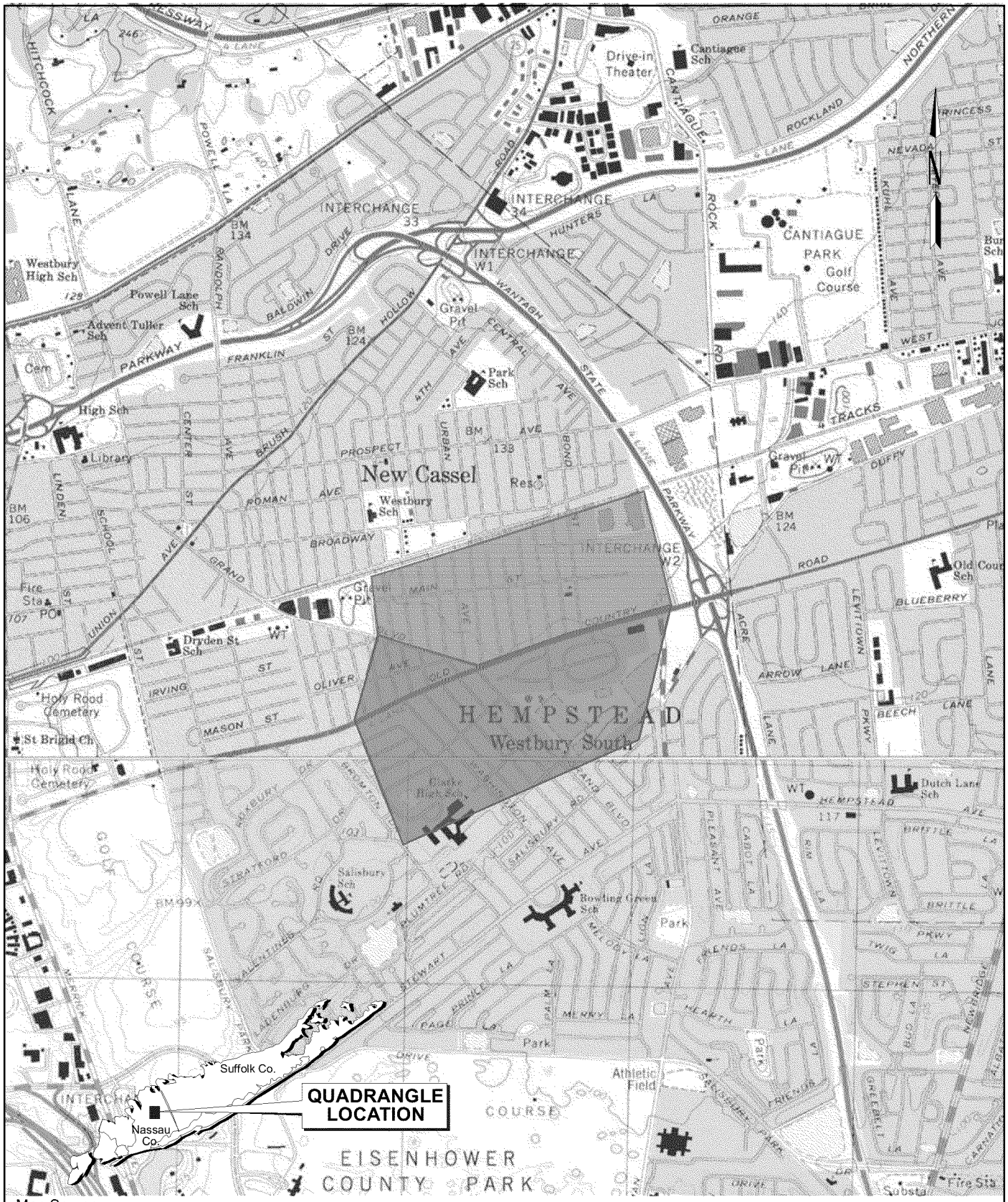
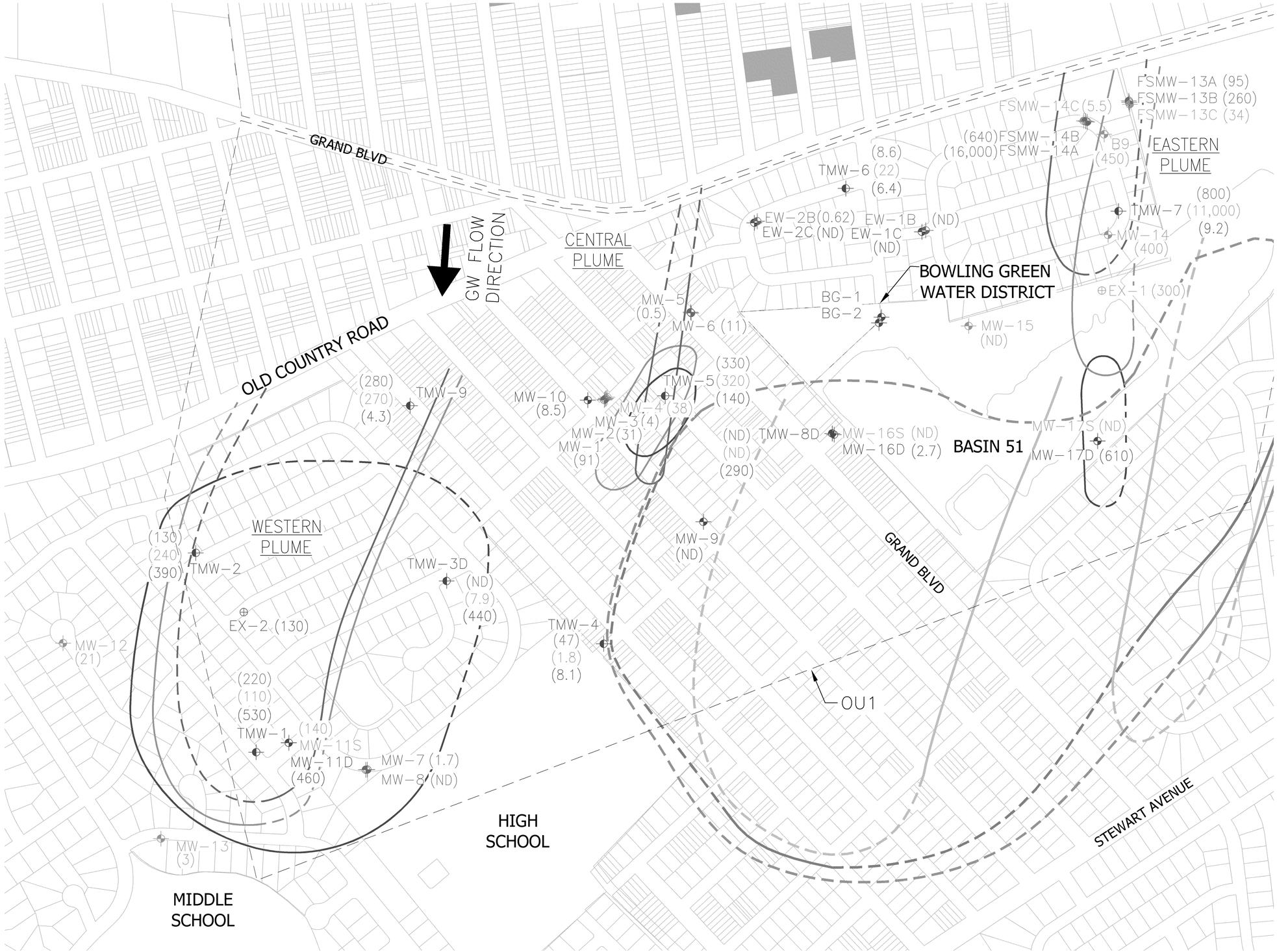


Map Source:

©1998-2006, Maptech Inc.
USGS 7.7-min. Quadrangle, Hicksville, NY, 1967/photorevised 1979, and Freeport, NY 1994. \Fig1_SiteLocation.des

HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Site Location Map**	**Figure** 2-1



LEGEND:

TMW-7	TEMPORARY MONITORING WELL LOCATION
MW-5	MONITORING WELL LOCATION
	LIMIT OF OPERABLE UNIT 1 (OU1)
	LIMIT OF NEW CASSEL INDUSTRIAL AREA
	SOURCE AREA PROPERTIES
BGS	BELOW GROUND SURFACE
PPB	PART PER BILLION
ug/l	MICROGRAMS PER LITER
PCE	TETRACHLOROETHENE
	< 175 FEET BGS
	175 – 250 FEET BGS
	> 250 FEET BGS
	100 PPB (ug/l) PCE ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (ug/l) PCE ISO CONCENTRATION CENTER AT 200 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (ug/l) PCE ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
(800)	PCE CONCENTRATION AT 150 FEET BGS
(11,000)	PCE CONCENTRATION AT 200 FEET BGS
(9.2)	PCE CONCENTRATION AT 285 FEET BGS
	5 PPB PCE ISO CONCENTRATION CENTER AT 150 FT BGS (DASHED WHERE INFERRED)
	5 PPB PCE ISO CONCENTRATION CENTER AT 200 FT BGS (DASHED WHERE INFERRED)
	5 PPB PCE ISO CONCENTRATION CENTER AT 285 FT BGS (DASHED WHERE INFERRED)

NOTES:

1. FIGURE DEPICTS MONITORING WELLS LOCATED WITHIN THE EPA OU1 AREA SOUTH OF OLD COUNTRY ROAD. NUMEROUS EXISTING MONITORING WELLS ARE FOUND NORTH OF OLD COUNTRY ROAD WITHIN INDUSTRIAL AREA THAT ARE NOT SHOWN.

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GRAPHIC SCALE

200 0 200 400

(IN FEET)
1 inch = 200 ft.

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Kansas City District

HDR

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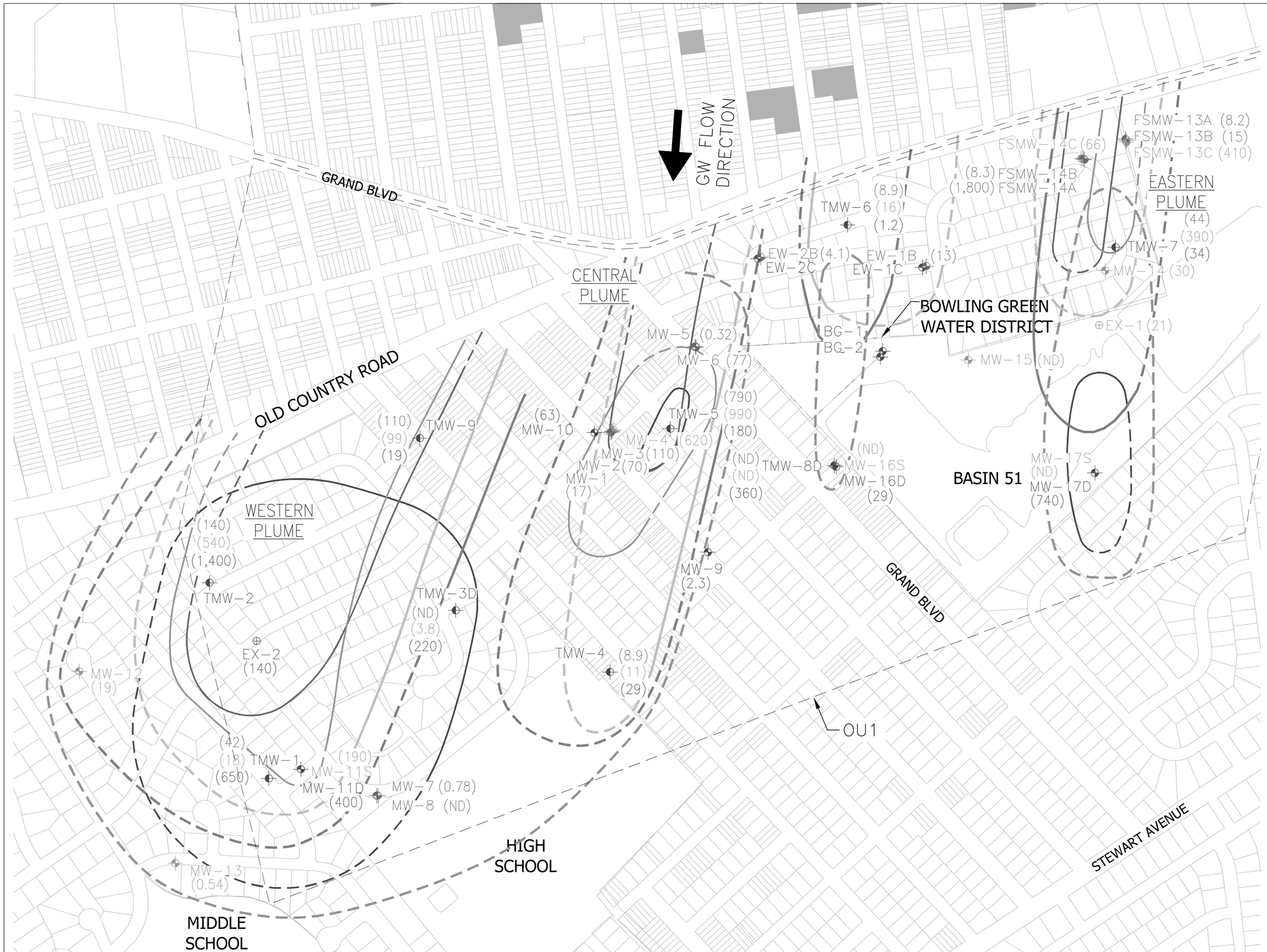
NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

PCE ISO-CONCENTRATION MAP

Sheet Reference Number:

3-1



DRAFT

LEGEND:

- TMW-7 — TEMPORARY MONITORING WELL LOCATION
- MW-5 — MONITORING WELL LOCATION
- LIMIT OF OPERABLE UNIT 1 (OU1)
- LIMIT OF NEW CASSEL INDUSTRIAL AREA
- SOURCE AREA PROPERTIES
- BGS — BELOW GROUND SURFACE
- PPB — PART PER BILLION
- ug/l — MICROGRAMS PER LITER
- TCE — TRICHLOROETHENE
- < 175 FEET BGS
- 175 – 250 FEET BGS
- > 250 FEET BGS
- 100 PPB (ug/l) TCE ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
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- 100 PPB (ug/l) TCE ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
- (800) — TCE CONCENTRATION AT 150 FEET BGS
- (11,000) — TCE CONCENTRATION AT 200 FEET BGS
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GRAPHIC SCALE

200 0 200 400

(IN FEET)
1 inch = 200 ft.

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Kansas City District

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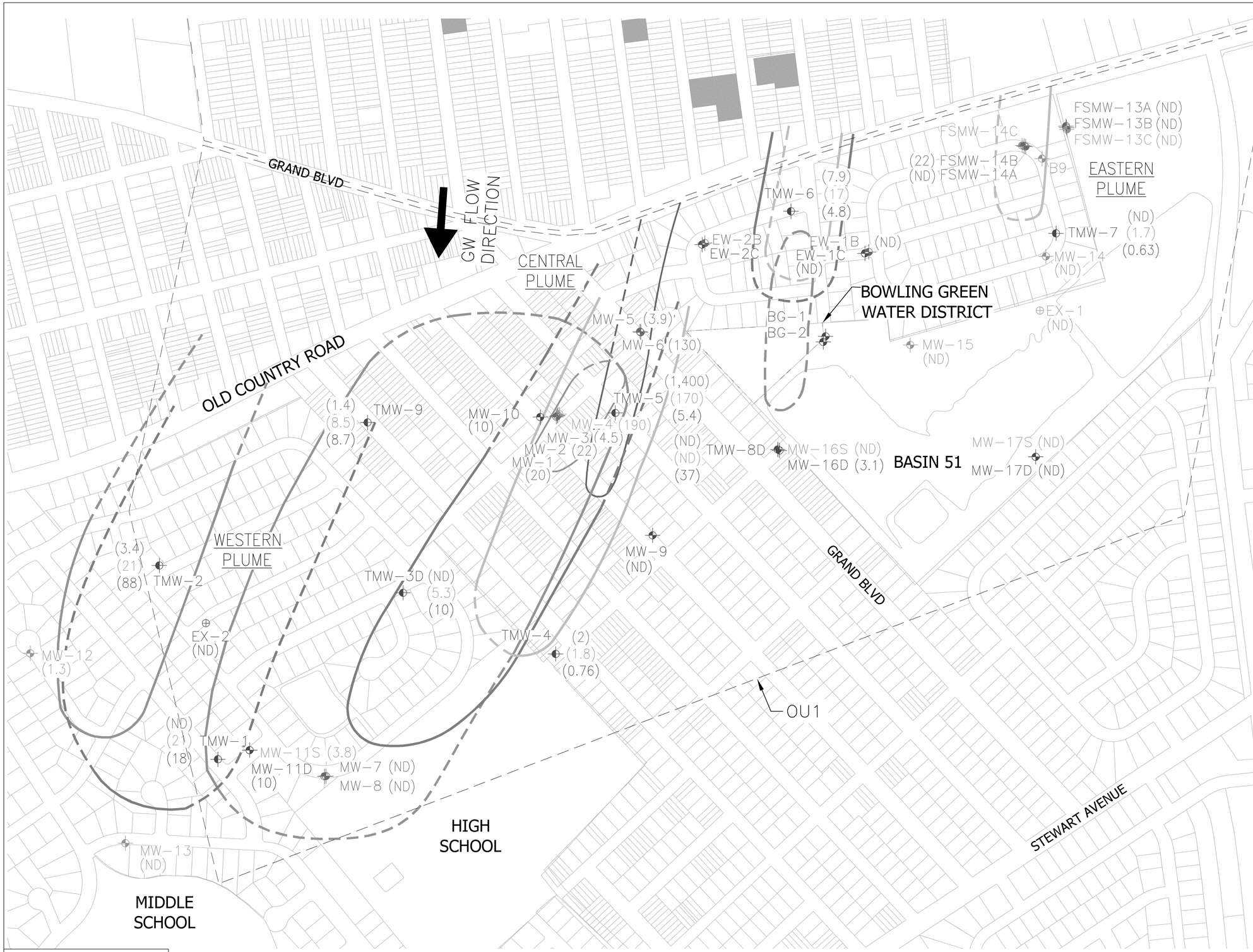
NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

TCE ISO-CONCENTRATION MAP

Sheet Reference Number:
3-2



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- MW-5 — MONITORING WELL LOCATION
- LIMIT OF OPERABLE UNIT 1 (OU1)
- LIMIT OF NEW CASSEL INDUSTRIAL AREA
- SOURCE AREA PROPERTIES
- BGS — BELOW GROUND SURFACE
- PPB — PART PER BILLION
- ug/l — MICROGRAMS PER LITER
- TCA — 1,1,1 – TRICHLOROETHANE
- < 175 FEET BGS
- 175 – 250 FEET BGS
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- 100 PPB (ug/l) TCA ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
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- 100 PPB (ug/l) TCA ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
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GRAPHIC SCALE

200 0 200 400

(IN FEET)
1 inch = 200 ft.

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Kansas City District

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KANSAS CITY, MISSOURI

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NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

TCA ISO-CONCENTRATION MAP

Sheet Reference Number:
3-3

N

LEGEND:

- TMW-7 TEMPORARY MONITORING WELL LOCATION
- MW-5 MONITORING WELL LOCATION
- LIMIT OF OPERABLE UNIT 1 (OU1)
- LIMIT OF NEW CASSEL INDUSTRIAL AREA
- SOURCE AREA PROPERTIES
- BGS BELOW GROUND SURFACE
- < 175 FEET BGS
- 175 – 250 FEET BGS
- > 250 FEET BGS

Existing NCIA EPA OU1 Study Area Temporary and Monitoring Wells

Well ID	Well Depth (BGS)
BG-1 (Well #1)	527
BG-2 (Well #2)	583
EW-1B	164
EW-1C	516
EW-2B	142
EW-2C	514
FS MW-13A	79
FS MW-13B	129
FS MW-13C	249
FS MW-14A	139
FS MW-14B	169
FS MW-14C	249
FSMW-6B	148
FSMW-7B	148
GWHP-01	150
GWHP-02	150
GWHP-03	150
GWHP-04	150
MW-1	110
MW-2	130
MW-3	150
MW-4	200
MW-5	110
MW-6	130
MW-7	110
MW-8	139
MW-10	285
MW-11 S	225
MW-11 D	285
MW-12	225
MW-13	210
MW-14	205
MW-15	205
MW-16 S	225
MW-16 D	285
MW-17 S	225
MW-17 D	285
EX-1	205
EX-2	285
N-10476	130
N-10478	121
N-11852	95
NRMW-1	70
NRMW-3	70
TMW-1	285
TMW-2	285
TMW-3D	502
TMW-4	285
TMW-5	285
TMW-6	285
TMW-7	285
TMW-8D	502
TMW-9	280

NOTES:

1. FIGURE DEPICTS MONITORING WELLS LOCATED WITHIN THE EPA OU1 AREA SOUTH OF OLD COUNTRY ROAD. NUMEROUS EXISTING MONITORING WELLS ARE FOUND NORTH OF OLD COUNTRY ROAD WITHIN INDUSTRIAL AREA THAT ARE NOT SHOWN.

GRAPHIC SCALE

300 0 300 600

(IN FEET)
1 inch = 300 ft.

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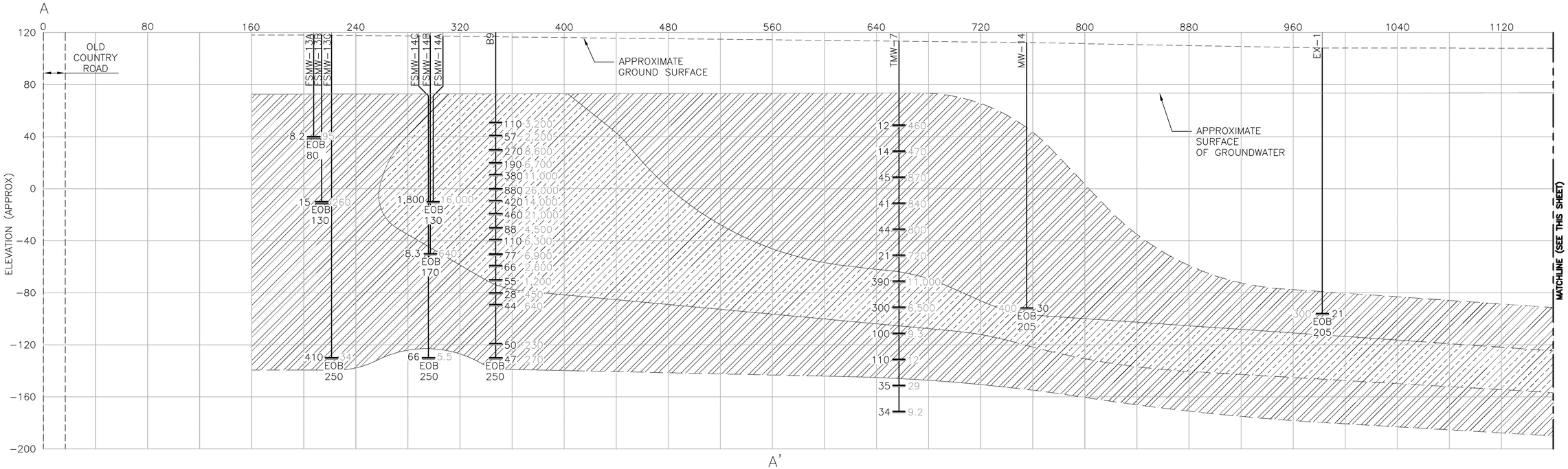
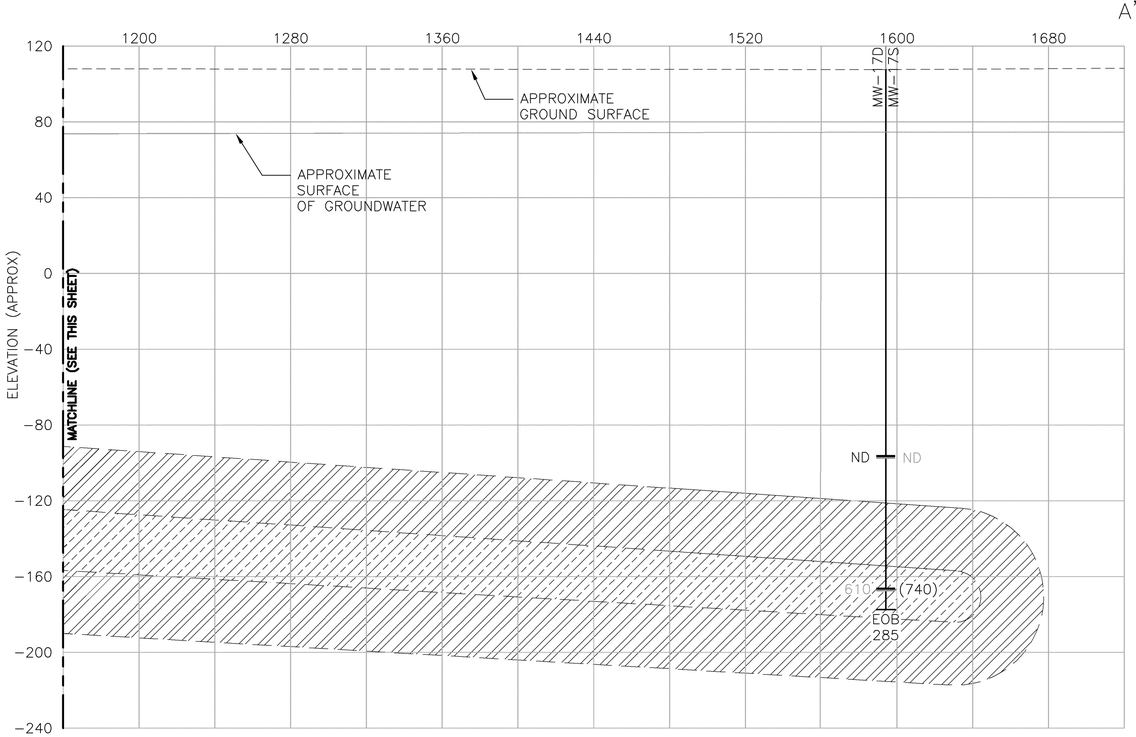
NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

EASTERN PLUME CROSS SECTION PLAN VIEW

Sheet Reference Number:

3–4





DRAFT

LEGEND

EOB	END OF BORING
BGS	BELOW GROUND SURFACE
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
PPB	PARTS PER BILLION
ug/l	MICROGRAMS PER LITER
27	PCE GROUNDWATER SAMPLE RESULTS (PPB)
220	TCE GROUNDWATER SAMPLE RESULTS (PPB)

TOTAL PCE + TCE CONCENTRATIONS

- 100 TO 1000 PPB
- GREATER THAN 1000 PPB

NOTES:

1. TEMPORARY MONITORING WELLS TMW-1 THROUGH TMW-9 WERE INSTALLED AND SAMPLED BY DVIRKA AND BARTILUCCI CONSULTING ENGINEERS (D&B) IN 2008. DURING INSTALLATION WELLS WERE SAMPLED AT MULTIPLE DEPTHS STARTING FROM THE GROUNDWATER TABLE TO THE TERMINAL DEPTH OF THE WELL.

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6. VERTICAL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL

VERTICAL GRAPHIC SCALE

40 0 40 80

(IN FEET)
1 inch = 40 ft.

HORIZONTAL GRAPHIC SCALE

40 0 40 80

(IN FEET)
1 inch = 40 ft.

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Kansas City District

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NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

EASTERN PLUME CROSS SECTION VIEW

Sheet Reference Number:
3-5

US Army Corps of Engineers ® Kansas City District

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LEGEND:

TMW-7	TEMPORARY MONITORING WELL LOCATION
MW-5	MONITORING WELL LOCATION
GWHP-01	HYDROPUNCH LOCATION
	LIMIT OF OPERABLE UNIT 1 (OU1)
	LIMIT OF NEW CASSEL INDUSTRIAL AREA
	SOURCE AREA PROPERTIES
BGS	BELOW GROUND SURFACE
PPB	PART PER BILLION
ug/l	MICROGRAMS PER LITER
ND	NOT DETECTED
FT	FEET
	< 175 FEET BGS
	175 – 250 FEET BGS
	> 250 FEET BGS

SUBSTANCE	NYSDEC TOGS 1.1.1 CLASS GA GROUNDWATER STANDARDS (ug/L)
1,1,1-Trichloroethane	5
1,1,2,2-Tetrachloroethane	5
1,1,2-Trichloro-1,2,2-trifluoroethane	5
1,1,2-Trichloroethane	1
1,1-Dichloroethane	5
1,1-Dichloroethene	5
1,2-Dibromoethane	0.006
1,2-Dichloroethane	0.6
1,2-Dichloropropane	1
Acetone	50
Benzene	1
Bromodichloromethane	50
Carbon Tetrachloride	5
Chlorobenzene	5
Chloroethane	50
Chloroform	7
Chloromethane	5
cis-1,2-Dichloroethene	5
Dibromochloromethane	50
Dichlorodifluoromethane	5
Ethylbenzene	5
Isopropylbenzene	5
m/p-Xylenes	5
Methyl tert-butyl Ether	10
Methylene Chloride	5
o-Xylene	5
Styrene	5
Tetrachloroethene	5
Toluene	5
trans-1,2-Dichloroethene	5
trans-1,3-Dichloropropene	0.4
Trichloroethene	5
Trichlorofluoromethane	5
Vinyl Chloride	2

WELL IDENTIFICATION
SCREEN DEPTH
SAMPLE DATE

NRMW-1 (70')	1/11/00	8/10/99	2/21/99
Acetone	ND	ND	3
Chloroform	ND	1	ND
Dibromochloromethane	ND	ND	ND

ANALYTICAL RESULT
ANALYTICAL PARAMETER

NOTES:

1. TEMPORARY MONITORING WELLS TMW-1 THROUGH TMW-9 WERE INSTALLED AND SAMPLED BY DVIRKA AND BARTILUCCI CONSULTING ENGINEERS (D&B) IN 2008. DURING INSTALLATION WELLS WERE SAMPLED AT MULTIPLE DEPTHS STARTING FROM THE GROUNDWATER TABLE TO THE TERMINAL DEPTH OF THE WELL.

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3. EARLY WARNING WELLS EW-1B, EW-2B, EW-1C AND EW-2C WERE INSTALLED BY THE NYSDEC IN 1998.

4. FROST STREET MONITORING WELLS FSMW-13A, B, AND C AND FSMW-14A, B, AND C WERE INSTALLED BY WALDEN ASSOCIATES IN DECEMBER 2004.

5. BORING B-9 WAS COMPLETED BY WALDEN ASSOCIATES IN 2004 DURING INVESTIGATION ACTIVITIES FOR THE FROST STREET SITES. DURING INSTALLATION GROUNDWATER SAMPLES WERE COLLECTED AT MULTIPLE DEPTHS FROM THE GROUNDWATER TABLE TO THE TERMINAL DEPTH OF THE BORING.

GRAPHIC SCALE
400 0 400 800
(IN FEET)
1 inch = 400 ft.

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NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Sheet Reference Number: 3-6

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LEGEND:

TMW-7	TEMPORARY MONITORING WELL LOCATION
MW-5	MONITORING WELL LOCATION
	LIMIT OF OPERABLE UNIT 1 (OU1)
	LIMIT OF NEW CASSEL INDUSTRIAL AREA
	SOURCE AREA PROPERTIES
BGS	BELOW GROUND SURFACE
PPB	PART PER BILLION
ug/l	MICROGRAMS PER LITER
PCE	TETRACHLOROETHENE
ISCO	IN SITU CHEMICAL OXIDATION
	< 175 FEET BGS
	175 – 250 FEET BGS
	> 250 FEET BGS
CVOCs	CHLORINATED VOLATILE ORGANIC COMPOUNDS
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 200 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
	PROPOSED AIR LINE
	PROPOSED TREATMENT BUILDING
	PROPOSED IN-WELL VAPOR STRIPPING WELL
	PROPOSED AREA FOR ISCO

GRAPHIC SCALE

200 0 200 400

(IN FEET)
1 inch = 200 ft.

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US Army Corps of Engineers
Kansas City District

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NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

ALTERNATIVE 8A
IN-WELL AIR STRIPPING
FULL TREATMENT

Sheet Reference Number:
5-1

N

LEGEND:

TMW-7	TEMPORARY MONITORING WELL LOCATION
MW-5	MONITORING WELL LOCATION
	LIMIT OF OPERABLE UNIT 1 (OU1)
	LIMIT OF NEW CASSEL INDUSTRIAL AREA
	SOURCE AREA PROPERTIES
BGS	BELOW GROUND SURFACE
PPB	PART PER BILLION
ug/l	MICROGRAMS PER LITER
CVOCs	CHLORINATED VOLATILE ORGANIC COMPOUNDS
ISCO	IN SITU CHEMICAL OXIDATION
	< 175 FEET BGS
	175 – 250 FEET BGS
	> 250 FEET BGS
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 200 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
	PROPOSED AIR LINE
	PROPOSED TREATMENT BUILDING
	PROPOSED GROUNDWATER TRANSMISSION LINE
	PROPOSED AREA FOR ISCO
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 100 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 80 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 60 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 50 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 40 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 20 GPM

GRAPHIC SCALE

200 0 200 400

(IN FEET)
1 inch = 200 ft.

DRAFT

US Army Corps of Engineers
Kansas City District

HDR

ORIGINAL SIGNED AND SEALED BY

SIGNATURE

Symbol	Description	Date	Appr.

Designed by: TC
Drawn by: SK
Checked by:
Submitted by: TC
Date: 01/23/13
Drawing code:
Plot scale:
CADD File Name:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

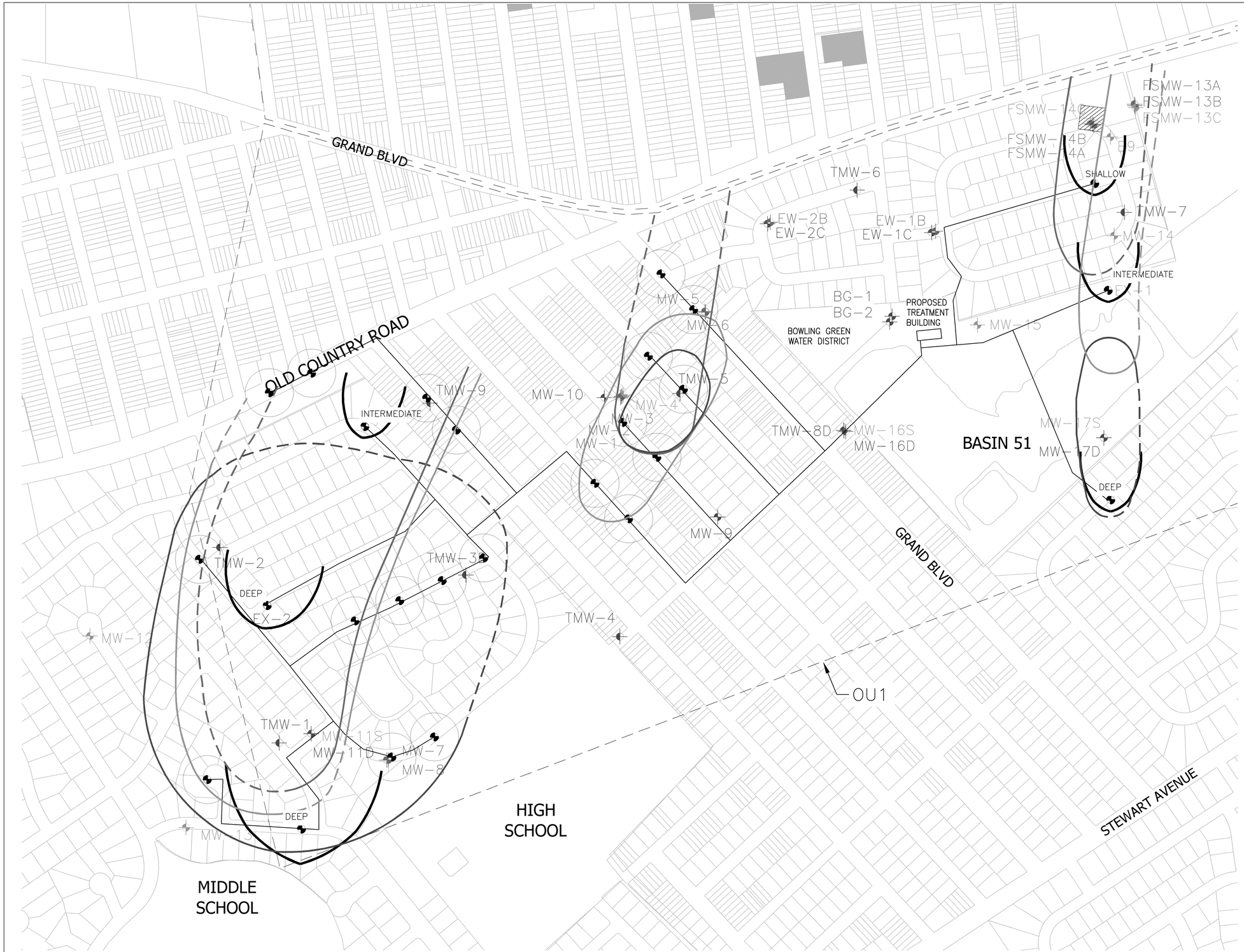
HDR|OBG JV

NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

ALTERNATIVE 8B
GROUNDWATER EXTRACTION / AIR STRIPPING FULL TREATMENT

Sheet Reference Number:

5–2



LEGEND:

TMW-7	TEMPORARY MONITORING WELL LOCATION
MW-5	MONITORING WELL LOCATION
	LIMIT OF OPERABLE UNIT 1 (OU1)
	LIMIT OF NEW CASSEL INDUSTRIAL AREA
	SOURCE AREA PROPERTIES
BGS	BELOW GROUND SURFACE
PPB	PART PER BILLION
ug/l	MICROGRAMS PER LITER
CVOCs	CHLORINATED VOLATILE ORGANIC COMPOUNDS
ISCO	IN SITU CHEMICAL OXIDATION
	< 175 FEET BGS
	175 – 250 FEET BGS
	> 250 FEET BGS
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 200 FEET BGS (DASHED WHERE INFERRED)
	100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
	PROPOSED TRANSMISSION PIPE
	PROPOSED TREATMENT BUILDING
	PROPOSED AREA FOR ISCO
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 60 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 40 GPM
	EXTRACTION WELL AND CAPTURE ZONE – PUMPED AT 20 GPM
	IN-WELL VAPOR STRIPPING WELL

GRAPHIC SCALE

200 0 200 400

(IN FEET)
1 inch = 200 ft.

DRAFT

US Army Corps of Engineers
Kansas City District

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NEW CASSEL INDUSTRIAL AREA
HEMPSTEAD, NEW YORK

ALTERNATIVE 9
COMBINED IN SITU AND EX SITU GROUNDWATER TREATMENT

Sheet Reference Number:

5-3