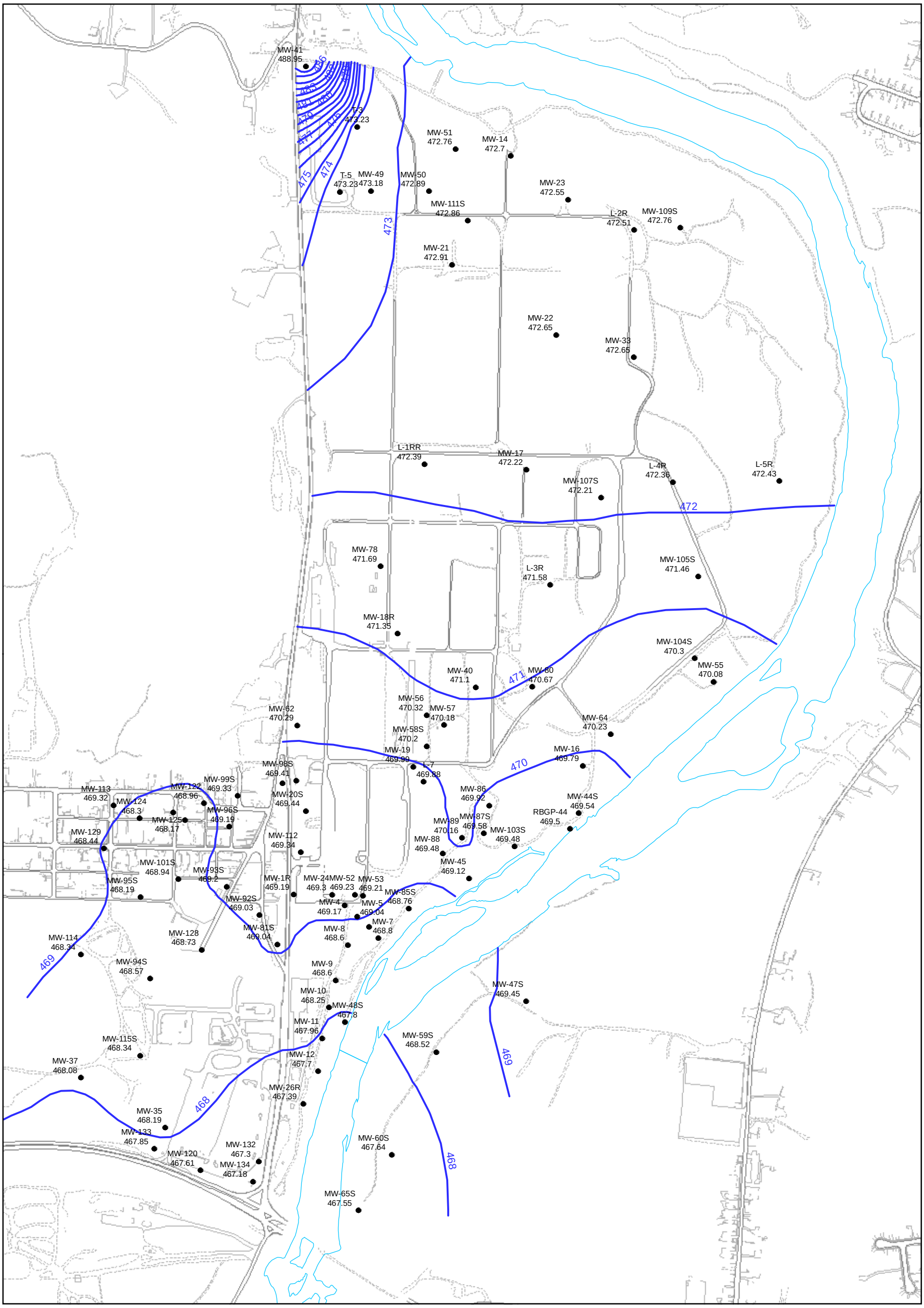
FIGURE 3-1

TRANSDUCER MONITORING WELLS FOR PLUME MONITORING

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PS	Scale: 1" = 650'	Date: 10/31/08	File: 500TRANMONWELLS200805



EXPLANATION

EQUIPOTENTIAL CONTOUR LINE
Elevation In Feet Above Sea Level
Contour Interval is 1.0 feet
(Line Dashed where approximate)

N

0 600'

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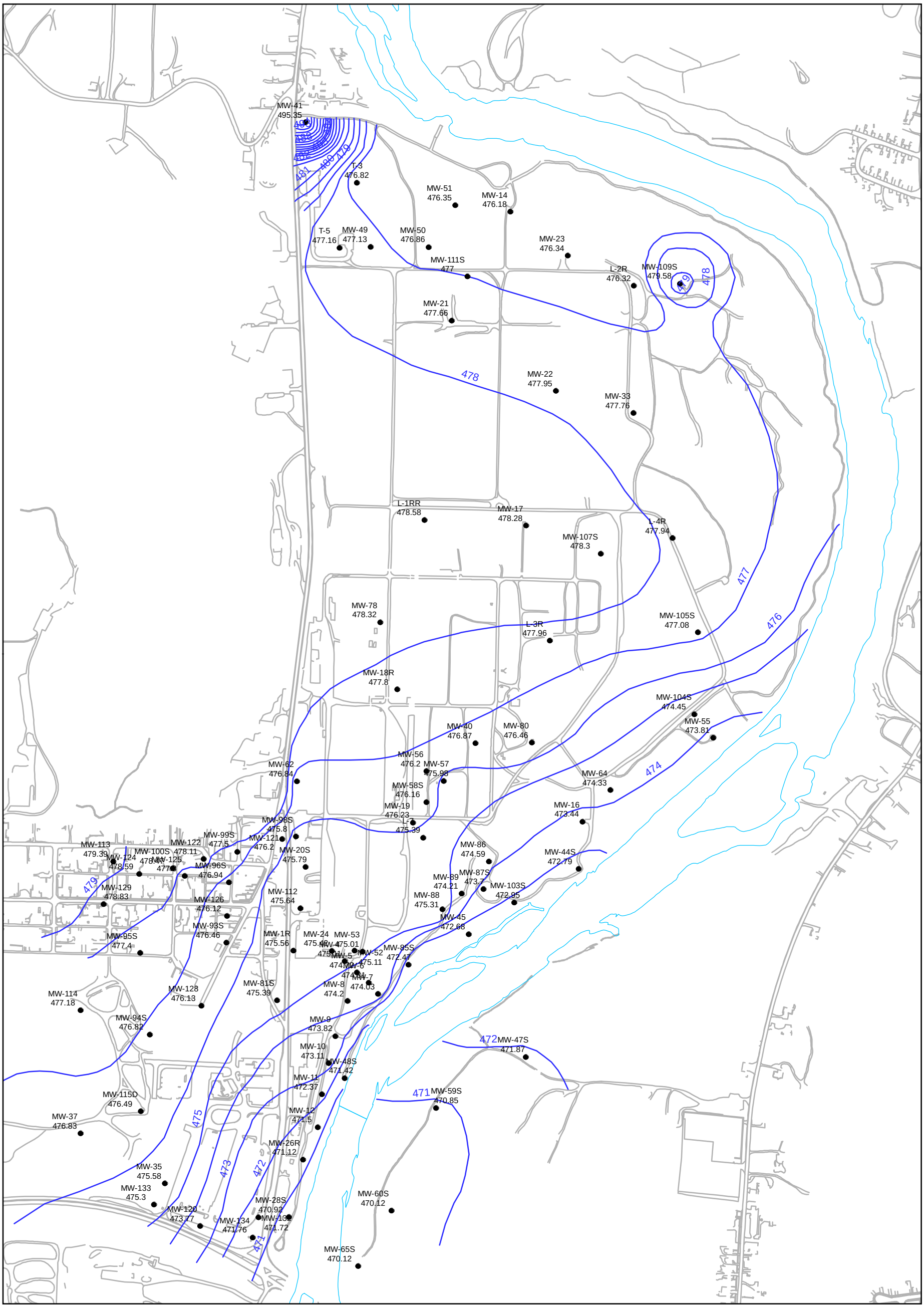
FIGURE 3-2

POTENTIOMETRIC SURFACE MAP, JANUARY 2008

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 600'	Date: 02/26/09	File: Jan08_Potsurface.mxd



EXPLANATION

EQUIPOTENTIAL CONTOUR LINE
Elevation In Feet Above Sea Level
Contour Interval is 1.0 feet
(Line Dashed where approximate)

N

0 600'

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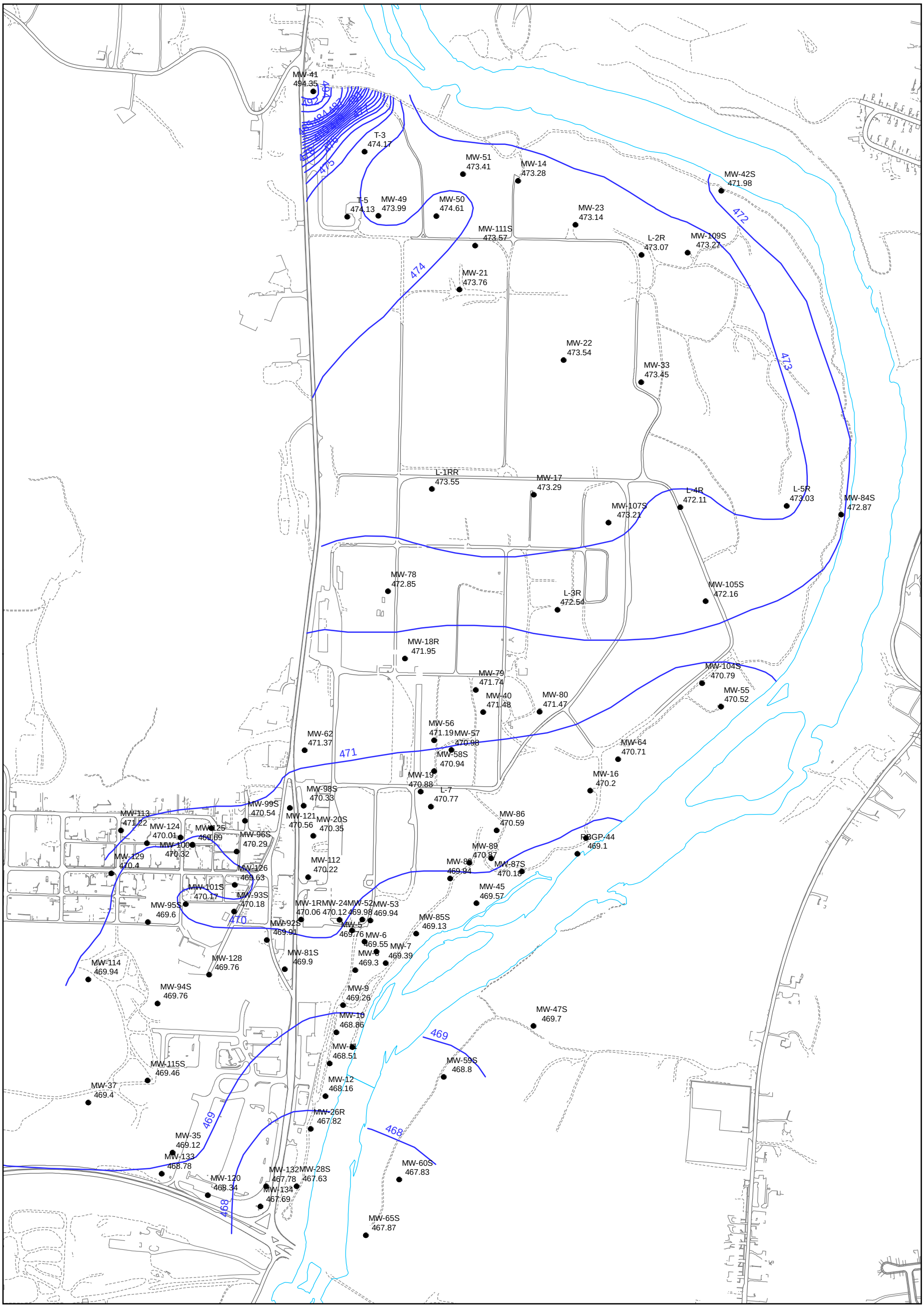
FIGURE 3-3

POTENTIOMETRIC SURFACE MAP, MARCH 2008

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 600'	Date: 04/17/09	File: Mar_08_Potsurface.mxd



EXPLANATION

EQUIPOTENTIAL CONTOUR LINE
Elevation In Feet Above Sea Level
Contour Interval is 1.0 feet
(Line Dashed where approximate)

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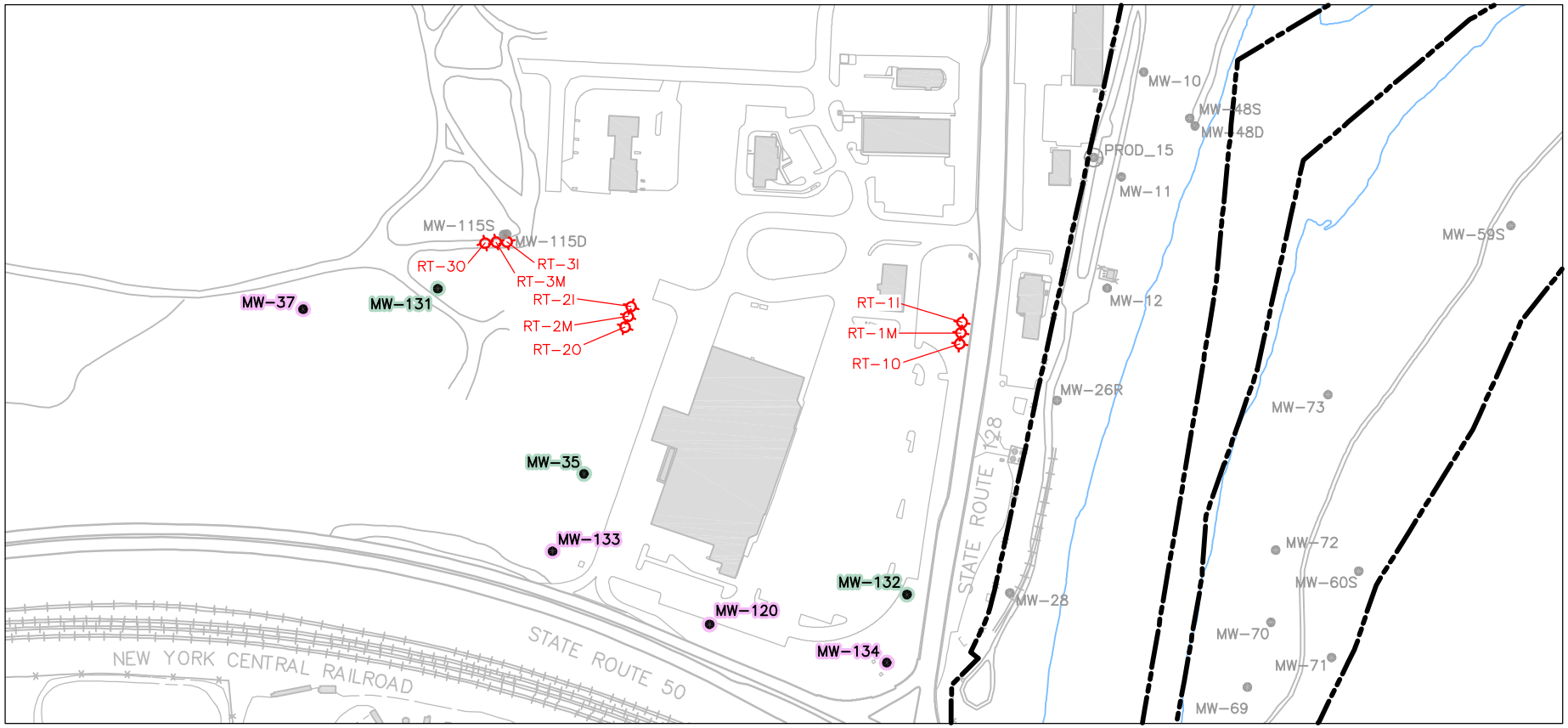
FIGURE 3-4

POTENTIOMETRIC SURFACE MAP, MAY 2008

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 600'	Date: 02/26/09	File: May_08_Potsurface.mxd



EXPLANATION

RT-2E — PERMANENT ROST TRANSECT AND DESIGNATION

MW-35 — SENTINEL MONITORING WELL AND DESIGNATION

MW-37 — POINT OF COMPLIANCE MONITORING WELL AND DESIGNATION

MW-47S — MONITORING WELL AND DESIGNATION

PROD_12 — PRODUCTION WELL AND DESIGNATION

STREAM

PROPERTY BOUNDARY

BUILDING, TANK OR OTHER STRUCTURE

N

0 300'

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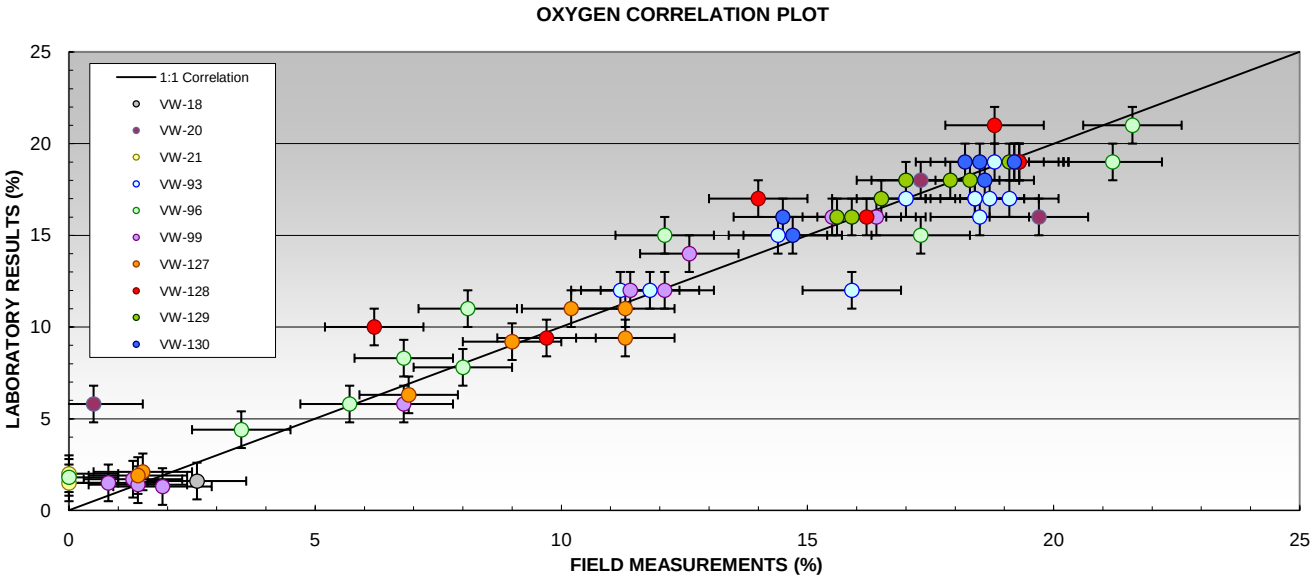
FIGURE 3-5

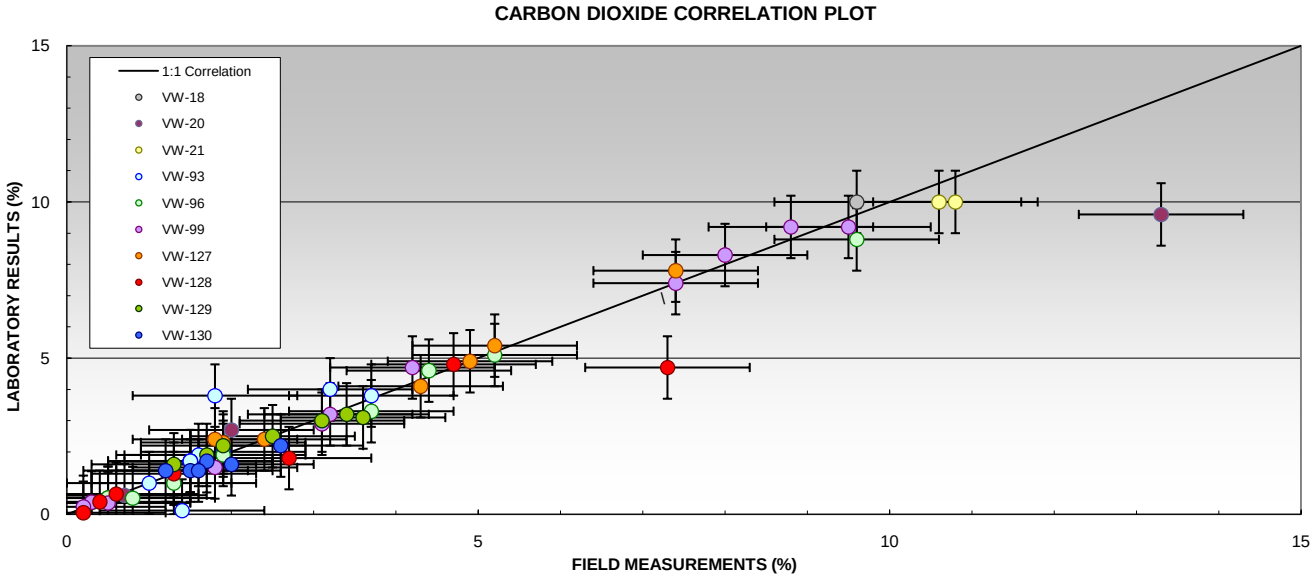
SENTINEL, POINT OF COMPLIANCE, AND ROST MONITORING NETWORK

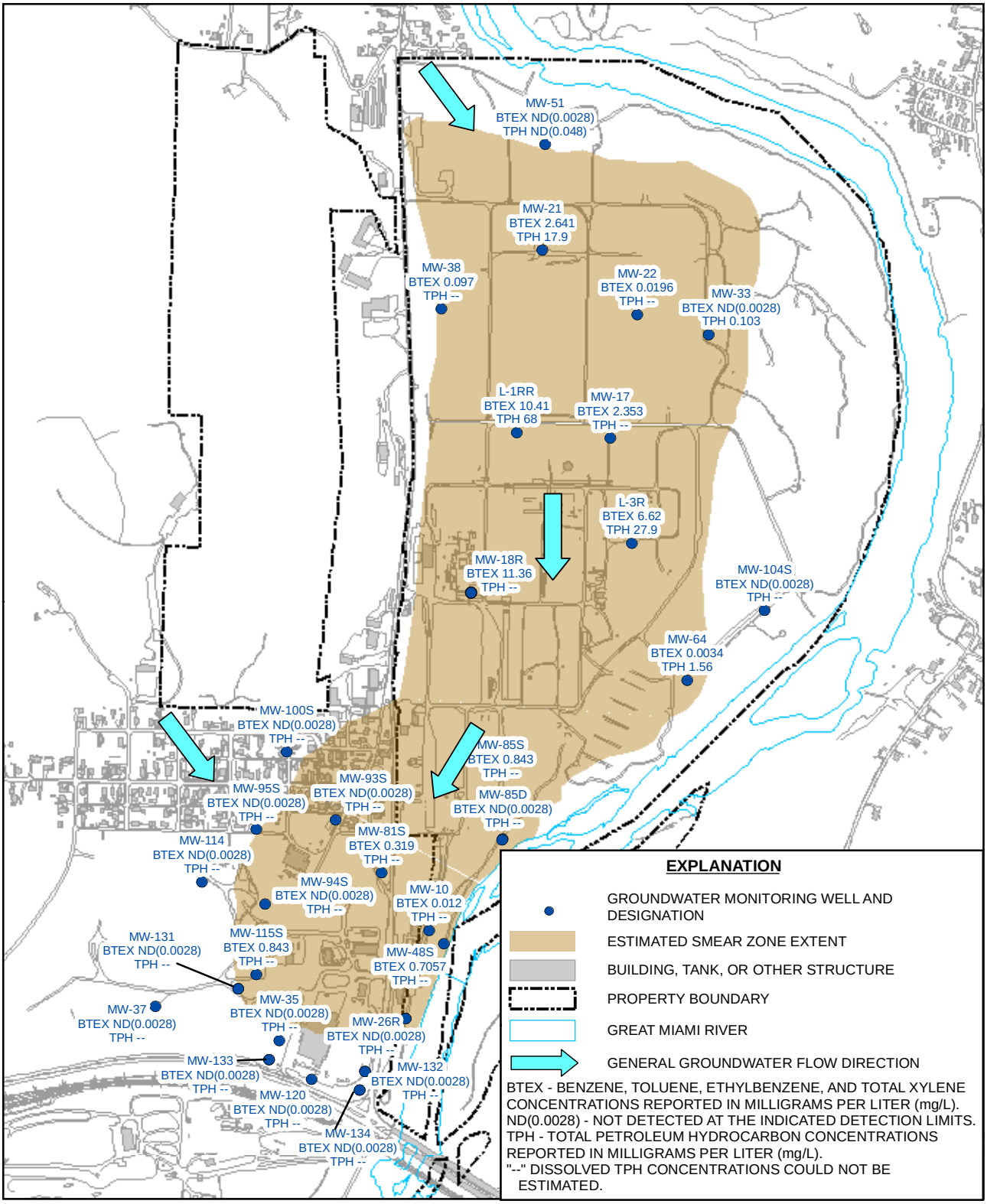
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PS	Scale: 1"=300'	Date: 10/31/08	File: 500ROST-TRANSECTS200805

FIGURE 3-6. NESTED WELL OXYGEN AND CARBON DIOXIDE CORRELATION PLOTS
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO







N

0 1,000 '

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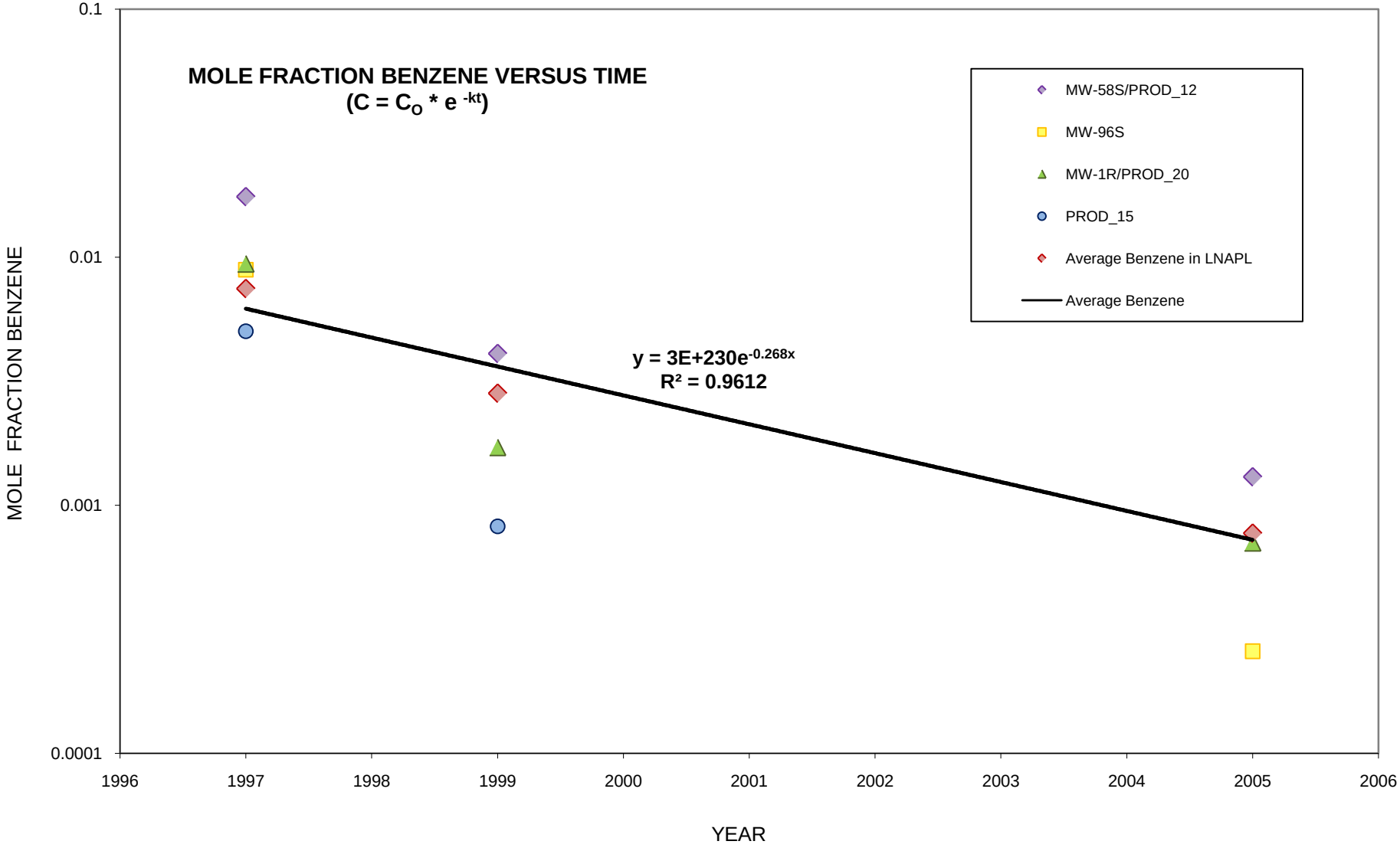
FIGURE 4-1

DISSOLVED PHASE BTEX AND TPH CONCENTRATIONS

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: BLM	Checked By: BR	Scale: 1" = 1000'	Date: 10/30/08	File: QI_TPHTrends.mxd

FIGURE 4-2. MOLE FRACTION BENZENE IN LNAPL VERSUS TIME
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



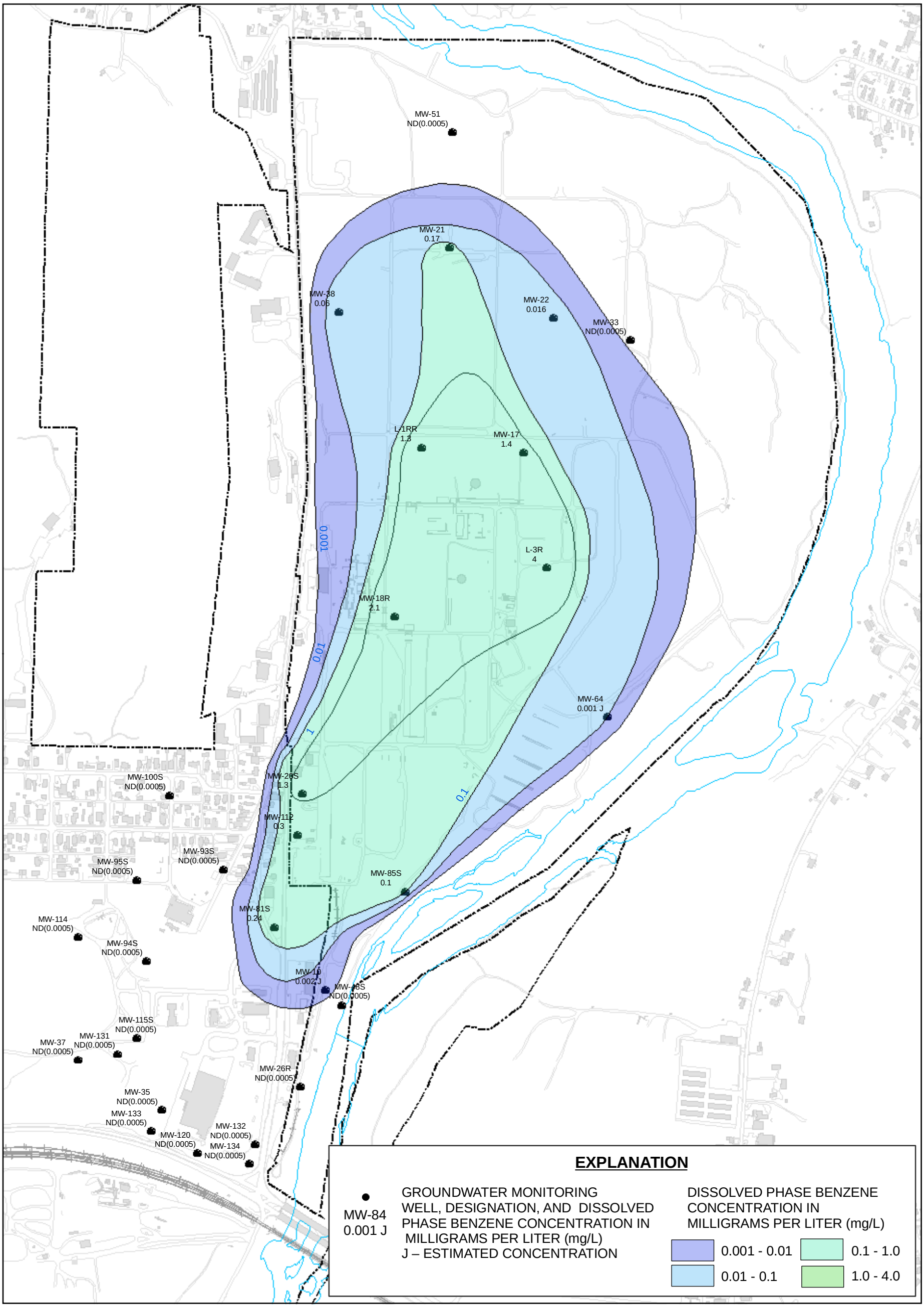


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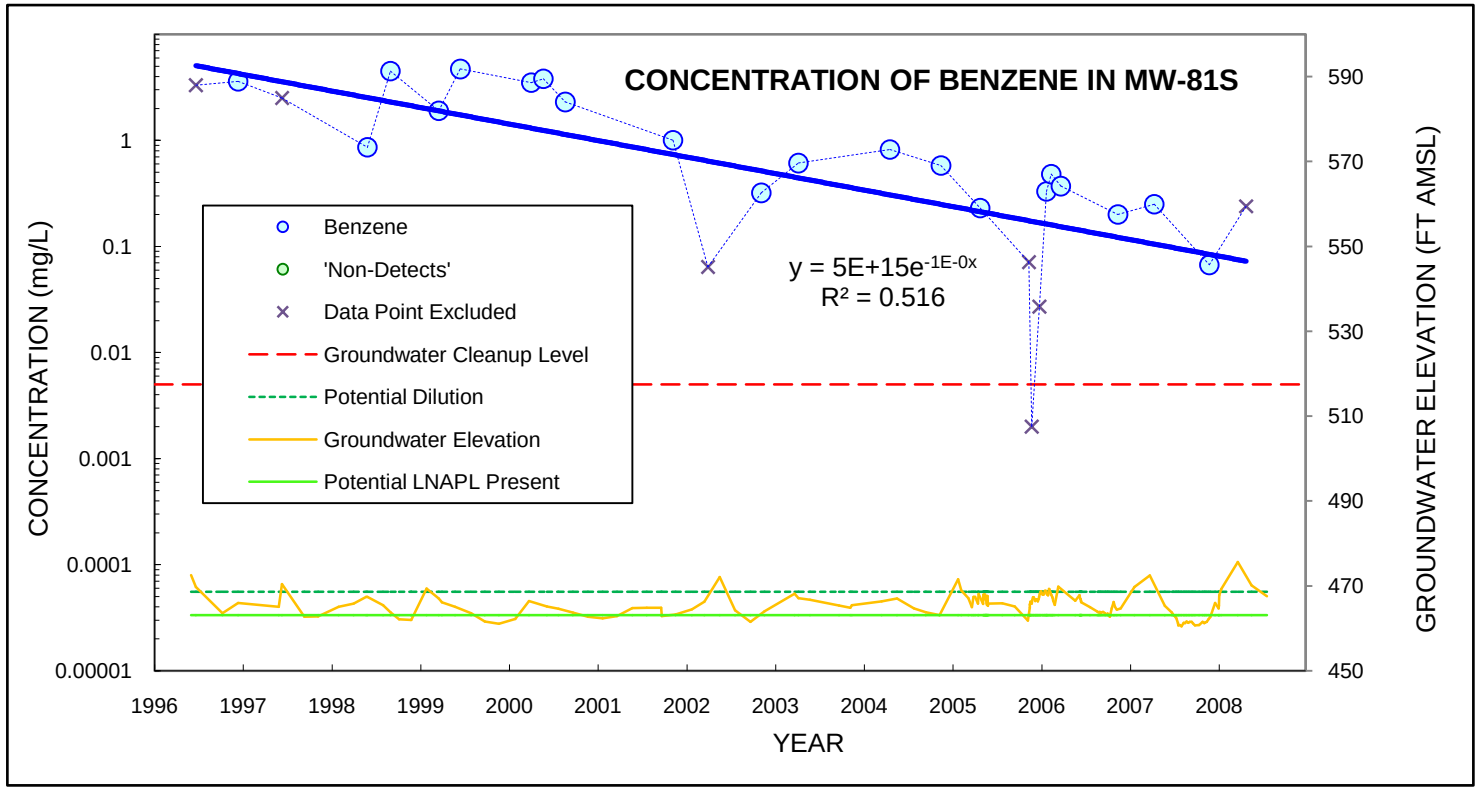
FIGURE 4-3

BENZENE ISOPLETH MAP
FIRST SEMIANNUAL 2008 MONITORING EVENT

CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 600'	Date: 03/16/09	File: 2008_1stSemi_Benz_GW.mxd

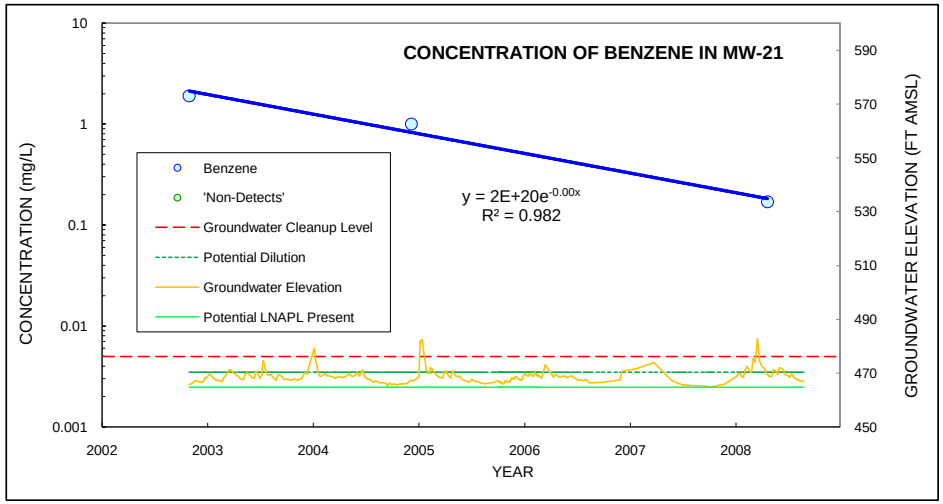
FIGURE 4-4. GROUNDWATER CONSTITUENT CONCENTRATIONS VERSUS TIME AT MW-81S
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

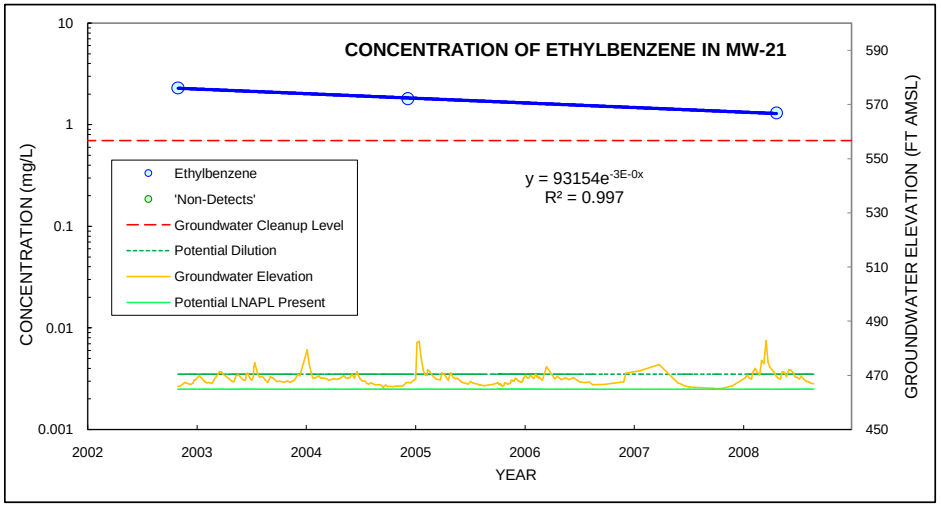


EXPLANATION:

WATER LEVELS PRESENTED FOR POSSIBLE EXCLUSION OF DATA POINTS. EXCLUSION BASED ON POTENTIAL DILUTION OR PRESENCE OF LNAPL.
EIGHT DATA POINTS EXLUDED (6/20/1996, 6/9/1997, 4/1/2002, 11/15/2005, 11/28/2005, 12/29/2005, 4/30/2008)
FT AMSL - FEET ABOVE MEAN SEA LEVEL
mg/L - MILLIGRAMS PER LITER

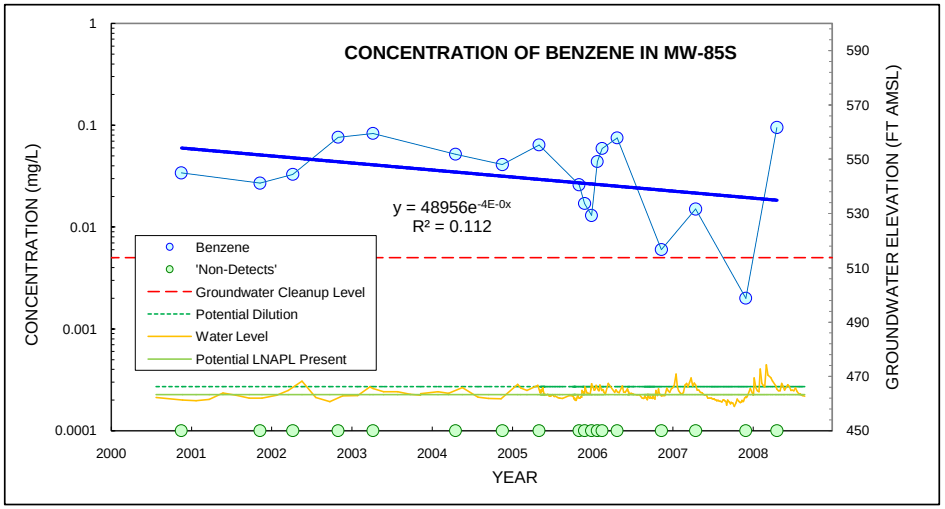
FIGURE 4-5. GROUNDWATER CONSTITUENT CONCENTRATIONS VERSUS TIME AT MW-21
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

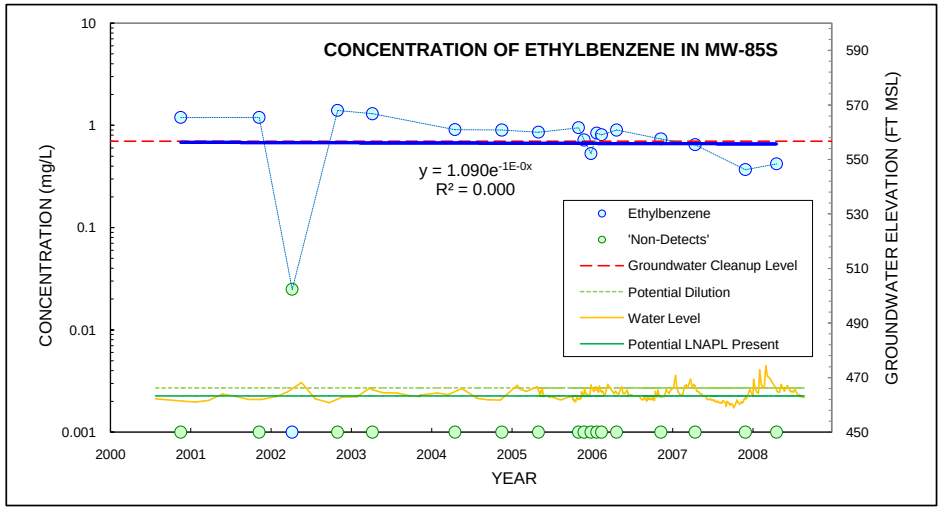




EXPLANATION:
WATER LEVELS PRESENTED FOR POSSIBLE EXCLUSION OF DATA POINTS. EXCLUSION BASED ON POTENTIAL DILUTION OR PRESENCE OF LNAPL.
NO DATA POINTS EXCLUDED FOR MW-21
FT AMSL - FEET ABOVE MEAN SEA LEVEL
mg/L - MILLIGRAMS PER LITER

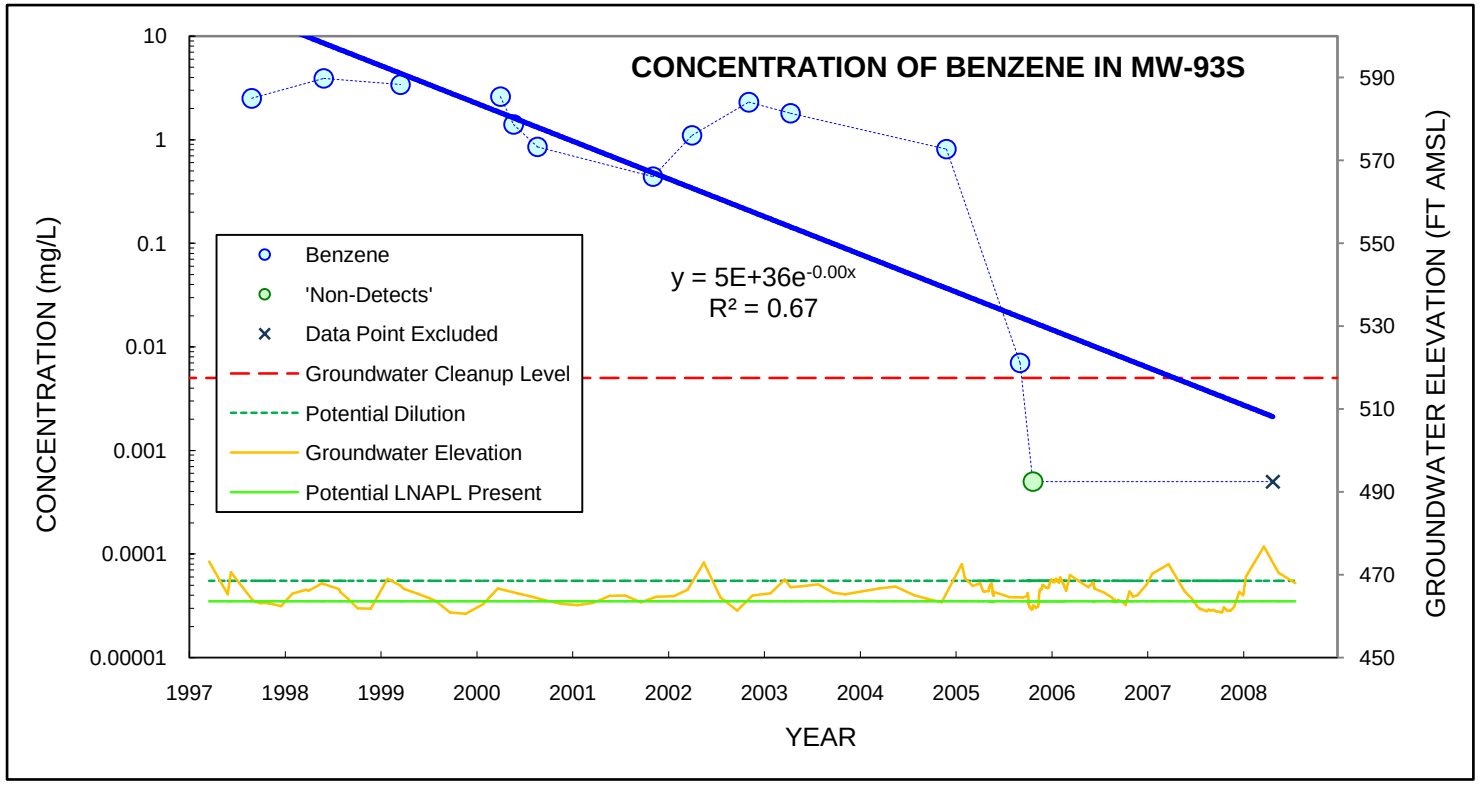
FIGURE 4-6. GROUNDWATER CONSTITUENT CONCENTRATIONS VERSUS TIME AT MW-85S
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





EXPLANATION:
WATER LEVELS PRESENTED FOR POSSIBLE EXCLUSION OF DATA POINTS. EXCLUSION BASED ON POTENTIAL DILUTION OR PRESENCE OF LNAPL.
NO DATA POINTS EXCLUDED FOR MW-85S
FT AMSL - FEET ABOVE MEAN SEA LEVEL
mg/L - MILLIGRAMS PER LITER

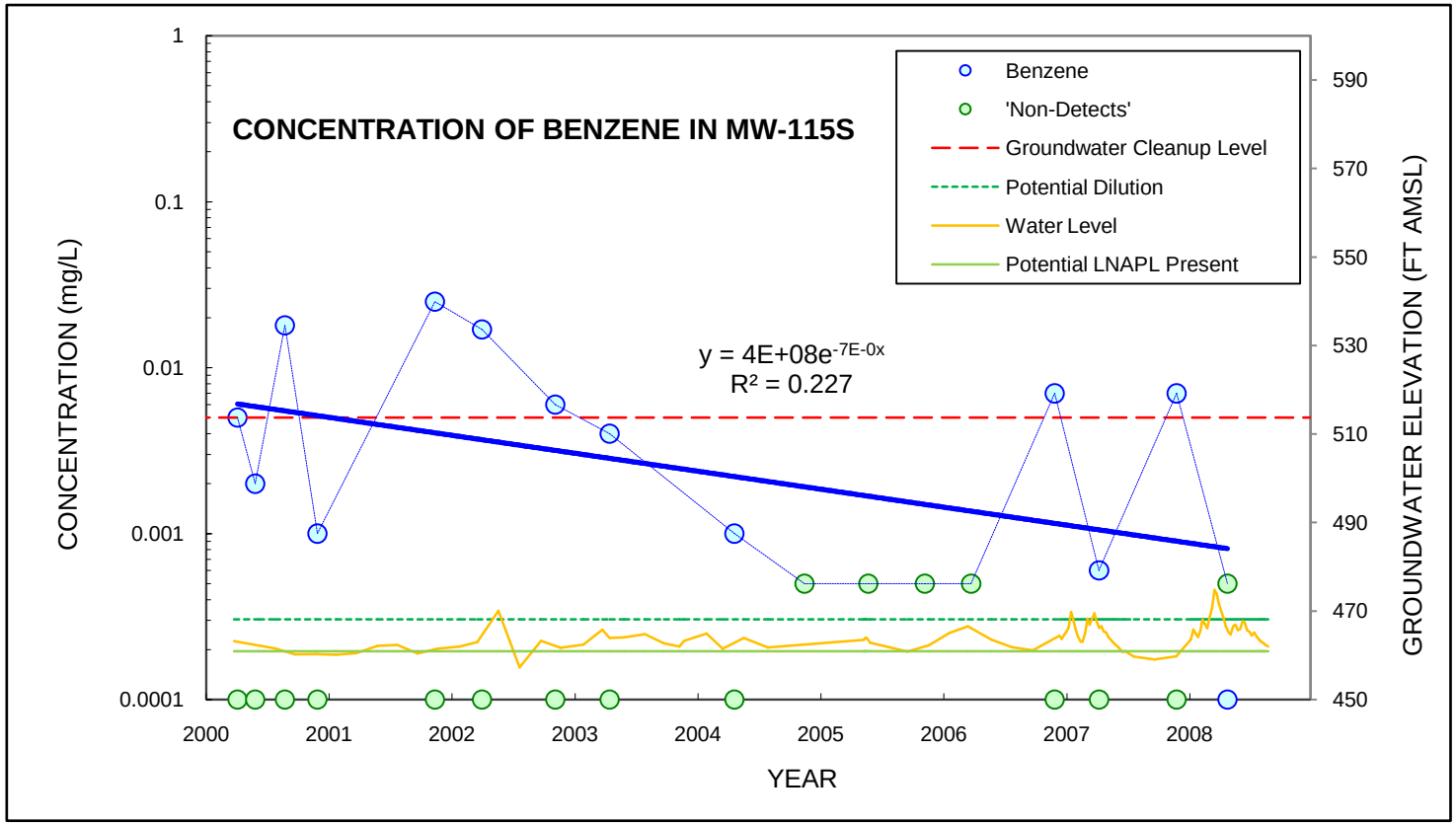
FIGURE 4-7. GROUNDWATER CONSTITUENT CONCENTRATIONS VERSUS TIME AT MW-93S
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:

WATER LEVELS PRESENTED FOR POSSIBLE EXCLUSION OF DATA POINTS. EXCLUSION BASED ON POTENTIAL DILUTION OR PRESENCE OF LNAPL.
ONE DATA POINT EXLUDED (4/30/2008)
FT AMSL - FEET ABOVE MEAN SEA LEVEL
mg/L - MILLIGRAMS PER LITER

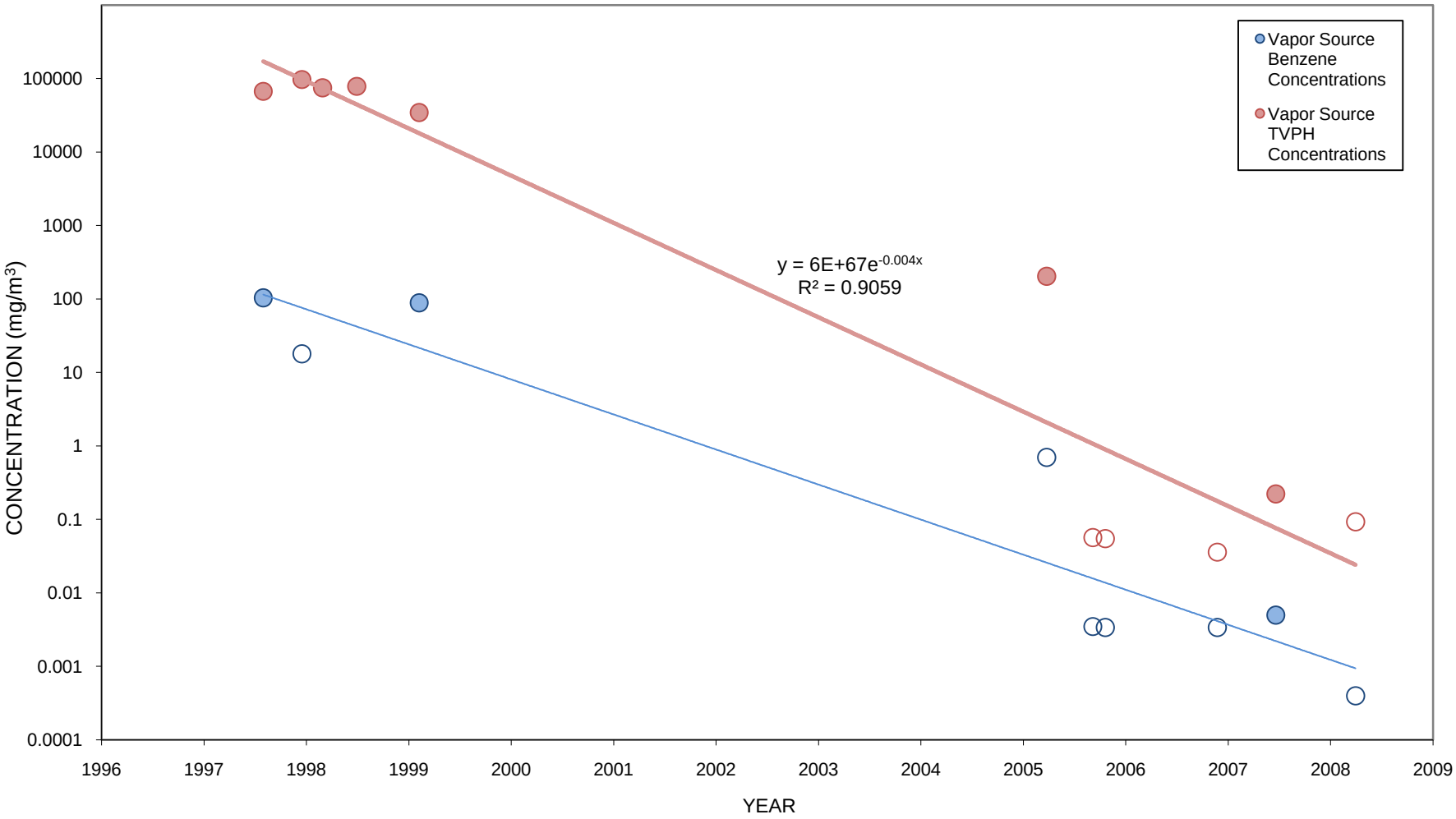
FIGURE 4-8. GROUNDWATER CONSTITUENT CONCENTRATIONS VERSUS TIME AT MW-115S
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:

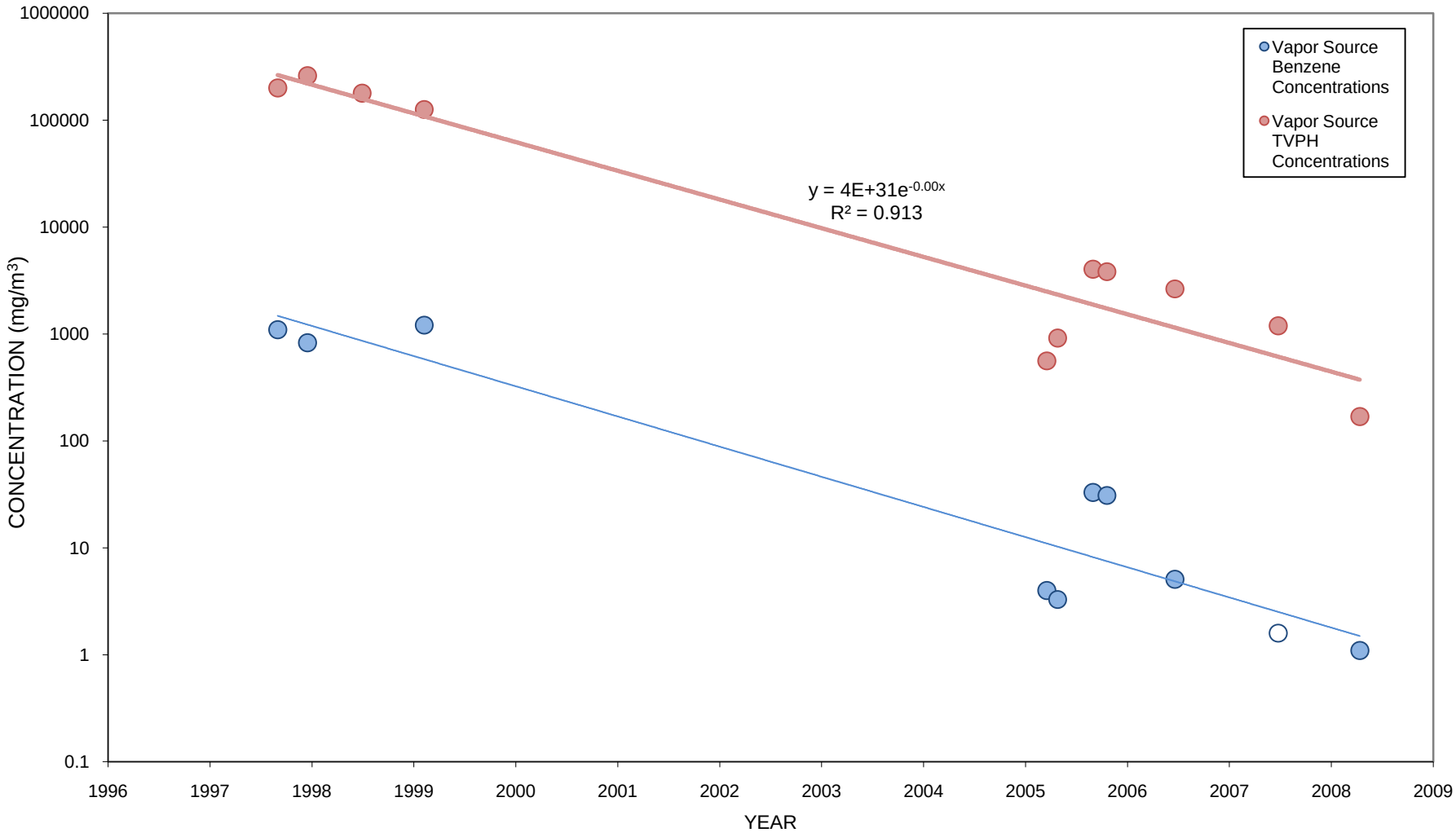
WATER LEVELS PRESENTED FOR POSSIBLE EXCLUSION OF DATA POINTS. EXCLUSION BASED ON POTENTIAL DILUTION OR PRESENCE OF LNAPL.
NO DATA POINTS EXCLUDED FOR MW-115S
FT AMSL - FEET ABOVE MEAN SEA LEVEL
mg/L - MILLIGRAMS PER LITER

FIGURE 4-9a. VAPOR SOURCE CONCENTRATIONS IN VW-93
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:
Open symbol designates a non-detect value

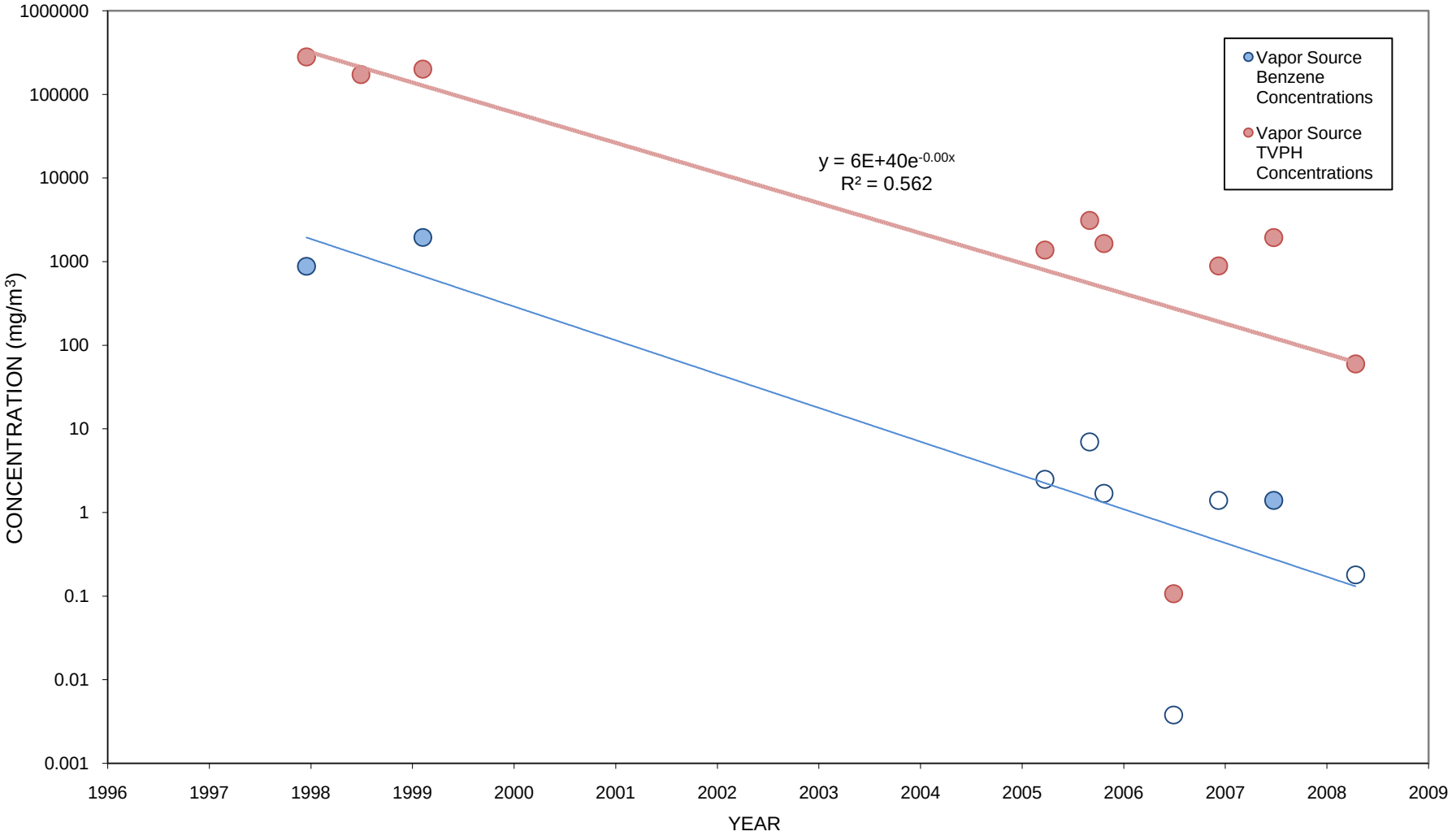
FIGURE 4-9b. VAPOR SOURCE CONCENTRATIONS IN VW-96
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



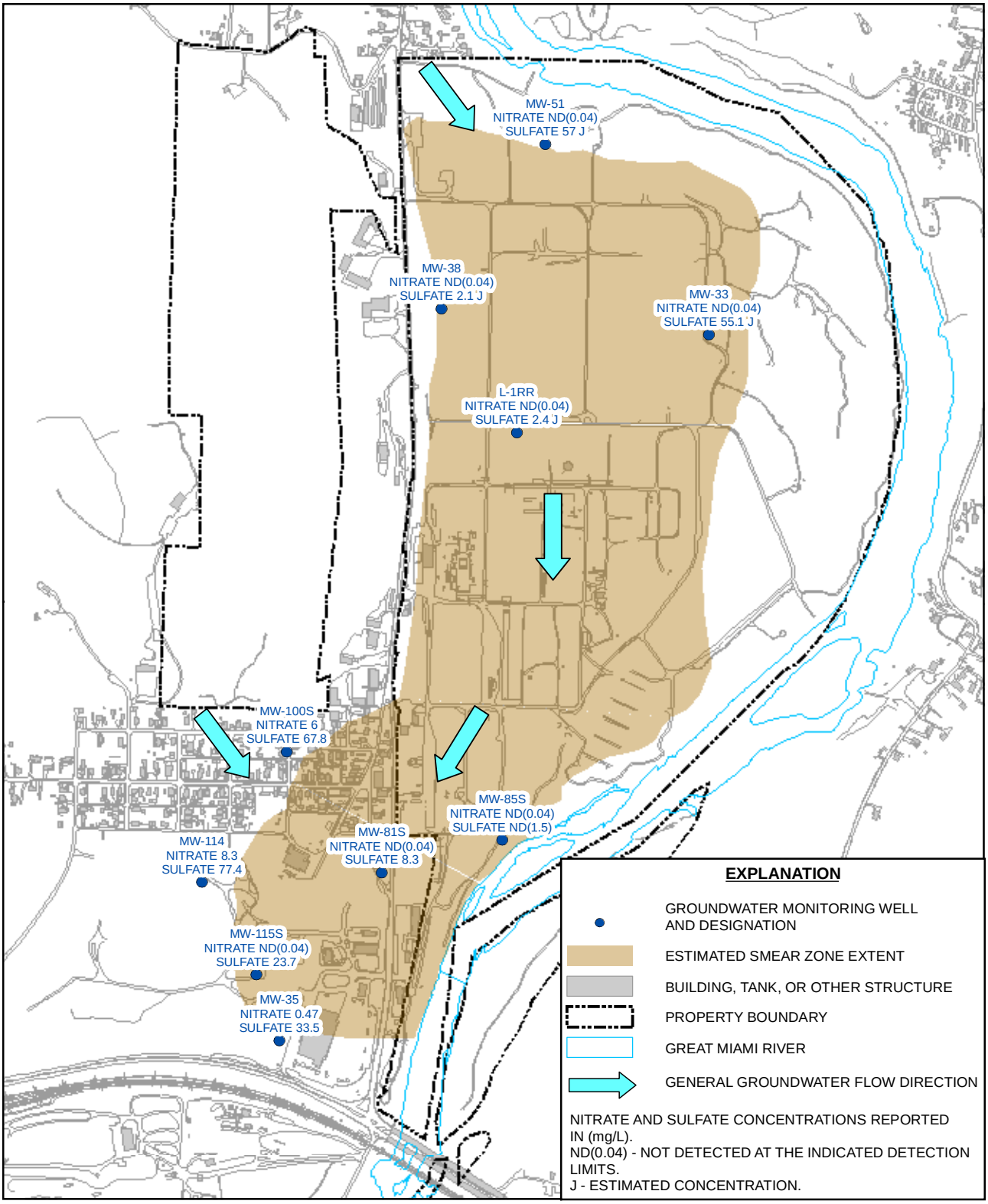
EXPLANATION:
Open symbol designates a non-detect value

200904_SourceTermVaporTrends_FIG-4-9

FIGURE 4-9c. VAPOR SOURCE CONCENTRATIONS IN VW-99
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:
Open symbol designates a non-detect value



N

0 1,000 '

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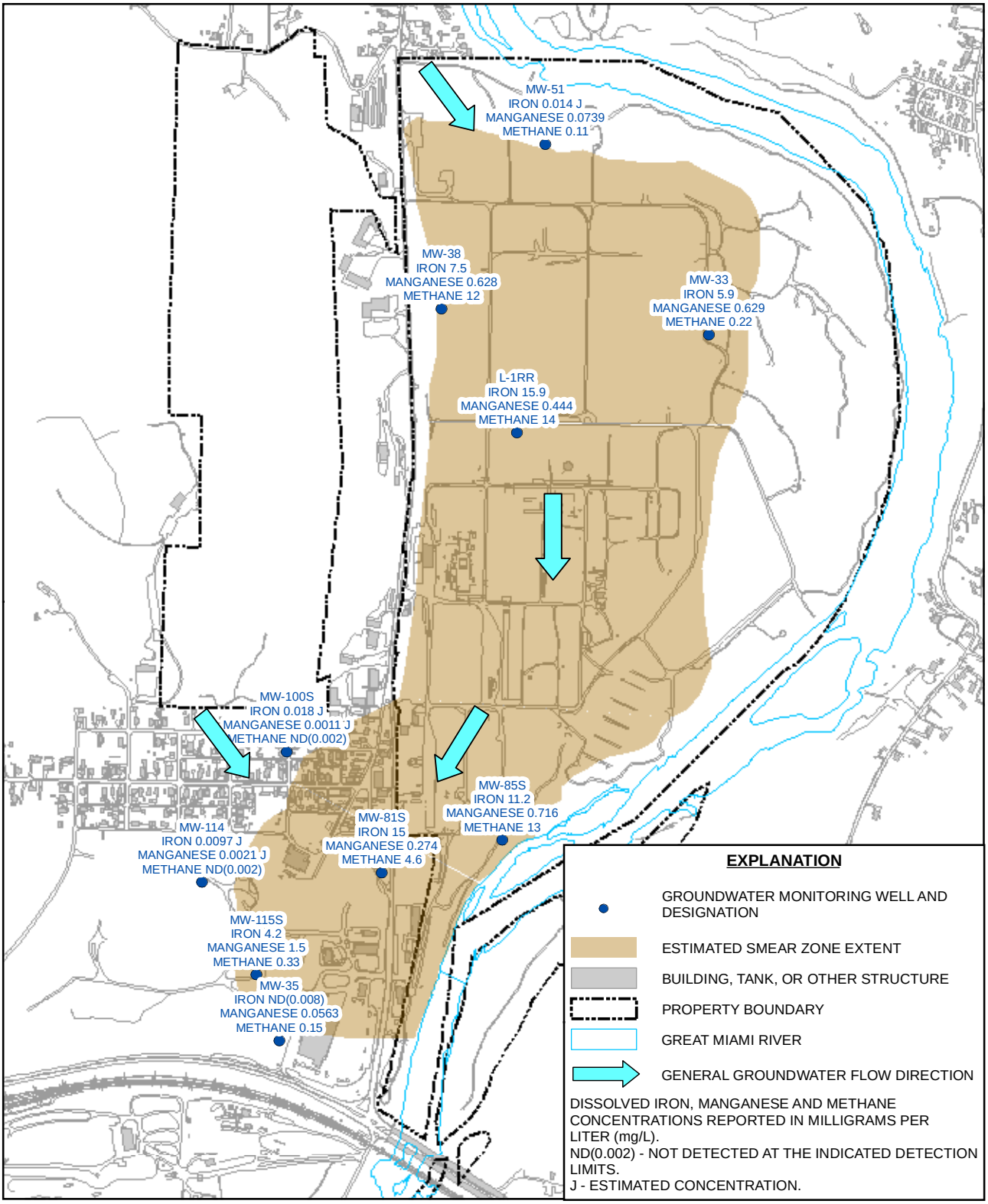
FIGURE 4-10

DISSOLVED PHASE NITRATE AND SULFATE CONCENTRATIONS

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: BLM	Checked By: BR	Scale: 1" = 1000'	Date: 10/30/08	File: Ql_EAccept_OxTrends.mxd



N

0 1,000 '

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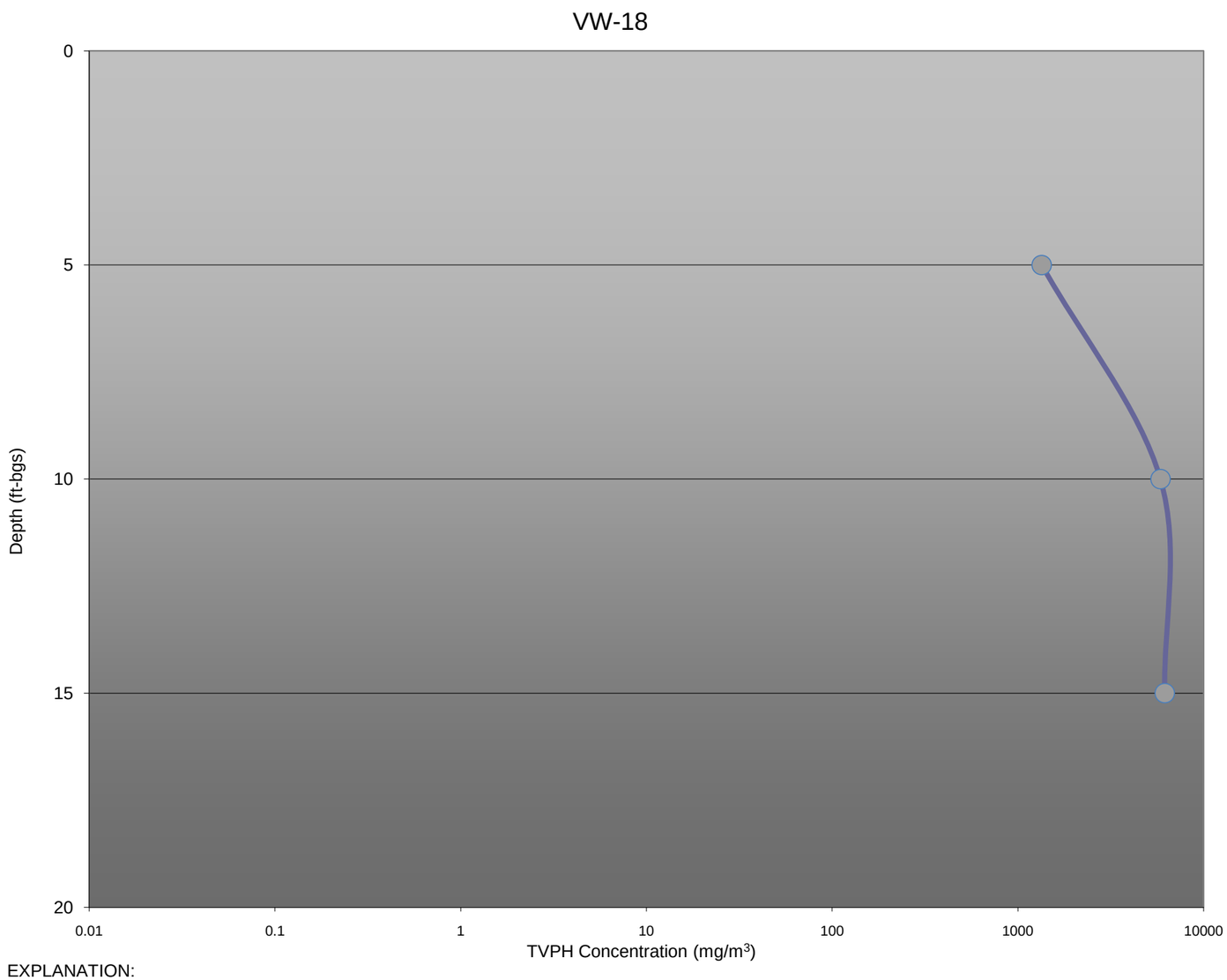
FIGURE 4-11

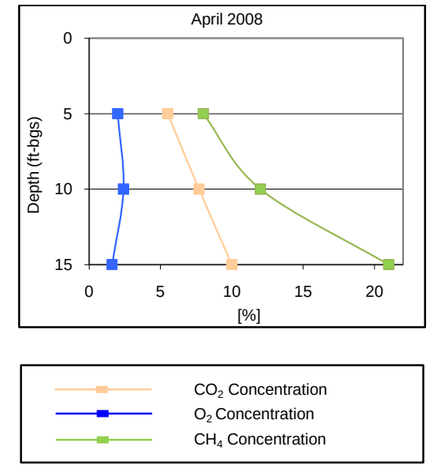
DISSOLVED PHASE IRON, MANGANESE, AND METHANE CONCENTRATIONS

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: BLM	Checked By: BR	Scale: 1" = 1000'	Date: 10/30/08	File: QI_EAccept_RedTrends.mxd

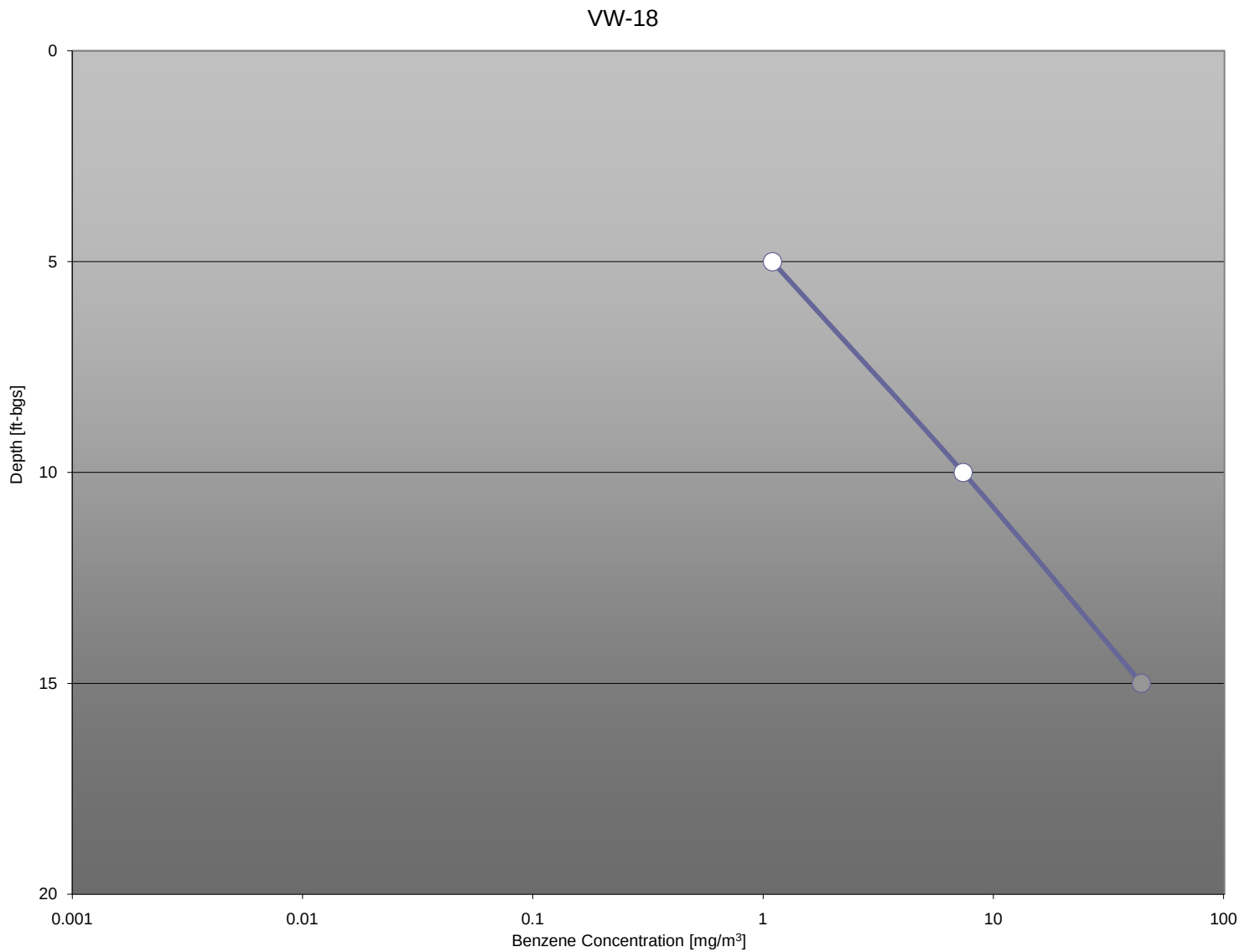
FIGURE 4-12a. NESTED VAPOR MONITORING WELL VW-18 TVPH AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





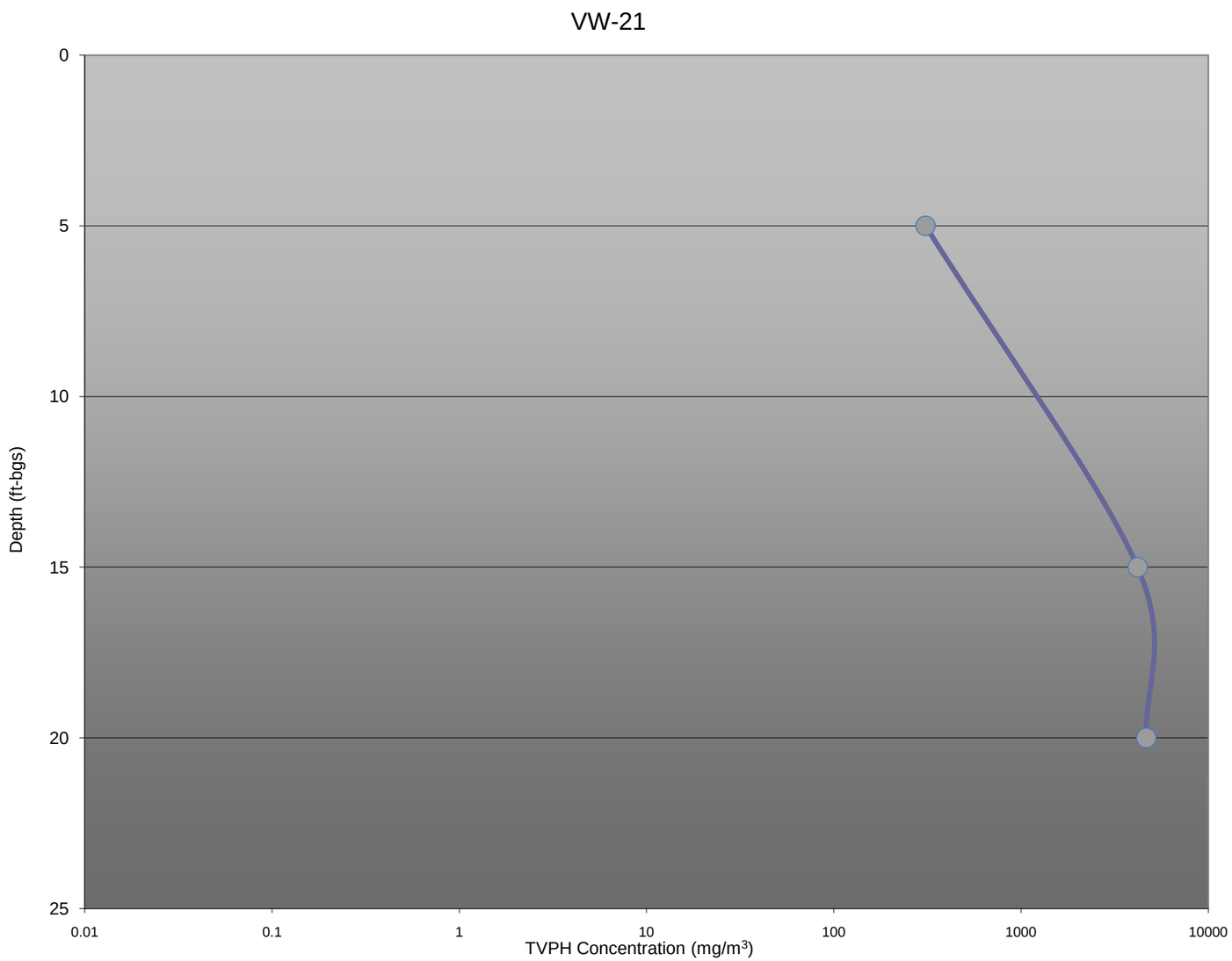
EXPLANATION:
1. Open symbol designates a non-detect value
2. TVPH - Total volatile petroleum hydrocarbons as gasoline

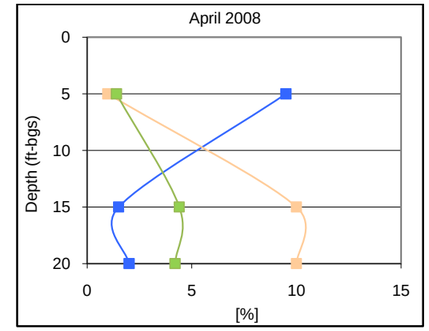
FIGURE 4-12b. NESTED VAPOR MONITORING WELL VW-18 BENZENE PROFILE
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

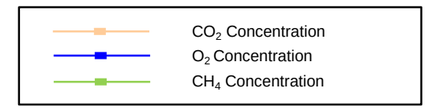


EXPLANATION:
1. Open symbol designates a non-detect value

FIGURE 4-13a. NESTED VAPOR MONITORING WELL VW-21 TVPH AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

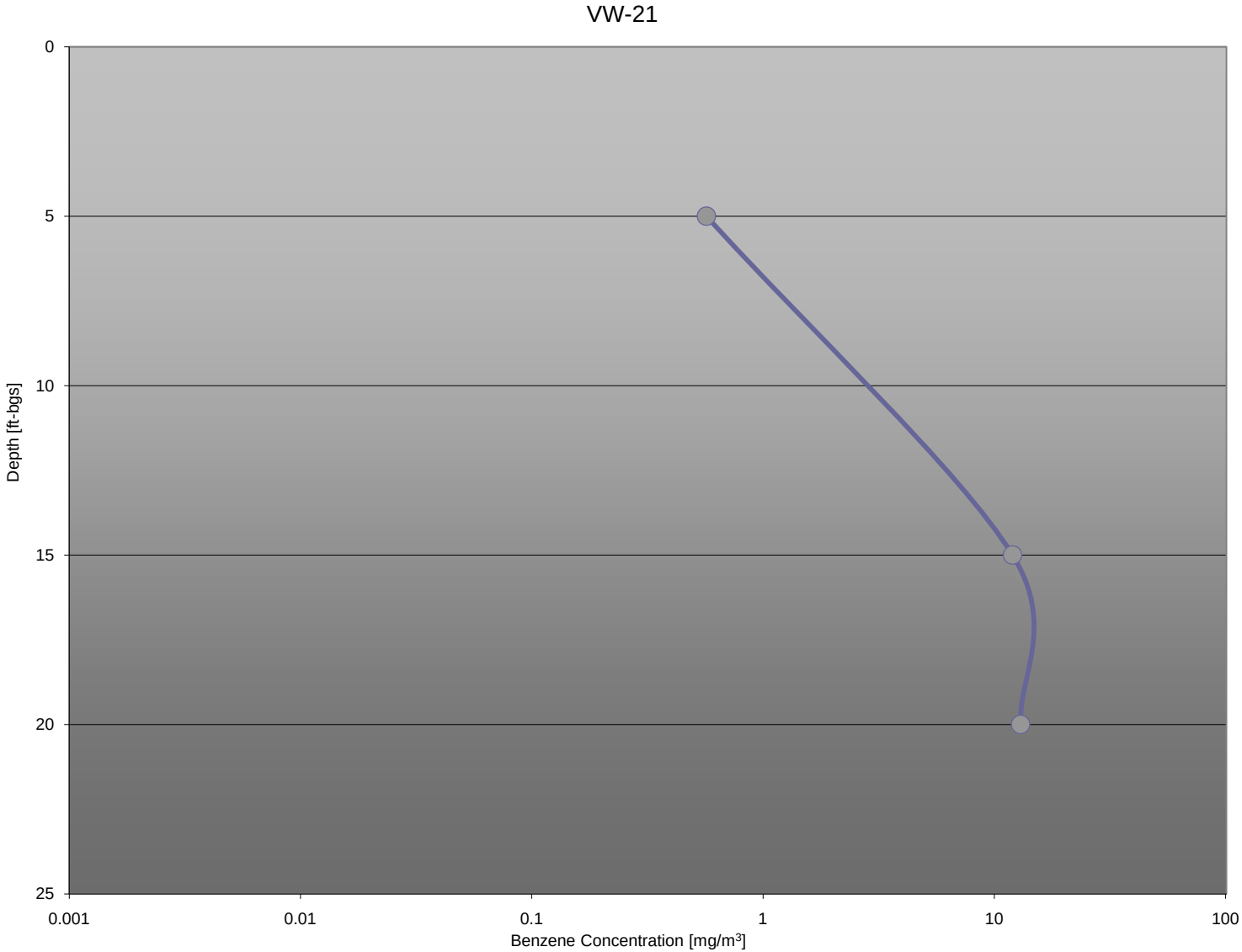






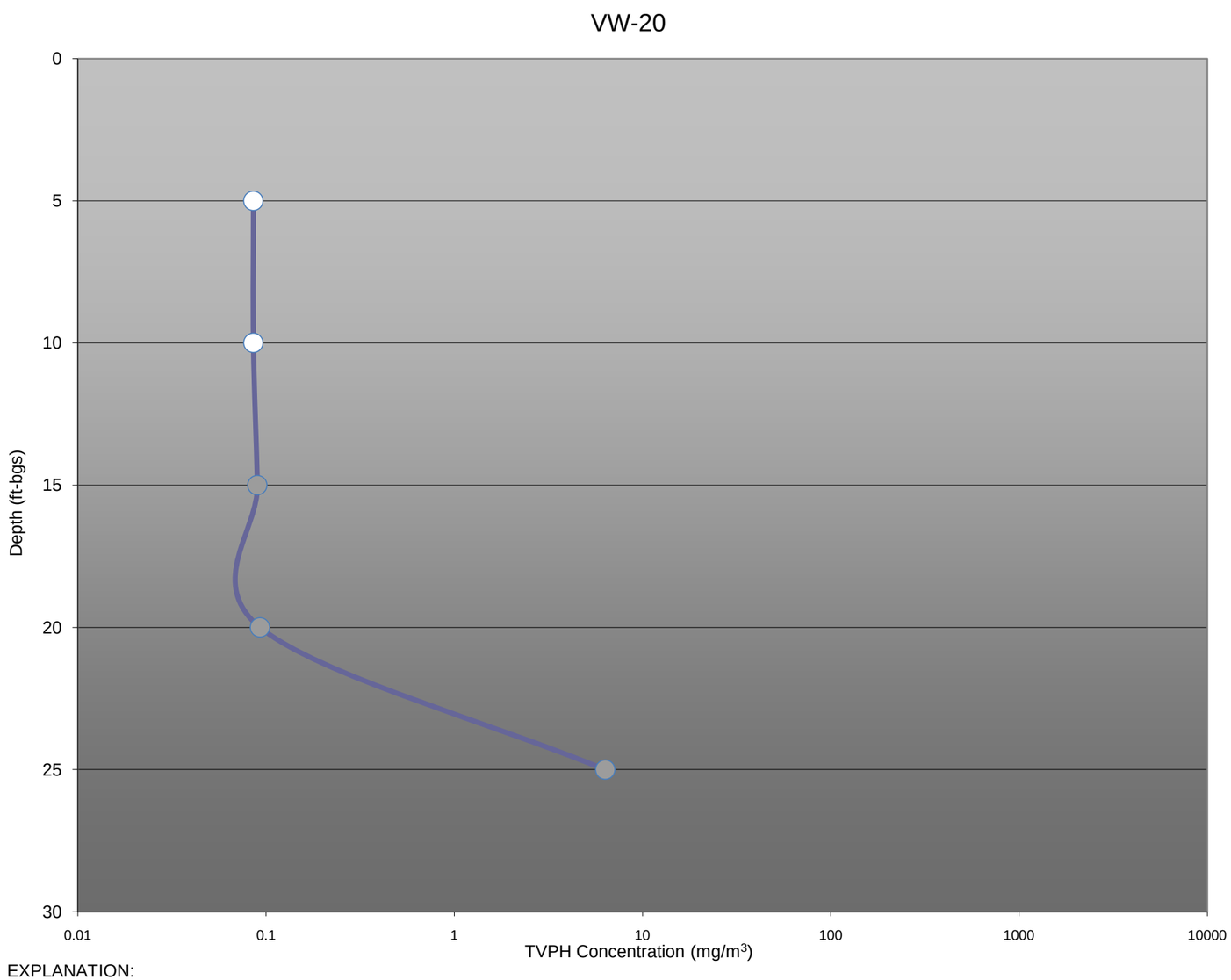
EXPLANATION:
1. Open symbol designates a non-detect value
2. TVPH - Total volatile petroleum hydrocarbons as gasoline

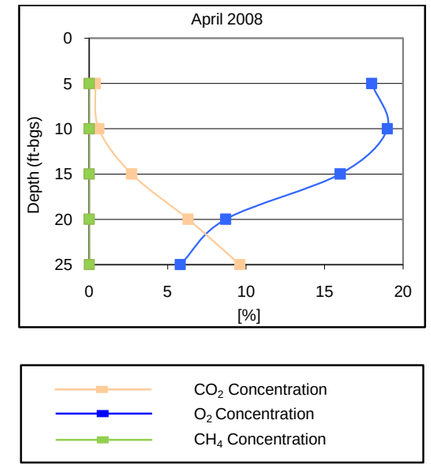
FIGURE 4-13b. NESTED VAPOR MONITORING WELL VW-21 BENZENE PROFILE
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:
1. Open symbol designates a non-detect value

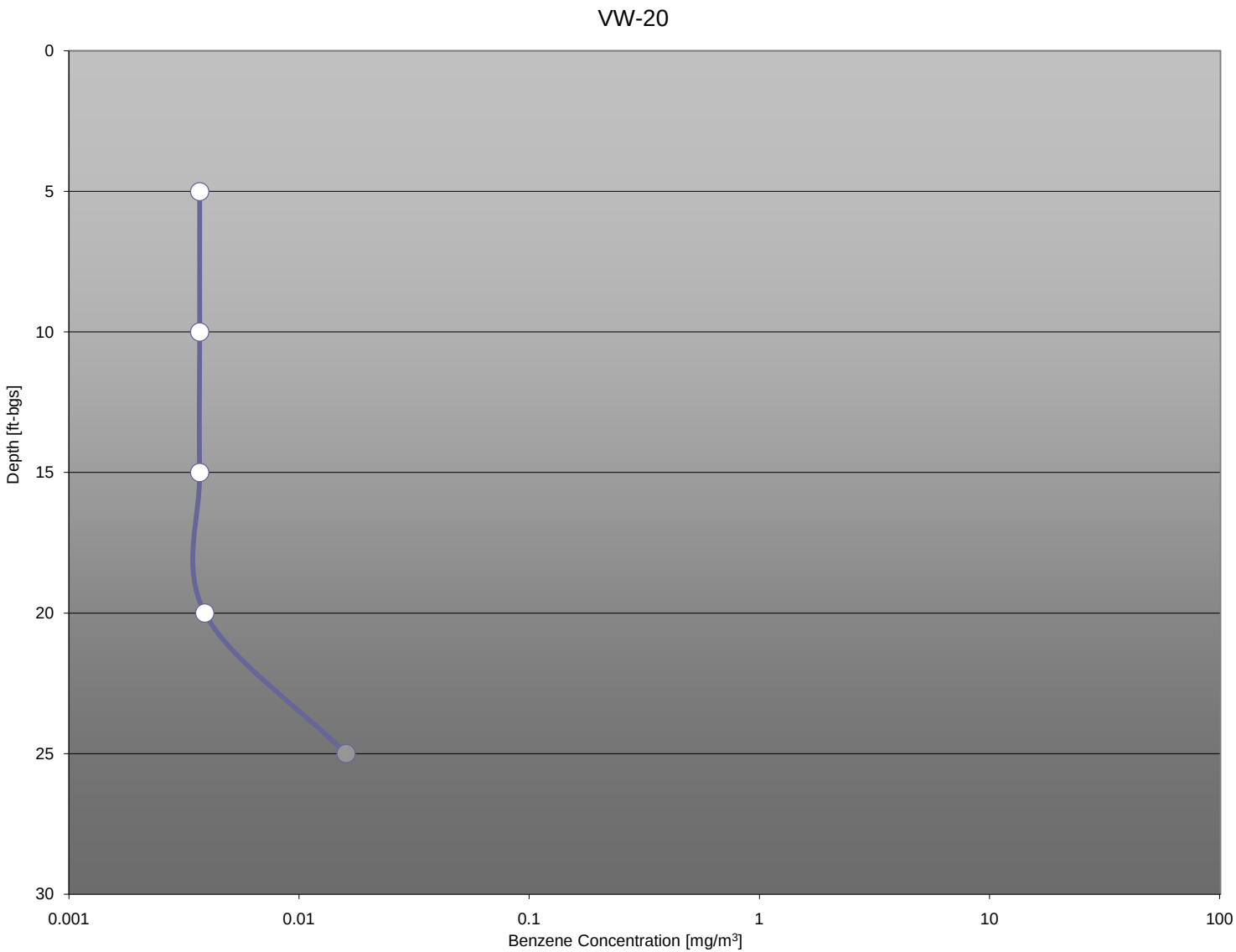
FIGURE 4-14a. NESTED VAPOR MONITORING WELL VW-20 TVPH AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





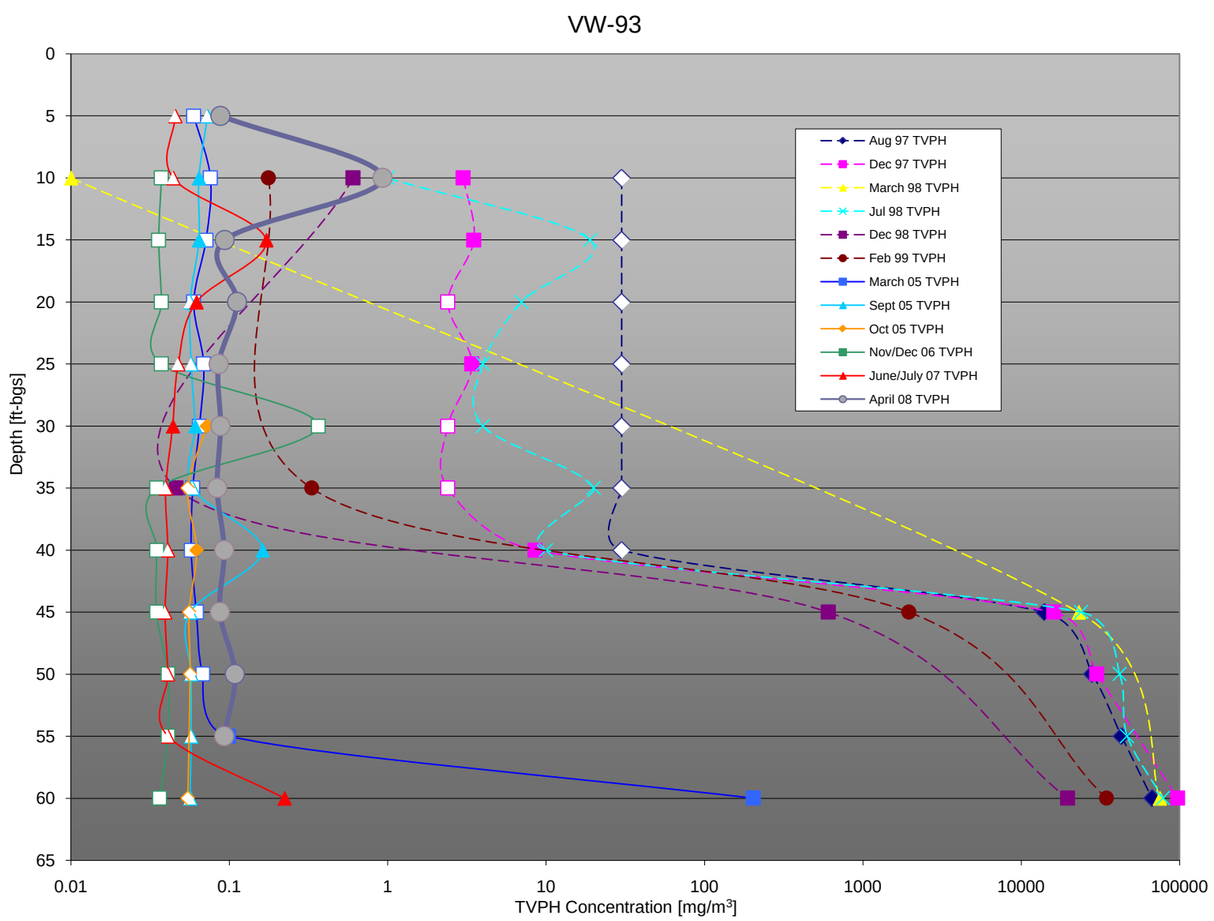
EXPLANATION:
1. Open symbol designates a non-detect value
2. TVPH - Total volatile petroleum hydrocarbons as gasoline

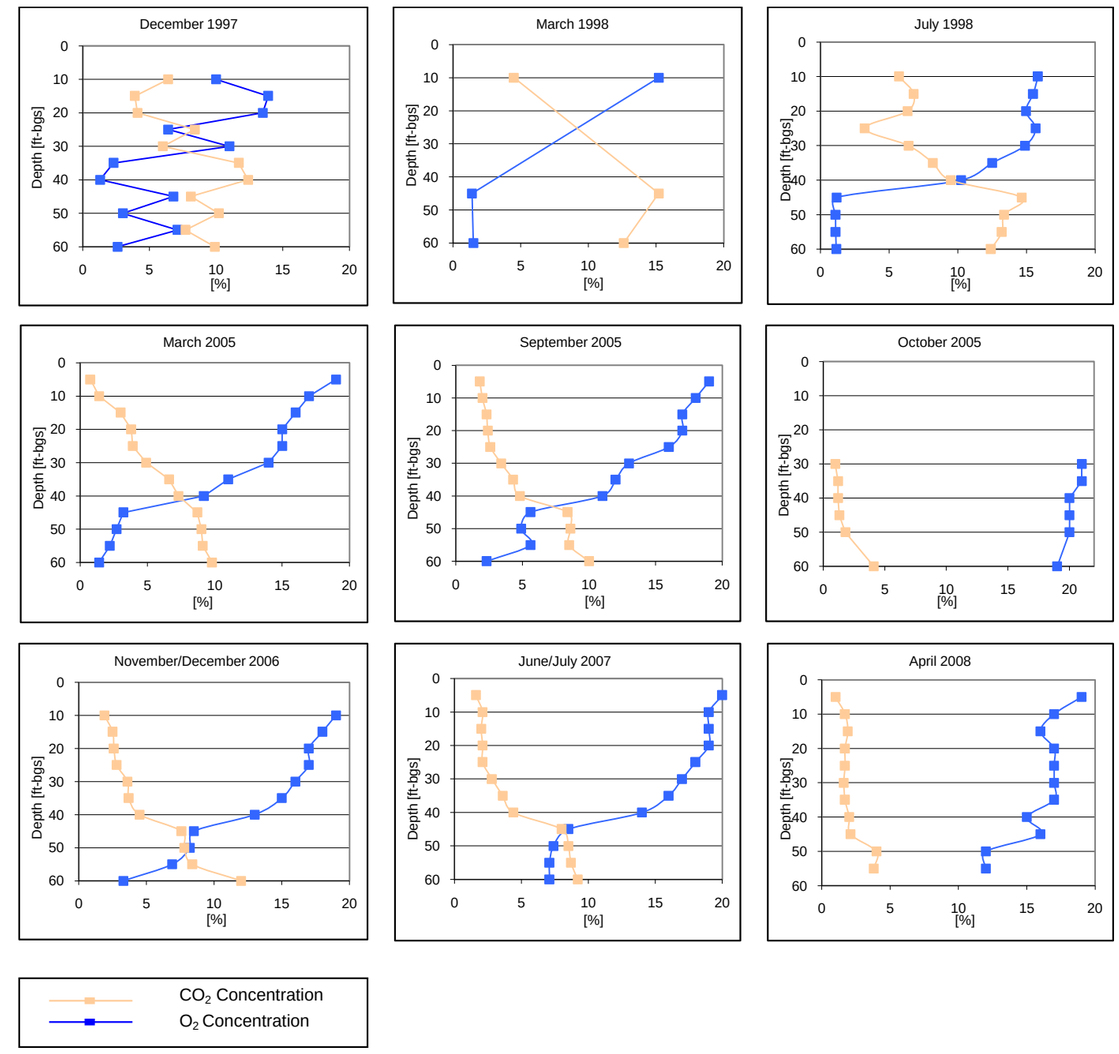
FIGURE 4-14b. NESTED VAPOR MONITORING WELL VW-20 BENZENE PROFILE
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:
1. Open symbol designates a non-detect value

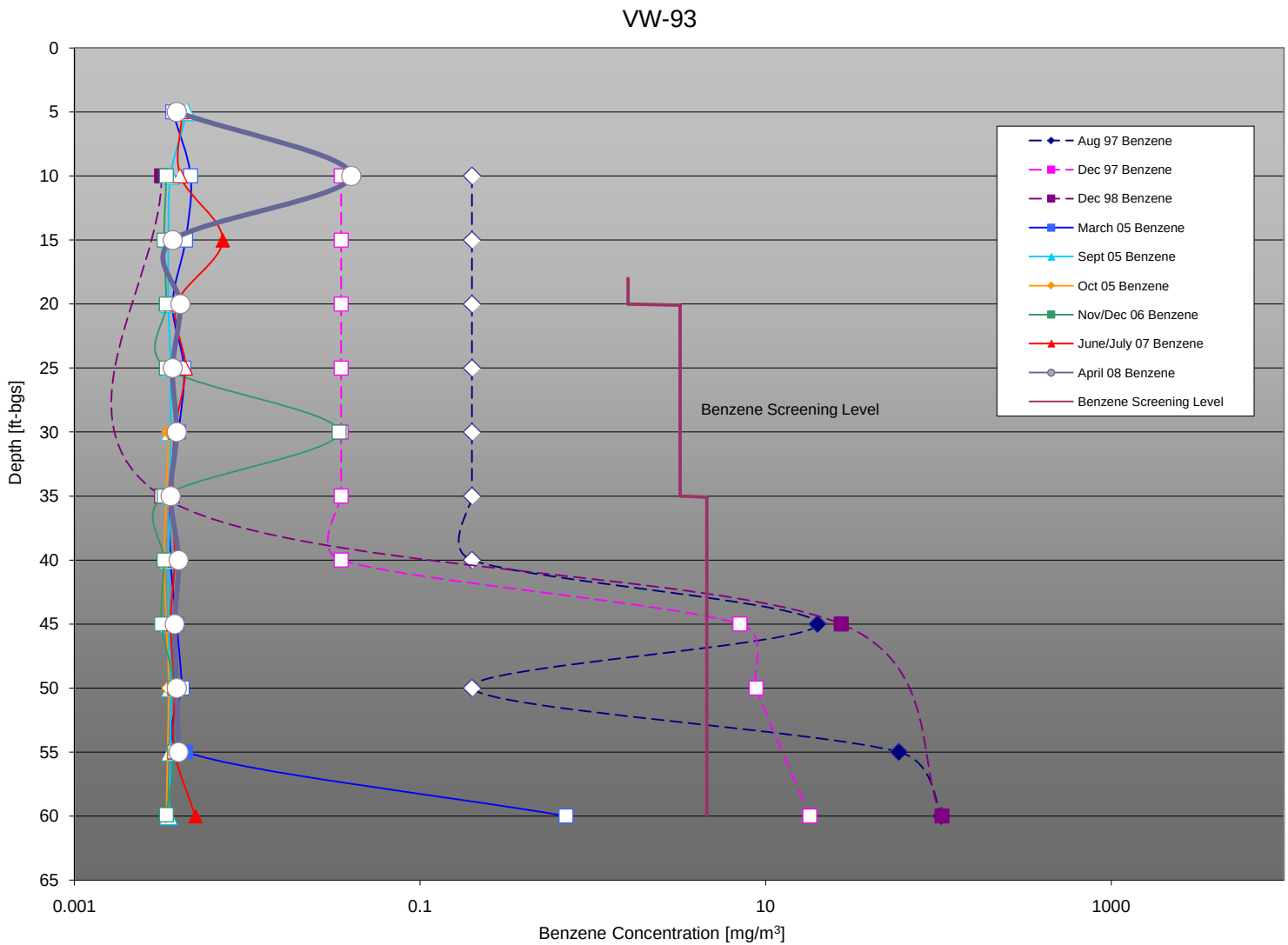
FIGURE 4-15a. NESTED VAPOR MONITORING WELL VW-93 TVPH AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





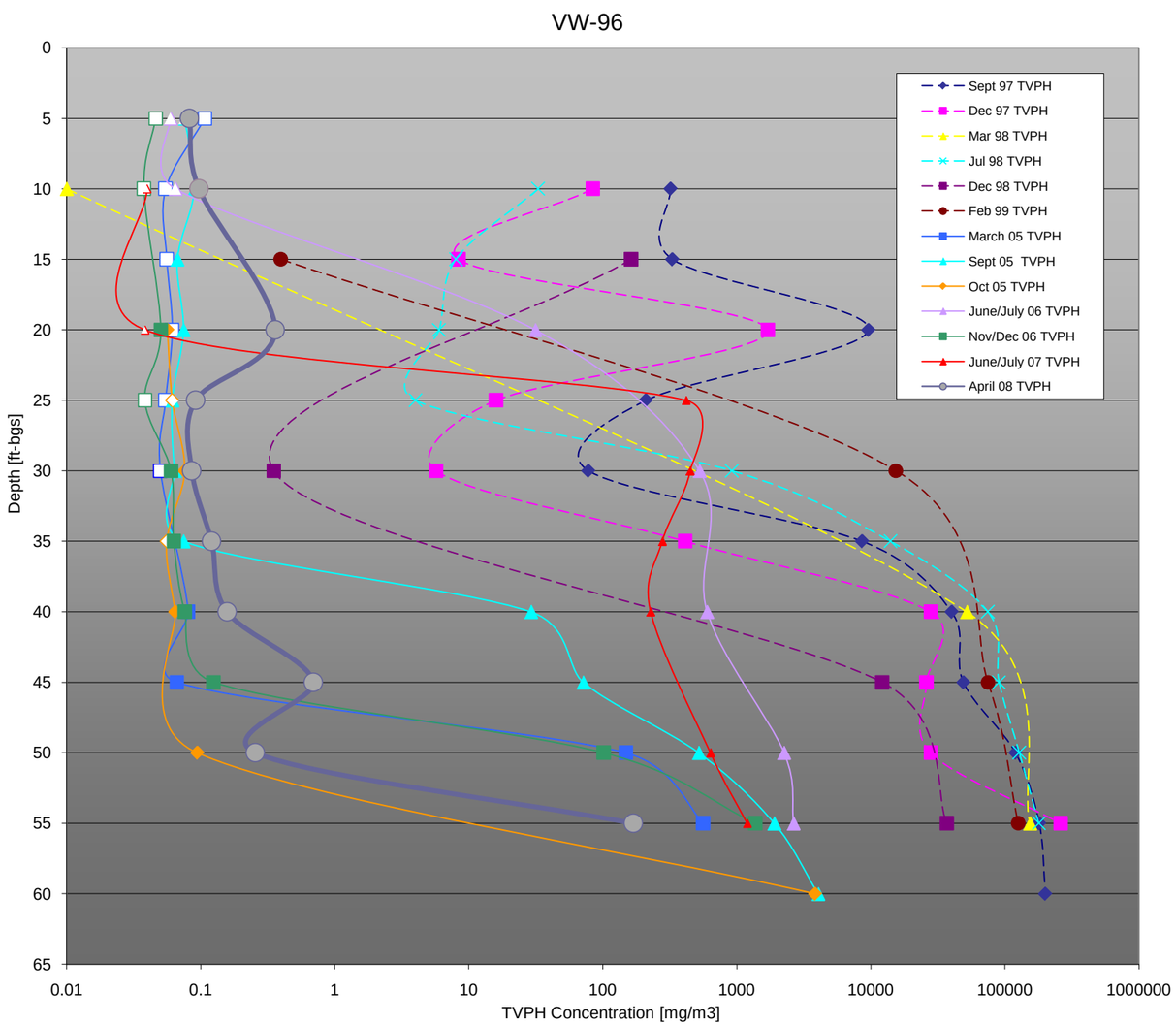
EXPLANATION:
1. Open symbol designates a non-detect value
2. The HSVE system was operating during the sampling conducted in October 2005
3. TVPH - Total volatile petroleum hydrocarbons as gasoline

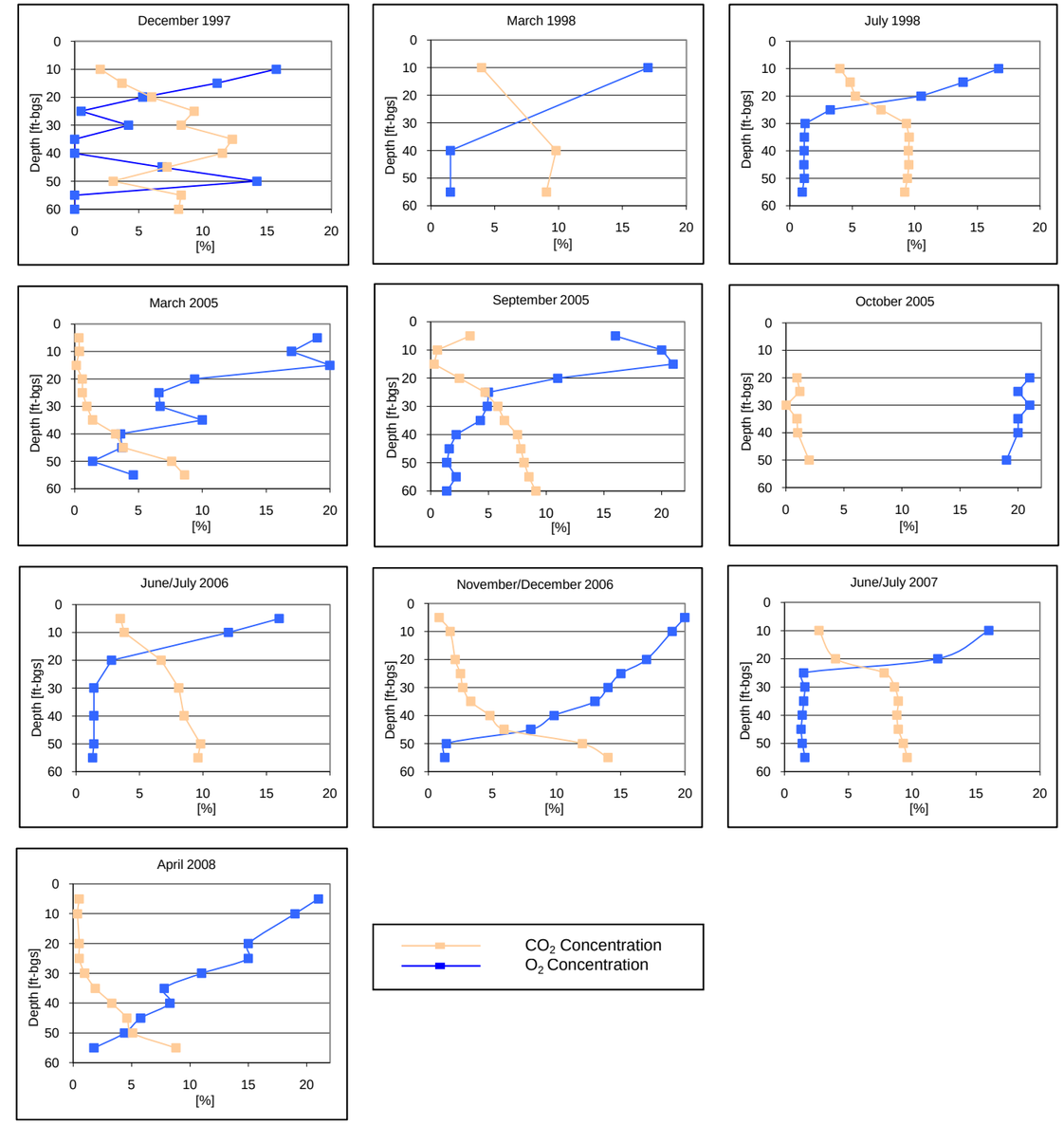
FIGURE 4-15b. NESTED VAPOR MONITORING WELL VW-93 BENZENE PROFILE
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:
1. Open symbol designates a non-detect value
2. The HSVE system was operating during the sampling conducted in October 2005

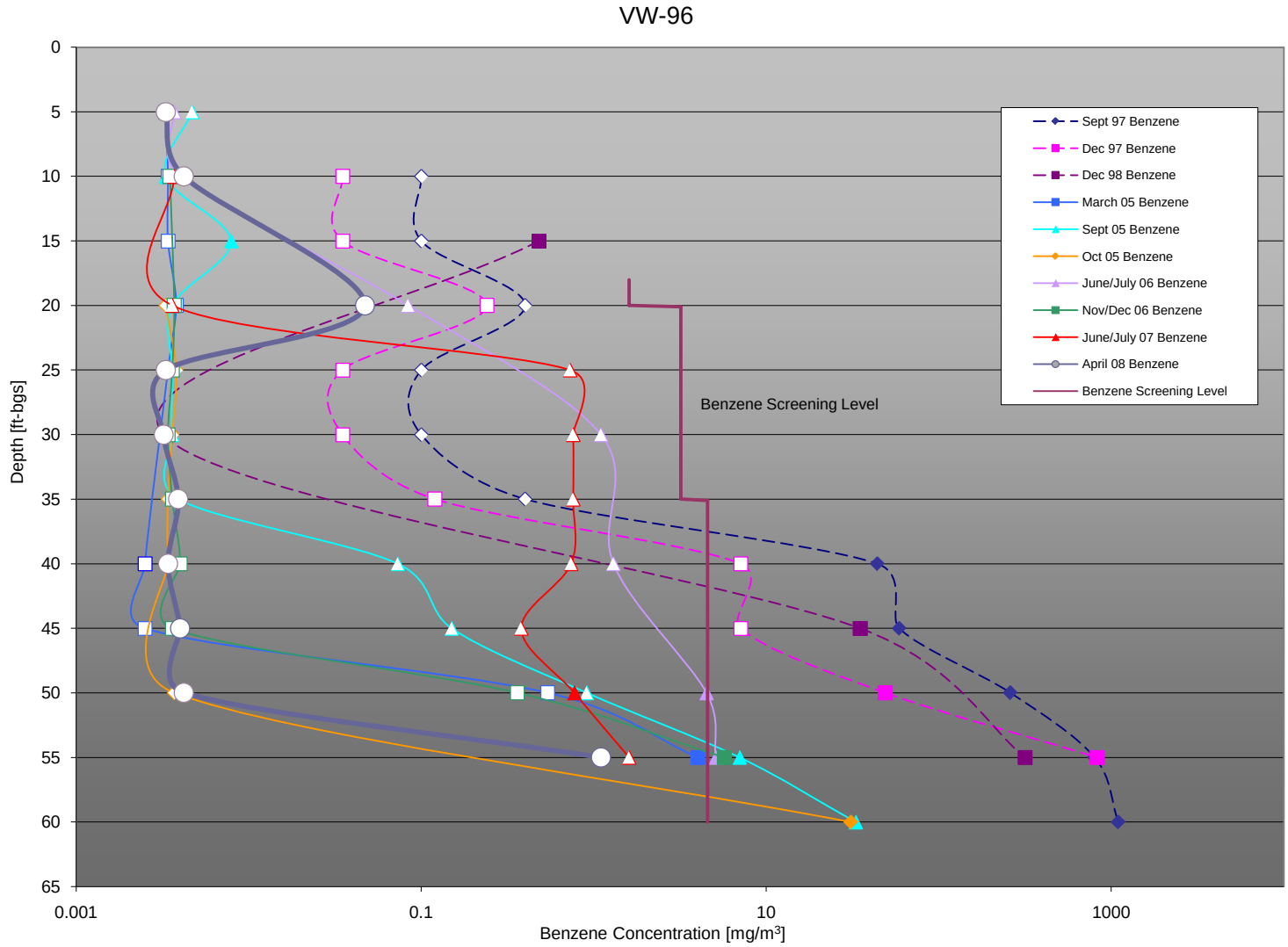
FIGURE 4-16a. NESTED VAPOR MONITORING WELL VW-96 TVPH AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





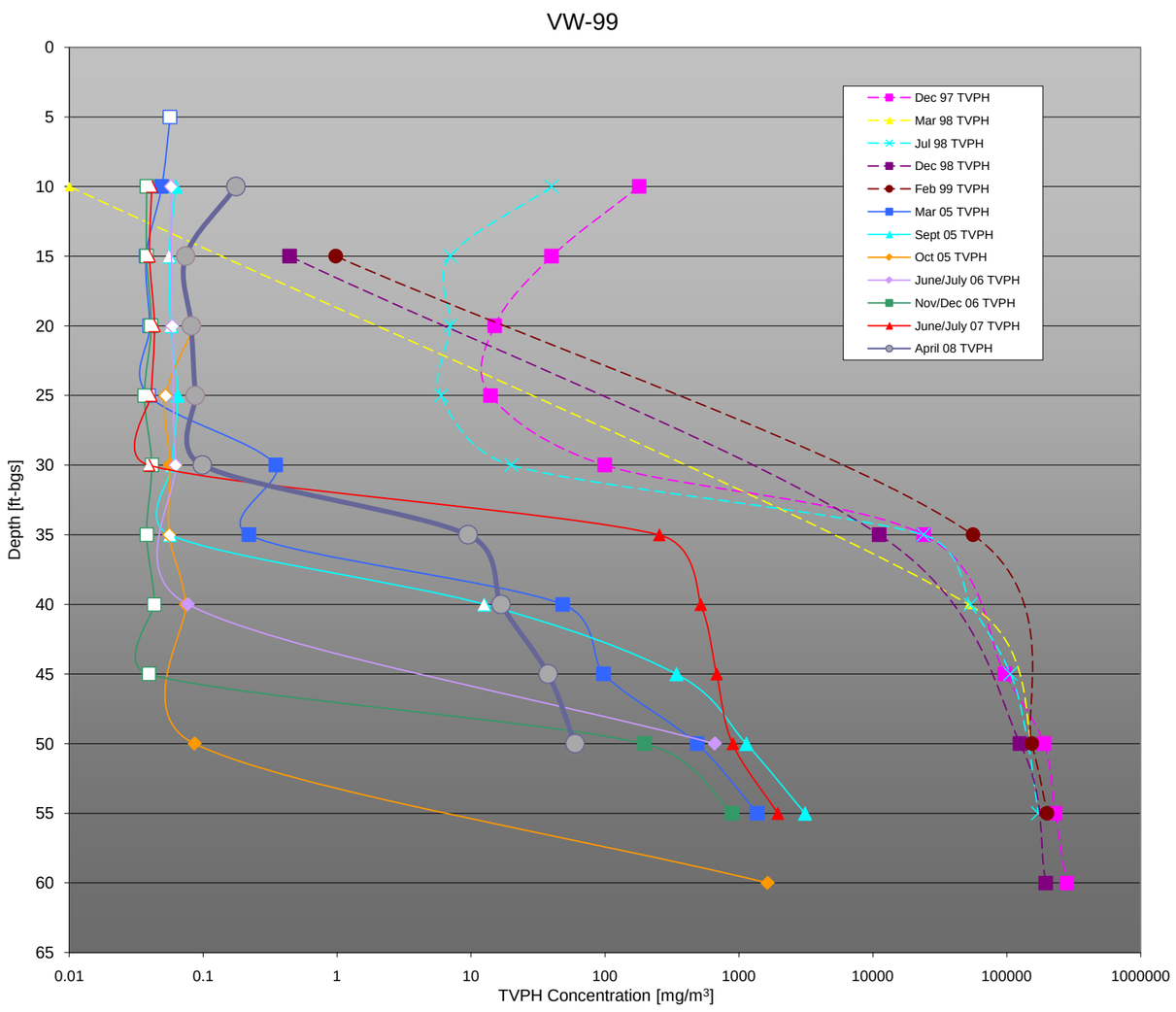
EXPLANATION:
1. Open symbol designates a non-detect value.
2. The HSVE system was operating during the sampling conducted in October 2005.
3. TVPH - Total volatile petroleum hydrocarbons as gasoline
4. Resampling of the 30, 35, and 55 ft-bgs probes was conducted in May 2005. The profile shown for March 2005 includes only March data

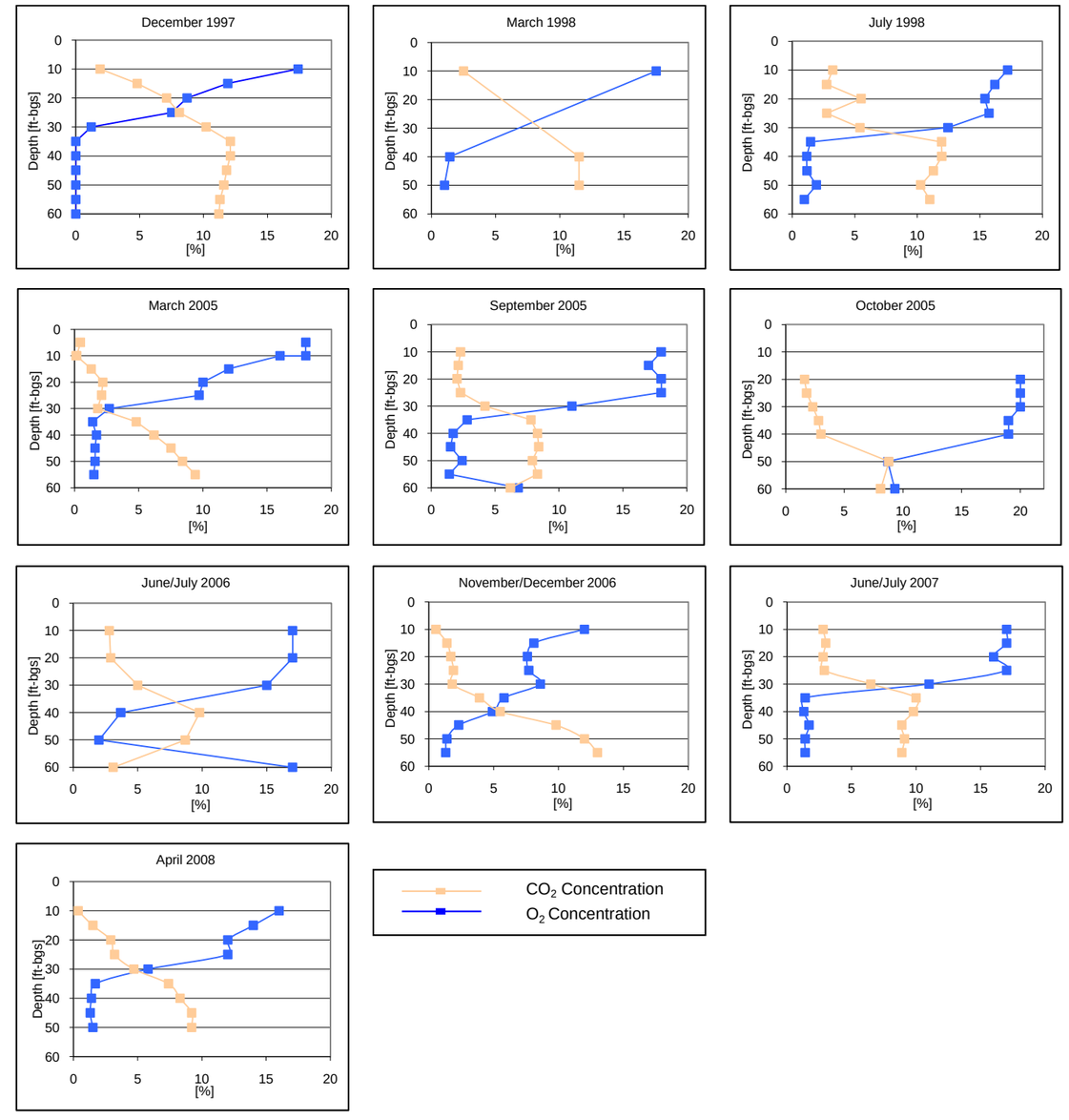
FIGURE 4-16b. NESTED VAPOR MONITORING WELL VW-96 BENZENE PROFILE,
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO



EXPLANATION:
1. Open symbol designates a non-detect value
2. The HSVE system was operating during the sampling conducted in October 2005
3. Resampling of the 30, 35, and 55 ft-bgs probes was conducted in May 2005. The profile shown for March 2005 includes only March data

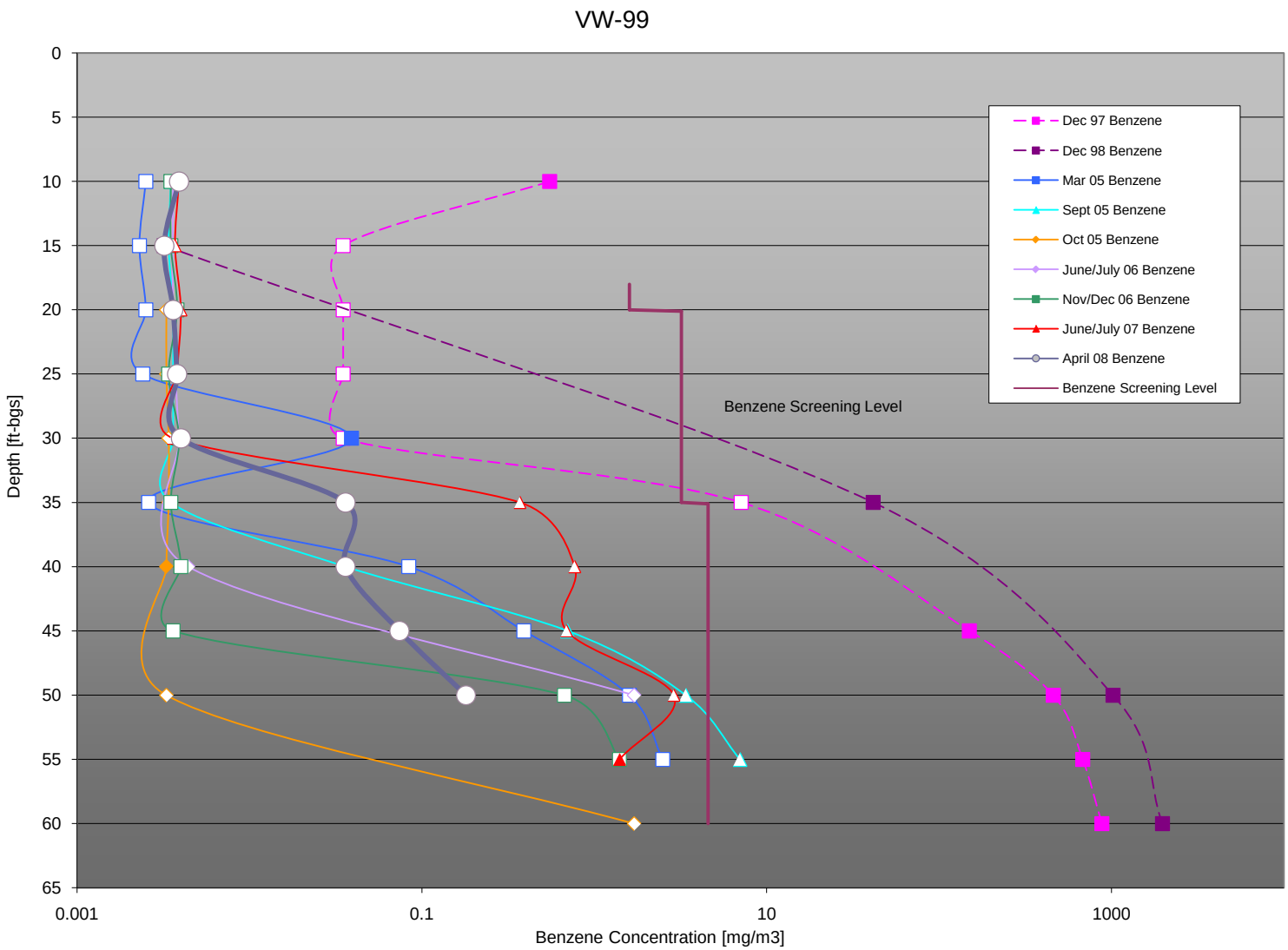
FIGURE 4-17a. NESTED VAPOR MONITORING WELL VW-99 TVPH AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





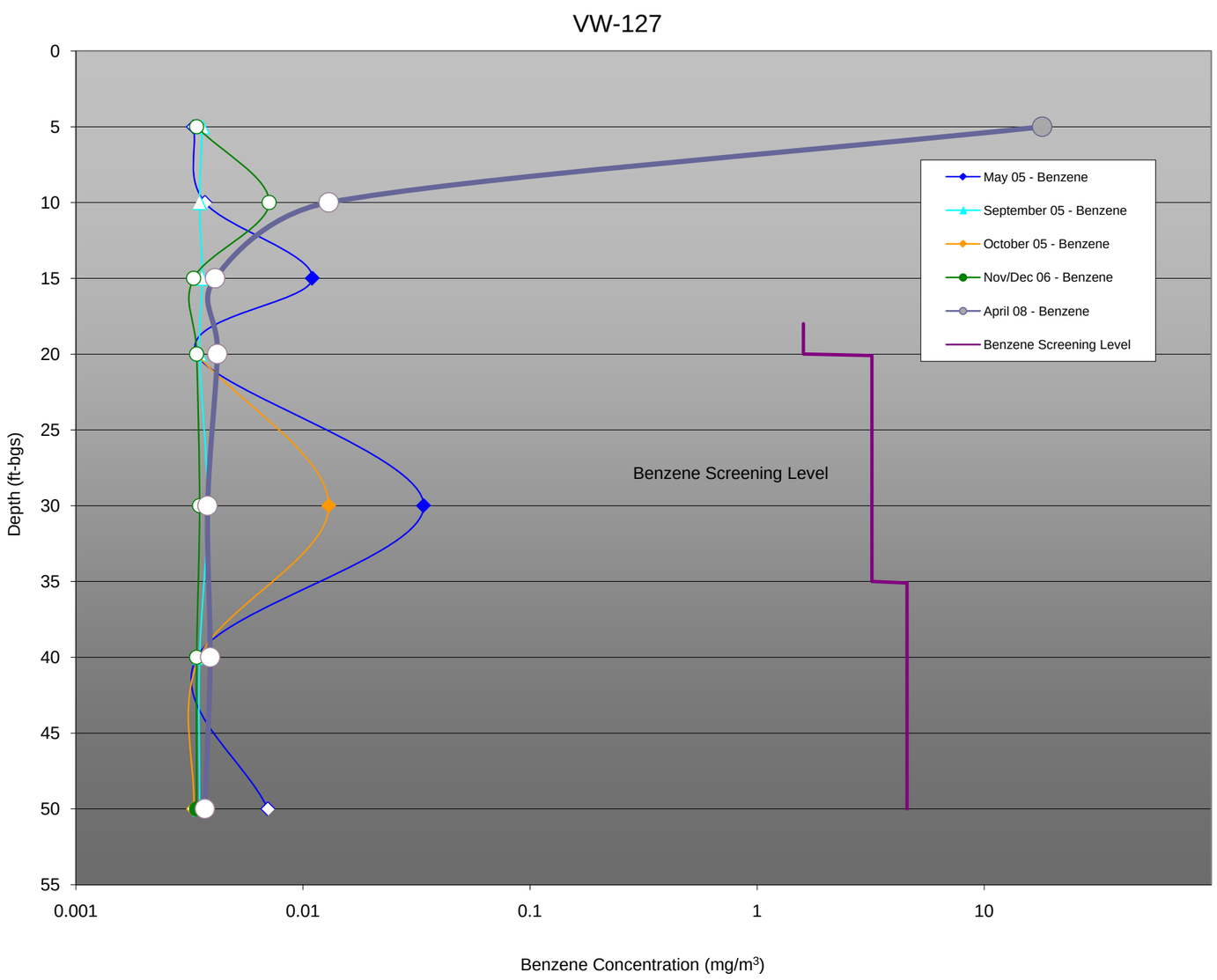
EXPLANATION:
1. Open symbol designates a non-detect value
2. The HSVE system was operating during the sampling conducted in October 2005
3. TVPH - Total volatile petroleum hydrocarbons as gasoline
4. Data from the 60 ft-bgs probe is not used for the September 2005 and June/July 2006 profiles due to dilution

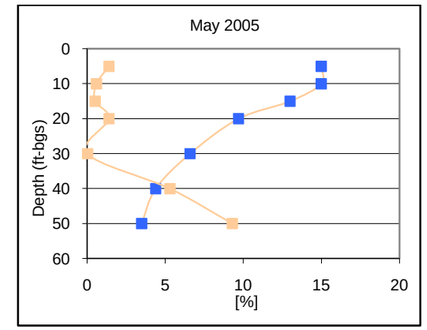
FIGURE 4-17b. NESTED VAPOR MONITORING WELL VW-99 BENZENE PROFILE
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

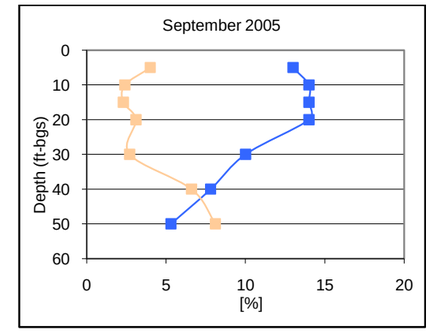


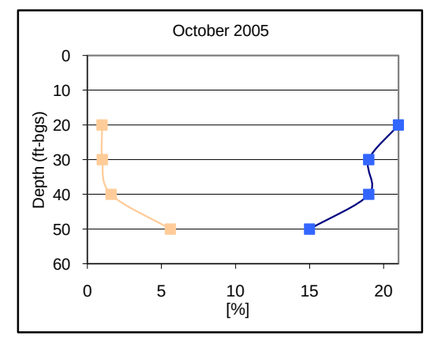
EXPLANATION:
1. Open symbol designates a non-detect value
2. The HSVE system was operating during the sampling conducted in October 2005
3. Data from the 60 ft-bgs probe is not used for the September 2005 and June/July 2006 profiles due to dilution

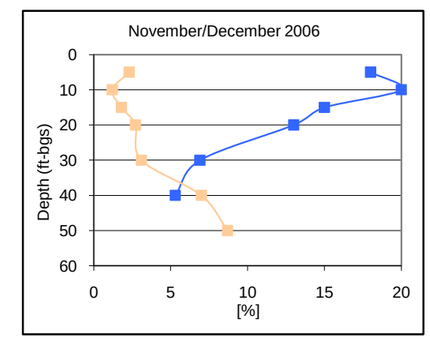
FIGURE 4-18. NESTED VAPOR MONITORING WELL VW-127 BENZENE AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

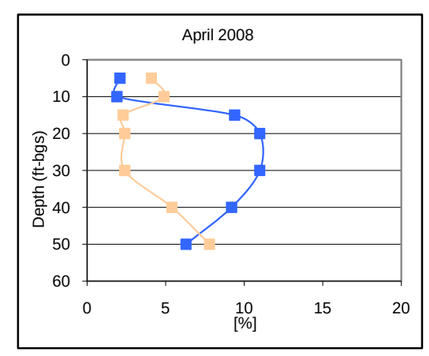


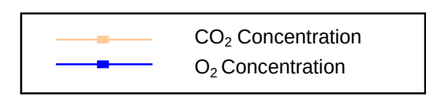






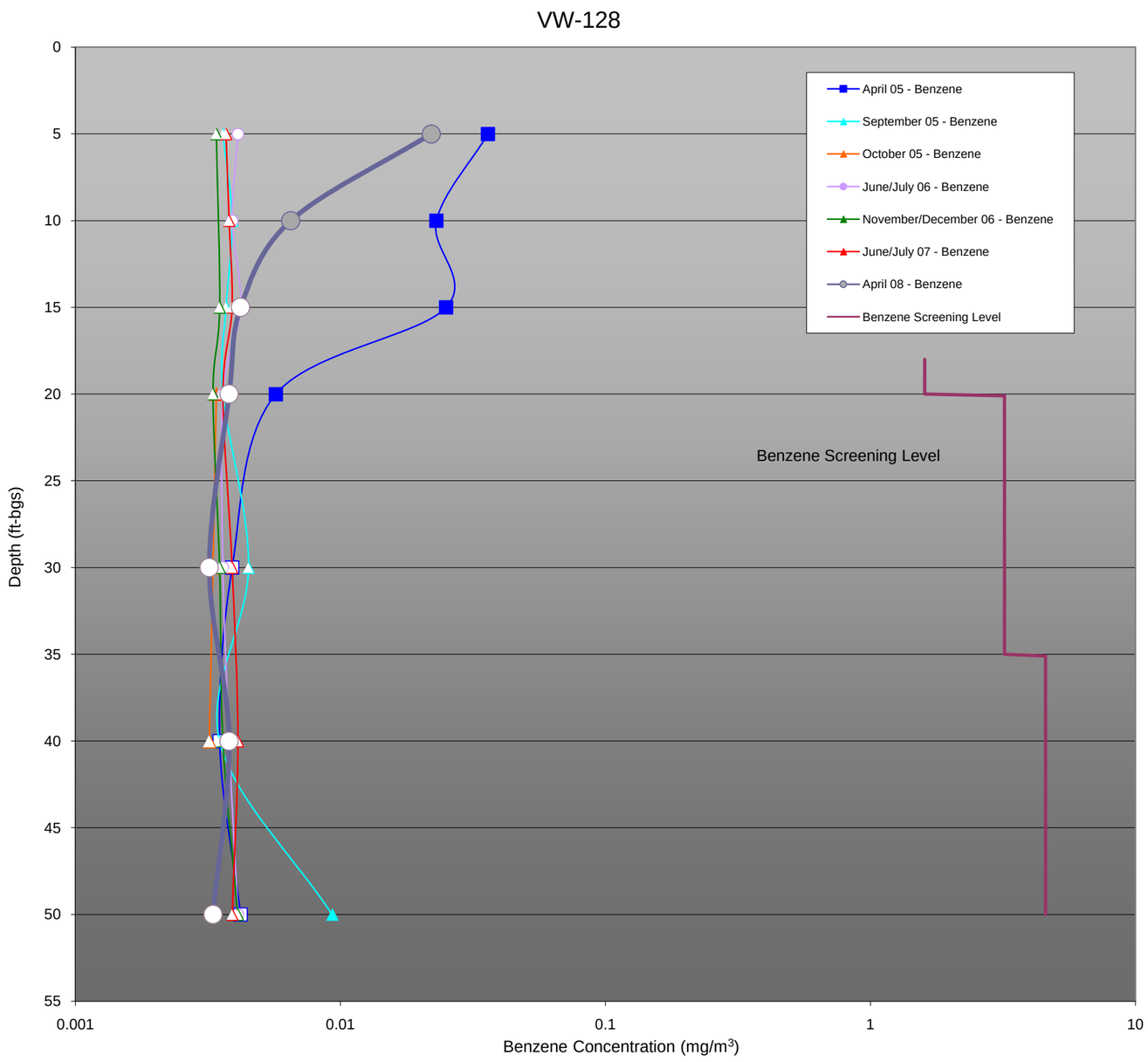


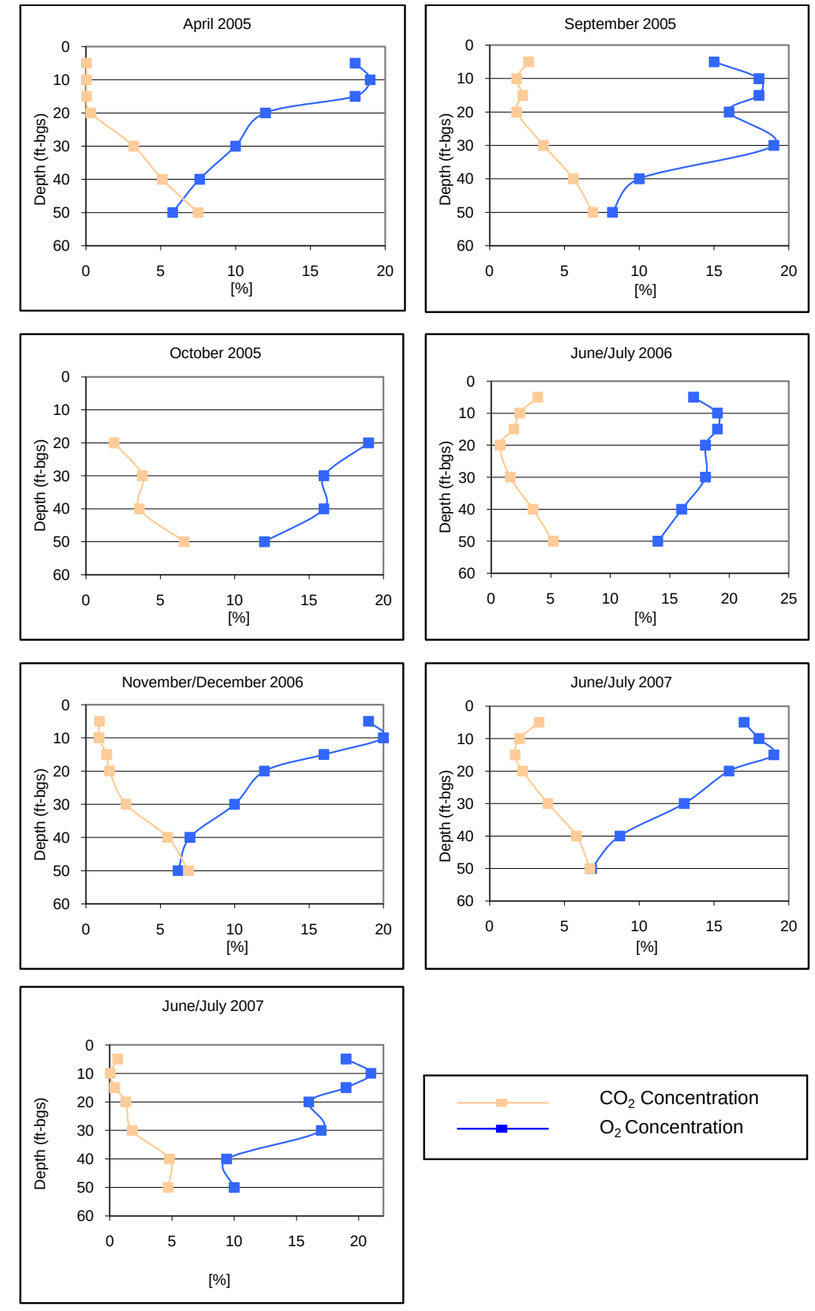




EXPLANATION:
1. Open symbol designates a non-detect value
2. The HSVE system was operating during the October 2005 soil gas sampling event

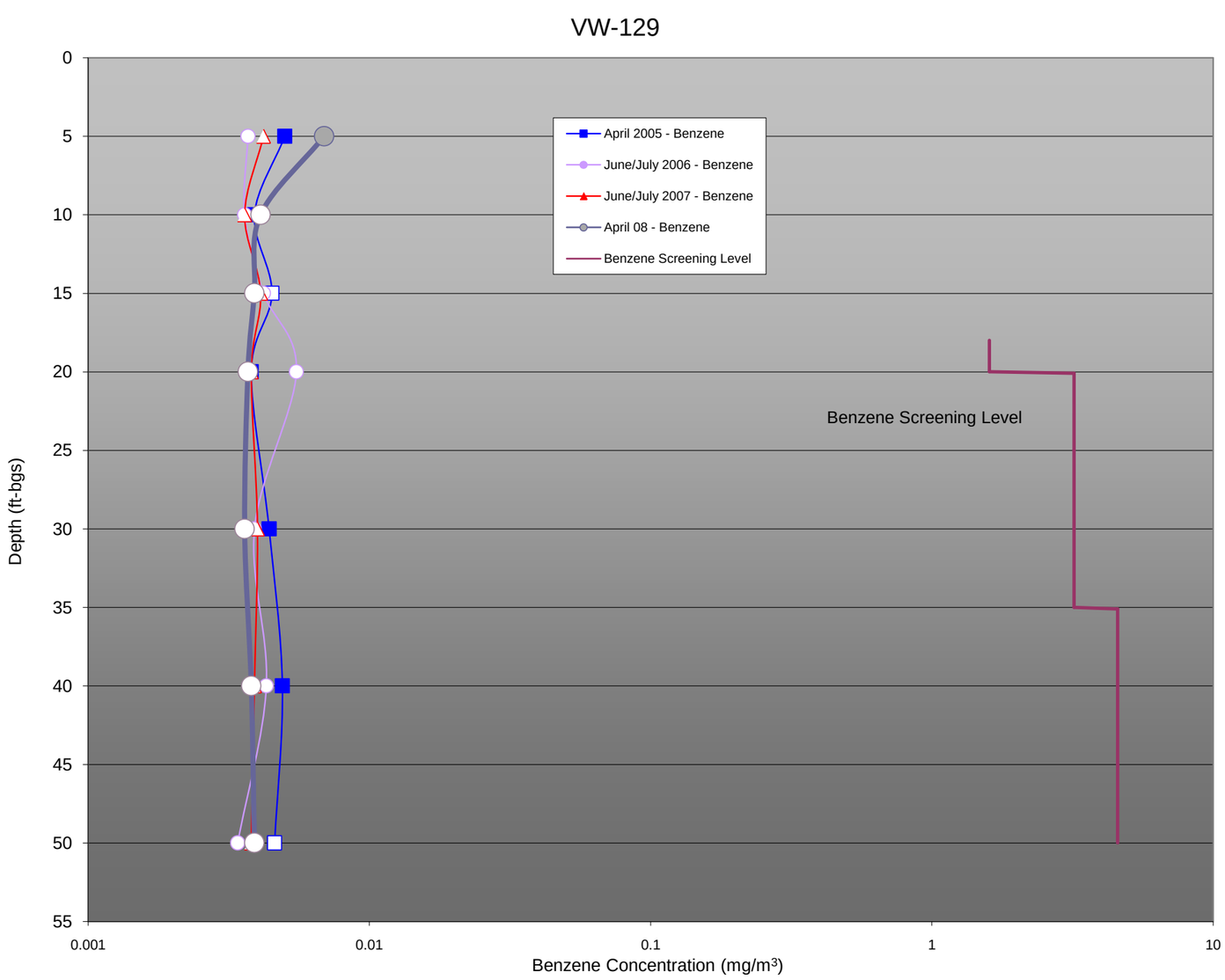
FIGURE 4-19. NESTED VAPOR MONITORING WELL VW-128 BENZENE AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

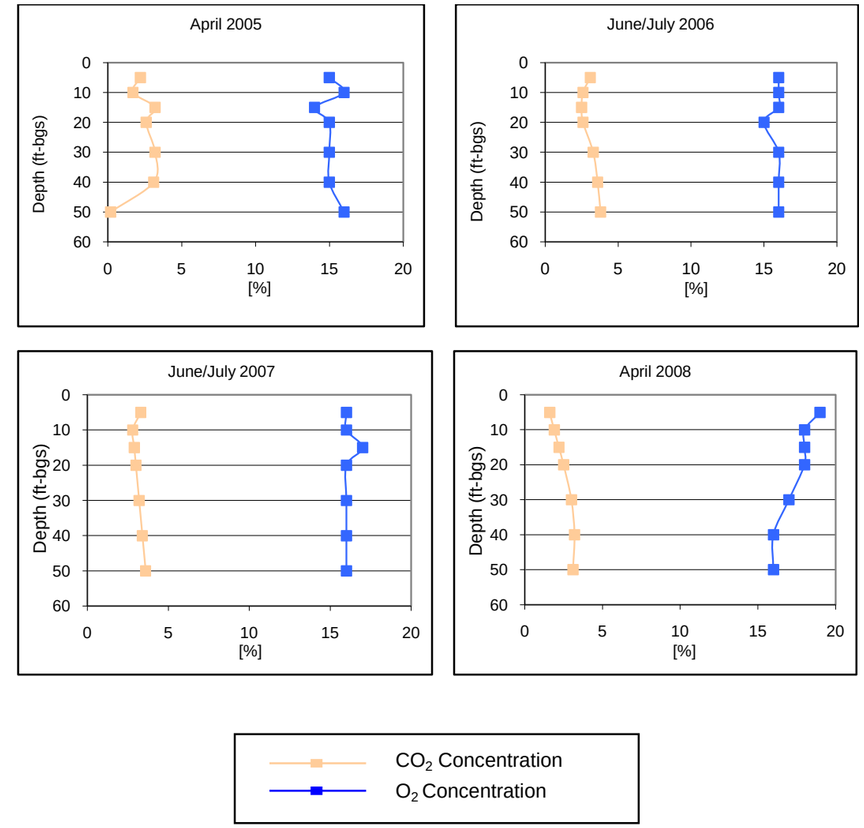




EXPLANATION:
1. Open symbol designates a non-detect value

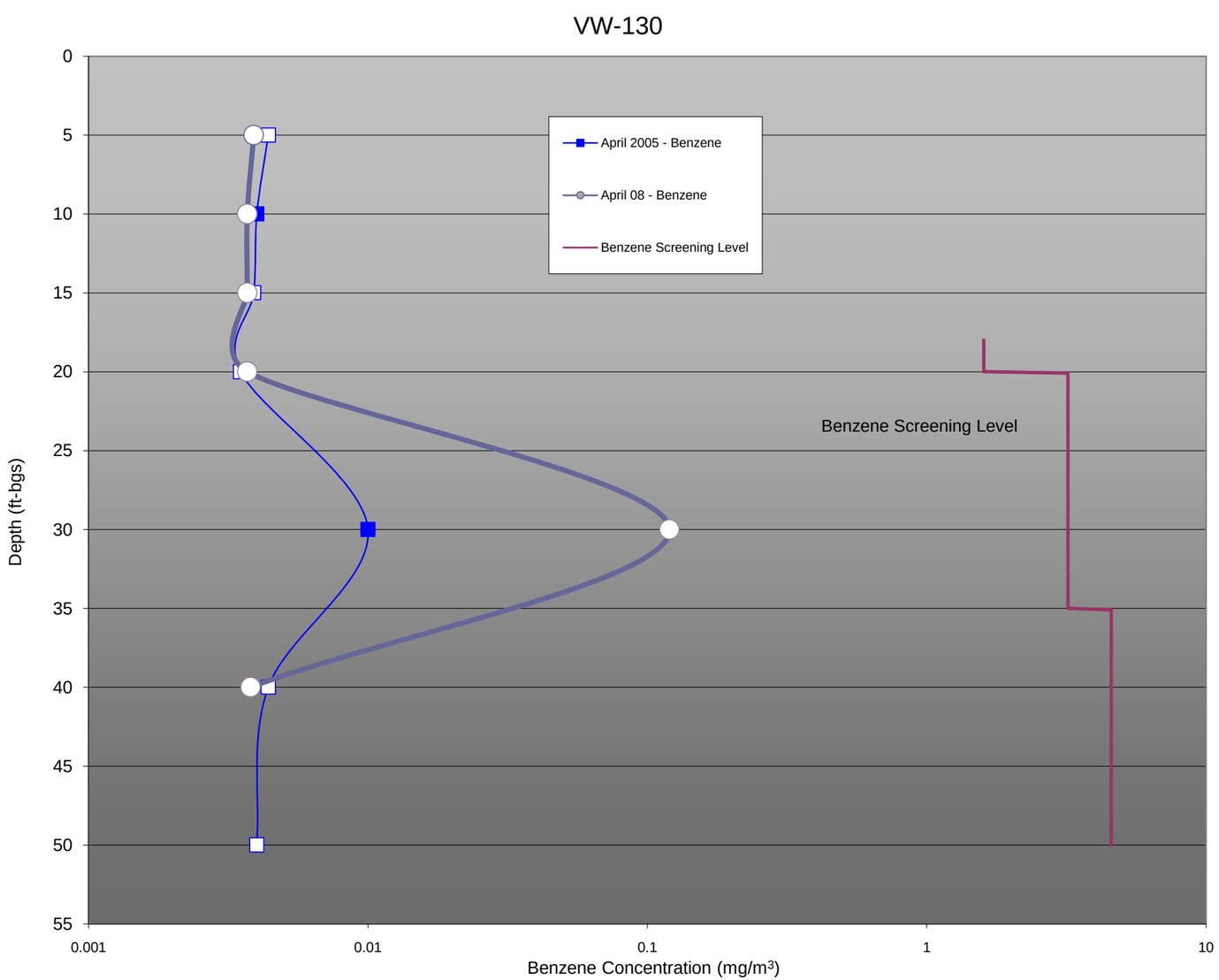
FIGURE 4-20. NESTED VAPOR MONITORING WELL VW-129 BENZENE AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

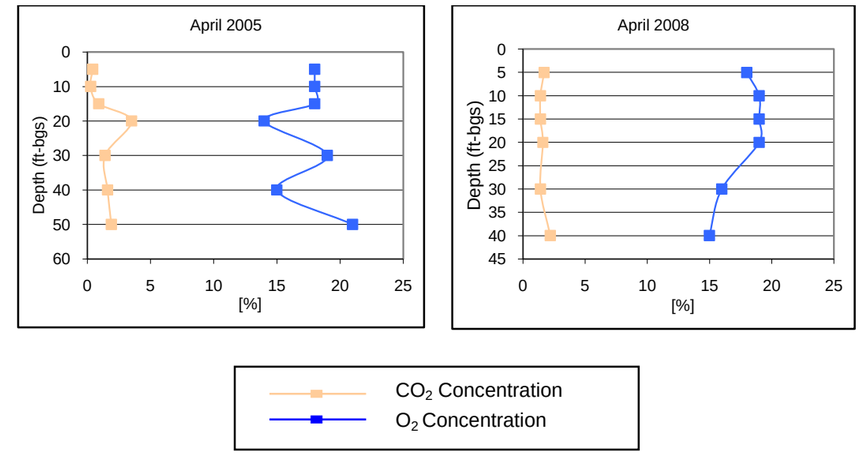




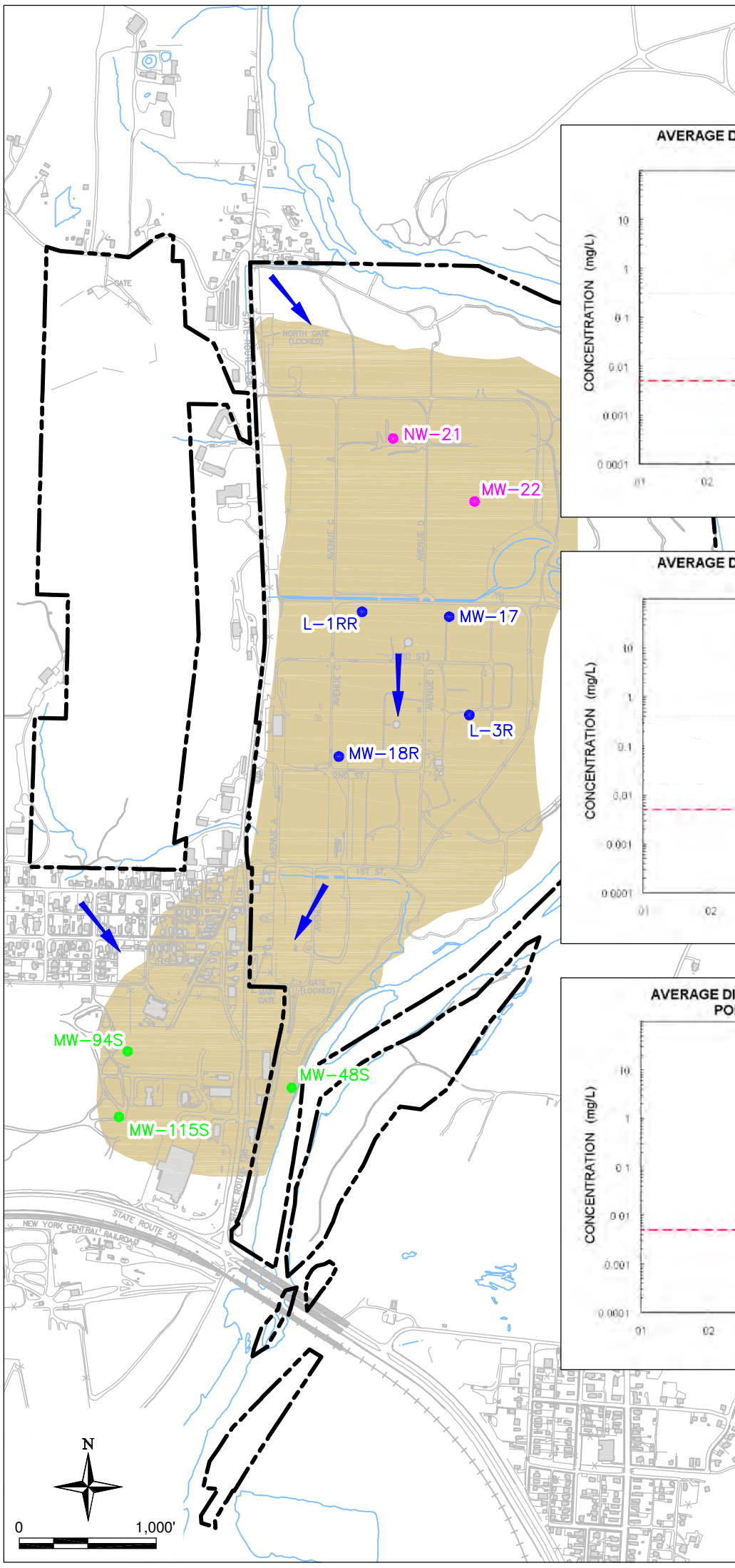
EXPLANATION:
1. Open symbol designates a non-detect value

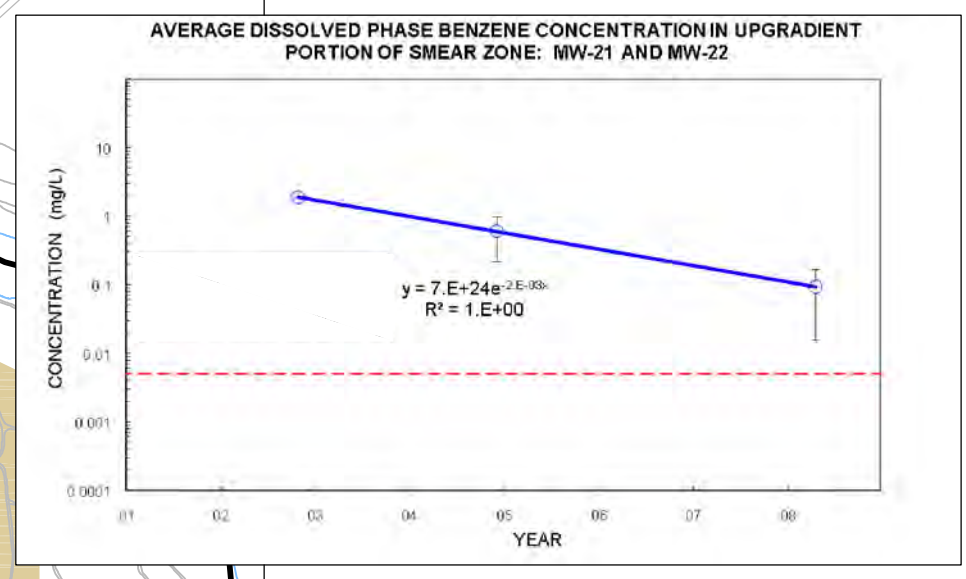
FIGURE 4-21. NESTED VAPOR MONITORING WELL VW-130 BENZENE AND O_2/CO_2 PROFILES
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

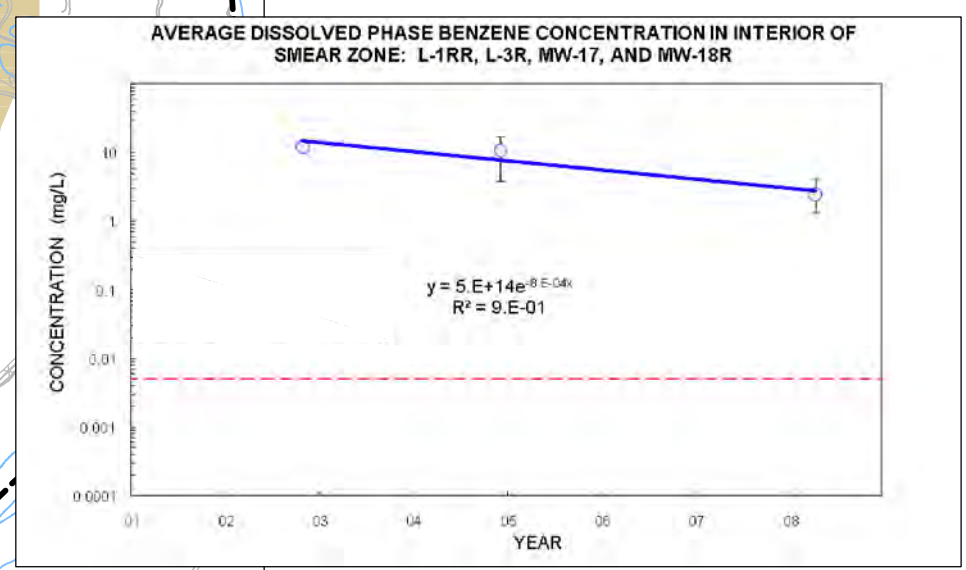


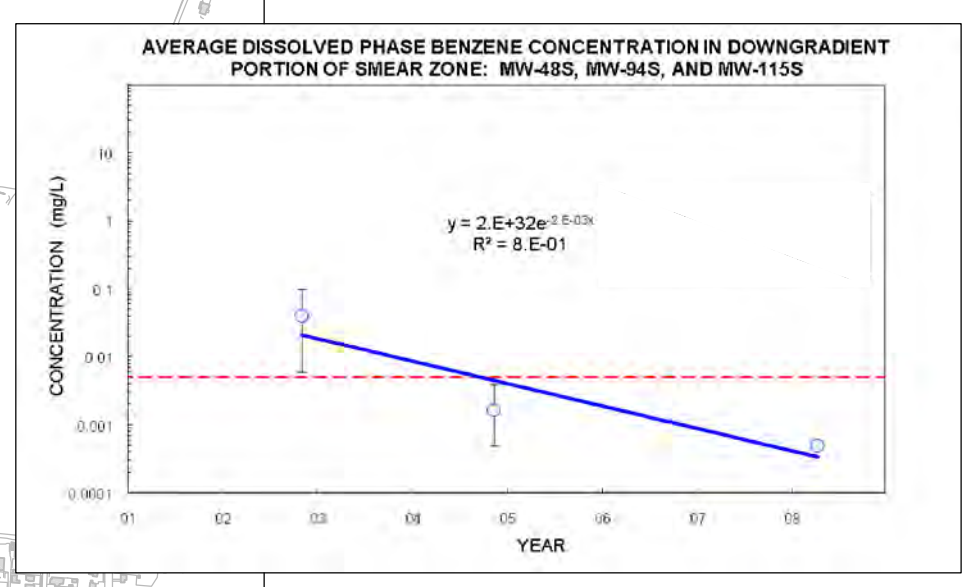


EXPLANATION:
1. Open symbol designates a non-detect value









EXPLANATION

- MW−22 UPGRADIENT MONITORING WELL AND DESIGNATION
- MW−17 INTERIOR MONITORING WELL AND DESIGNATION
- MW−48S DOWNGRADIENT MONITORING WELL AND DESIGNATION
- PROPERTY BOUNDARY
- FENCE
- STREAM
- GROUNDWATER CLEANUP LEVEL
- GENERAL GROUNDWATER FLOW DIRECTION
- BUILDING, TANK OR OTHER STRUCTURE
- SMEAR ZONE

NOTES:

1. ERROR BARS REPRESENT MINIMUM AND MAXIMUM CONCENTRATIONS MEASURED DURING SAMPLING EVENT
2. NON-DETECT CONCENTRATIONS SET TO REPORTING LIMIT FOR AVERAGING
3. SAMPLING EVENTS DISPLAYED: FALL 2002, FALL 2004, AND SPRING 2008

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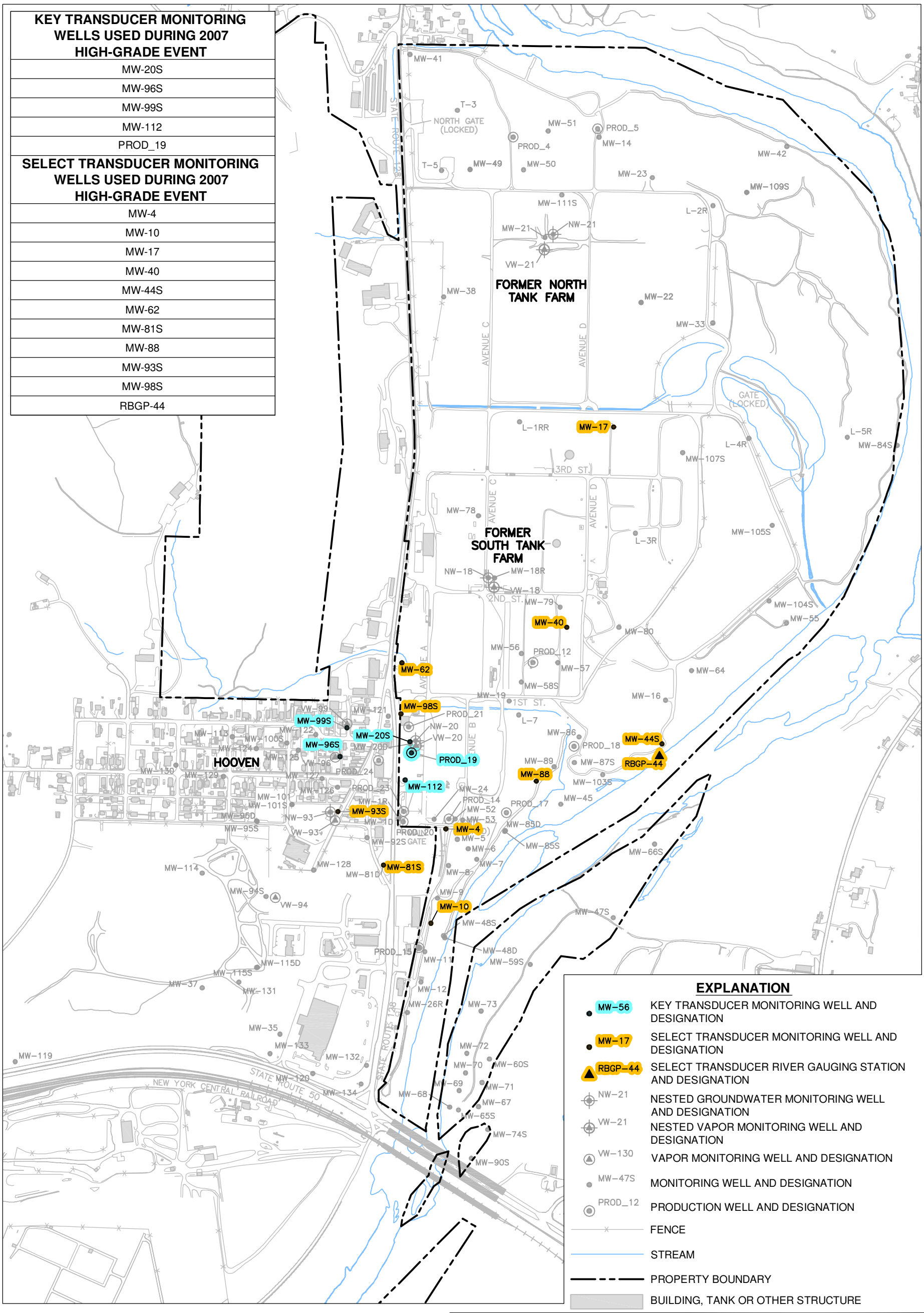
FIGURE 4-22

DISSOLVED PHASE BENZENE CONCENTRATIONS VERSUS TIME FOR SELECTED WELLS WITHIN SMEAR ZONE

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: BM	Scale: AS SHOWN	Date: 4/9/09	File: 500SPATIO200904

KEY TRANSDUCER MONITORING WELLS USED DURING 2007 HIGH-GRADE EVENT
MW-20S
MW-96S
MW-99S
MW-112
PROD_19
SELECT TRANSDUCER MONITORING WELLS USED DURING 2007 HIGH-GRADE EVENT
MW-4
MW-10
MW-17
MW-40
MW-44S
MW-62
MW-81S
MW-88
MW-93S
MW-98S
RBGP-44



EXPLANATION

- MW-56 — KEY TRANSDUCER MONITORING WELL AND DESIGNATION
- MW-17 — SELECT TRANSDUCER MONITORING WELL AND DESIGNATION
- RBGP-44 — SELECT TRANSDUCER RIVER GAUGING STATION AND DESIGNATION
- NW-21 — NESTED GROUNDWATER MONITORING WELL AND DESIGNATION
- VW-21 — NESTED VAPOR MONITORING WELL AND DESIGNATION
- VW-130 — VAPOR MONITORING WELL AND DESIGNATION
- MW-47S — MONITORING WELL AND DESIGNATION
- PROD_12 — PRODUCTION WELL AND DESIGNATION
- FENCE
- STREAM
- PROPERTY BOUNDARY
- BUILDING, TANK OR OTHER STRUCTURE

N

0 650'

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FIGURE 5-1

KEY AND SELECT TRANSDUCER MONITORING WELLS DURING 2007 HIGH-GRADE EVENT

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PM	Scale: 1" = 650'	Date: 12/27/07	File: 500HG07TRANWELLS200904

KEY TRANSDUCER MONITORING WELLS FOR SOUTHWESTERN HIGH-GRADE AREA	KEY TRANSDUCER MONITORING WELLS FOR CENTRAL HIGH-GRADE AREA
MW-20S	MW-19
MW-96S	MW-56
MW-99S	MW-57
MW-112	MW-58S
PROD_19	PROD_12
SELECT TRANSDUCER MONITORING WELLS FOR SOUTHWESTERN HIGH-GRADE AREA	**SELECT TRANSDUCER MONITORING WELLS FOR CENTRAL HIGH-GRADE AREA**
MW-4	MW-17
MW-10	MW-18R
MW-17	MW-20S
MW-18R	MW-40
MW-44S	MW-44S
MW-81S	MW-62
MW-93S	MW-88
RBGP-44	MW-98S
	RBGP-44

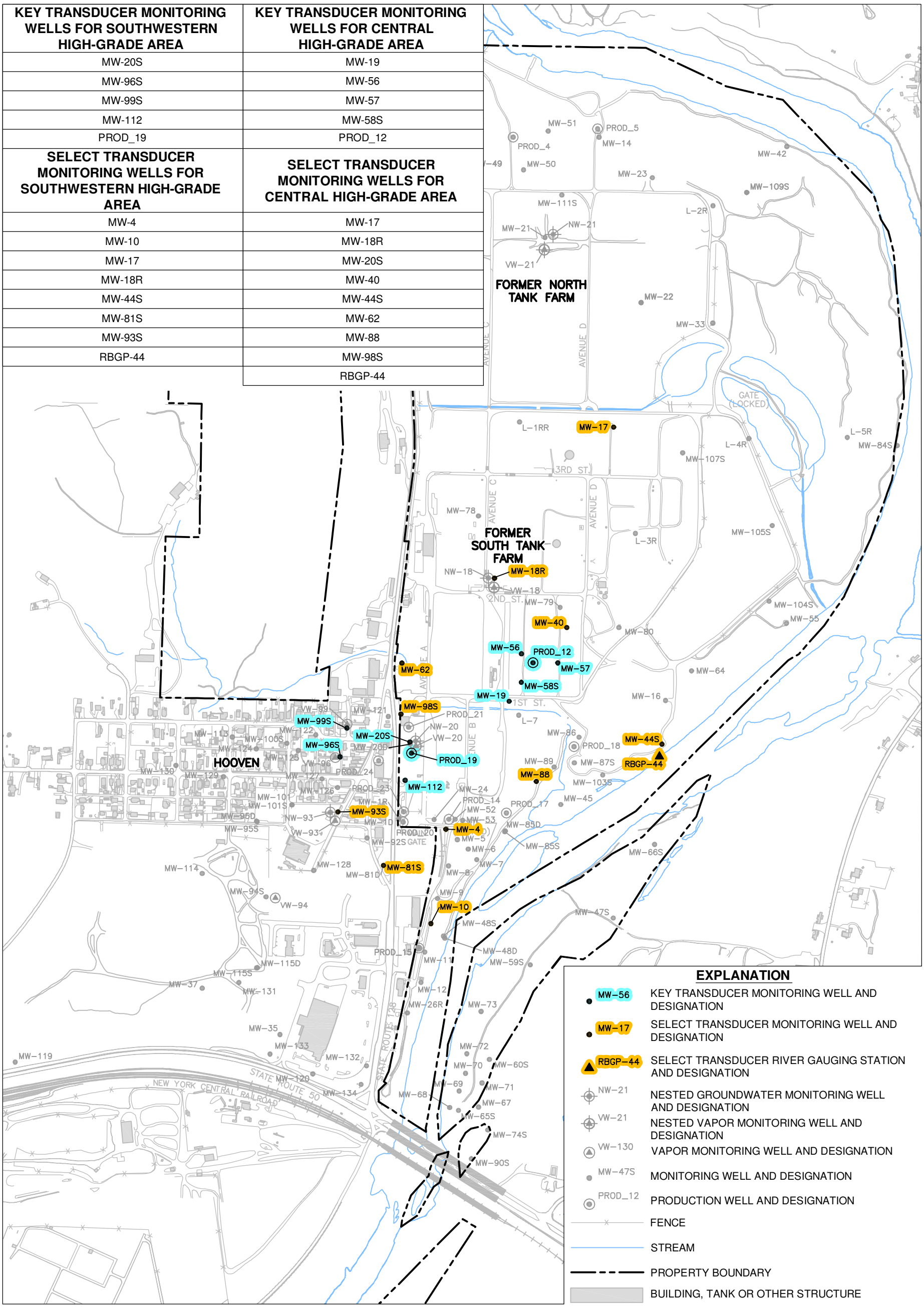

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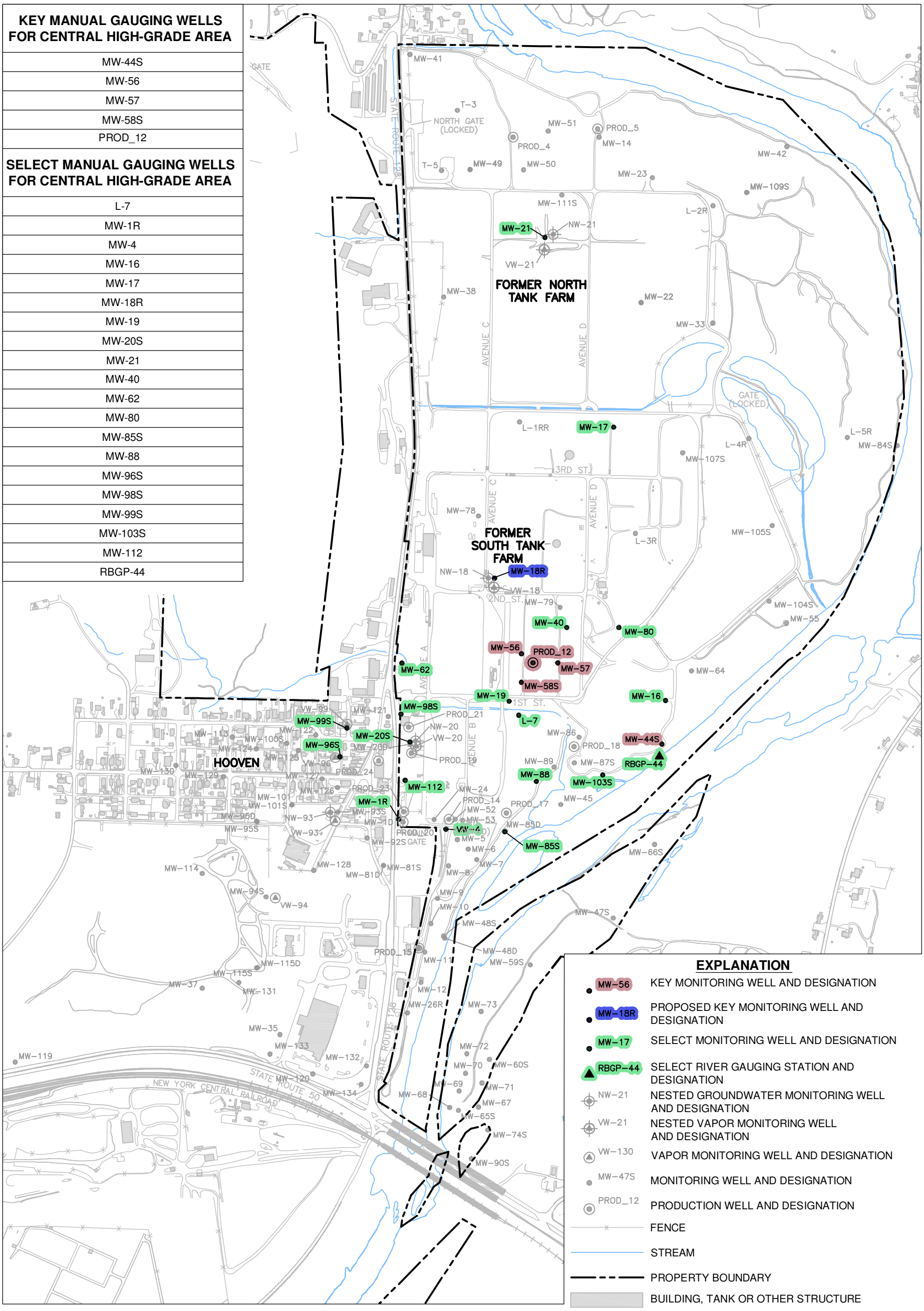
FIGURE 5-2

PROPOSED KEY AND SELECT TRANSDUCER MONITORING WELLS IN THE CENTRAL AND SOUTHWESTERN HIGH-GRADE AREAS

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PM	Scale: 1" = 650'	Date: 12/27/07	File: 500PROPTRANWELLS200904

KEY MANUAL GAUGING WELLS FOR CENTRAL HIGH-GRADE AREA
MW-44S
MW-56
MW-57
MW-58S
PROD_12
SELECT MANUAL GAUGING WELLS FOR CENTRAL HIGH-GRADE AREA
L-7
MW-1R
MW-4
MW-16
MW-17
MW-18R
MW-19
MW-20S
MW-21
MW-40
MW-62
MW-80
MW-85S
MW-88
MW-96S
MW-98S
MW-99S
MW-103S
MW-112
RBGP-44



N

0 650'

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FIGURE 5-3

KEY AND SELECT MANUAL MONITORING WELLS IN THE CENTRAL HIGH-GRADE AREA

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PM	Scale: 1" = 650'	Date: 12/27/07	File: 500P12MGAGEWELLS200805

KEY MANUAL GAUGING WELLS FOR SOUTHWESTERN HIGH-GRADE AREA
MW-20S
MW-85S
MW-96S
MW-99S
PROD_19
SELECT MANUAL GAUGING WELLS FOR SOUTHWESTERN HIGH-GRADE AREA
L-7
MW-1R
MW-4
MW-10
MW-17
MW-20D
MW-44S
MW-62
MW-81S
MW-88
MW-92S
MW-93S
MW-100S
MW-101
MW-112
MW-121
MW-126
MW-128
MW-129
RBGP-44

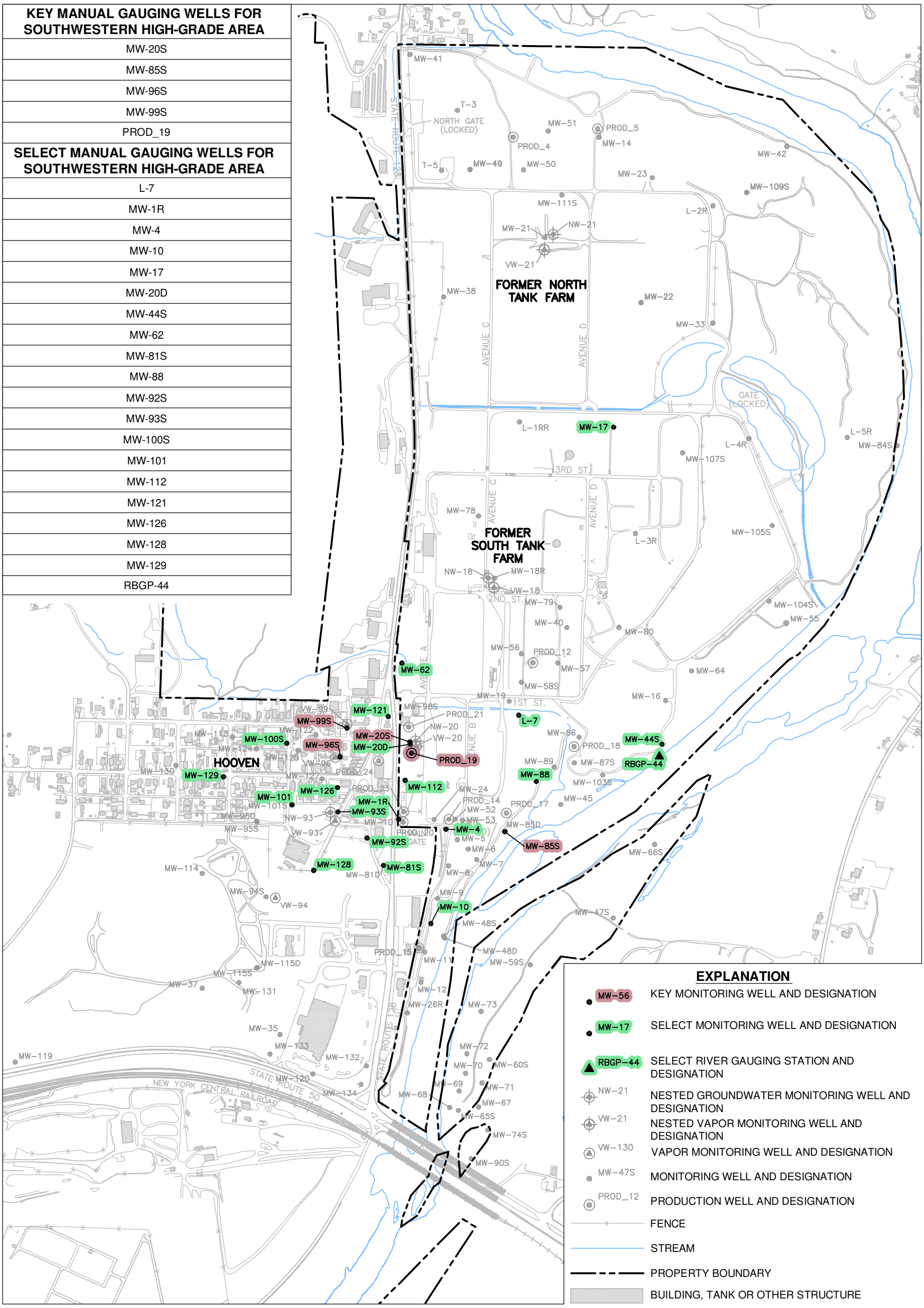

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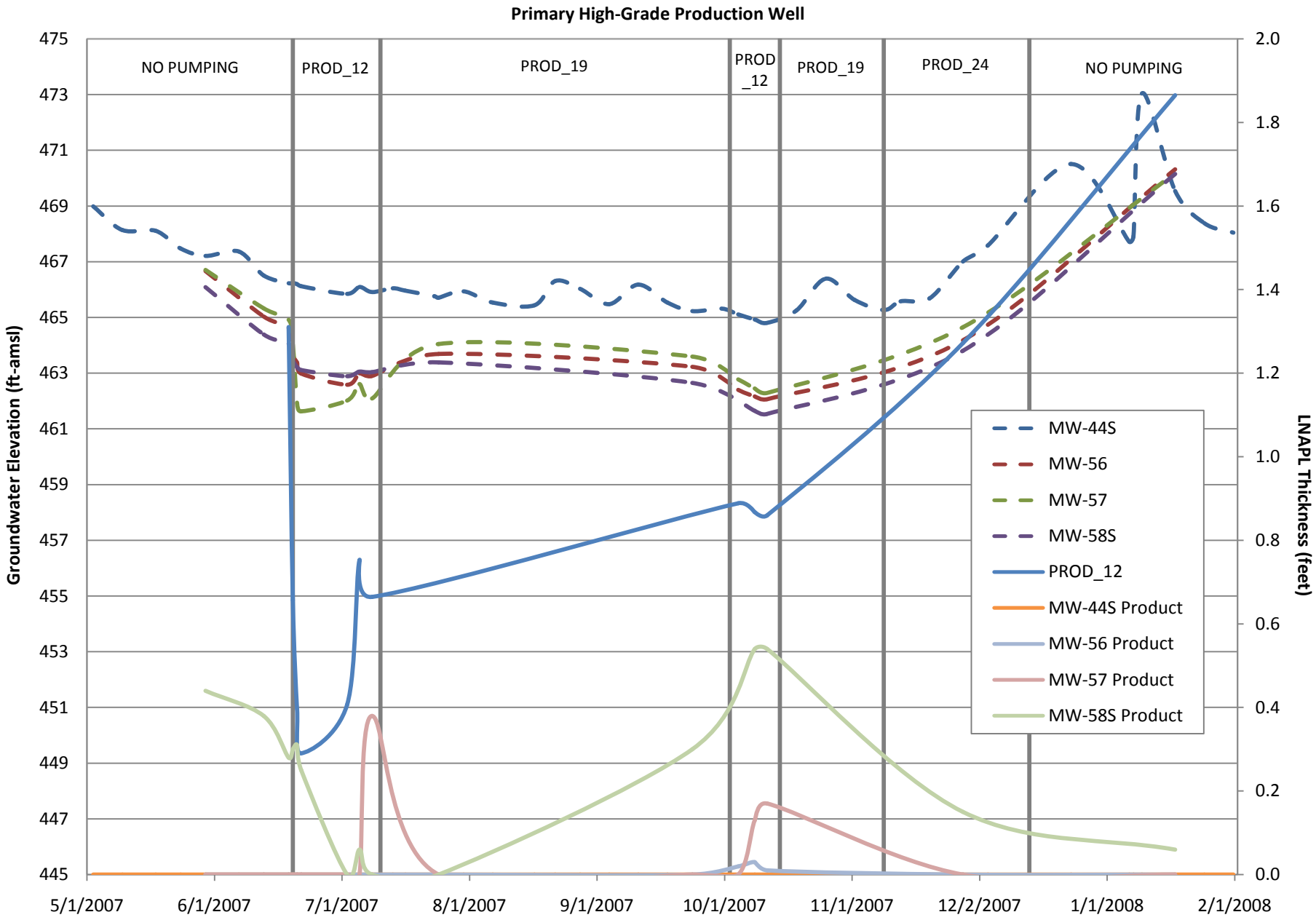
FIGURE 5-4

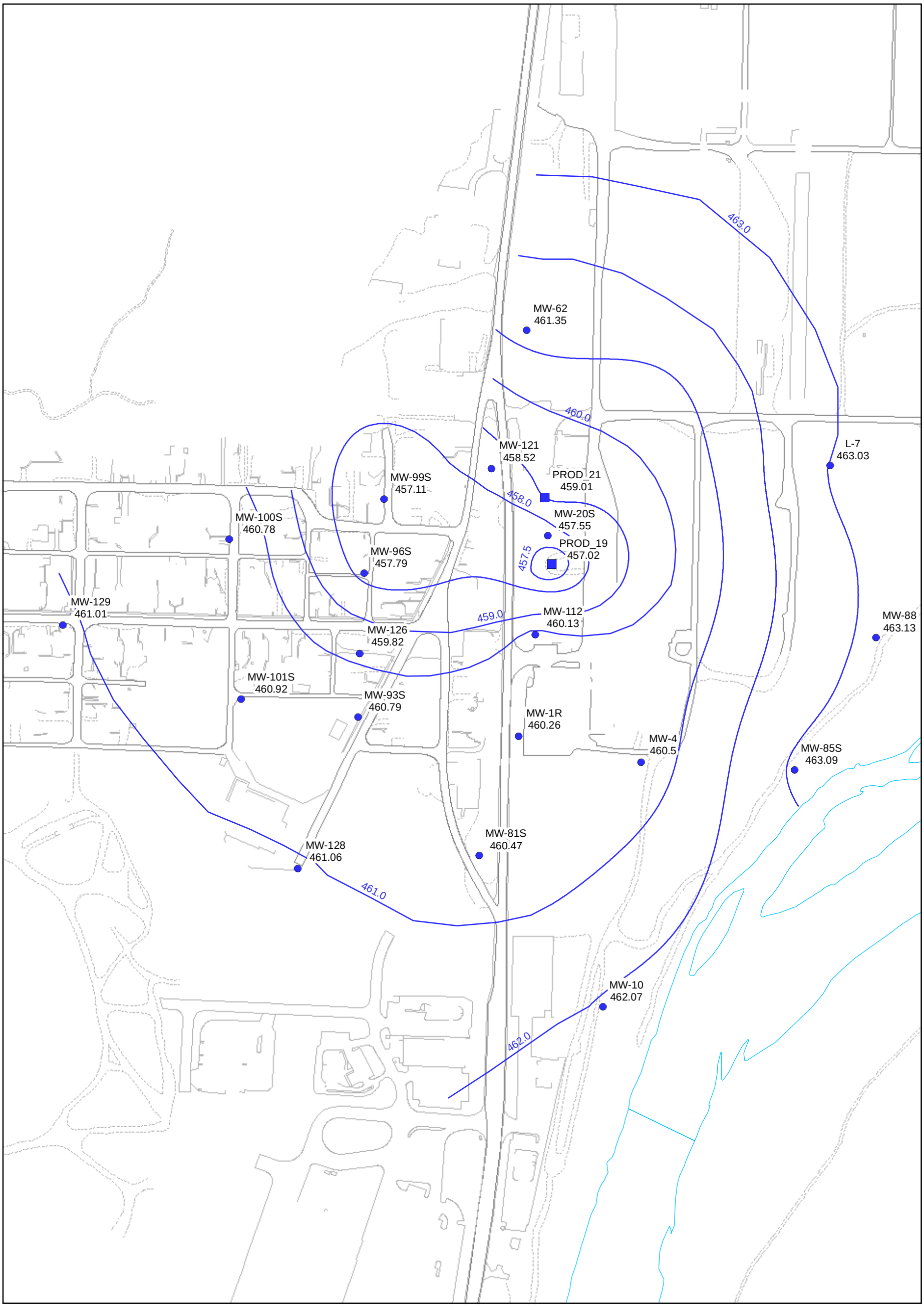
KEY AND SELECT MANUAL MONITORING WELLS IN THE SOUTHWESTERN HIGH-GRADE AREA

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: REP	Checked By: PM	Scale: 1" = 650'	Date: 12/27/07	File: 500P19MGAGEWELLS200805

FIGURE 5-5. HYDROGRAPHS FOR KEY MONITORING WELLS IN CENTRAL HIGH-GRADE RECOVERY AREA
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





EXPLANATION

EQUIPOTENTIAL CONTOUR LINE
Elevation In Feet Above Sea Level
Contour Interval is variable

N

0 250'

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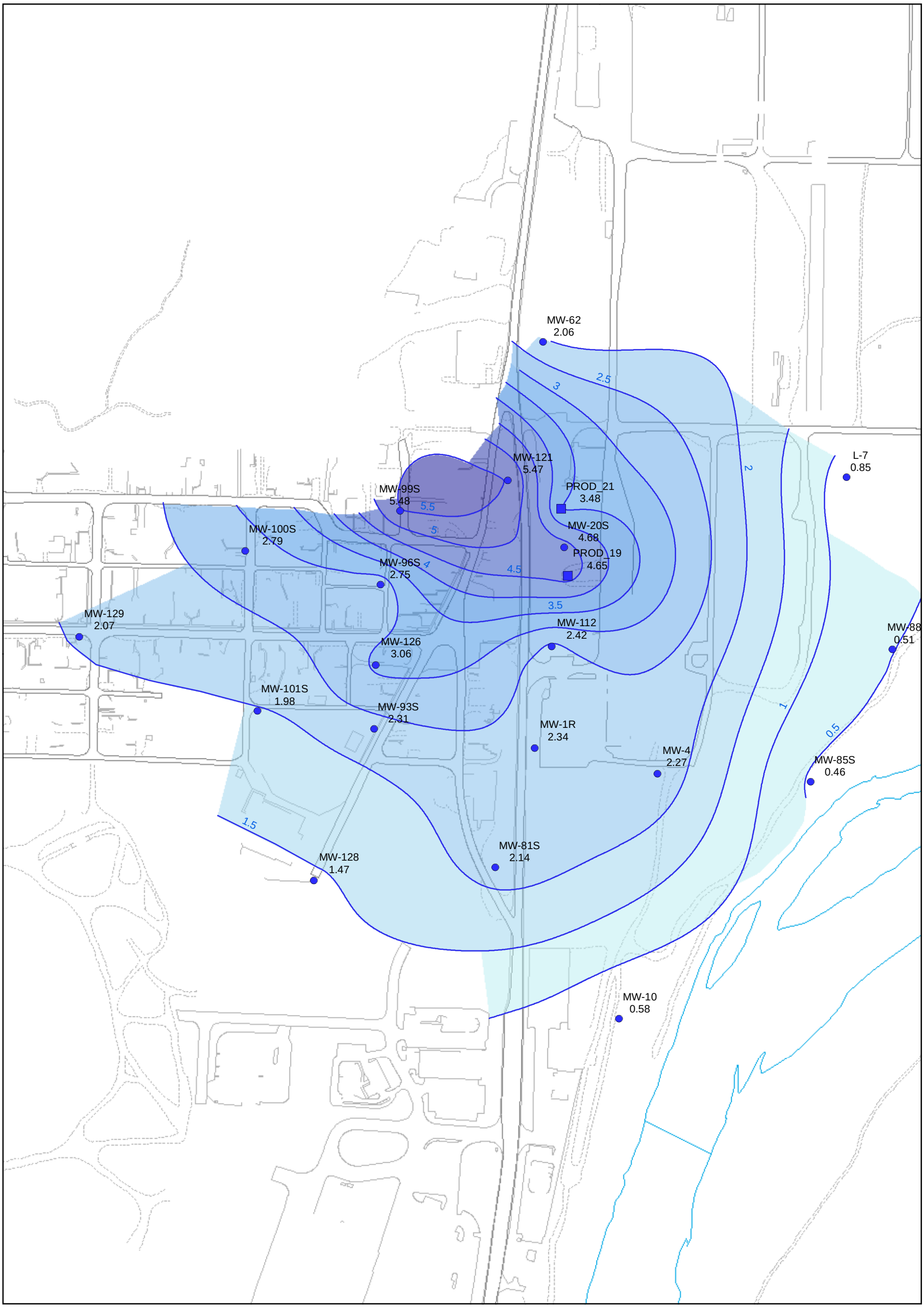
FIGURE 5-6

HIGH-GRADE POTENTIOMETRIC SURFACE MAP, OCTOBER 1, 2007

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 250'	Date: 04/03/09	File: Oct_01_07_Potsurface.mxd



EXPLANATION

CONTOUR LINE OF EQUAL DRAWDOWN IN FEET

AREA OF EQUAL DRAWDOWN IN FEET

0.5 — 5.5

N

0 — 250'

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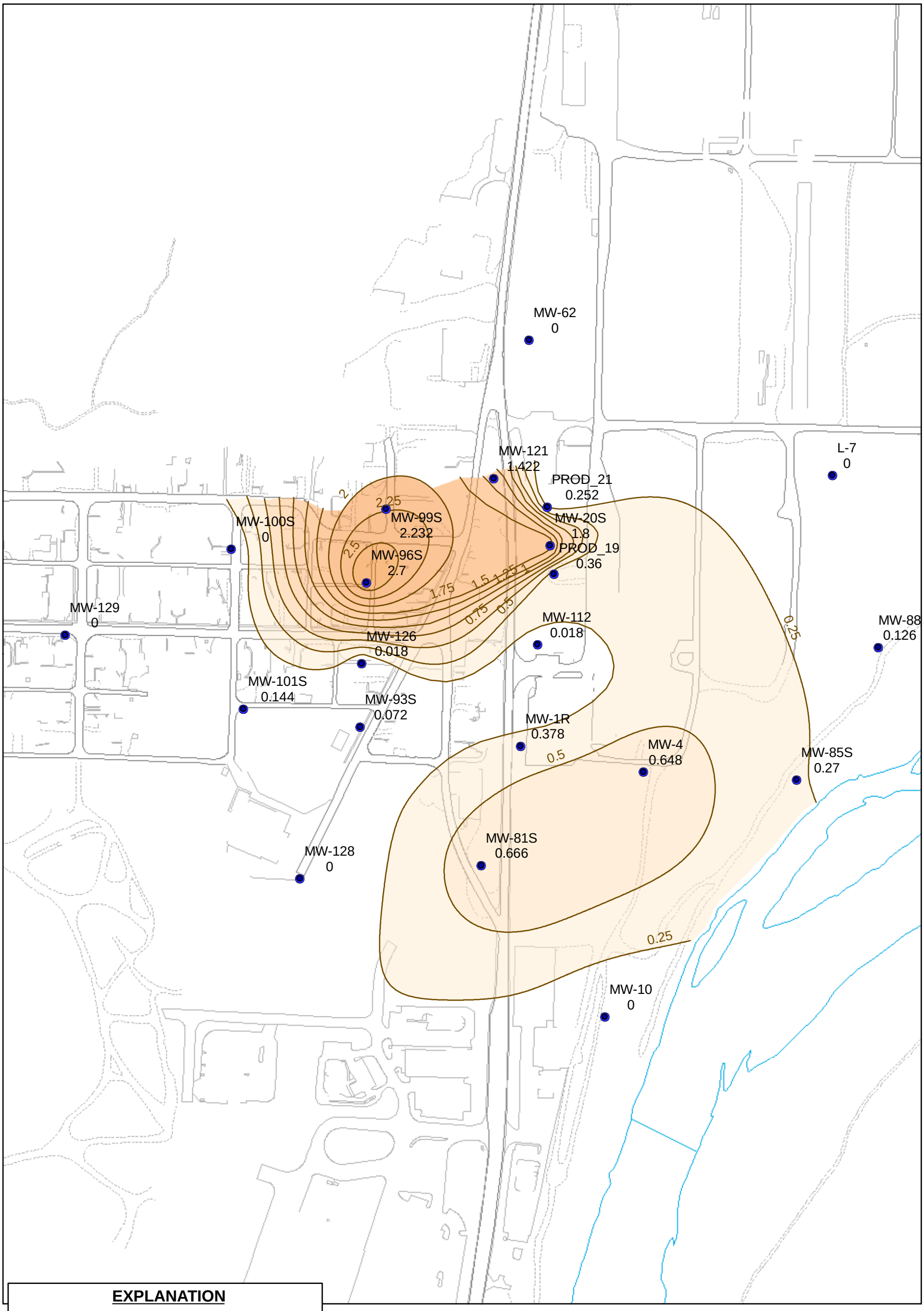
FIGURE 5-7

HIGH-GRADE DRAWDOWN MAP, OCTOBER 1, 2007

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 250'	Date: 04/03/09	File: Oct_01_07_DrawDown.mxd



EXPLANATION

EQUIPOTENTIAL CONTOUR LINE OF LNAPL THICKNESS, CONTOUR INTERVAL IS 0.25 FEET

AREA OF EQUAL LNAPL THICKNESS IN FEET

0.25 — 2.5

N

0 — 250'

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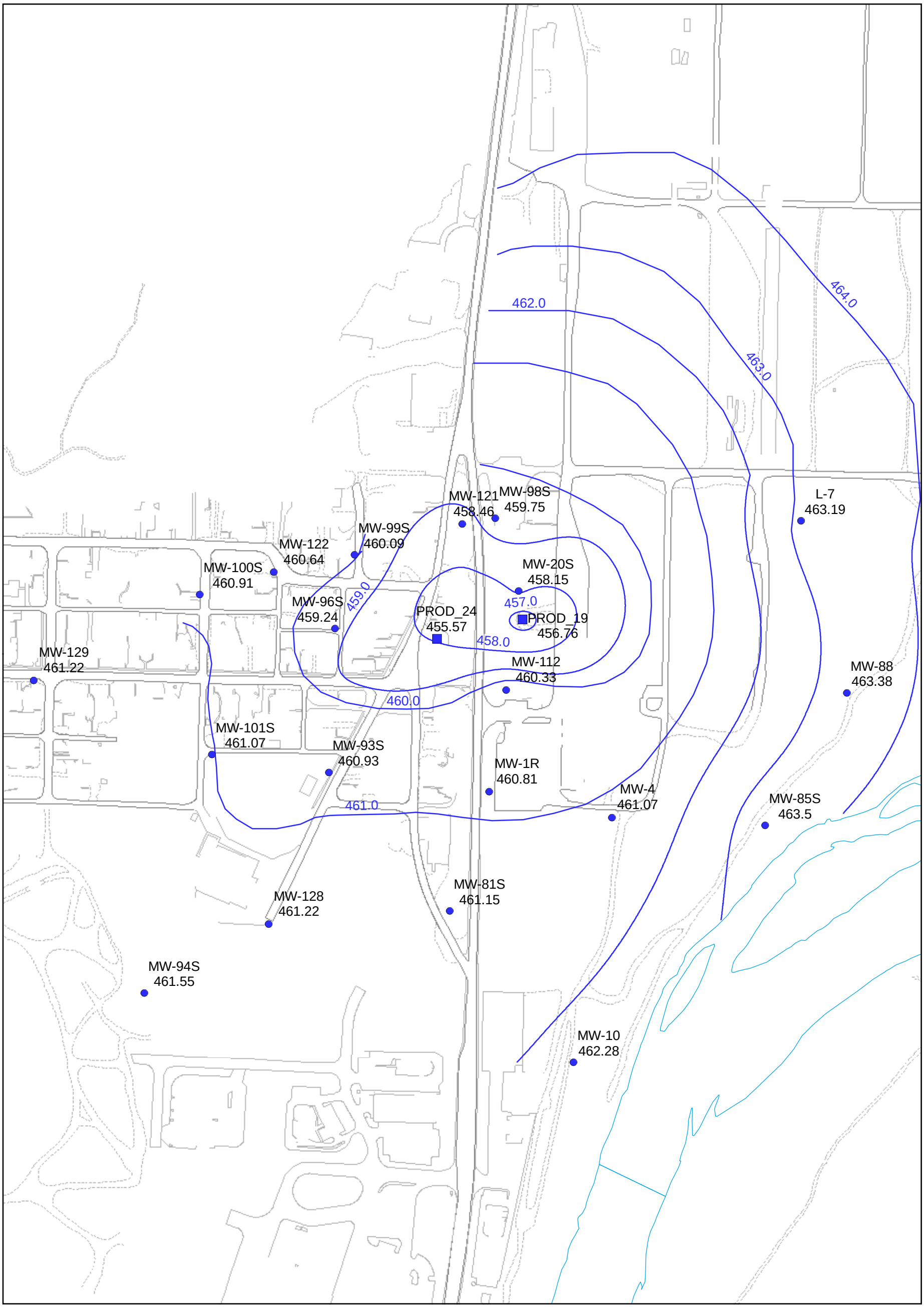
FIGURE 5-8

HIGH-GRADE LNAPL THICKNESS MAP, OCTOBER 1, 2007

FIRST 2008 SEMIANNUAL MONITORING EVENT CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 250'	Date: 04/03/09	File: Oct_01_07_NAPL_Thkn.mxd



EXPLANATION

EQUIPOTENTIAL CONTOUR LINE
Elevation In Feet Above Sea Level
Contour Interval is 1.0 feet
(Line Dashed where approximate)

N

0 250'

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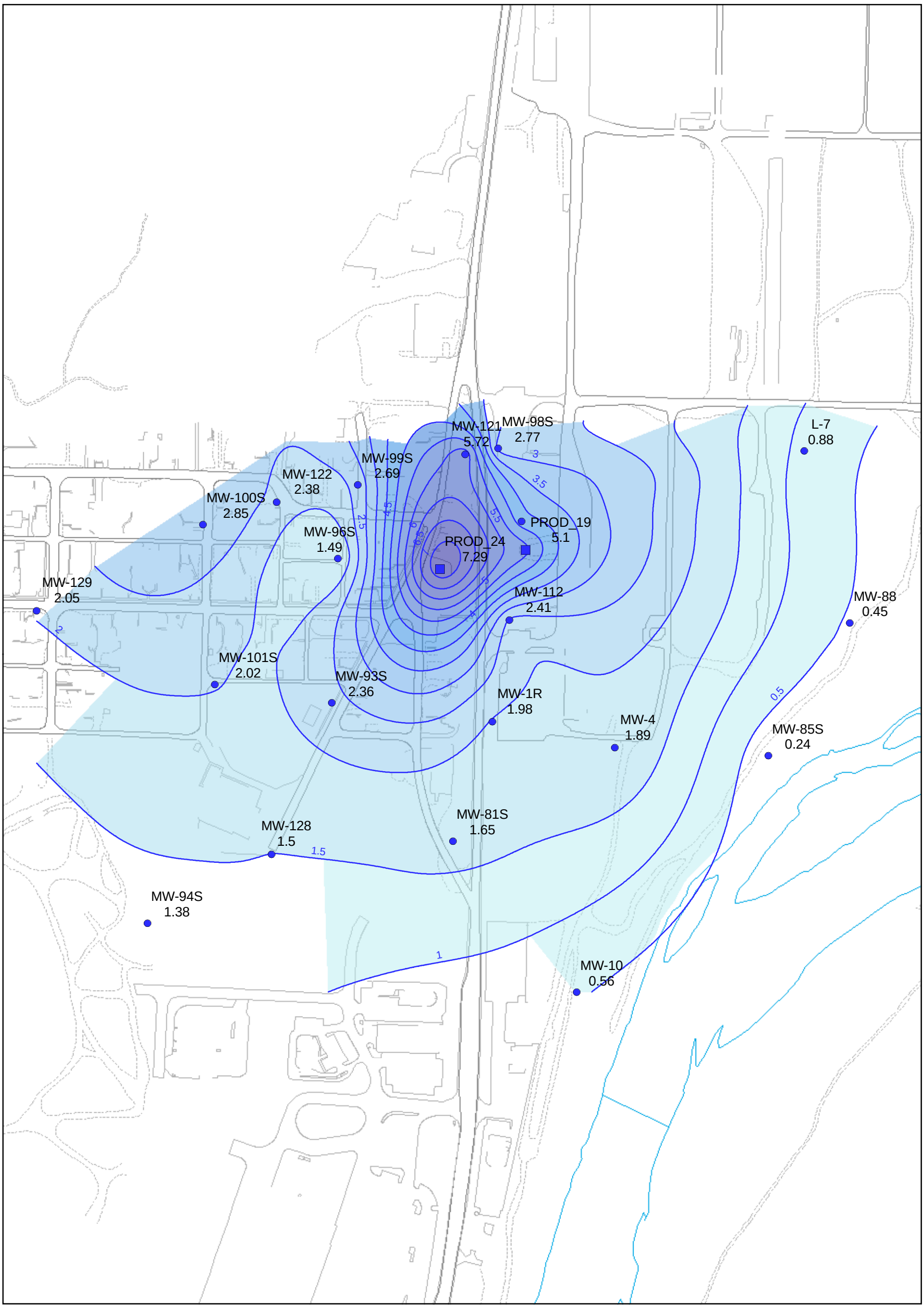
FIGURE 5-9

HIGH-GRADE POTENTIOMETRIC SURFACE MAP, NOVEMBER 13, 2007

FIRST 2008 SEMIANNUAL MONITORING EVENT CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 250'	Date: 04/03/09	File: Nov_13_07_Potsurface.mxd



EXPLANATION

CONTOUR LINE OF EQUAL DRAWDOWN IN FEET

AREA OF EQUAL DRAWDOWN IN FEET

0.5 — 7.0

N

0 — 250'

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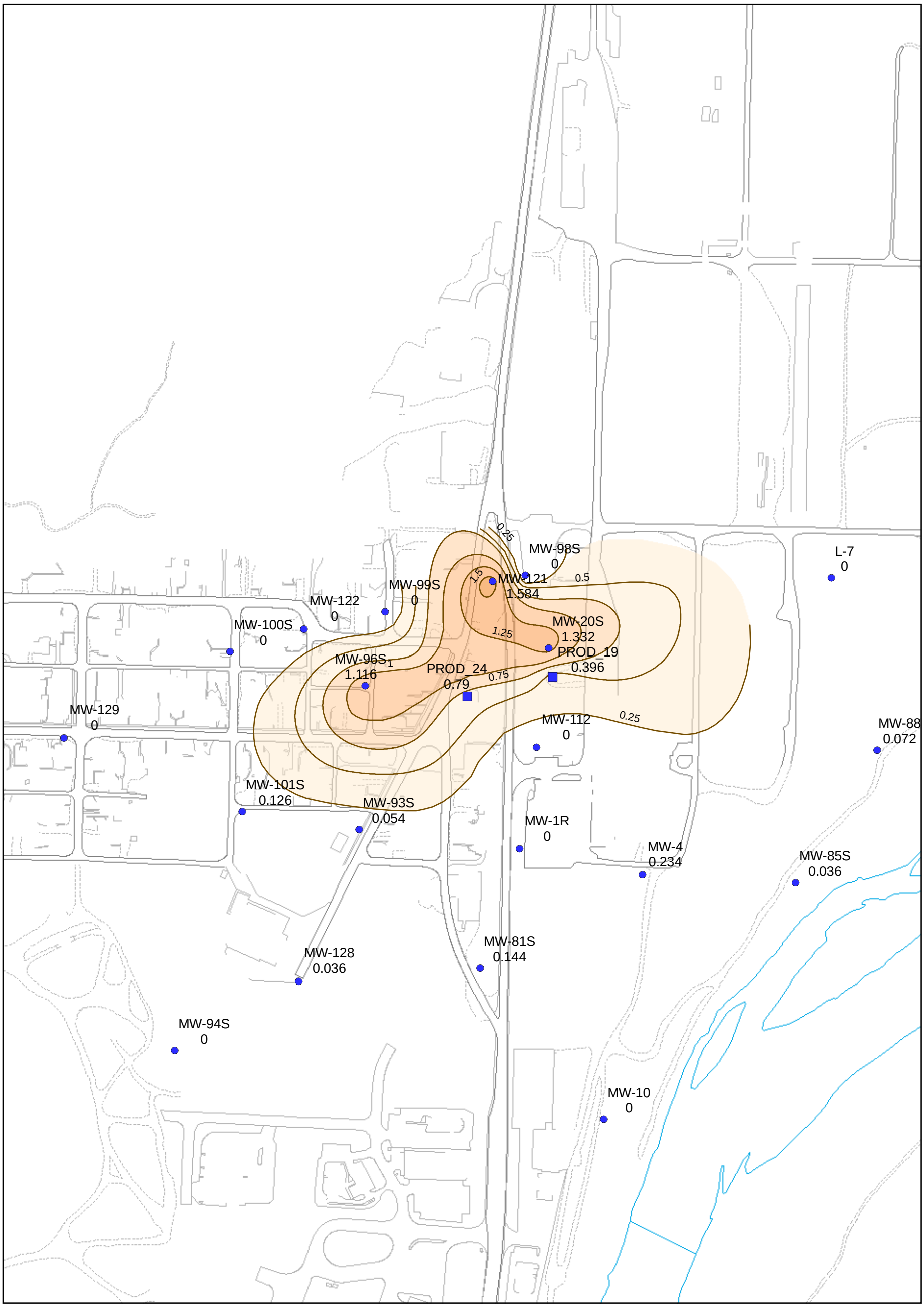
FIGURE 5-10

HIGH-GRADE DRAWDOWN MAP, NOVEMBER 13, 2007

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 250'	Date: 04/03/09	File: Nov_13_07_DrawDown.mxd



EXPLANATION

EQUIPOTENTIAL CONTOUR LINE OF LNAPL THICKNESS IN FEET

AREA OF EQUAL LNAPL THICKNESS IN FEET

0.25 — 1.50

N

0 — 250'

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FIGURE 5-11

HIGH-GRADE LNAPL THICKNESS MAP, NOVEMBER 13, 2007

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY,
HOOVEN, OHIO

Drawn By: PS	Checked By: PM	Scale: 1" = 250'	Date: 04/03/09	File: Noc_13_07_NAPL_Thkn.mxd

FIGURE 5-12. HYDROGRAPHS FOR KEY MONITORING WELLS IN SOUTHWESTERN HIGH-GRADE RECOVERY AREA
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

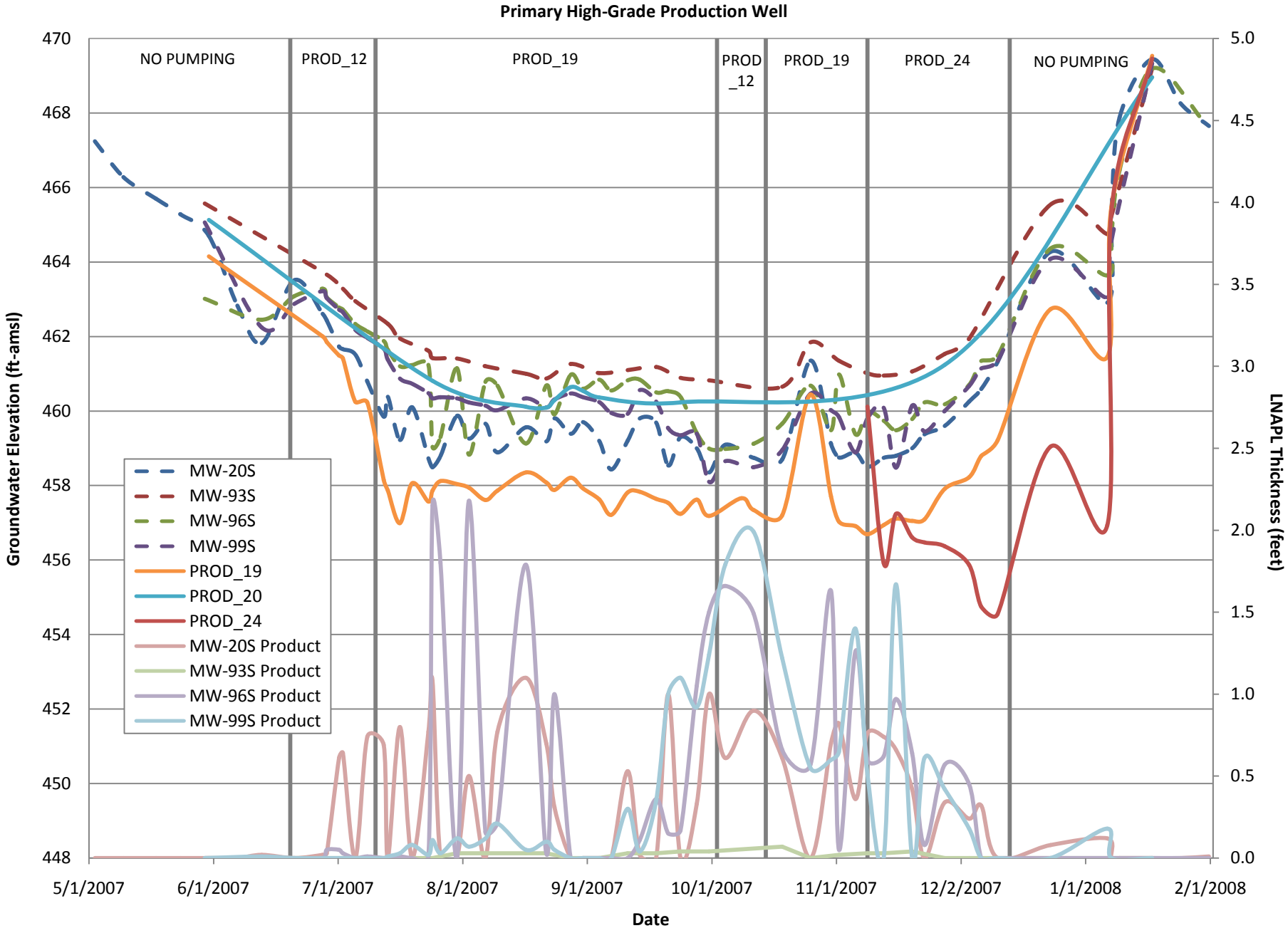
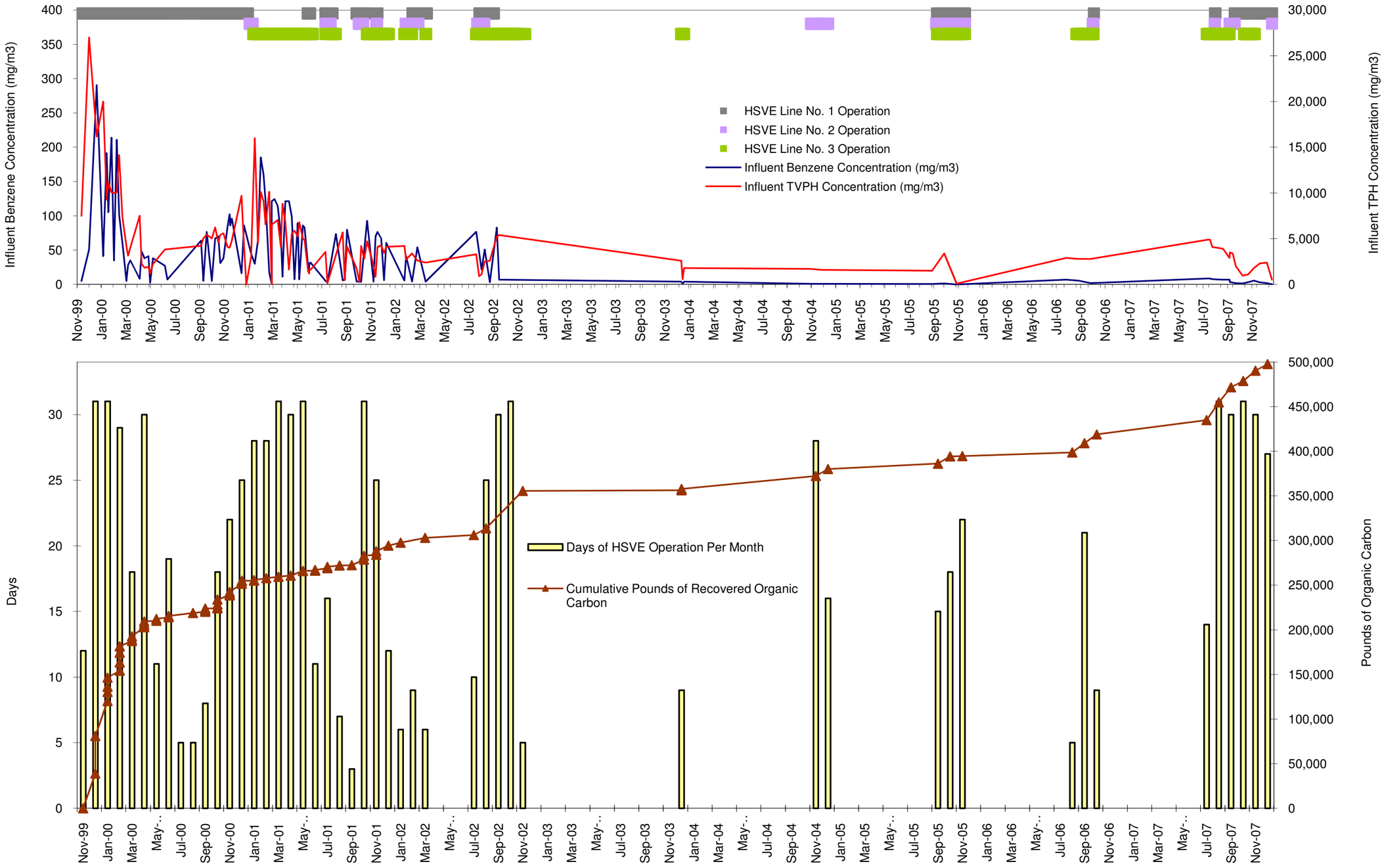
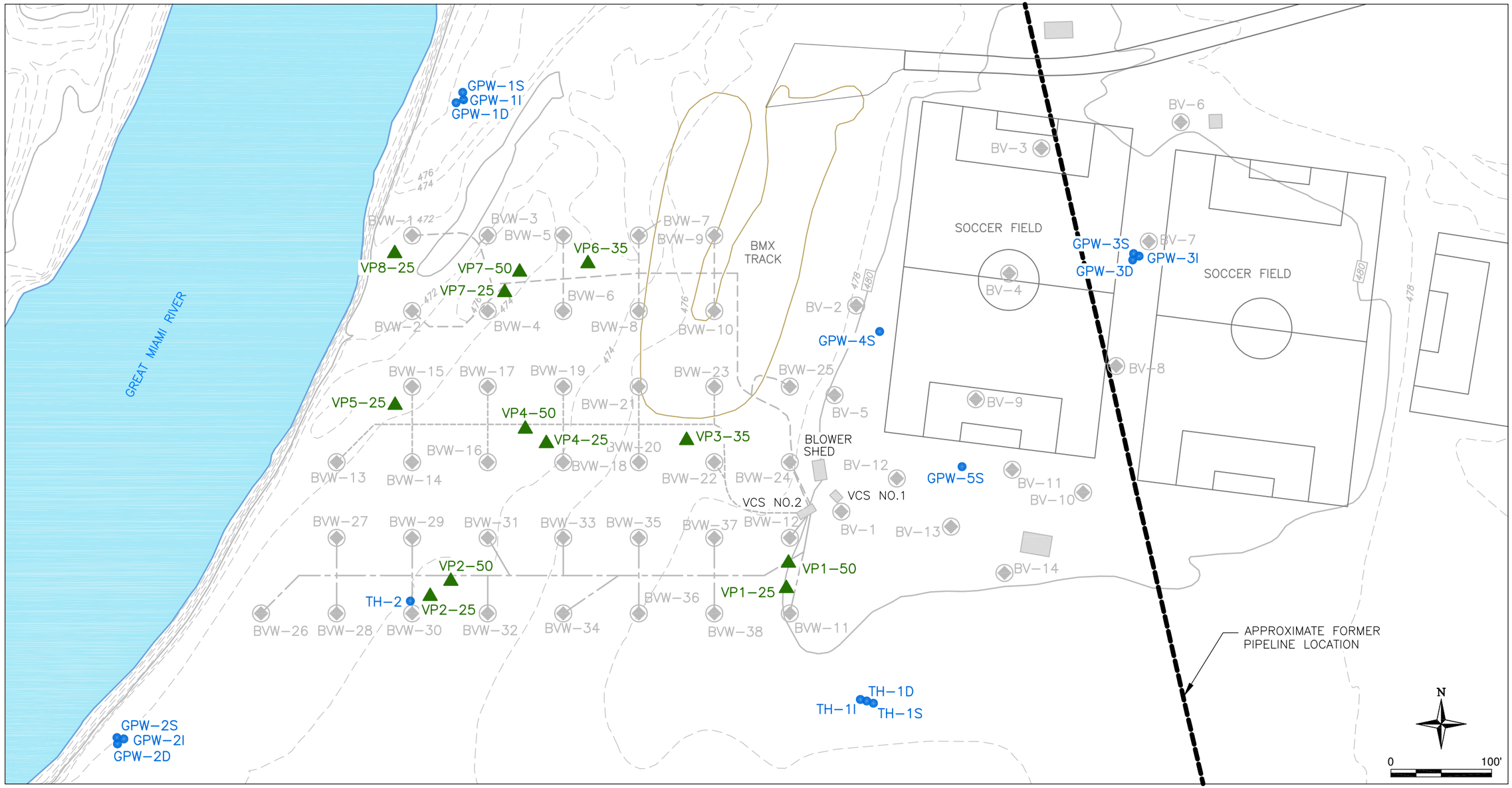


FIGURE 5-13 HIGH-GRADE PRODUCTION RATES AND EFFECTIVE DRAWDOWN
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

FIGURE 5-14. HSVE OPERATION, INFLUENT CONCENTRATION, AND CUMULATIVE POUNDS OF RECOVERED ORGANIC CARBON
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO





EXPLANATION

- GPW-2D — GROUNDWATER MONITORING WELL AND DESIGNATION
- VP2-25 — VAPOR MONITORING POINT
- BVW-26 — BIOVENT WELL AND DESIGNATION
- EXPANDED BIOVENTING SYSTEM PIPE RUN #1
- EXPANDED BIOVENTING SYSTEM PIPE RUN #2
- EXPANDED BIOVENTING SYSTEM PIPE RUN #3
- 480 — GENERAL TOPOGRAPHIC CONTOUR (FT-AMSL, INTERVAL 2 FEET, DASHED WHERE INFERRED)
- BUILDING, TANK OR OTHER STRUCTURE
- ROAD
- VCS — VALVE CONTROL SHED
- FT AMSL — FEET ABOVE MEAN SEA LEVEL

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FIGURE 6-1

GULF PARK LAYOUT

FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY
HOOVEN, OHIO

Drawn By: JP	Checked By: PM	Scale: 1"=100'	Date: 3/30/09	File: 500GP_LAYOUT

FIGURE 6-2. HYDROGRAPHS AND TRIGGER LEVELS FOR MONITORING WELLS GPW-5S AND TH-2
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

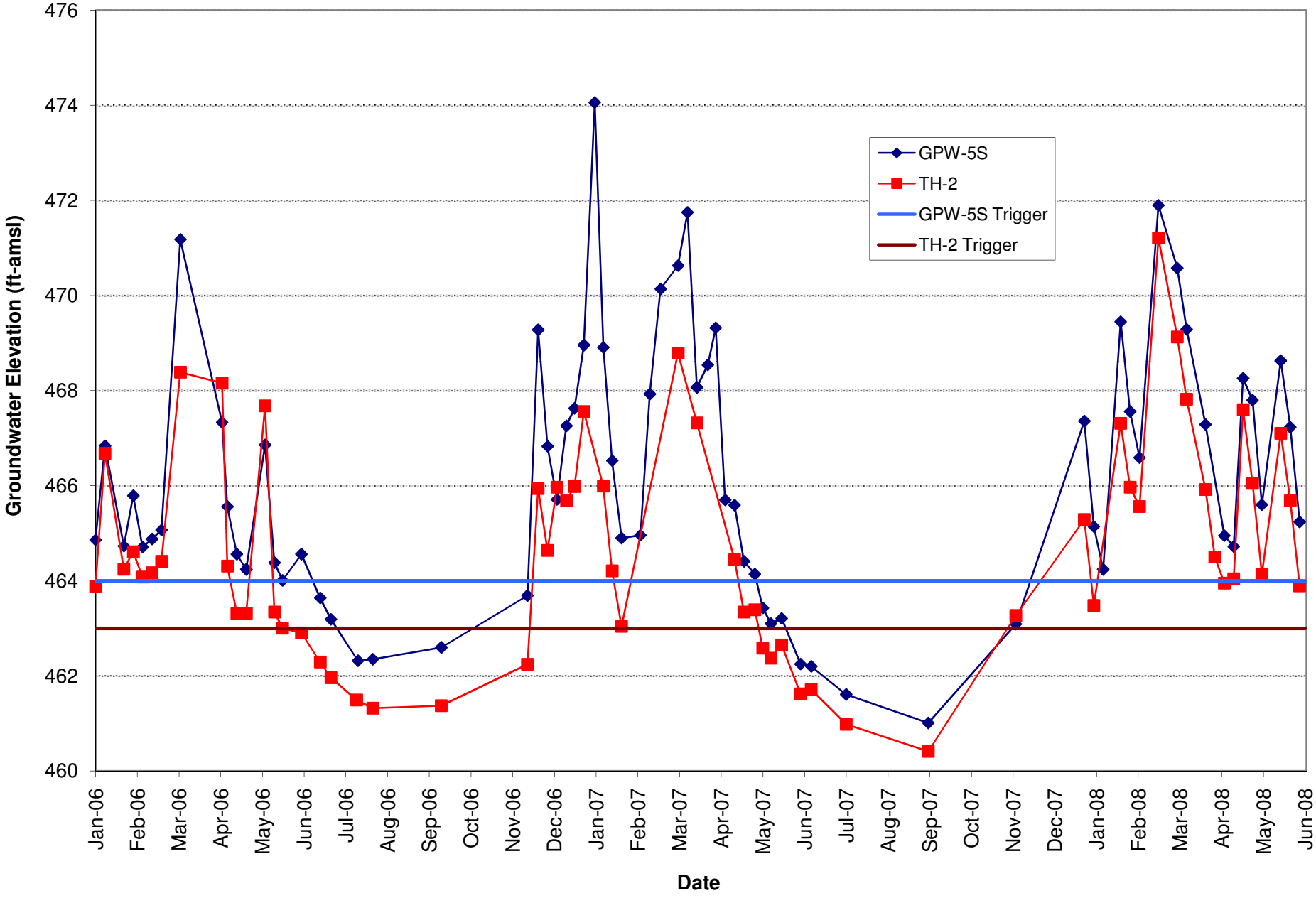

FIGURE 6-3. FIXED GAS CONCENTRATION VERSUS TIME AT VP1-25S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

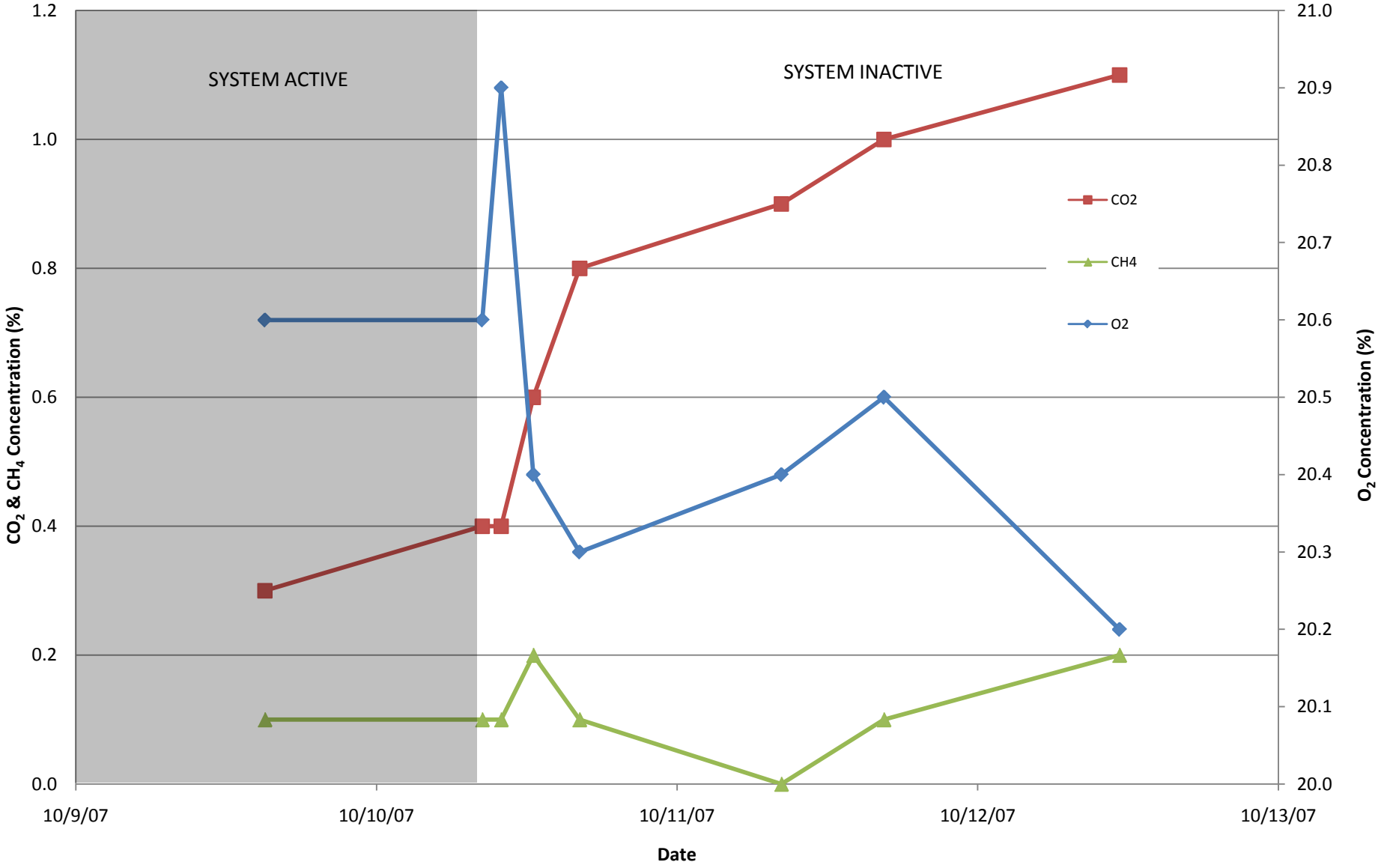

FIGURE 6-4. FIXED GAS CONCENTRATION VERSUS TIME AT VP1-25D (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

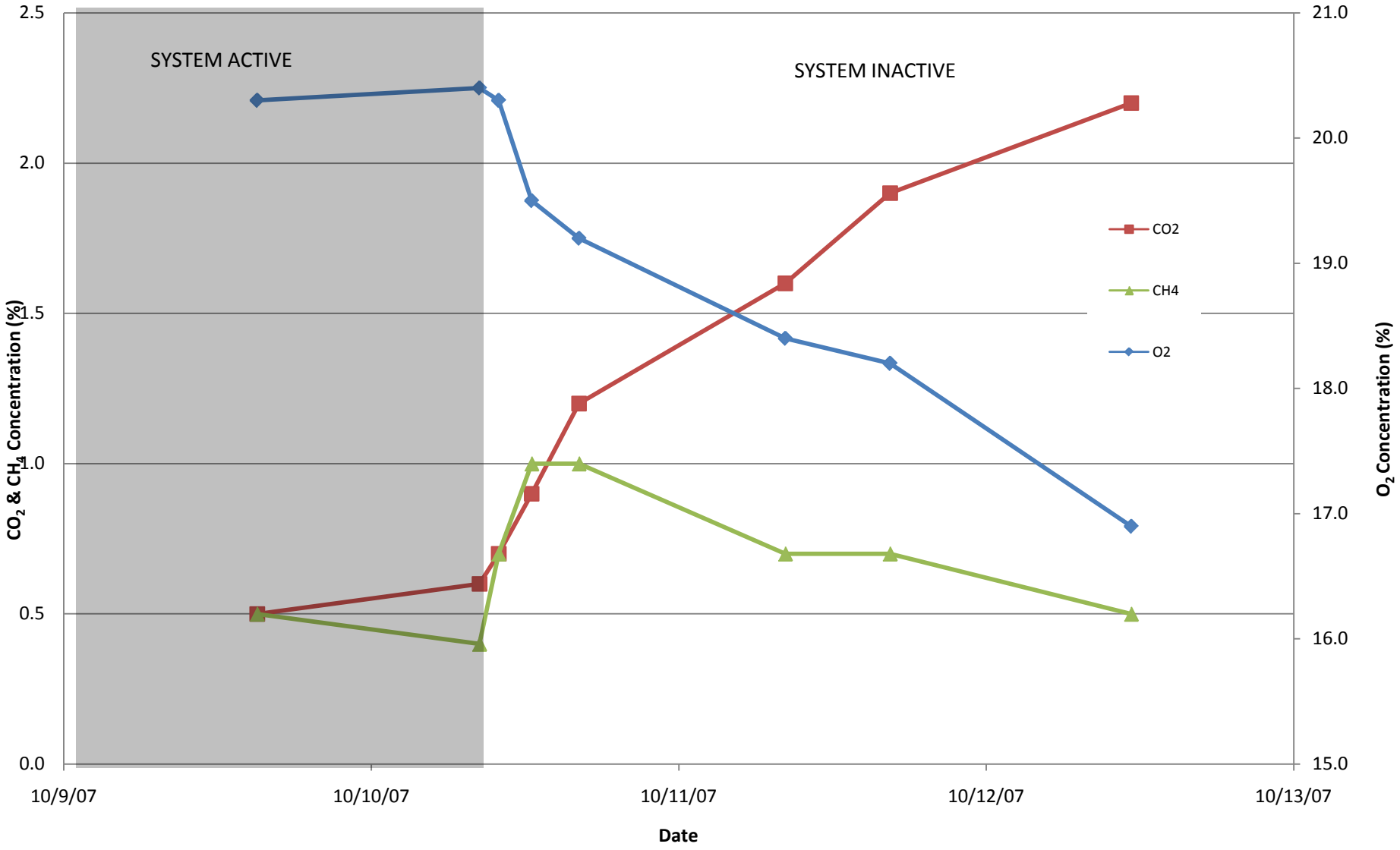

FIGURE 6-5. FIXED GAS CONCENTRATION VERSUS TIME AT VP1-50S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

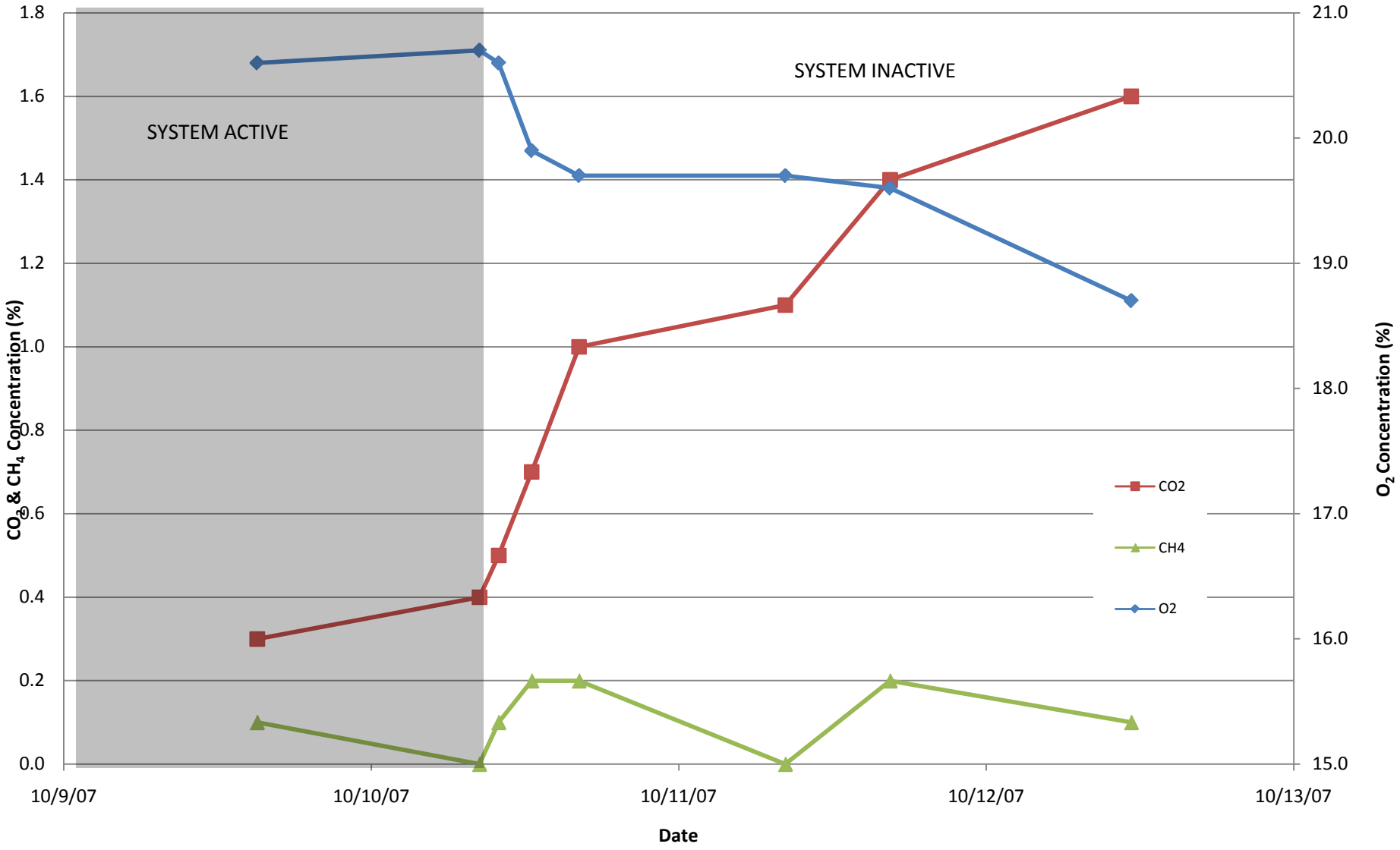

FIGURE 6-6. FIXED GAS CONCENTRATION VERSUS TIME AT VP1-50D (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

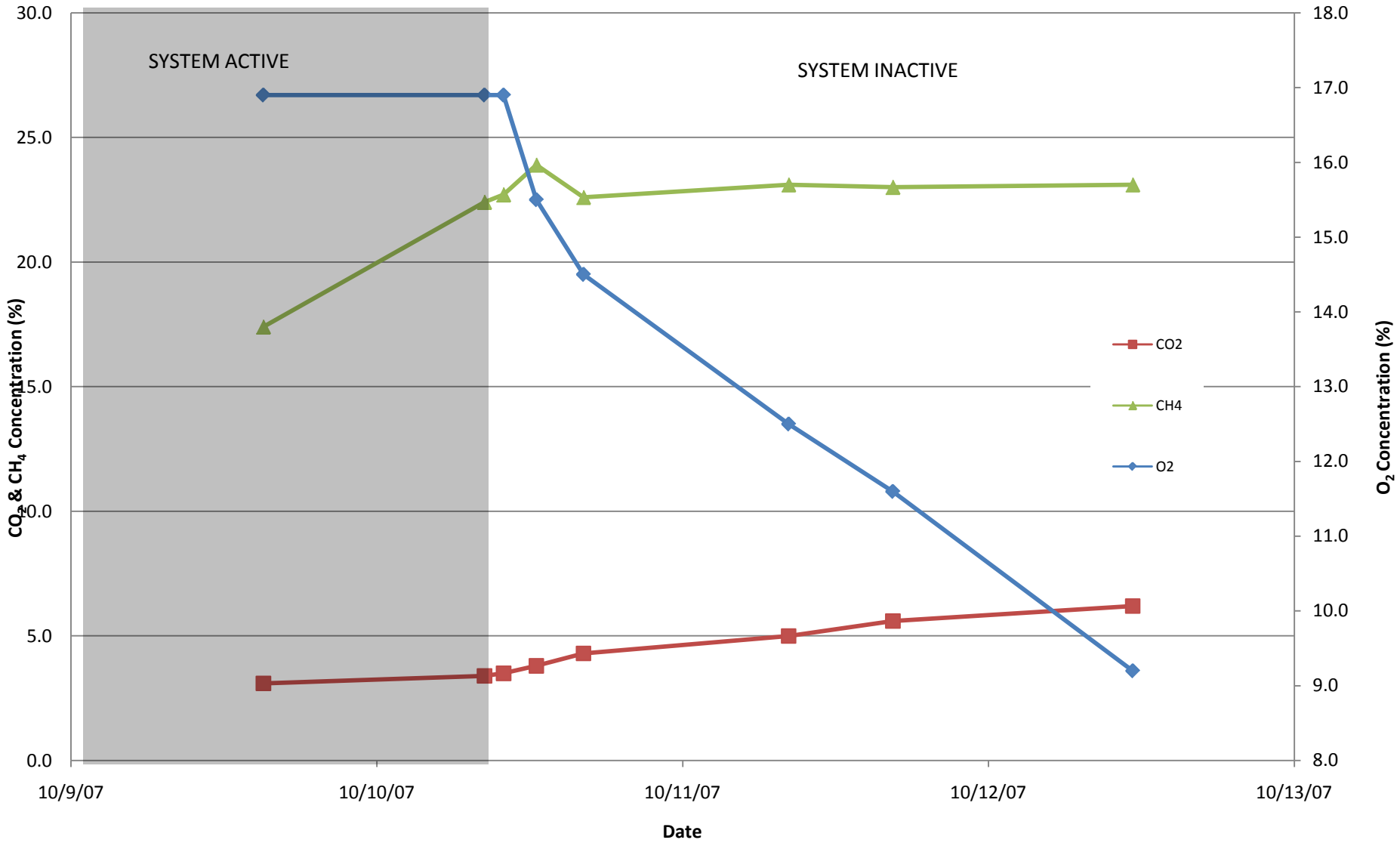

FIGURE 6-7. FIXED GAS CONCENTRATION VERSUS TIME AT VP2-25S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

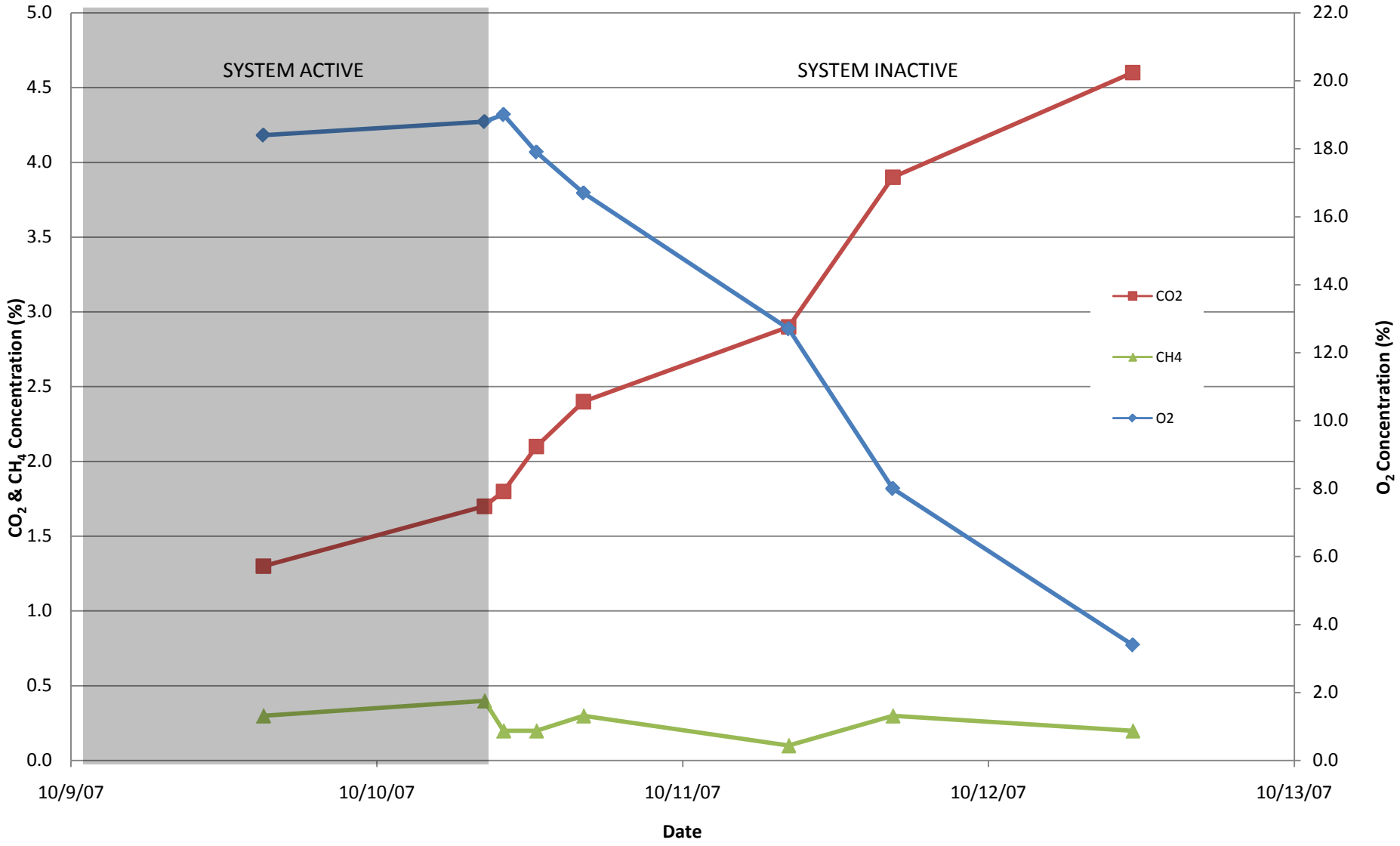

FIGURE 6-8. FIXED GAS CONCENTRATION VERSUS TIME AT VP2-50S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

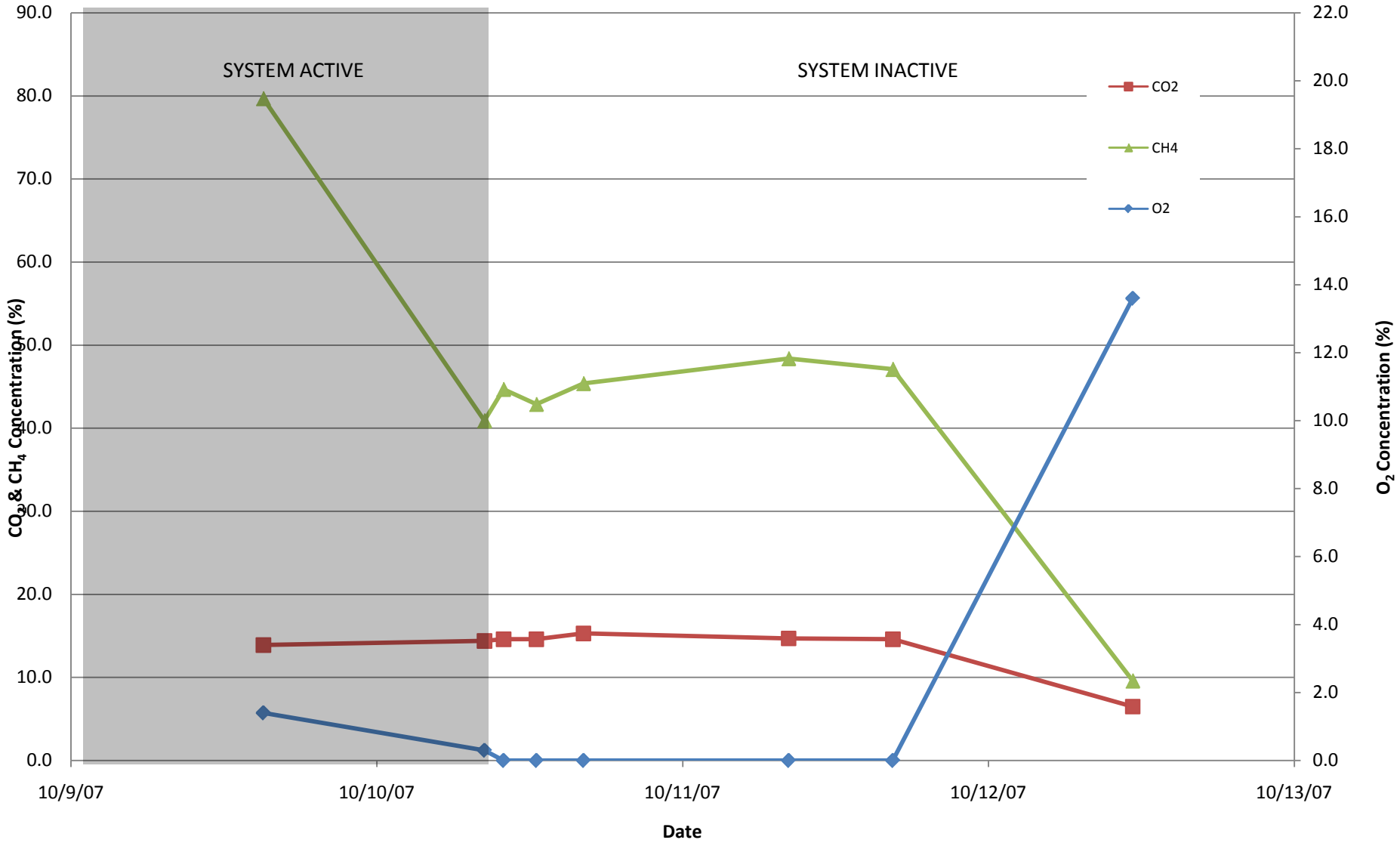

FIGURE 6-9. FIXED GAS CONCENTRATION VERSUS TIME AT VP2-50D
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

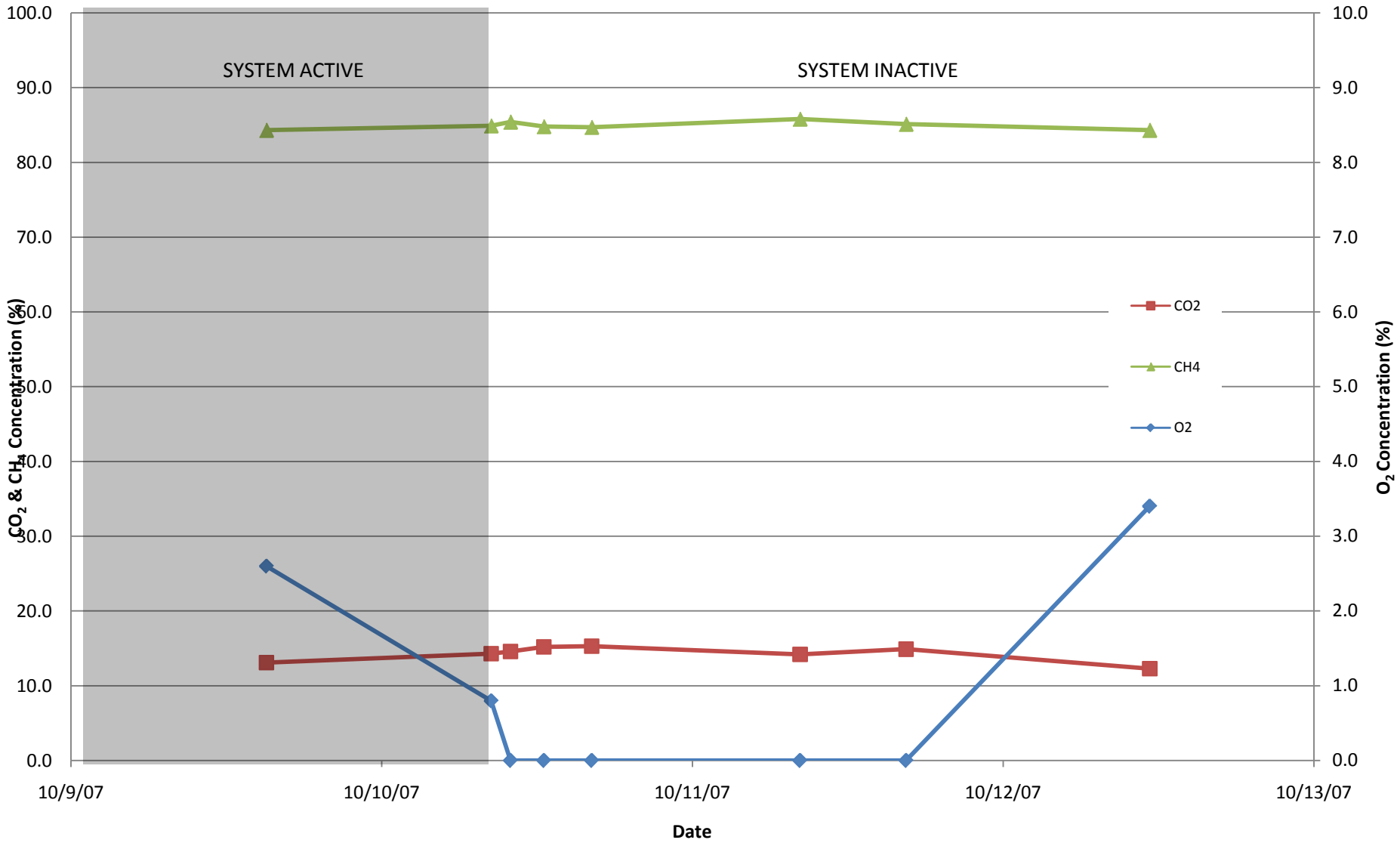

FIGURE 6-10. FIXED GAS CONCENTRATION VERSUS TIME AT VP3-35S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

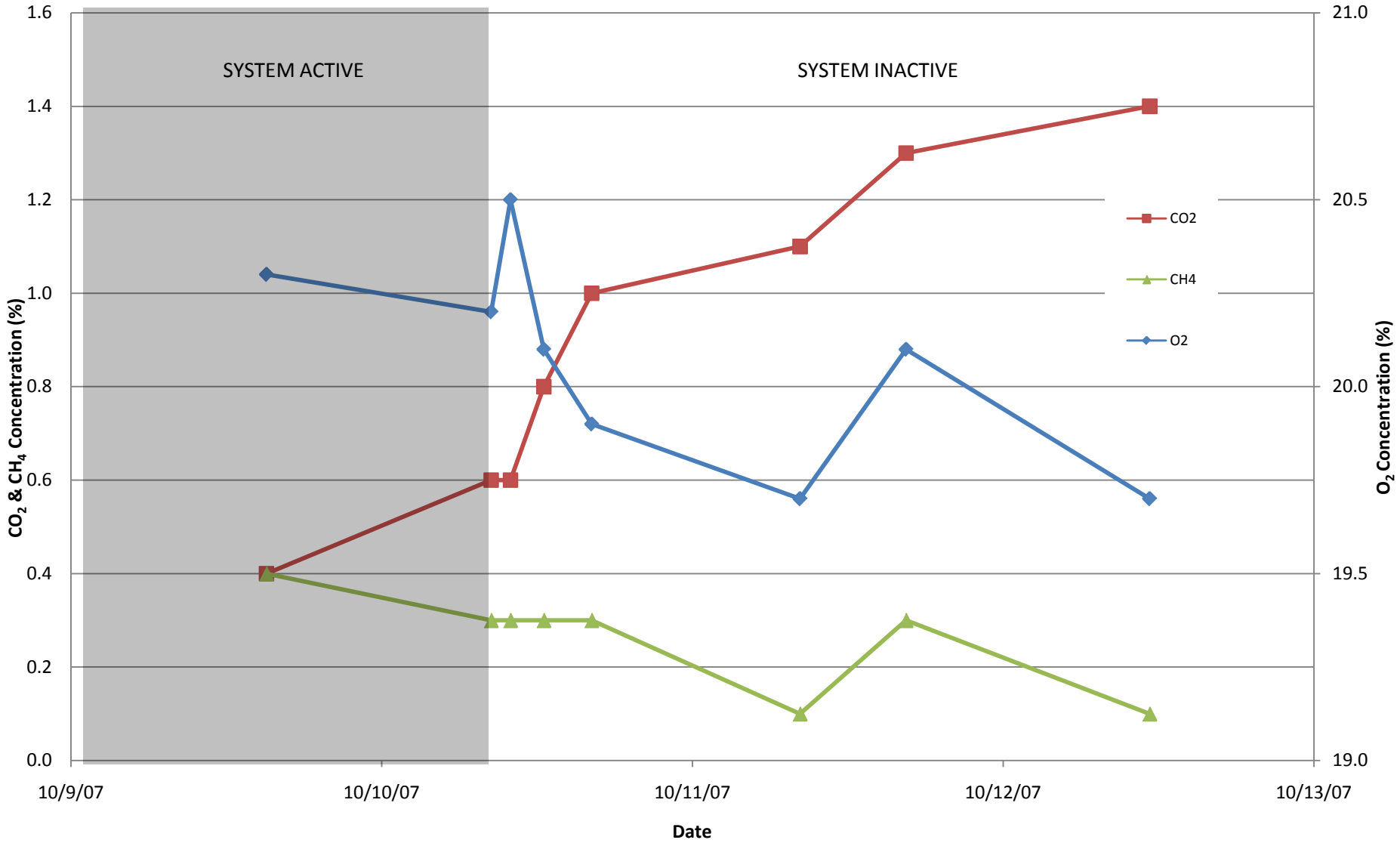

FIGURE 6-11. FIXED GAS CONCENTRATION VERSUS TIME AT VP3-35D (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

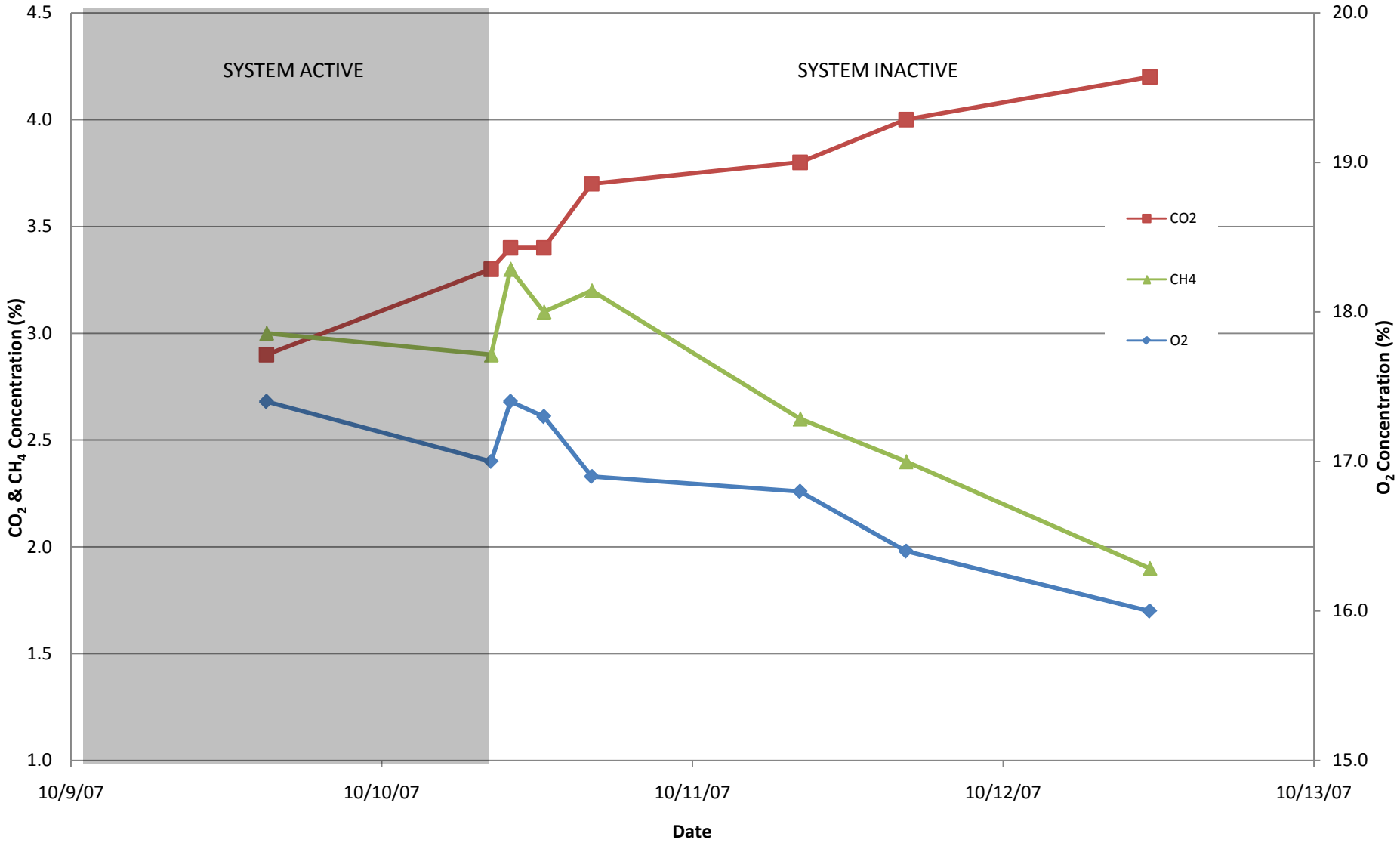

FIGURE 6-12. FIXED GAS CONCENTRATION VERSUS TIME AT VP4-25S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

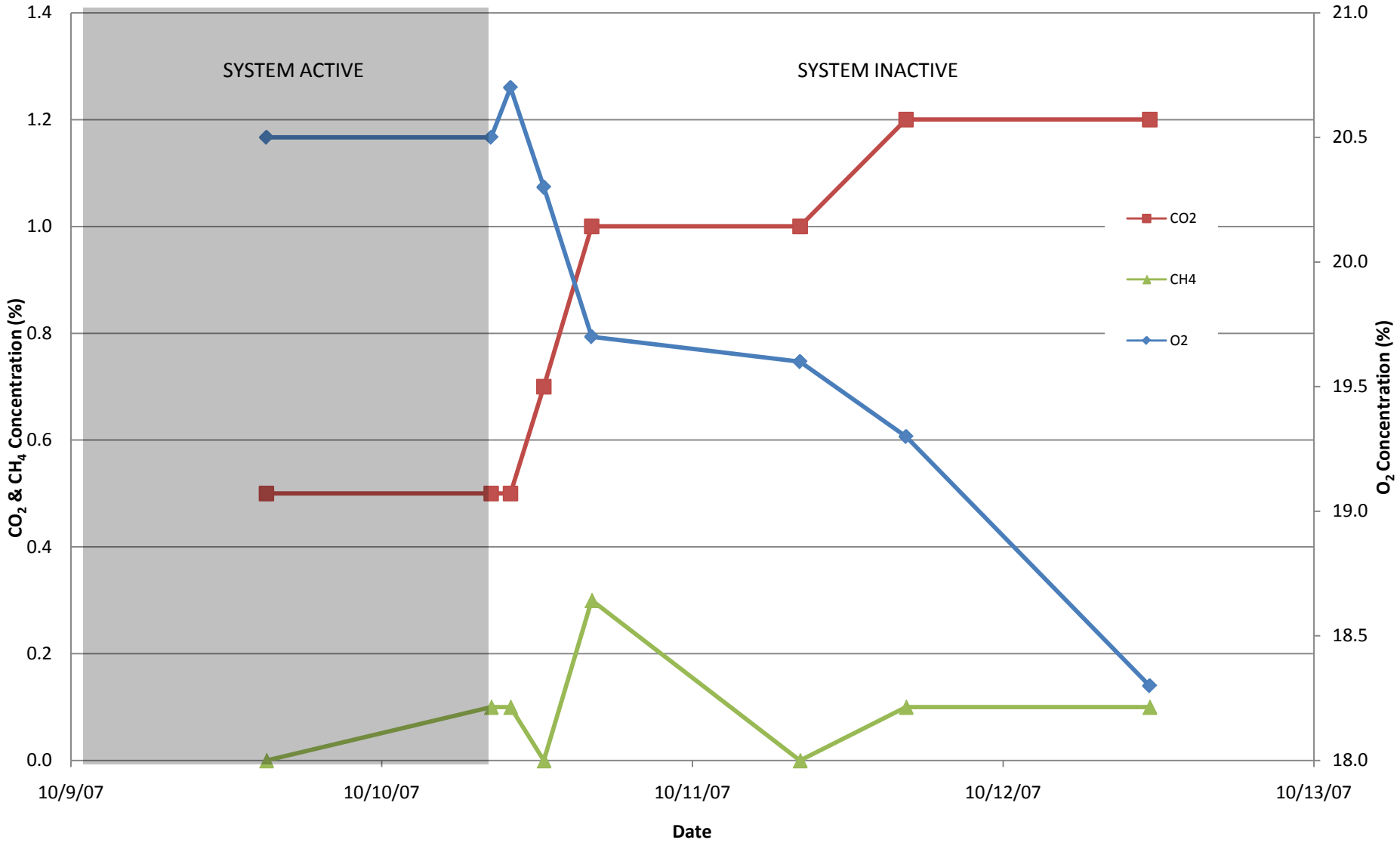

FIGURE 6-13. FIXED GAS CONCENTRATION VERSUS TIME AT VP4-25D (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

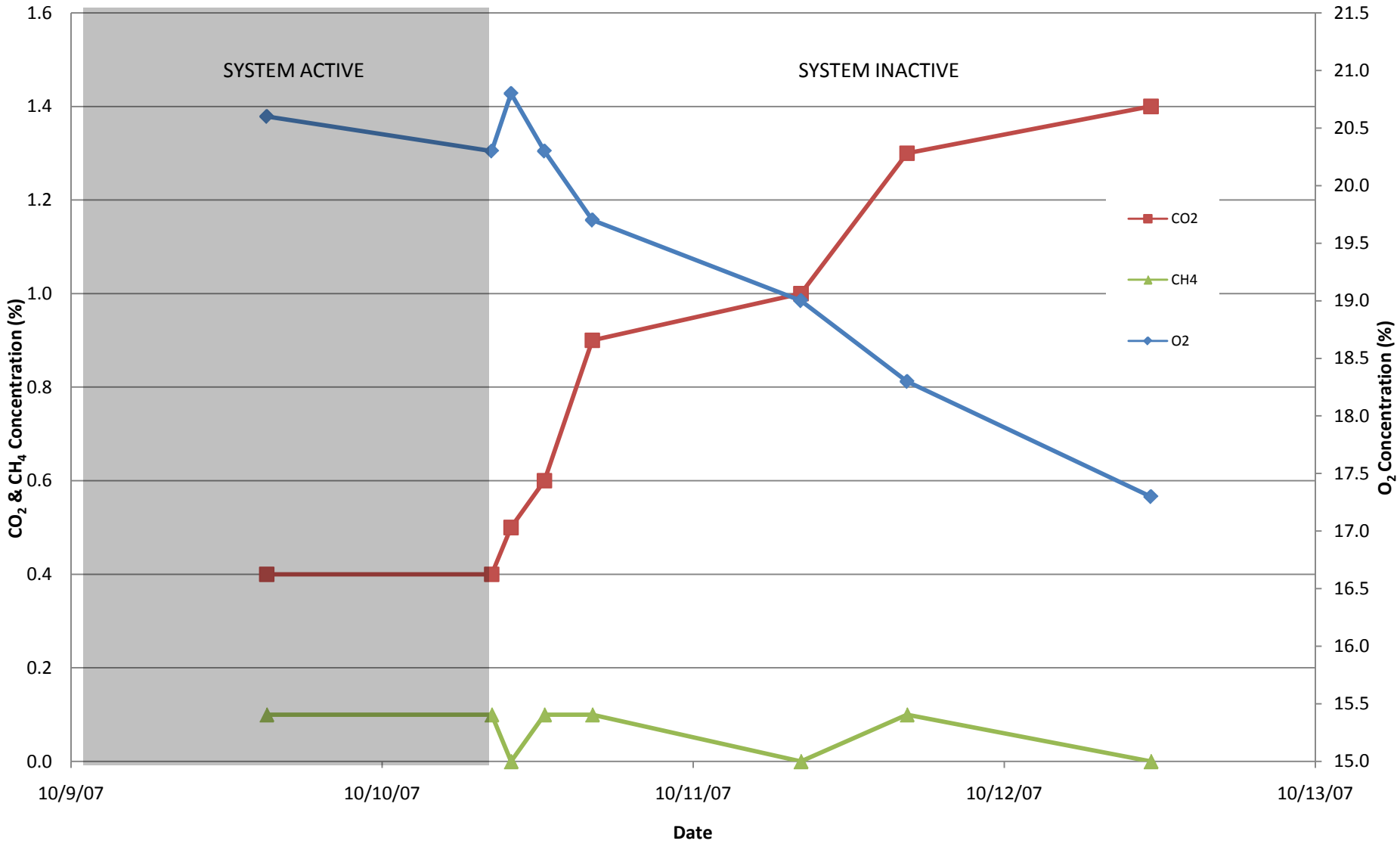

FIGURE 6-14. FIXED GAS CONCENTRATION VERSUS TIME AT VP5-25S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

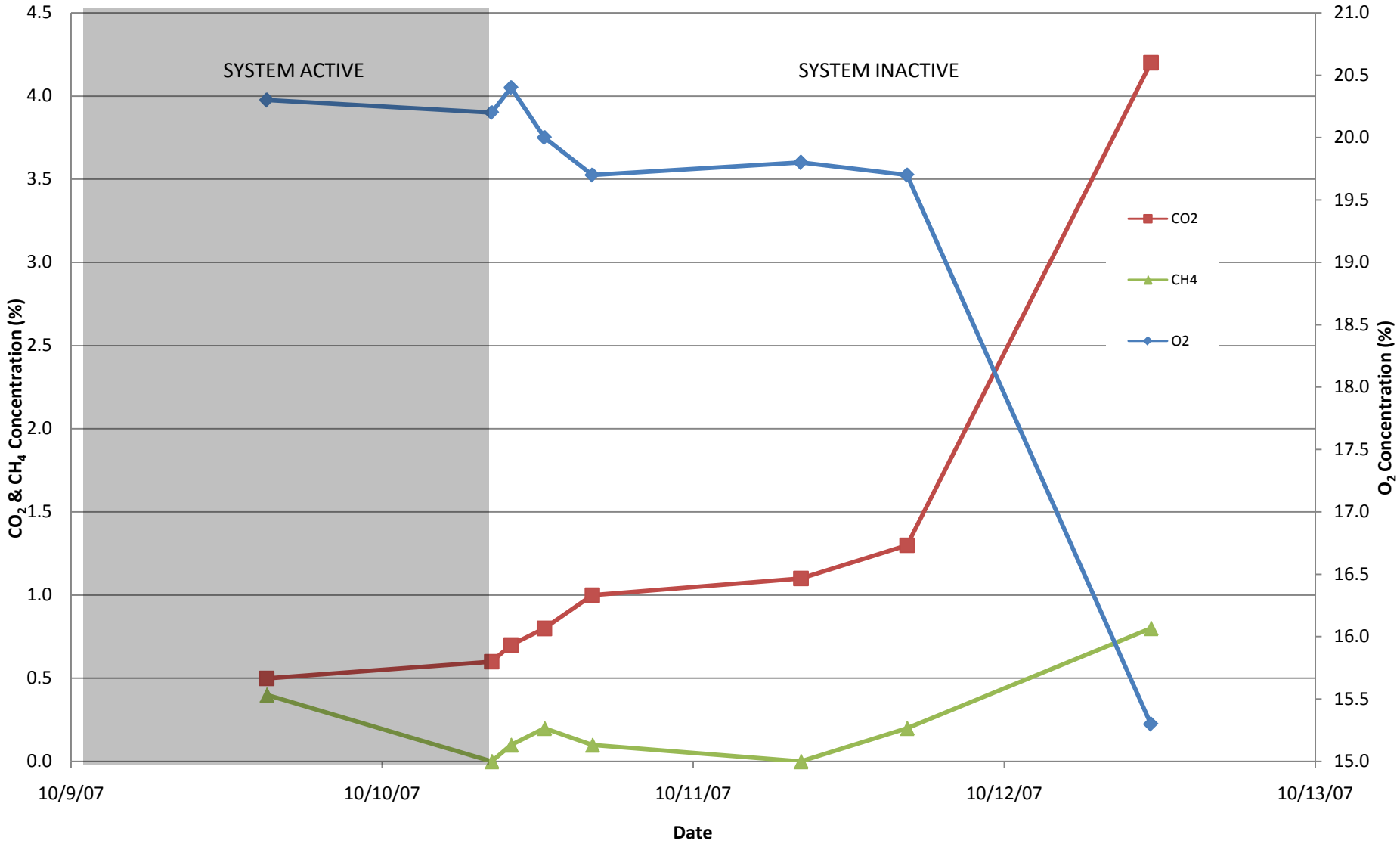

FIGURE 6-15. FIXED GAS CONCENTRATION VERSUS TIME AT VP5-25D (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

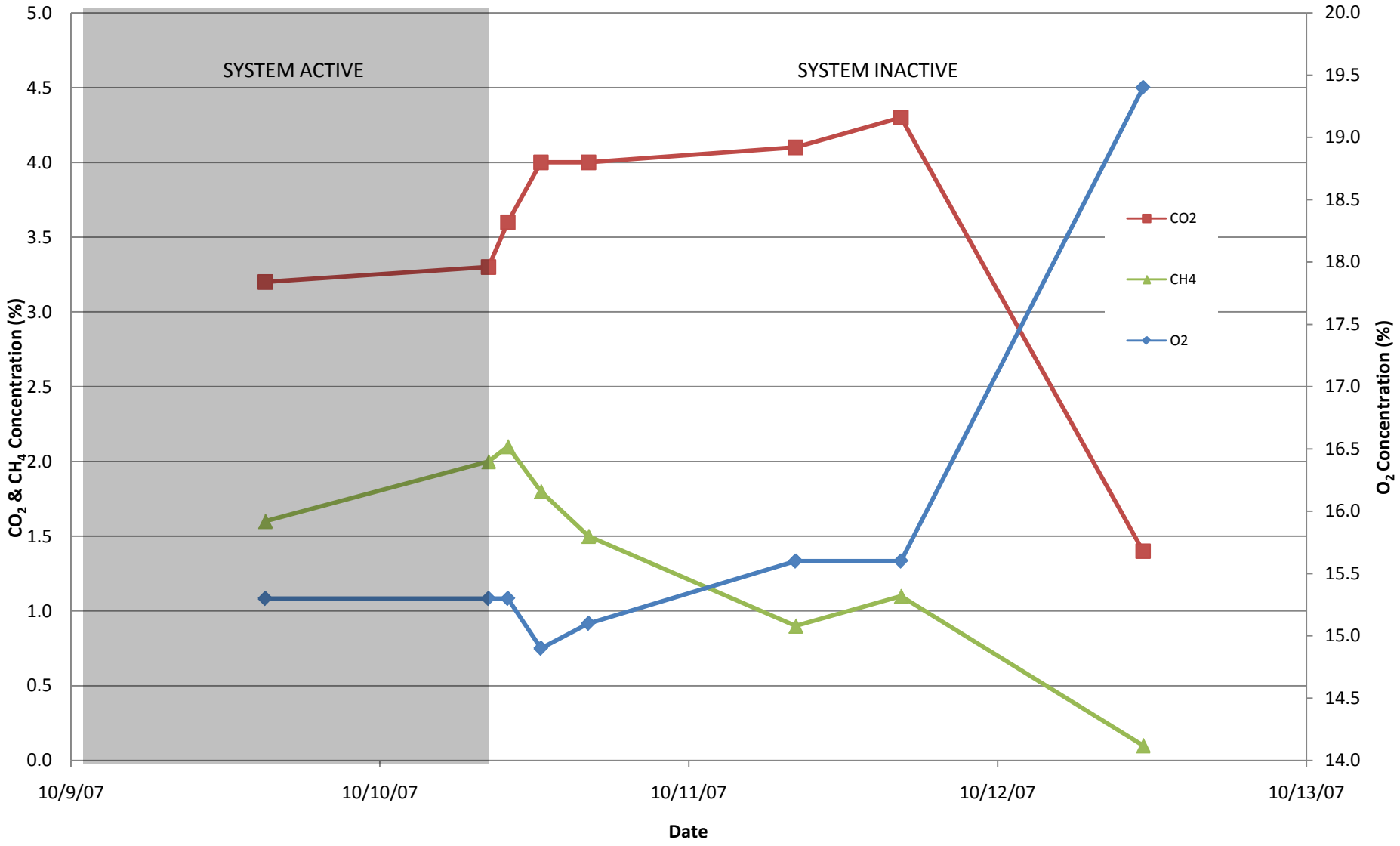

FIGURE 6-16. FIXED GAS CONCENTRATION VERSUS TIME AT VP6-35S (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

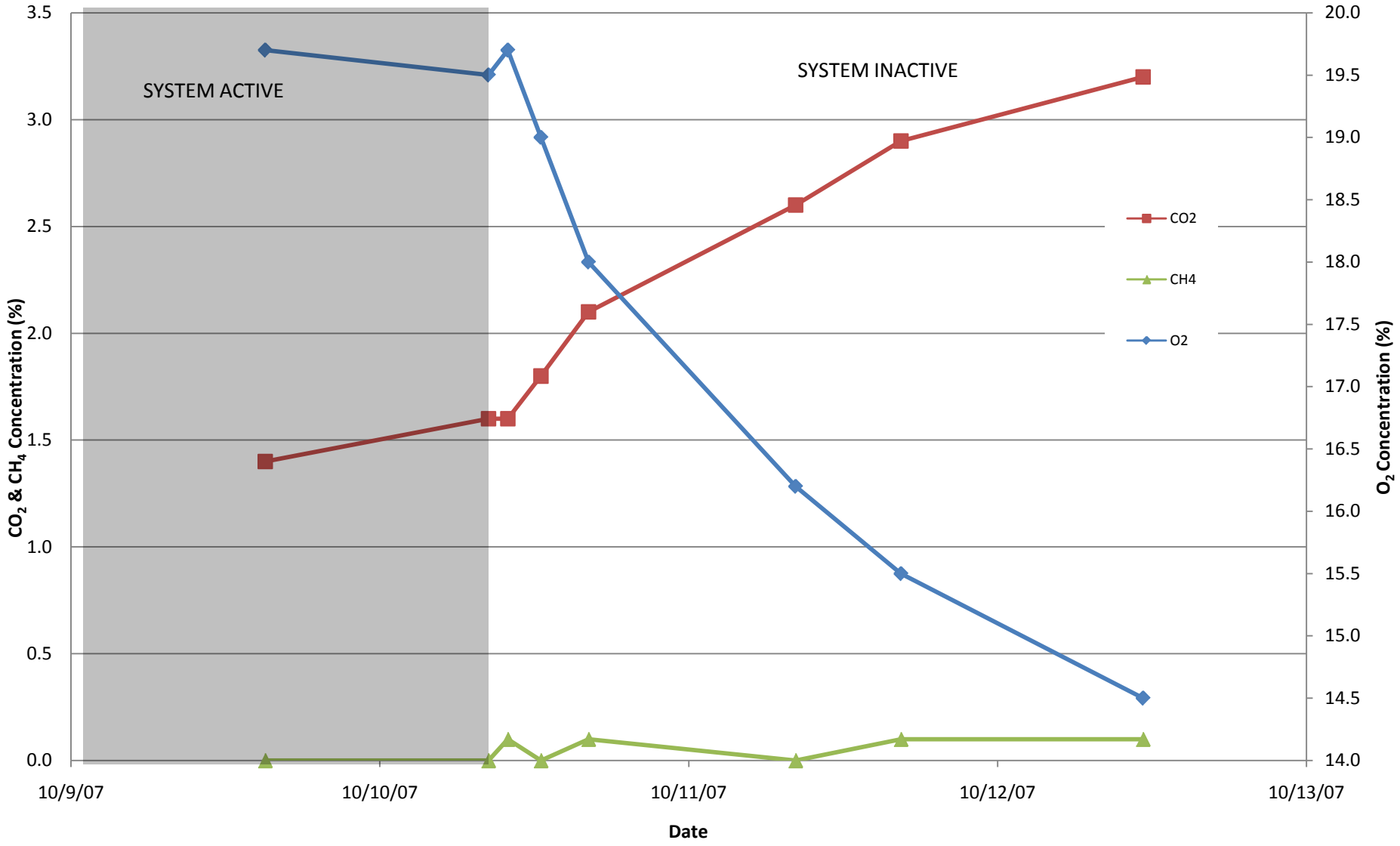

FIGURE 6-17. FIXED GAS CONCENTRATION VERSUS TIME AT VP7-25D (OCTOBER 2007)
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

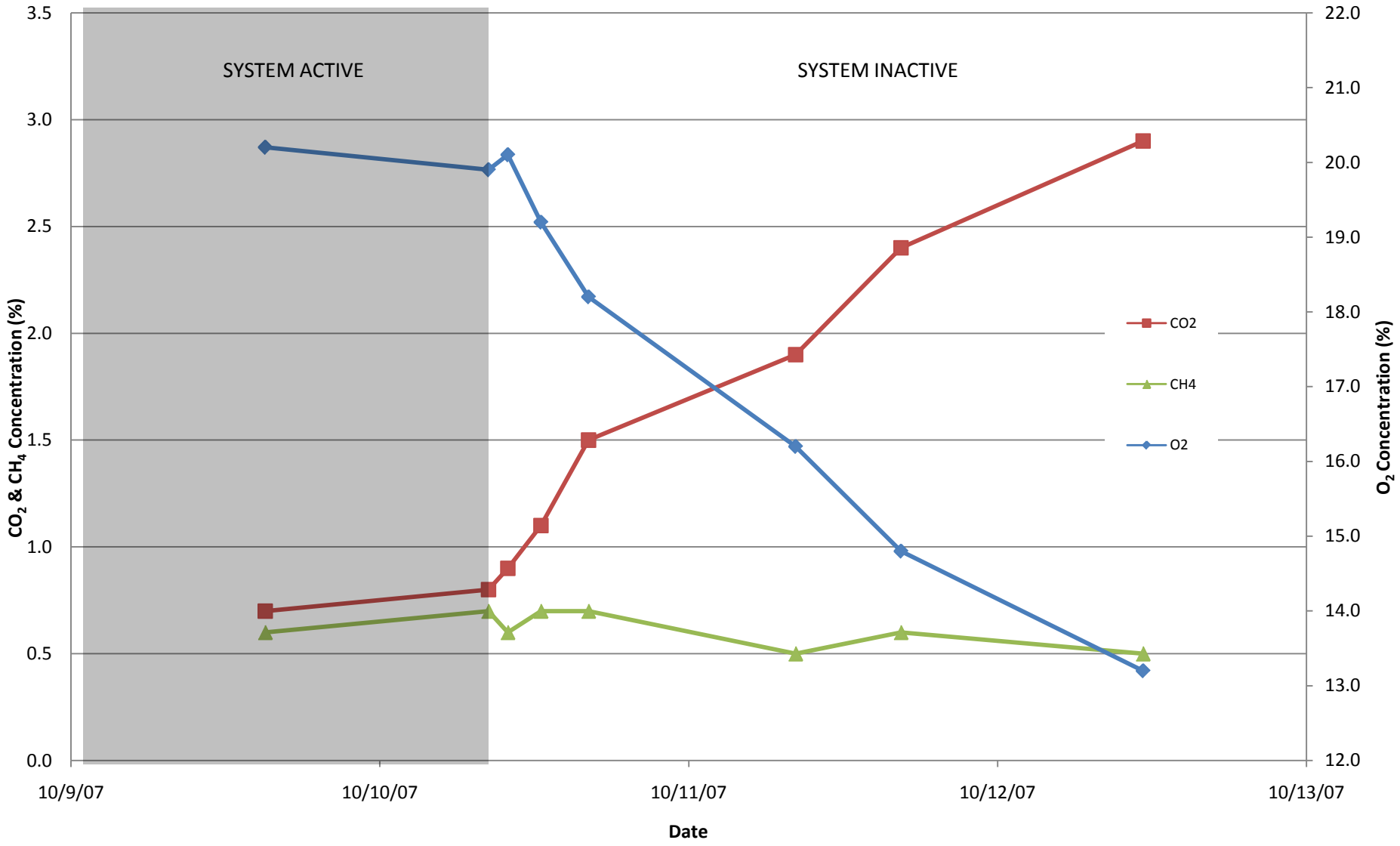

FIGURE 6-18. TOTAL BTEX CONCENTRATION VERSUS TIME FOR MONITORING WELL TH-1S
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

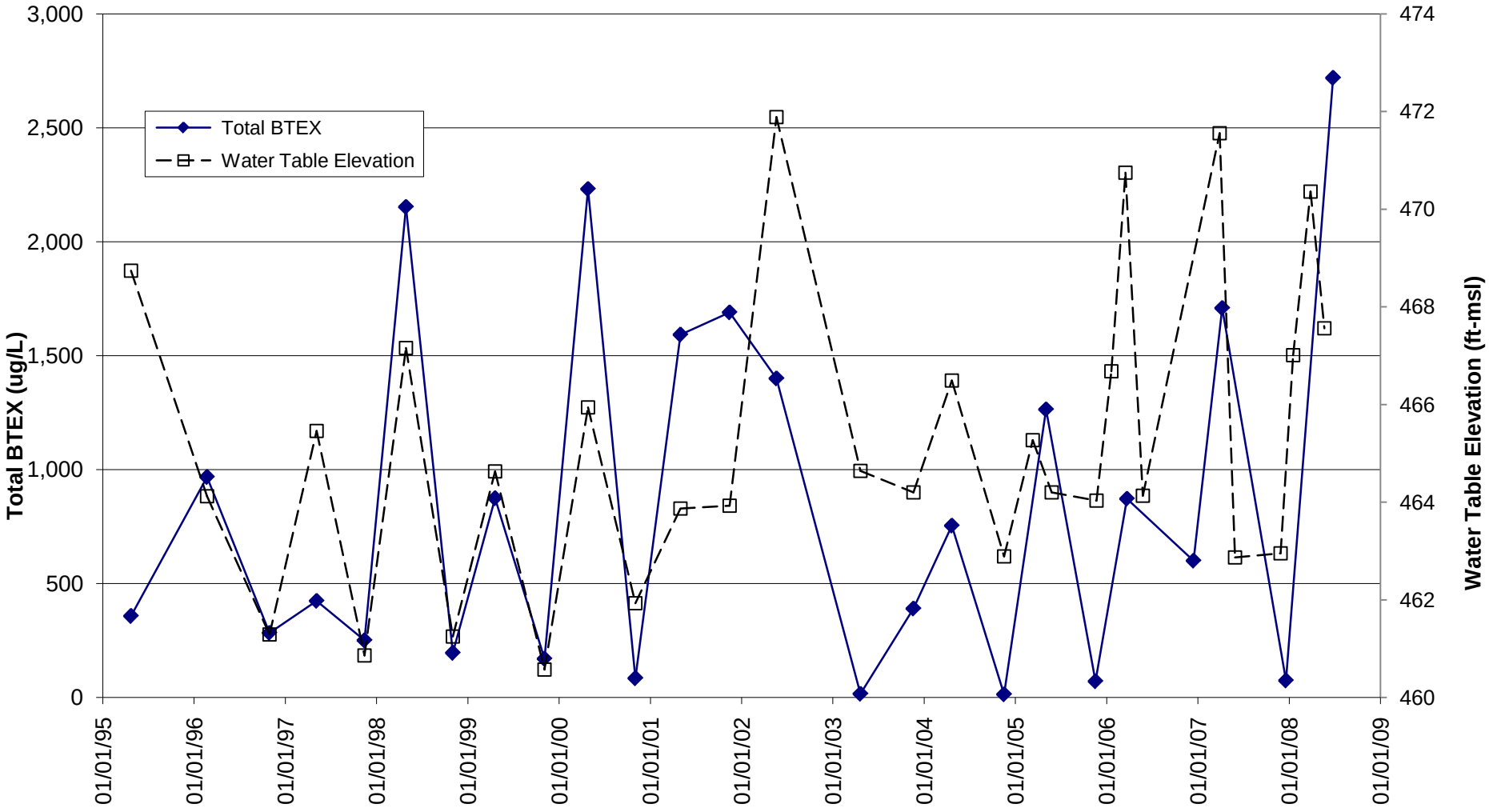

FIGURE 6-19. TOTAL BTEX CONCENTRATION VERSUS TIME FOR MONITORING WELL TH-2
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO

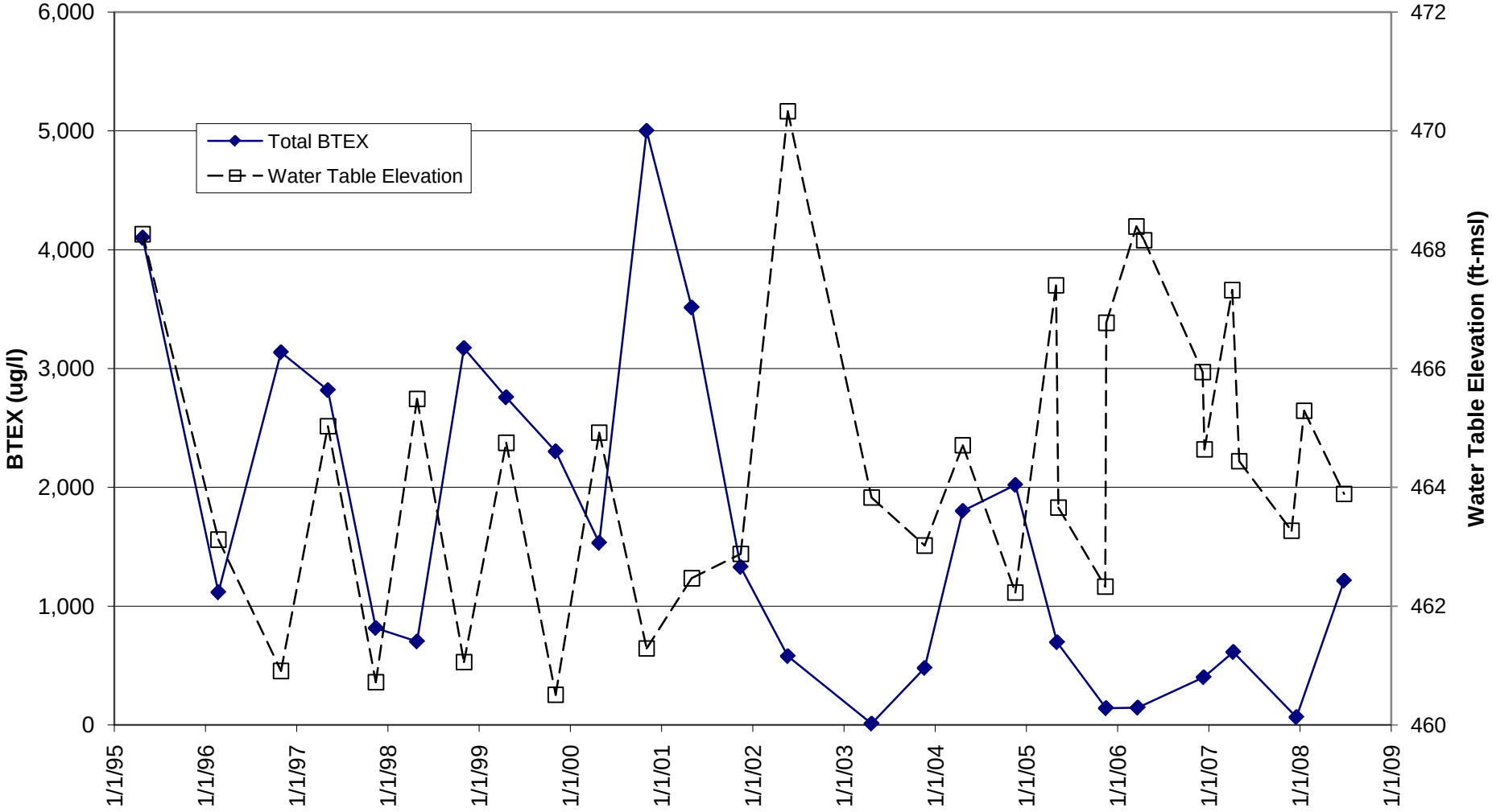
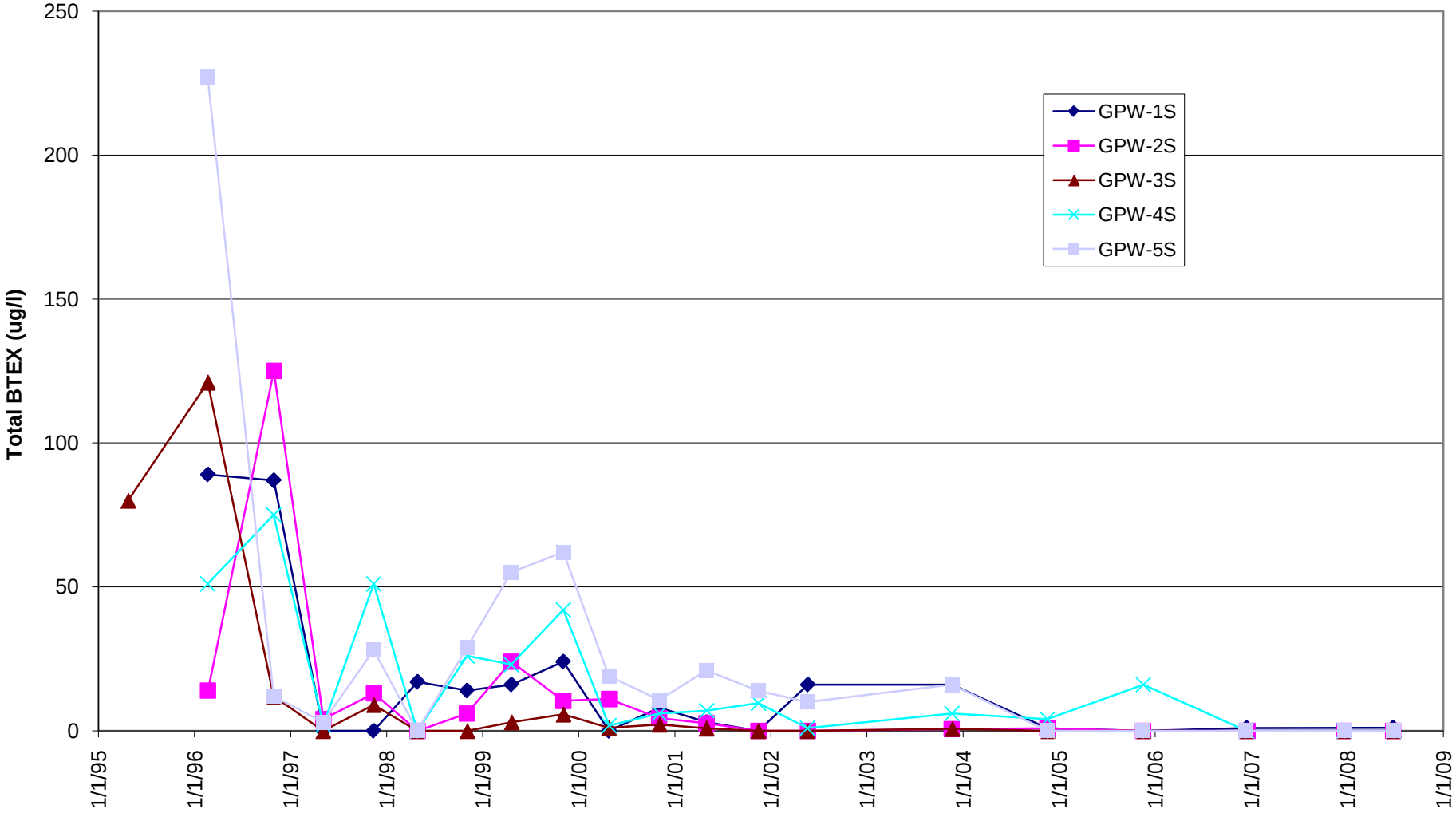
FIGURE 6-20. TOTAL BTEX CONCENTRATION VERSUS TIME FOR MONITORING WELLS GPW-1S, GPW-2S, GPW-3S, GPW-4S, AND GPW-5S
FIRST 2008 SEMIANNUAL MONITORING EVENT
CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO