LeCrone, Darin

From: Michael Beyer [mbeyer@environcorp.com]
Sent: Wednesday, April 13, 2011 8:52 AM
To: LeCrone, Darin
Subject: FW: Arnold Magnetic Technologies WPCP [2011-EO-1001-1] TRC limit

RELEASABLE

Darin:

Thank you for speaking with me today regarding Arnold Magnetic Technologies' operating permit. Below is the email I sent to Al Keller last week regarding this issue, which I am forwarding to you for your information and use. I appreciate you taking the time to speak with Mr. Keller today regarding re-issuing the abovementioned permit with a "monitor only" TRC limit. Arnold is eager to have this resolved and to begin operating under the revised permit.

Should you have any questions or need additional clarification, please contact me at my number below.

Best Regards,
Mike

Michael Beyer, P.E. | Sr. Associate
ENVIRON | www.environcorp.com
4350 N Fairfax Drive | Suite 300 | Arlington, VA 22203
V: 703.516.2318 | mbeyer@environcorp.com

From: Michael Beyer
Sent: Tuesday, April 05, 2011 12:18 PM
To: 'Al.Keller@illinois.gov'
Cc: Brian Land; 'Jessica Wojick'; Robin Garibay
Subject: Arnold Magnetic Technologies WPCP [2011-EO-1001-1] TRC limit

Dear Mr. Keller:

Thank you for speaking to Robin Garibay and Jessica Wojick regarding Arnold Magnetic Technologies' Water Pollution Control Permit. Jessica received a copy of the permit (2011-EO-1001-1) issued March 31, 2011. She forwarded a copy to ENVIRON for our review.

We noticed one concern regarding the permit -- for Total Residual Chlorine (TRC), the permit contains a reference to "0.05 mg/L" under the heading "Class I Groundwater Quality Standards."

It is our understanding that there is not a Class I Groundwater Quality Standard for TRC. Thus, the reference to the Standards seems confusing. Also, based on the sampling Arnold conducted as part of its permit application, Arnold's average TRC was 0.1 mg/L. Thus, the reference to 0.05 mg/L limit is below Arnold's average TRC for fouling control.

Accordingly, could you revisit the reference to 0.05 mg/L for TRC? In our view, it would be appropriate for TRC to be subject to monitoring and reporting, without reference to a standard. If it would be helpful, we would be happy to participate in a telephone conference to discuss this.

Regards,
Michael Beyer

Michael Beyer, P.E. | Sr. Associate
ENVIRON | www.environcorp.com

4350 N Fairfax Drive | Suite 300 | Arlington, VA 22203
V: 703.516.2318 | mbeyer@environcorp.com

RELEASABLE

1029-11

RECEIVED
MAY 11 2011
Environmental Protection Agency
WPC-Permit Log In

RELEASABLE

Permittee/Applicant: Arnold Magnetic Technologies – Arnold Engineering
Engineer: Darin LeCrone DEL
Log# 1629-11
Date: May 11, 2011

Project:

Arnold Magnetic Technologies – Arnold Engineering was issued permit #2011-EO-1001 on January 12, 2011 for the renewal of an operating permit for the operation of a wastewater treatment and recycle system. Supplemental Permit # 2011-EO-1001-1 was issued on March 31, 2011 to revise Special Condition 4, for the monitoring of groundwater.

The Agency received an e-mail from Michael Beyer, P.E. of Environ concerning the inclusion of a limit on Total Residual Chlorine (TRC) based on a groundwater standard.

There is in fact no groundwater standard for TRC, so the inclusion of such a limit was an error on the part of the Agency. A supplemental permit will be issued to clarify the language of Special Condition 4, such that there is a monitoring requirement (only) for TRC and no limit.

Action: Issue Supplemental Permit

05/11/2011

SPEED OF PROCESSING FORM

DATE RECEIVED: 05/11/2011

PROJECT NAME: ARNOLD ENGINEERING CO

LOG NUMBER: 1629 LOG YEAR: 2011

PROJECT DESC: INDUSTRIAL TREATMENT PLT MAREN

ENGINEER: DEL

PROJECT TYPE: ITP

UNIT: I

LOCATION: MARENGO

PLANS: B

REGION: 2

RELEASABLE

FIPS COUNTY: 111

ORIGINAL LOG NO:

45 DAY FIELD: .F.

PREVIOUS PERMIT NO: 2011EO1001-1

CARD SENT: (Y or N)

LOAN/GRANT:

FEE SUBMITTED

CHECK NUMBER: 0 CHECK AMOUNT: 0

CHECK NUMBER: CHECK AMOUNT:

30 DAY REVIEW PERIOD ENDS

IDNR: / / IHPA: / /

SIGN-OFF AUTHORIZATIONS

	INITIALS	DATE
ENGINEER:	AEL	5/11/11
UNIT MANAGER:	DEL	5/11/11
SECTION MANAGER:	SAK w/DEL	5/11/11
DATE MAILED:	AJO	5-10-11

ACTION: ✓ PERMIT: ___ DENIAL: ___ VOIDED ___ NPR: ___ NOI: ___

PERMIT NUMBER: 2011-EO-1001-1 LOADING: ___ P.E.

ISSUE DATE: ___ ___ GPD DAF

EXPIRATION DATE: ___

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

RELEASABLE

LOG NUMBERS: 1629-11

PERMIT NO.: 2011-EO-1001-2

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS
PREPARED BY: Arnold Magnetic Technologies

DATE ISSUED: May 11, 2011

SUBJECT: ARNOLD ENGINEERING CORPORATION (MARENGO FACILITY) - Wastewater Treatment and Recycle System - McHenry County

PERMITTEE TO OPERATE

Arnold Magnetic Technologies - Arnold Engineering
300 North West Street
Marengo, Illinois 60152

Supplemental permit is hereby granted to the above designated permittee(s) to construct and/or operate water pollution control facilities, which were previously approved under Permits #2011-EO-1001 dated January 12, 2011 and #2011-EO-1001-1 dated March 31, 2011. Special Condition 4 has been revised below:

SPECIAL CONDITION 4: Monitoring and Reporting Requirements – The discharge to the percolation pond shall not exceed the Class I Groundwater Standards.

A. Samples shall be collected of the treated wastewater at a point representative of the discharge from Pond #4 (final stage) but prior to entry into the ditch tributary to the percolation field. All samples shall be analyzed for the following parameters:

Parameter	Sample Type	Frequency	Class I Groundwater Quality Standards
Total Residual Chlorine	Grab	Once/Month	No Standard
Nickel	Grab	Once/Month	0.1 mg/l
pH	Grab	Once/Month	6.5 - 9.0 SU

B. Flow rate from Pond #4 to the ditch tributary to the percolation field shall be recorded, in million gallons per day, as a daily maximum and monthly average.

C. Monitoring shall be conducted according to test procedures approved in 40 CFR 136 or other Agency approved methods. The monitoring results and flow data shall be tabulated and submitted to the Agency on a semi-annual basis (May and November of each year) to the following addresses:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
1021 North Grand Avenue East

Illinois Environmental Protection Agency
DWPC - Des Plaines Region
9511 W. Harrison
Des Plaines, Illinois 60016

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

SAK:SMT:1629-11.docx

DIVISION OF WATER POLLUTION CONTROL

Alan Keller by SAK

Alan Keller, P.E.
Manager, Permit Section

cc: EPA-Peoria FOS
Arnold Magnetic Technologies
Records - Industrial
Binds

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

RELEASABLE

The Illinois Environmental Protection Act (Illinois Revised Statutes Chapter 111-12. Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentations of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit;

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants;

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rules or Regulation effective thereunder as a result of the construction or development authorized by this permit.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT RELEASABLE

LOG NUMBERS: 1629-11

PERMIT NO.: 2011-EO-1001-2

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS
PREPARED BY: Arnold Magnetic Technologies

DATE ISSUED: May 11, 2011

SUBJECT: ARNOLD ENGINEERING CORPORATION (MARENGO FACILITY) - Wastewater Treatment and Recycle System - McHenry County

Post Office Box 19276
Springfield, Illinois 62794-9276

This operating permit expires on December 31, 2015.

All standard and special conditions and provisions of the original permit are also applicable to this permit unless specifically deleted or revised in this permit.

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

RELEASABLE

The Illinois Environmental Protection Act (Illinois Revised Statutes Chapter 111-12. Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentations of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit;

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants;

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rules or Regulation effective thereunder as a result of the construction or development authorized by this permit.

egsl
ENVIRONMENTAL GROUP
SERVICES LIMITED

557 West Polk Street, Suite 201
Chicago, IL 60607
312.447.1200 p
312.447.0922 f
www.egsl.com w

Right-to-Know Response Report

LPC # 1110650003 – McHenry County
Marengo – Arnold Magnetic Technologies
300 West LLC
Site Remediation Program/Technical Reports

Prepared for:
Mr. Dean Studer
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62794

Prepared by:
Bill Lennon
Project Manager

January 15, 2013

SUBJECT PROPERTY

300 West LLC
300 West Street
Marengo, Illinois 60152

Prepared For

Illinois Environmental Protection Agency
Site Remediation Program/Tim Zook, Project Manager
1021 North Grand Avenue East
Springfield, Illinois 62702

Prepared By

ENVIRONMENTAL GROUP SERVICES, LTD.
557 WEST POLK STREET, SUITE 201
CHICAGO, ILLINOIS 60607

On Behalf of

Ms. Mary Crandall
MPR Management Inc.
2340 South River Road – Suite 310
Des Plaines, Illinois 60018

January 15, 2013

EGSL Project Number: 805247

egsl

MW-9 and MW-10

$$\frac{90.83 \text{ ft} - 88.16 \text{ ft}}{239.2 \text{ ft}} = 0.0112$$

MW-13 and MW-1

$$\frac{103.57 \text{ ft} - 84.45 \text{ ft}}{711.1 \text{ ft}} = 0.0269$$

MW-12 and MW-1

$$\frac{95.91 \text{ ft} - 84.45 \text{ ft}}{226.3 \text{ ft}} = 0.0506$$

Average Gradient = 0.02324 ft/ft

2.4 Hydraulic Conductivity Testing

EGSL conducted in-situ hydraulic conductivity tests at four of the monitoring wells (MW-10, MW-13, MW-14, and MW-16). Due to the relatively instant recharge of the on-site wells, hydraulic conductivity testing was conducted by utilizing a *Midwest Geosciences Group* Pneumatic Hi-K Slug™ system in coordination with an *In-Situ Inc.* Level Troll 700 Instrument®. The data collected was input into the Aqtesolv® Hydraulic Conductivity program.

The site-specific hydraulic conductivity results were as follows:

MW-10: 0.001611 ft/sec
MW-13: 0.001740 ft/sec
MW-14: 0.001608 ft/sec
MW-16: 0.001966 ft/sec

The average of the above = 0.001731 ft/sec = 5.276 E-02 cm/sec.

See Appendix E for Field Data and Aqtesolv® Results.

2.5 Summary of Detected Groundwater Impaction

As documented in EGSL's Site Investigation Report, dated March 27, 2012, the following table identifies all concentrations of chemicals of concern that were detected above IEPA Tier 1 Remediation Objectives for Class I Groundwater (maximum concentrations highlighted):

Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
INORGANIC				
Aluminum	MW-3 MW-4	8.1 4.8	3.5	Class I Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
	MW-8	35		
	MW-9	30		
	MW-10	12		
	MW-11	7.2		
	MW-12	23		
	MW-13	44		
	MW-15	6.9		
	MW-16	5.3		
Antimony	MW-2	0.0069	0.0060	Class I Groundwater
	MW-8	0.0085		
Arsenic	MW-8	0.28	0.05	Class I Groundwater
Barium	MW-3	2.7	2.0	Class I Groundwater
	MW-8	2.4		
Chromium	MW-8	0.12	0.1	Class I Groundwater
	MW-13	0.16		
Iron	MW-2	11	5.0	Class I Groundwater
	MW-3	29		
	MW-4	26		
	MW-7	18		
	MW-8	360		
	MW-9	120		
	MW-10	41		
	MW-11	11		
	MW-12	39		
	MW-13	110		
	MW-15	13		
	MW-16	11		
	MW-21	31		
Lead	MW-2	0.016	0.0075	Class I Groundwater
	MW-3	0.073		
	MW-4	0.036		
	MW-6	0.0085		
	MW-8	0.13		
	MW-9	0.17		
	MW-10	0.11		
	MW-11	0.014		
	MW-12	0.041		
	MW-13	0.099		
	MW-15	0.013		
	MW-16	0.0085		
	MW-21	0.025		

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Manganese	MW-1	0.27	0.15	Class I Groundwater
	MW-2	0.5		
	MW-3	1.2		
	MW-4	0.75		
	MW-5	0.24		
	MW-6	0.26		
	MW-7	2		
	MW-8	31		
	MW-9	6.3		
	MW-10	2.8		
	MW-11	0.62		
	MW-12	2.5		
	MW-13	2.3		
	MW-14	0.19		
	MW-15	0.63		
	MW-16	0.58		
	MW-17	0.21		
	MW-18	0.24		
	MW-19	0.39		
	MW-21	0.92		
	MW-23	0.34		
Nickel	MW-8	0.32	0.1	Class I Groundwater
	MW-9	0.83		
	MW-13	0.13		
	MW-15	0.36		
Thallium	MW-8	0.0062	0.002	Class I Groundwater
Vanadium	MW-8	0.27	0.049	Class I Groundwater
	MW-9	0.12		
	MW-12	0.055		
	MW-13	0.13		
SVOC				
Bis(2-ethylhexyl)phthalate	MW-1	0.011	0.006	Class I Groundwater
VOC				
1,1,1-Trichloroethane	MW-4	0.3	0.2	Class I Groundwater
1,1-Dichloroehene	MW-1	0.017	0.007	Class I Groundwater
	MW-2	0.044		
	MW-4	0.036		
	MW-5	0.013		
	MW-6	0.012		
	MW-7	0.031		
	MW-13	0.012		
	MW-17	0.010		
	MW-19	0.016		
Tetrachloroethene	MW-4	0.014	0.005	Class I Groundwater
	MW-7	0.12		
	MW-8	0.01		
	MW-19	0.0092		
Trichloroethene	MW-6	0.01	0.005	Class I Groundwater
	MW-7	0.0078		

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Vinyl Chloride	MW-18	0.0025	0.002	Class I Groundwater

2.6 Tier 2 Analysis for GCGIR Class I Exceedances

R26

$$C_{(x)} = C_{source} \bullet \exp\left[\left(\frac{X}{2\alpha_x}\right) \bullet \left(1 - \sqrt{1 + \frac{4\lambda \bullet \alpha_x}{U}}\right)\right] \bullet erf\left[\frac{S_w}{4 \bullet \sqrt{\alpha_y \bullet X}}\right] \bullet erf\left[\frac{S_d}{2 \bullet \sqrt{\alpha_z \bullet X}}\right]$$

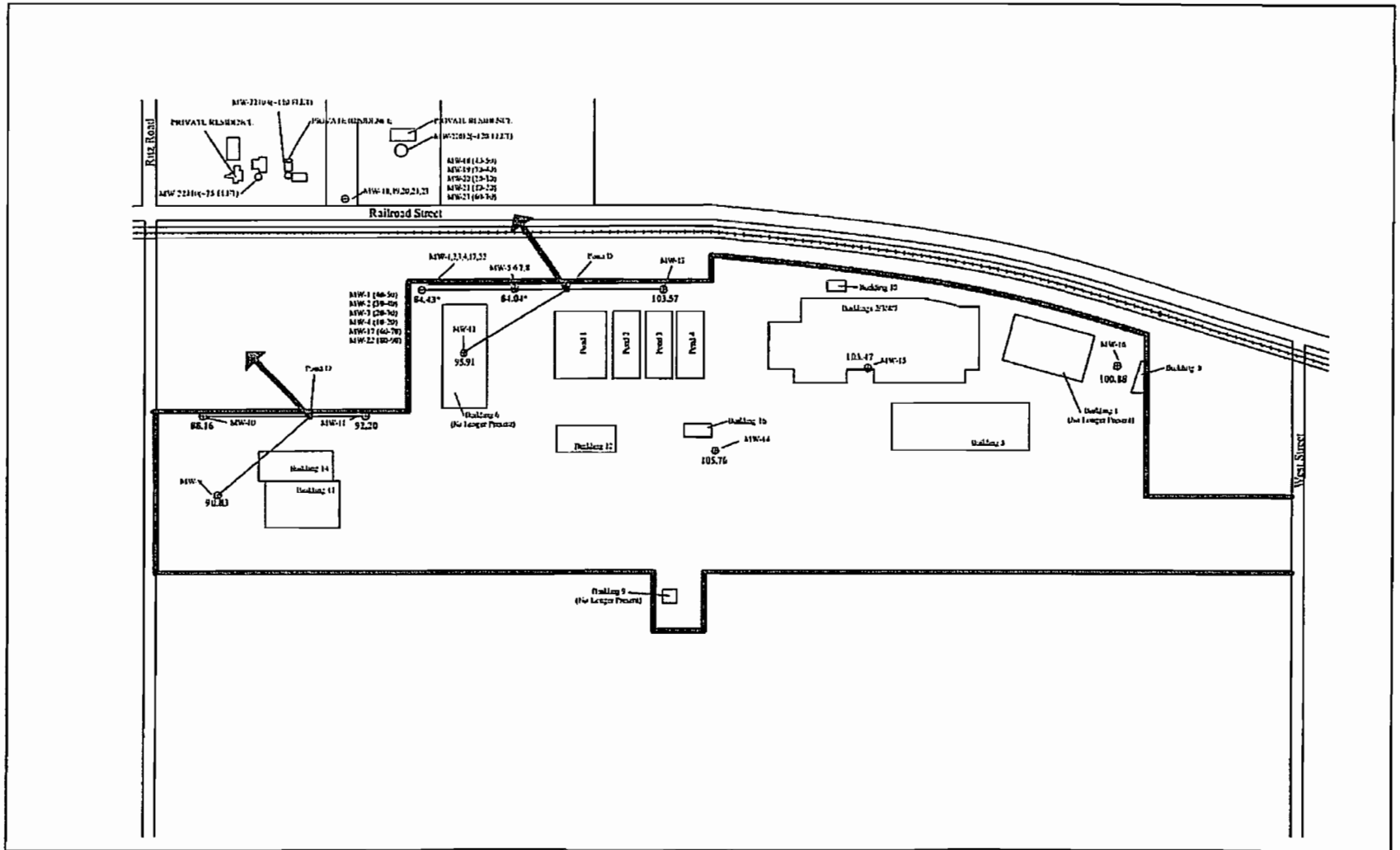
Tier 2 R26 analysis was conducted in order to determine the horizontal extent of Tier 1 GCGIR exceedances identified in Section 2.5. Site-specific parameters for each negatively impacted monitoring well location, in order to represent the most stringent ROs, were determined as follows:

General Site Specific Input Data:
Soil Type: Sand (2) – as determined from site-specific soil borings.
Class of Groundwater: Class I – as determined from on-site hydraulic conductivity tests.
Remediation Objective Comparison Values: Residential (1)
Hydraulic Gradient (i): 0.02324 ft/ft
Hydraulic Conductivity (k): 5.276 E-02 cm/sec
Thickness of Aquifer (da): 15 ft – as determined from saturated well depth.
Source Depth (Sd): 80 ft (as determined from "clean" water samples from MW-22).
Source Width (Sw): 50 ft (as determined from maximum delineation of adjacent borings).

All VOC detections above IEPA Tier 1 Remediation Objectives were modeled. The highest concentrations of Inorganics for each individual chemical were modeled.

R-26 analysis determined that, under the most stringent circumstances, potential groundwater migration distances of the above-referenced COCs traveled the following distances from their source locations before they reached their groundwater ROs:

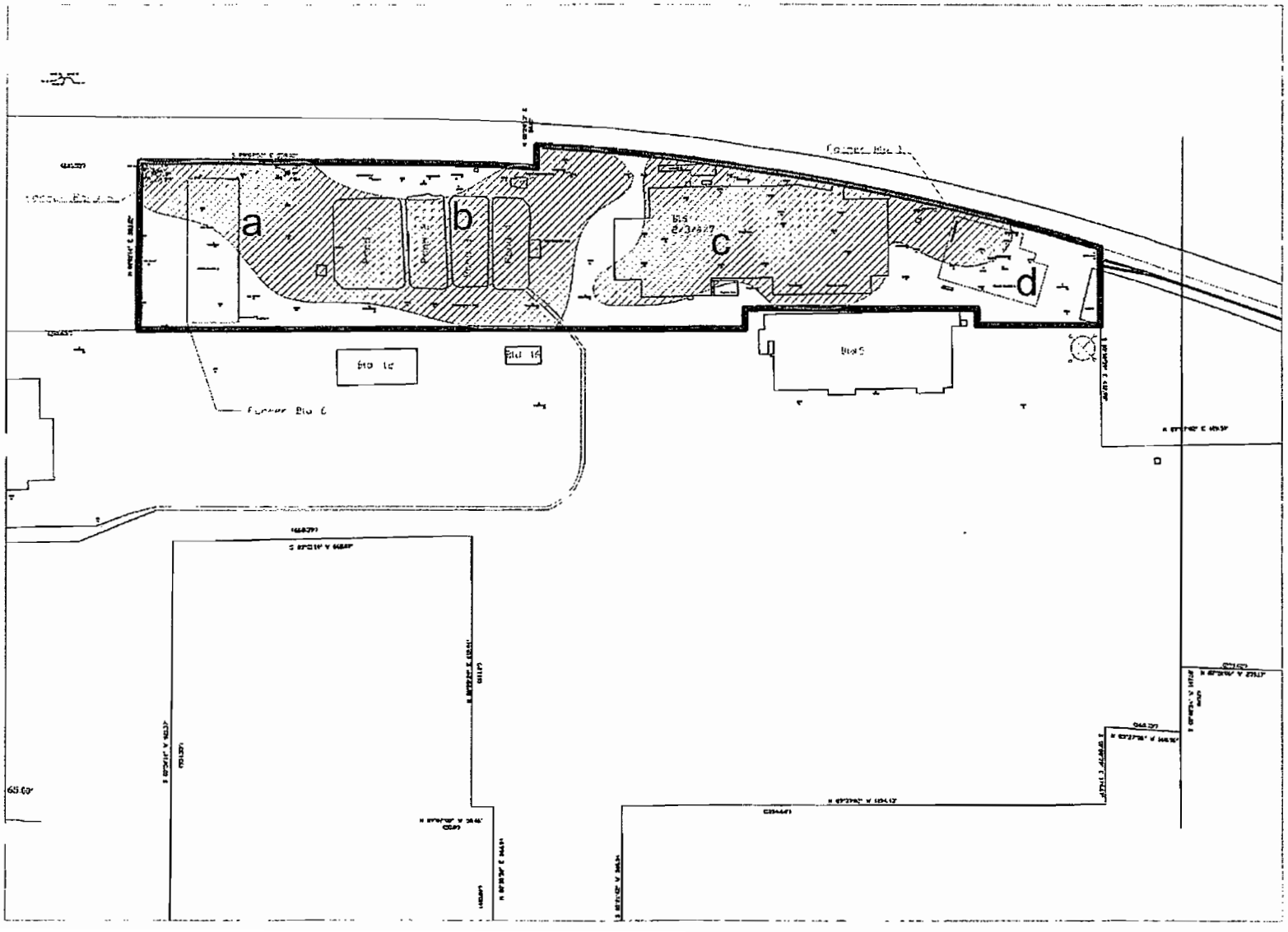
INORGANICS					
Aluminum	MW-13	10-20	44	21800	715
Antimony	MW-8	10-20	0.0085	2800	92
Arsenic	MW-8	10-20	0.28	12350	405
Barium	MW-3	20-30	2.7	2600	85
Chromium	MW-13	10-20	0.16	3300	108
Iron	MW-8	10-20	360	56800	1864
Lead	MW-9	10-20	0.17	30700	1008
Manganese	MW-8	10-20	31	97500	3200
Nickel	MW-9	10-20	0.83	16700	550



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

Project Name: Arnold Technologies 300 West Street Marengo, Illinois	Drawing Title: Groundwater Flow Direction	Drawing Legend: Monitoring Well ⊕ GW Elevation 95.03 Property Line	N
Project Number: 805247	Survey Date: 10.06.2010		GRAPHIC SCALE 0 400

AE009755
R 000075



egsl

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 17
Water - PCE
Plume

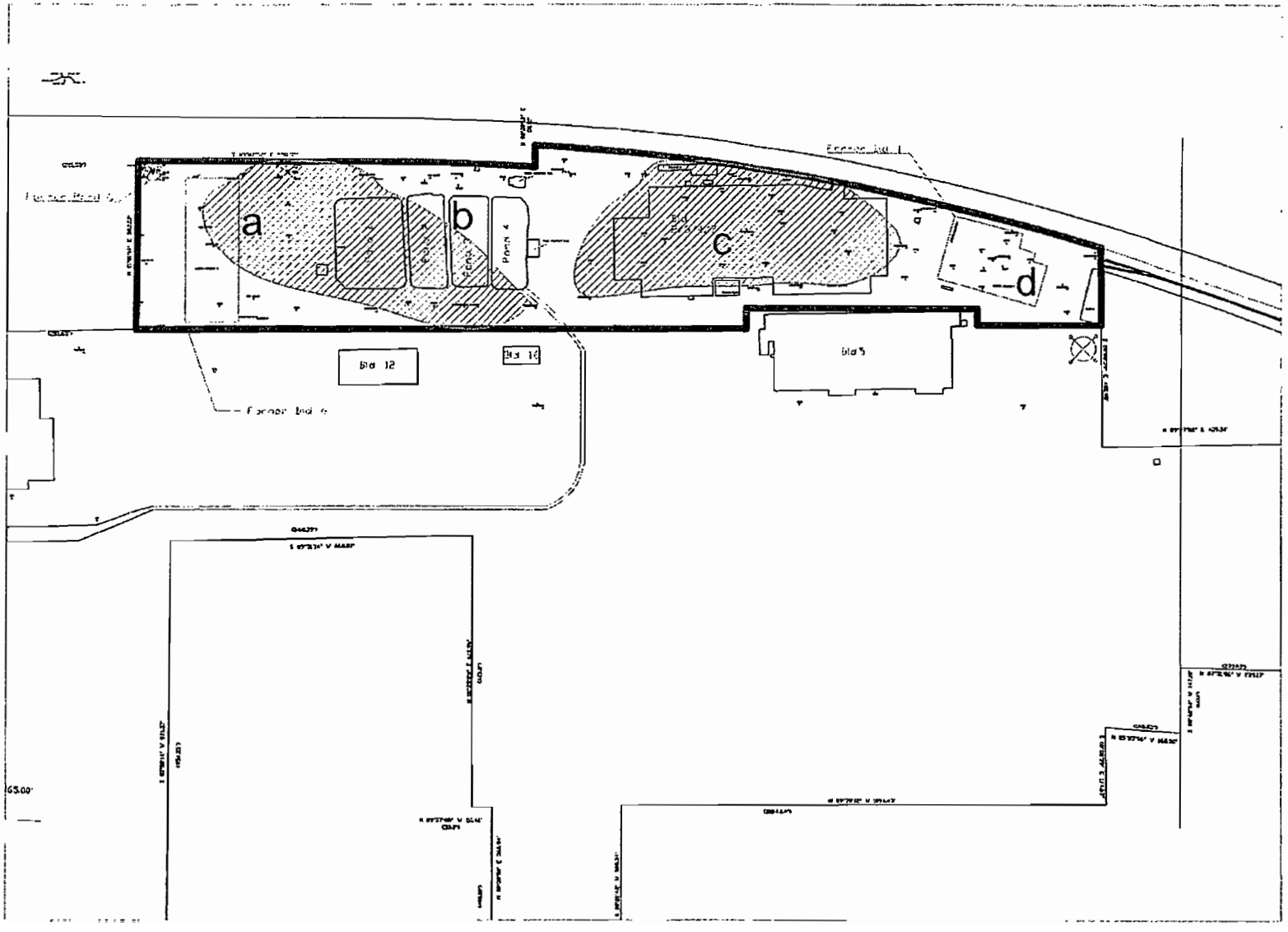
Subject Property

Contaminant Plume

Graphic Scale
0 200
1" = 200'

N

R 000076



egsl

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 18
Water - TCE
Plume

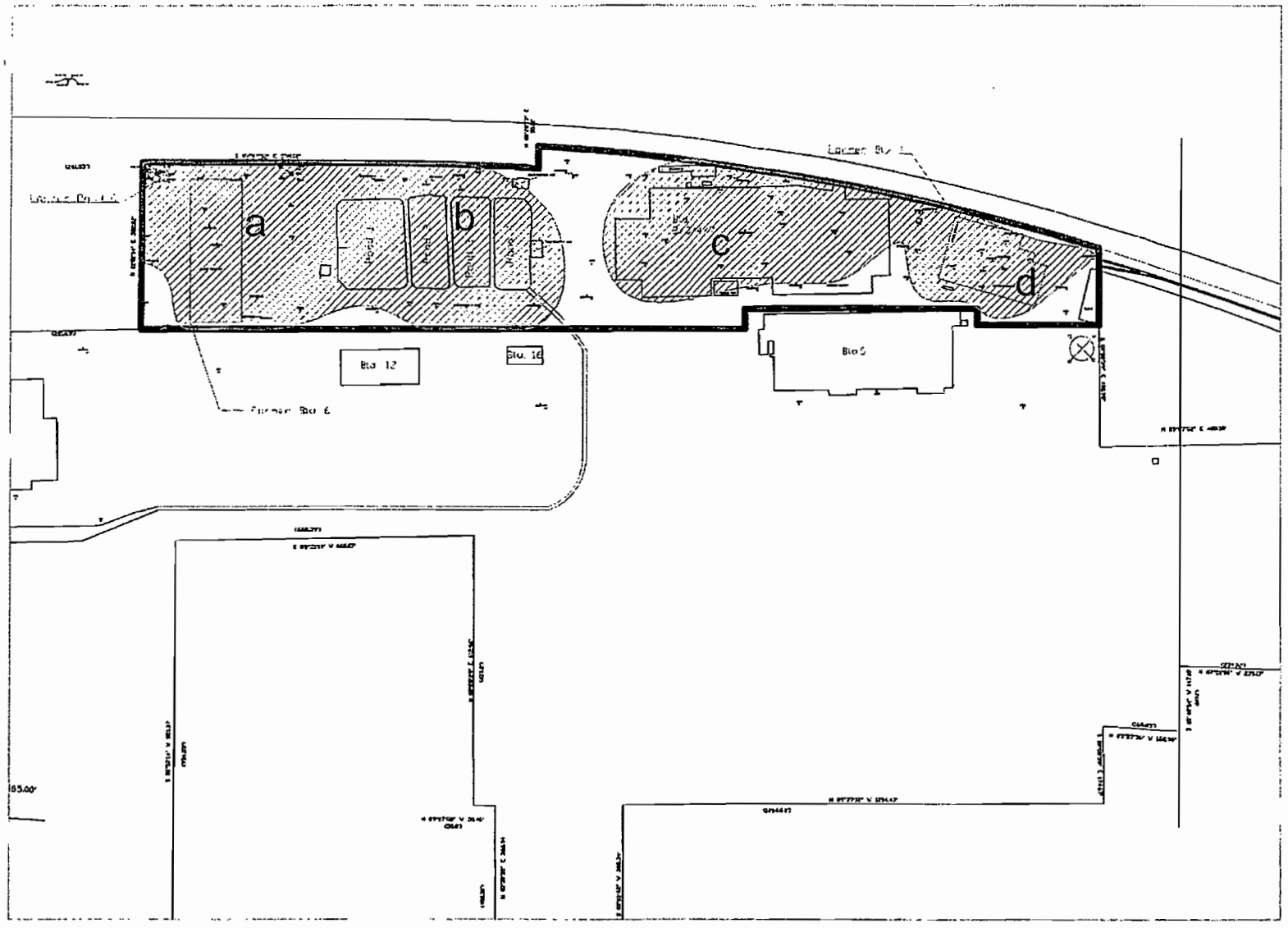
Subject Property

Contaminant Plume

Graphic Scale
0 200
1" = 200'

N

R 000077



egsl

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 10
Water - 11 DCE Plume

Subject Property

Contaminant Plume

Graphic Scale

0 200

1" = 200'

N

R 000078

FILE COPY

19-52862

1110650003
Arnold Magnetic Technologies

SRI Tech

Illinois Environmental Protection Agency

Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

Site Remediation Program Form (DRM-2)
(To be Submitted with all Plans and Reports)

You may complete this form online, save a copy, print, sign and mail it to the address above.

I. Site Identification:

Site Name: Arnold Magnetic Technologies
Street Address: 300 N. West Street P.O. Box:
City: Marengo State: IL Zip Code: 60152 Phone: (847) 376-2013
Illinois Inventory ID Number: 1110650003 IEMA Incident Number:

II. Remediation Applicant:

Applicant's Name: Mary Crandall
Company: MPR Management, Inc.
Street Address: 2340 South River Road Suite 310 P.O. Box:
City: Des Plaines State: IL Zip Code: 60018 Phone: (847) 376-2013
Email Address: mary@mprealty.net

I hereby request that the Illinois EPA review and evaluate the attached project documents in accordance with the terms and conditions of the Environmental Protection Act (415 ILCS 5), implementing regulations, and the review and evaluation services agreement.

Remediation Applicant's Signature: Mary Crandall Date: 1/18/13

III. Contact Person for Remediation Applicant:

Contact's Name: same as above
Company:
Street Address: P.O. Box:
City: State: Zip Code: Phone:
Email Address:

Contact Person for Consultant:

Contact's Name: Bill Lennon
Company: EGSL
Street Address: 557 West Polk Street Suite 201 P.O. Box:
City: Chicago State: IL Zip Code: 60607 Phone: 312.447.1200
Email Address: bill@egsl.com

IV. Review & Evaluation Licensed Professional Engineer or Geologist ("RELPEG"), if applicable:

RELPEG's Name:
Company:
Street Address: P.O. Box:
City: State: Zip Code: Phone:
Email Address:

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE
FEB 01 2013
REVIEWER EAV

RECEIVED
JAN 24 2013
IEPA/BOL

IL 532-2547
LPC 566 June 2012

V. Project Documents Being Submitted:

Document Title: Right-to-Know Response Report
Date of Preparation of Plan or Report: Jan. 15, 2013
Prepared by: EGSL
Prepared For: IEPA/Dean Studer

Type of Document Submitted:

- ☐ Site Investigation Report - Comprehensive
- ☐ Site Investigation Report - Focused
- ☐ Remediation Objectives Report - Tier 1 or 2
- ☐ Remediation Objectives Report - Tier 3
- ☐ Remedial Action Plan
- ☐ Remedial Action Completion Report
- ☐ Sampling Plan
- ☐ Health and Safety Plan
- ☑ Community Relations Plan
- ☐ Risk Assessment
- ☐ Containment Fate & Transport Modeling
- ☐ Other: _____

Document Title: _____
Date of Preparation of Plan or Report: _____
Prepared by: _____
Prepared For: _____

Type of Document Submitted:

- ☐ Site Investigation Report - Comprehensive
- ☐ Site Investigation Report - Focused
- ☐ Remediation Objectives Report - Tier 1 or 2
- ☐ Remediation Objectives Report - Tier 3
- ☐ Remedial Action Plan
- ☐ Remedial Action Completion Report
- ☐ Sampling Plan
- ☐ Health and Safety Plan
- ☐ Community Relations Plan
- ☐ Risk Assessment
- ☐ Containment Fate & Transport Modeling
- ☐ Other: _____

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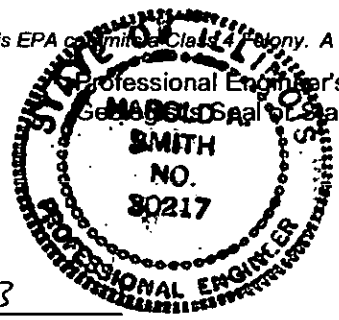
- ☐ Community Relations Plan
- ☐ Risk Assessment
- ☐ Containment Fate & Transport Modeling
- ☐ Other: _____

VI. Professional Engineer's or Geologist's Seal or Stamp:

I attest that all site investigations or remedial activities that are subject of this plan(s) or report(s) were performed under my direction, and this document and all attachments were prepared under my direction or reviewed by me, and to the best of my knowledge and belief, the work described in the plan and report has been designed or completed in accordance with the Illinois Environmental Protection Act (415 ILCS 5), 35 Ill. Adm. Code 740, and generally accepted engineering practices or principles of professional geology, and the information presented is accurate and complete.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Professional Engineer's or Geologist's Seal or Stamp:



Engineer's or Geologist's Name: Harold A. Smith, P.E.

Company: EGSL

Registration Number: 062-030217 Phone: 312.447.1200

License Expiration Date: 11/30/2013

Signature: Harold A. Smith Date: 1/18/13

Note: The authority of a Licensed Professional Geologist to certify documents submitted to the Illinois Environmental Protection Agency for review and evaluation pursuant to Title XVII of the Environmental Protection Act is limited to Site Investigation Reports (415 ILCS 58.7(f), as amended by P. A. 92-0735, effective July 25, 2002. A Licensed Professional Geologist cannot certify Remediation Objectives Reports, Remedial Action Plans or Remedial Action Completion Reports.

All information submitted is available to the public except when specifically designated by the Remediation Applicant to be treated confidentially as a trade secret or secret process in accordance with the Illinois Compiled Statutes, Section 7(a) of the Environmental Protection Act, applicable Rules and Regulations of the Illinois Pollution Control Board and applicable Illinois EPA rules and guidelines. The Illinois EPA is authorized to require this information under Sections 415 ILCS 5/58 - 58.12 of the Environmental Protection Act and regulations proumulgated thereunder. Disclosure of this information is required as a condition of participation in the Site Remediation Program. Failure to do so may prevent this form from being processed and could result in your plan(s) or report(s) being rejected. This form has been approved by the Forms Management Center.

FILE COPY

13-52862

1110650003
Arnold Magnetic Technologies
SR/Tech

egsl
ENVIRONMENTAL GROUP
SERVICES LIMITED

557 West Polk Street, Suite 201
Chicago, IL 60607
312.447.1200 p
312.447.0922 f
www.egsl.com w

Right-to-Know Response Report

LPC # 1110650003 – McHenry County
Marengo – Arnold Magnetic Technologies
300 West LLC
Site Remediation Program/Technical Reports

Prepared for:
Mr. Dean Studer
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62794

Prepared by:
Bill Lennon
Project Manager

January 15, 2013

Reducing the Risks. Stopping the Causes. Correcting the Effects.

SUBJECT PROPERTY

300 West LLC
300 West Street
Marengo, Illinois 60152

Prepared For

Illinois Environmental Protection Agency
Site Remediation Program/Tim Zook, Project Manager
1021 North Grand Avenue East
Springfield, Illinois 62702

Prepared By

ENVIRONMENTAL GROUP SERVICES, LTD.
557 WEST POLK STREET, SUITE 201
CHICAGO, ILLINOIS 60607

On Behalf of

Ms. Mary Crandall
MPR Management Inc.
2340 South River Road – Suite 310
Des Plaines, Illinois 60018

January 15, 2013

EGSL Project Number: 805247

egsl

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report is in response to the IEPA' Office of Community Relations correspondence letter (Letter), dated November 20, 2012. The purpose of this report is to address the six comments (Comments) identified in the Letter (complete Letter can be found in Attachment A).

2. SUPPLEMENTAL INFORMATION

The purpose of this section is to provide supplemental information needed in order to address portions of the Comments. This includes an on-site groundwater monitoring well elevation survey, groundwater flow direction modeling, hydraulic gradient determination, and hydraulic conductivity calculations. This information was necessary in order to perform Tier 2 modeling of subsurface groundwater impaction.

2.1 Groundwater Monitoring Well Elevation Survey

EGSL conducted a well elevation survey in order to determine the site-specific direction of groundwater flow. After a benchmark location was chosen, the height of the measuring tool was recorded as to serve as a reference height for the monitoring wells. The tops of the well risers and tops of the protective casings were then measured and recorded. Water level measurements were collected from all of the on-site wells using an electronic water level indicator and recorded in field logs. The water level indicator was decontaminated between monitoring wells with distilled water and an Alconox solution.

Elevation Survey can be found in Attachment B.

2.2 Groundwater Flow Direction

Due to the size of the Subject Property, and the relatively large number of on-site groundwater monitoring wells installed by EGSL (18 total on-site wells), site-specific groundwater flow direction calculations were conducted in two separate areas. These areas were chosen due to the relatively elevated concentrations of chemicals of concern in the groundwater. Groundwater flow direction was obtained by locating an arbitrary location (point D) that had the same water-level elevation as the well with the mid-water elevation. To find point D, the 3-point mathematical proportional method was utilized:

Let x = the distance from the low water elevation to point D.

$$\frac{\textbf{Elevation (mid point – low point)}}{\textbf{Elevation (high point – low point)}} = \frac{x}{\textbf{distance (low point to high point)}}$$

The first area consisted of monitoring wells MW-9, MW-10, and MW-11. This area is located north of the percolation field (aka Pond #5):

$$\frac{\text{90.83 feet (MW-9)} - \text{88.16 feet (MW-10)}}{\text{92.20 feet (MW-11)} - \text{88.16 feet (MW-10)}} = \frac{x}{474 \text{ feet}}$$

x = 313.26 feet = Point D

The second area consisted of monitoring wells MW-1*, MW-12, and MW-13. This area is located to the north and northwest of the pond systems, historical Building #6, and historical Pond #6. *Please note that MW-1 is part of a nested well system with MW-2, MW-3, and MW-4. All four wells contained a groundwater elevation that was +/- 0.04 feet of each other; as such the average elevation of 84.43 feet was utilized.

$$\frac{\text{95.91 feet (MW-12)} - \text{84.43 feet (MW-1*)}}{\text{103.57 feet (MW-13)} - \text{84.43 feet (MW-1*)}} = \frac{x}{711 \text{ feet}}$$

x = 426.0 feet = Point D

After plotting Point D for both surveyed areas, the groundwater flow direction was determined to be to the northwest (see Attachment C for Groundwater Flow Direction Map). Please note that this coincides with the information historical documentation of groundwater flow direction, as determined in the Monitoring Well Network Installation and Groundwater Flow Assessment, prepared by *Roux Associates*, Inc., dated May 17, 1990. A complete copy of this report can be found in Attachment D.

2.3 Hydraulic Gradient

Hydraulic gradient was recalculated by determining the difference in elevations of the groundwater levels between two wells, and dividing that number by the distance between the two wells in the direction of groundwater flow. EGSL selected five sets of wells located throughout the entire Subject Property in order to obtain a site-specific average hydraulic gradient. After determining the gradient for each of the five selected areas, the site-specific average was calculated.

MW-11 and MW-1

$$\frac{92.20 \text{ ft} - 84.45 \text{ ft}}{408.2 \text{ ft}} = 0.0190$$

MW-11 and MW-10

$$\frac{92.20 \text{ ft} - 88.16 \text{ ft}}{474.2 \text{ ft}} = 0.0085$$

MW-9 and MW-10
90.83 ft – 88.16 ft = 0.0112
239.2 ft

MW-13 and MW-1
103.57 ft – 84.45 ft = 0.0269
711.1 ft

MW-12 and MW-1
95.91 ft – 84.45 ft = 0.0506
226.3 ft

Average Gradient = 0.02324 ft/ft

2.4 Hydraulic Conductivity Testing

EGSL conducted in-situ hydraulic conductivity tests at four of the monitoring wells (MW-10, MW-13, MW-14, and MW-16). Due to the relatively instant recharge of the on-site wells, hydraulic conductivity testing was conducted by utilizing a *Midwest Geosciences Group* Pneumatic Hi-K Slug™ system in coordination with an *In-Situ Inc.* Level Troll 700 Instrument®. The data collected was input into the Aqtesolv® Hydraulic Conductivity program.

The site-specific hydraulic conductivity results were as follows:

MW-10: 0.001611 ft/sec
MW-13: 0.001740 ft/sec
MW-14: 0.001608 ft/sec
MW-16: 0.001966 ft/sec

The average of the above = 0.001731 ft/sec = 5.276 E-02 cm/sec.

See Appendix E for Field Data and Aqtesolv® Results.

2.5 Summary of Detected Groundwater Impaction

As documented in EGSL's Site Investigation Report, dated March 27, 2012, the following table identifies all concentrations of chemicals of concern that were detected above IEPA Tier 1 Remediation Objectives for Class I Groundwater (maximum concentrations highlighted):

Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
INORGANIC				
Aluminum	MW-3 MW-4	8.1 4.8	3.5	Class I Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
	MW-8	35		
	MW-9	30		
	MW-10	12		
	MW-11	7.2		
	MW-12	23		
	MW-13	44		
	MW-15	6.9		
	MW-16	5.3		
Antimony	MW-2	0.0069	0.0060	Class I Groundwater
	MW-8	0.0085		
Arsenic	MW-8	0.28	0.05	Class I Groundwater
Barium	MW-3	2.7	2.0	Class I Groundwater
	MW-8	2.4		
Chromium	MW-8	0.12	0.1	Class I Groundwater
	MW-13	0.16		
Iron	MW-2	11	5.0	Class I Groundwater
	MW-3	29		
	MW-4	26		
	MW-7	18		
	MW-8	360		
	MW-9	120		
	MW-10	41		
	MW-11	11		
	MW-12	39		
	MW-13	110		
	MW-15	13		
	MW-16	11		
	MW-21	31		
Lead	MW-2	0.016	0.0075	Class I Groundwater
	MW-3	0.073		
	MW-4	0.036		
	MW-6	0.0085		
	MW-8	0.13		
	MW-9	0.17		
	MW-10	0.11		
	MW-11	0.014		
	MW-12	0.041		
	MW-13	0.099		
	MW-15	0.013		
	MW-16	0.0085		
	MW-21	0.025		

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Manganese	MW-1	0.27	0.15	Class I Groundwater
	MW-2	0.5		
	MW-3	1.2		
	MW-4	0.75		
	MW-5	0.24		
	MW-6	0.26		
	MW-7	2		
	MW-8	31		
	MW-9	6.3		
	MW-10	2.8		
	MW-11	0.62		
	MW-12	2.5		
	MW-13	2.3		
	MW-14	0.19		
	MW-15	0.63		
	MW-16	0.58		
	MW-17	0.21		
	MW-18	0.24		
	MW-19	0.39		
	MW-21	0.92		
	MW-23	0.34		
Nickel	MW-8	0.32	0.1	Class I Groundwater
	MW-9	0.83		
	MW-13	0.13		
	MW-15	0.36		
Thallium	MW-8	0.0062	0.002	Class I Groundwater
Vanadium	MW-8	0.27	0.049	Class I Groundwater
	MW-9	0.12		
	MW-12	0.055		
	MW-13	0.13		
SVOC				
Bis(2-ethylhexyl)phthalate	MW-1	0.011	0.006	Class I Groundwater
VOC				
1,1,1-Trichloroethane	MW-4	0.3	0.2	Class I Groundwater
1,1-Dichloroehene	MW-1	0.017	0.007	Class I Groundwater
	MW-2	0.044		
	MW-4	0.036		
	MW-5	0.013		
	MW-6	0.012		
	MW-7	0.031		
	MW-13	0.012		
	MW-17	0.010		
	MW-19	0.016		
Tetrachloroethene	MW-4	0.014	0.005	Class I Groundwater
	MW-7	0.12		
	MW-8	0.01		
	MW-19	0.0092		
Trichloroethene	MW-6	0.01	0.005	Class I Groundwater
	MW-7	0.0078		

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Vinyl Chloride	MW-18	0.0025	0.002	Class I Groundwater

2.6 Tier 2 Analysis for GCGIR Class I Exceedances

R26

$$C_{(x)} = C_{source} \bullet \exp\left[\left(\frac{X}{2\alpha_x}\right) \bullet \left(1 - \sqrt{1 + \frac{4\lambda \bullet \alpha_x}{U}}\right)\right] \bullet erf\left[\frac{S_w}{4 \bullet \sqrt{\alpha_y \bullet X}}\right] \bullet erf\left[\frac{S_d}{2 \bullet \sqrt{\alpha_z \bullet X}}\right]$$

Tier 2 R26 analysis was conducted in order to determine the horizontal extent of Tier 1 GCGIR exceedances identified in Section 2.5. Site-specific parameters for each negatively impacted monitoring well location, in order to represent the most stringent ROs, were determined as follows:

General Site Specific Input Data:
Soil Type: Sand (2) – as determined from site-specific soil borings.
Class of Groundwater: Class I – as determined from on-site hydraulic conductivity tests.
Remediation Objective Comparison Values: Residential (1)
Hydraulic Gradient (i): 0.02324 ft/ft
Hydraulic Conductivity (k): 5.276 E-02 cm/sec
Thickness of Aquifer (da): 15 ft – as determined from saturated well depth.
Source Depth (Sd): 80 ft (as determined from "clean" water samples from MW-22).
Source Width (Sw): 50 ft (as determined from maximum delineation of adjacent borings).

All VOC detections above IEPA Tier 1 Remediation Objectives were modeled. The highest concentrations of Inorganics for each individual chemical were modeled.

R-26 analysis determined that, under the most stringent circumstances, potential groundwater migration distances of the above-referenced COCs traveled the following distances from their source locations before they reached their groundwater ROs:

Chemical	Monitoring Well	Screen Depth (feet)	Concentration Detected (mg/L)	Distance to Compliance (feet)	Distance to Compliance (feet)
INORGANICS					
Aluminum	MW-13	10-20	44	21800	715
Antimony	MW-8	10-20	0.0085	2800	92
Arsenic	MW-8	10-20	0.28	12350	405
Barium	MW-3	20-30	2.7	2600	85
Chromium	MW-13	10-20	0.16	3300	108
Iron	MW-8	10-20	360	56800	1864
Lead	MW-9	10-20	0.17	30700	1008
Manganese	MW-8	10-20	31	97500	3200
Nickel	MW-9	10-20	0.83	16700	550

Constituent	Monitoring Well	Screen Depth (feet)	Groundwater Standard (mg/L)	Distance to Compliance (feet)	Distance to Compliance (feet)
Thallium	MW-8	10-20	0.0062	7000	230
Vanadium	MW-8	10-20	0.27	12150	399
VOCs					
1,1,1-Trichloroethane	MW-4	10-20	0.3	2950	97
1,1-Dichloroethylene	MW-1	40-50	0.017	4900	161
	MW-2	30-40	0.044	11450	375
	MW-4	10-20	0.036	9800	321
	MW-5	40-50	0.013	3650	120
	MW-6	30-40	0.012	3450	113
	MW-7	20-30	0.031	8650	284
	MW-13	10-20	0.012	3350	110
	MW-17	60-70	0.010	2650	87
	MW-19*	30-40	0.016	4600	151
Tetrachloroethene	MW-4	10-20	0.014	6150	202
	MW-7	20-30	0.12	30500	1000
	MW-8	10-20	0.01	4250	140
	MW-19*	30-40	0.0092	3850	126
Trichloroethene	MW-6	30-40	0.01	4300	141
	MW-7	20-30	0.0078	3150	103
Vinyl Chloride	MW-18*	40-50	0.0025	2300	75

*indicates an off-site well

See Attachment F for Tier 2 GCGIR Analysis.

2.7 GCGIR Class I Plume Diagrams

VOCs: The maximum plume (in the direction of groundwater flow) of VOCs has been diagramed. It should be noted that the Tetrachloroethene (PCE) exceedance at MW-7, which traveled 1,000 feet before reaching compliance, encompassed all other VOC plumes; as such, only PCE is modeled on the diagram.

See Attachment G for VOC (PCE) Plume Diagram.

Inorganics: The maximum plume (in the direction of groundwater flow) of Inorganics has been diagramed. It should be noted that the Manganese exceedance at MW-8, which traveled 3,200 feet before reaching compliance, encompassed all other Inorganic plumes; as such, only Manganese is modeled on the diagram.

See Attachment H for Inorganic (Manganese) Plume Diagram.

3. OFF-SITE PROPERTIES WITHIN THE MODELED PLUMES AND HISTORICAL OFF-SITE SAMPLING

EGSL has determined that the following addresses are within the modeled plumes:

- 4106 Ritz Road
- 4210 Ritz Road
- 4501 Ritz Road
- 4805 Ritz Road
- 4907 Ritz Road
- 5010 Ritz Road
- 5011 Ritz Road
- 5017 Ritz Road
- 22110 W. Railroad Street
- 22104 W. Railroad Street
- 22102 W. Railroad Street
- 21902 W. Railroad Street
- 21816 W. Railroad Street

It should be noted that EGSL and Tom Rivera from the IEPA Bureau of Land contacted all owners of the north and northwesterly private wells in May of 2008. The complete list can be found in Attachment I. All listed entities were sent a letter (Attachment J) by Tom Rivera on behalf of IEPA and EGSL requesting permission to sample their private well water. Of the 20 letters sent out, 5 were returned by the USPS due to incorrect and/or invalid addresses. Of the 15 remaining letters that were delivered, only three entities responded, as follows (responses can be found in Attachment K):

- Deborah Kearney: 4210 Ritz Road
- Raymond Anthony: 4106 Ritz Road
- John Hanecker: 22110 Railroad Street

All three wells were sampled by IEPA and EGSL on June 19, 2008. Groundwater samples were submitted for analysis of VOCs; all results came back non-detect (see Attachment L for email from Tom Rivera and analytical results).

Subsequent to the above-referenced sampling activities, EGSL installed a nested well system within the northerly easement of the Railroad Street right-of-way. Due to the presence of negatively impacted groundwater within the nested well system, EGSL personally contacted the residential dwellings directly adjacent to the well system, as follows:

- John Hanecker: 22110 Railroad Street
- Alvin Polnow: 22104 Railroad Street
- Pete Steiger: 22012 Railroad Street

All owners gave permission to EGSL to sample their private wells. On March 31, 2011, each well was sampled and submitted for analysis of VOCs. According to laboratory results, all samples came back non-detect for VOCs (see Attachment M for analytical results).

Finally, EGSL has performed a search of the ISGS database pertaining to off-site private wells within ¼ mile of the Subject Property (see Attachment N). Upon review of this report, the pertinent wells will be investigated further in conjunction with the direction of the IEPA Right-to-Know Committee, IEPA Bureau of Land/Site Remediation Program, and IEPA Bureau of Water.

4. SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

This report pertains to the property located at 300 West Street, Marengo, Illinois. Our professional services have been performed using the degree of care and skill ordinarily exercised under similar circumstances by environmental professionals practicing in this field. The representations made in this report are accurate and true to the best knowledge of the undersigned.

Sincerely,

ENVIRONMENTAL GROUP SERVICES, LIMITED

Bill Lennon
Project Manager

Vahooman Mirkhaef
President

ATTACHMENT A – IEPA CORRESPONDENCE LETTER

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 • (312) 814-6026
PATRICK J. QUINN, GOVERNOR JOHN J. KIM, INTERIM DIRECTOR

November 20, 2012

Michael D. Kaser, Chief Financial Officer
Arnold Engineering Corporation
300 North West Street
Marengo, IL 60152

Re: 1110650003 – McHenry County
Marengo/Arnold Magnetic Technologies
Information Demand Letter
File Code 02A

Certified Mail Return Receipt Requested

Dear Mr. Kaser:

Pursuant to Section 25d-2 of the Illinois Environmental Protection Act (Act), 415 ILCS 5/25d-2, the Illinois EPA is required to evaluate releases of contaminants whenever it determines that the extent of soil, soil gas, or groundwater contamination may extend beyond the boundary of the site where the release occurred. The Illinois EPA has performed a contaminant evaluation for the Arnold Magnetic Technologies site located at 300 North West Street in Marengo regarding groundwater contamination.

Based on the information contained in the *Phase I Environmental Site Assessment*, dated September 30, 2009, the *Phase II Subsurface Investigation Report* dated July 15, 2010, and the *Site Investigation Report* dated March 27, 2012, the Illinois EPA has determined that groundwater contamination beyond the boundary of the Arnold Magnetic Technologies poses a threat of exposure to the public above the appropriate Tier 1 remediation objectives and the Class I groundwater quality standards and that notice to the owners of the nearby properties must be given pursuant to Section 25d-3 of the Act, 415 ILCS 5/25d-3. The groundwater contamination consists of volatile organic compounds (VOCs) including tetrachloroethylene, vinyl chloride, 1,1-dichloroethylene as well as the metals iron, lead and manganese.

The Illinois EPA is requesting that the following information be provided to us pursuant to Section 25d-4 of the Act, 415 ILCS 5/25d-4 within 30 calendar days of receipt of this letter:

1. The direction of groundwater flow in the area of the site and surrounding private wells as established by a formal determination of hydraulic gradient;
2. A comprehensive door-to-door private well survey within 1500 feet of the site;
3. A report of which private wells' 200-foot setback zones would be anticipated to be in contact with the site-related plume of chlorinated solvents;
4. The highest historical concentrations on-site of the above-named VOC and other groundwater contaminants;
5. A detailed map of the site, including monitoring well locations and the on-site area of VOC contamination, and which clearly shows proximity to area residences and businesses; and

6. Sampling of private wells within 1500 feet of the site in the direction of groundwater flow from the area of contamination (ostensibly former building #6 and pond #6) in consultation with the Illinois EPA Project Manager, Tim Zook.

The request above may include information that has already been collected by any entity hired by you or working on your behalf regarding this site. If the requested information is contained in a documents previously submitted to the Agency, please indicate the name of the document and the specific page or pages where the information may be found in the document.

The information should be submitted to me at:

Dean Studer, Office of Community Relations
Illinois EPA
1021 North Grand Avenue East, mail code #5
P.O. Box 19276
Springfield, Illinois 62794-9276

Once this information is received, the Illinois EPA will review this information to confirm that notice is required pursuant to the Act. Upon such confirmation, the Illinois EPA may contact you to provide an opportunity for you to provide the required notice. In the event that this information should demonstrate that notification is not required under the Act, the Illinois EPA will notify you of this determination.

Please be aware that any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony, 415 ILCS 5/44(h).

Should you have questions regarding the notification or Right-to-Know processes, or if you would like to discuss the information request, please contact me at (217) 558-8280. Questions regarding the technical nature of the site can be directed to Tim Zook, Project Manager, at 217/557-8085.

Sincerely,

Dean Studer

Dean Studer
Hearing Officer and Right-to-Know Coordinator
Office of Community Relations

ATTACHMENT B – GROUNDWATER ELEVATION SURVEY

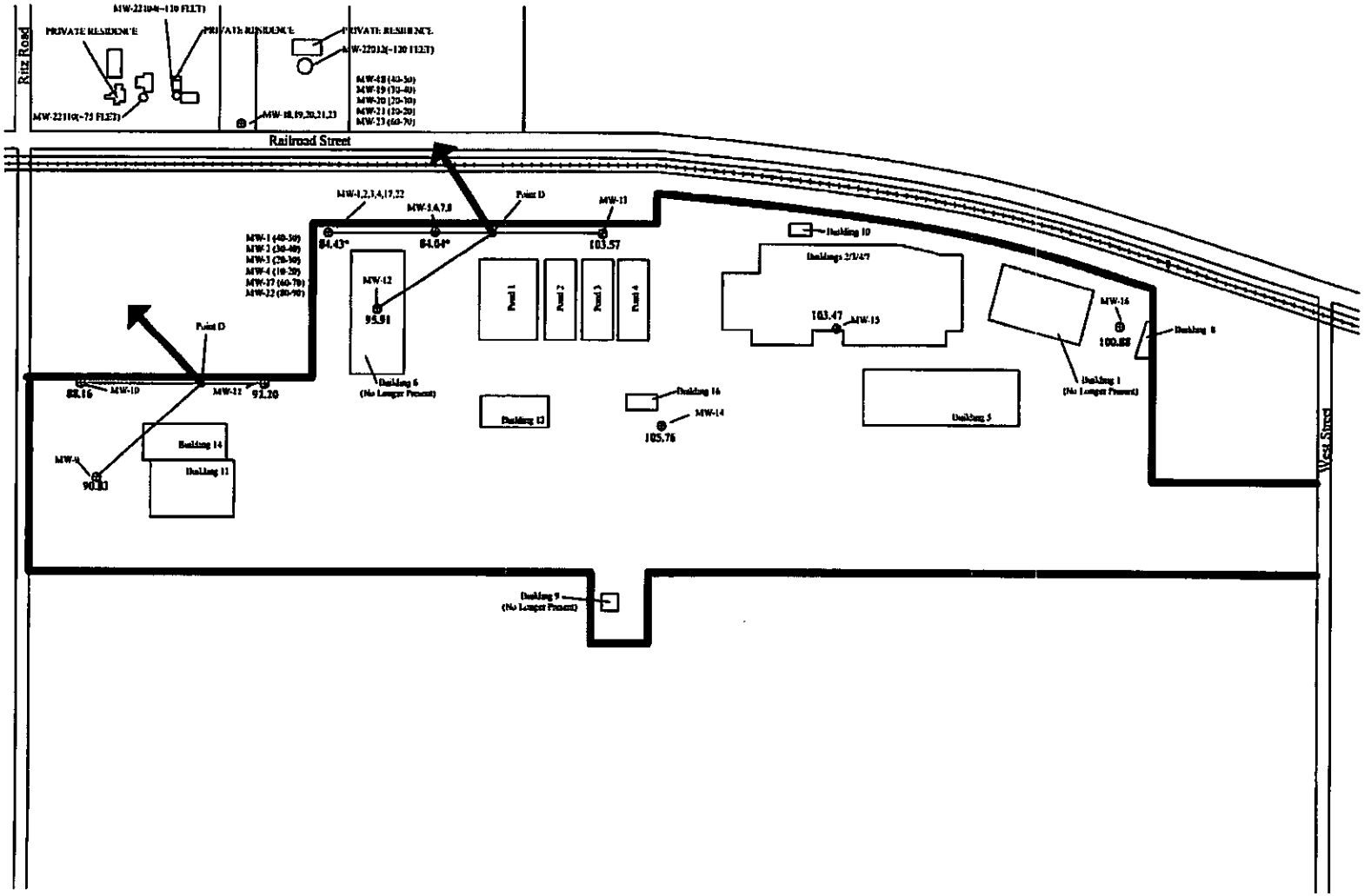
Site Elevation Survey

10/6/2010
300 West LLC
300 West Street
Marengo, Illinois

EGSL

BM	BME	HI	HIRE	GWMW	FSGS	FSTR	GSEL	TREL	WLTR	WLGS	AG
(Bench Mark)	(Bench Mark Elevation)	(Height of Instrument)	(Height of Instrument at Relative Elevation)	Groundwater Monitoring Well ID	(Foresight Ground Surface)	(Foresight Top of Riser)	(Ground Surface Elevation)	(Top of Riser Elevation)	(Water Level From Top of Riser)	(Water Level From Ground Surface)	(Actual Groundwater)
NW corner of the far western building	100.00	1.28	101.28	MW-9	4.88	5.14	96.40	96.14	5.31	5.57	90.83
NW corner of the far western building	100.00	1.28	101.28	MW-10	8.77	9.08	92.51	92.20	4.04	4.35	88.16
NW corner of the far western building	100.00	1.28	101.28	MW-11	3.62	3.9	97.66	97.38	5.18	5.46	92.20
NW corner of the far western building	100.00	10.79	110.79	MW-2	13.25	13.5	97.54	97.29	12.88	13.13	84.41
NW corner of the far western building	100.00	10.79	110.79	MW-1	12.90	13.2	97.89	97.59	13.14	13.44	84.45
NW corner of the far western building	100.00	10.79	110.79	MW-3	12.82	13.02	97.97	97.77	13.33	13.53	84.44
NW corner of the far western building	100.00	10.79	110.79	MW-4	12.60	12.84	98.19	97.95	13.53	13.77	84.42
NW corner of the far western building	100.00	10.79	110.79	MW-5	10.79	11.12	100.00	99.67	15.66	15.99	84.01
NW corner of the far western building	100.00	10.79	110.79	MW-6	11.00	11.42	99.79	99.37	15.31	15.73	84.06
NW corner of the far western building	100.00	10.79	110.79	MW-7	10.92	11.26	99.87	99.53	15.48	15.82	84.05
NW corner of the far western building	100.00	10.79	110.79	MW-8	10.65	11	100.14	99.79	15.75	16.10	84.04
NW corner of the far western building	100.00	10.79	110.79	MW-12	8.30	8.68	102.49	102.11	6.20	6.58	95.91
Metal pole in the center of the property	109.95	4.35	114.30	MW-13	5.22	5.42	109.08	108.88	5.31	5.51	103.57
Metal pole in the center of the property	109.95	4.35	114.30	MW-14	4.22	4.5	110.08	109.80	4.04	4.32	105.76
Metal pole in the center of the property	109.95	2.30	112.25	MW-15	3.49	3.6	108.76	108.65	5.18	5.29	103.47
Metal pole in the center of the property	109.95	2.30	112.25	MW-16	4.19	4.46	108.06	107.79	6.91	7.18	100.88

ATTACHMENT C – GROUNDWATER FLOW DIRECTION MAP



egsl ENVIRONMENTAL GROUP SERVICES LIMITED	**Project Name:** Arnold Technologies 300 West Street Marengo, Illinois	**Drawing Title:** Groundwater Flow Direction	**Drawing Legend:** Monitoring Well ⊕ GW Elevation 95.03 Property Line
	Project Number: 805247	**Survey Date:** 10.06.2010	N GRAPHIC SCALE

R 000100

ATTACHMENT D – ROUX ASSOCIATES GROUNDWATER REPORT

MONITORING WELL NETWORK INSTALLATION AND GROUND-WATER FLOW ASSESSMENT

AT THE
ARNOLD ENGINEERING COMPANY
Marengo, Illinois

May 17, 1990

Prepared for:

Arnold Engineering Company
300 N. West Street
Marengo, Illinois

Prepared by:

ROUX ASSOCIATES, INC.
2301 West 22nd Street
Oak Brook, IL 60521

APPENDICES

A. SOIL BORING LOGS AND WELL CONSTRUCTION SCHEMATICS

B. GROUND-WATER FLOW MAPS

1.0 EXECUTIVE SUMMARY

This report summarizes the methods and results of activities undertaken by Roux Associates, Inc. to establish a ground-water monitoring network at the Arnold Engineering magnet manufacturing facility in Marengo, Illinois. The work was conducted to satisfy a wastewater treatment plant permit requirement to install a ground water monitoring network to assess potential impacts the facility may have had on local ground-water quality. Activities which were undertaken during this project are summarized below:

- A background review was conducted to estimate the probable ground-water flow direction at the site.
- Three stainless steel ground-water monitoring wells were installed in selected areas of the site.
- The horizontal and vertical coordinates of the well casings were established and referenced to a United States Geologic Survey datum.
- Weekly ground-water elevation measurements were taken in all wells for a five-week period from March 2, 1990 to March 27, 1990.
- The ground-water elevation data was reduced and used to generate potentiometric surface maps from which ground-water flow directions were interpreted.

Based on the above activities, Roux Associates conclude that, during the study period, ground water at the facility was flowing in generally a north-northwesterly direction.

This conclusion was previously provided to Arnold Engineering in a letter dated April 9, 1990. Roux Associates understands that Arnold Engineering has negotiated an exemption

from the permit requirement of three downgradient wells, and that the Illinois Environmental Protection Agency (IEPA) will accept the current well configuration.

2.0 INTRODUCTION

The Arnold Engineering Company owns and operates a wastewater treatment facility at its magnet manufacturing plant in Marengo, Illinois. The wastewater treatment facility consists of a series of four settling ponds with a capacity of three-million gallons, two overflow ponds, a ten acre diked percolation field and an extended aeration activated sludge treatment plant. Wastewater influent sampling conducted at the facility during August, 1989 indicated that trace amounts of 1,1,1-trichloroethane, methanol, acetone and methylethyl ketone were present in grab samples.

Arnold Engineering received a renewal of their wastewater facility operation permit from the Illinois Environmental Protection Agency (IEPA) in October, 1989. A number of special requirements were cited as conditions of renewal of Water Pollution Control Permit number 1989-EO-3870. One of the special conditions was a requirement to install a network of ground-water monitoring wells around the treatment facility to assess potential impacts the facility may have had on local ground-water quality.

Roux Associates Inc., was retained by the Arnold Engineering Company in February,1990

to install the monitoring well network in accordance with the specifications outlined in the water pollution control permit.

Salient requirements for the monitoring well network specified in IEPA Water Pollution Control Permit number 1989-EO-3870 are outlined below:

- At least one monitoring well must be located hydraulically upgradient of the percolation sites. The purpose of this well is to collect representative samples of ground water not affected by percolation areas.
- At least three monitoring wells located hydraulically downgradient of the percolation sites. Locations and depths of wells must be chosen in a manner such that representative samples of ground water most likely to be contaminated will be collected.
- Monitoring wells must be at least two inches in diameter and cased with a material which will not react with the samples. The well screen must be packed with sand or gravel and the annular space sealed to prevent infiltration. Well riser pipe must be protected and secured.

This report describes the methods and results of Roux Associates Inc. activities to install the monitoring network.

3.0 SITE DESCRIPTION

The Arnold Engineering Company magnet manufacturing facility is located on approximately 80 acres in the northwest quarter of Section 35, Township 44 north, Range 5 east of the Third Principal Meridian in southwestern Mc Henry County, Illinois (Figure 1). The plant manufactures magnets for a wide range of industrial uses.

3.1 Facility Description

The facility is bounded to the east by residential property in the City of Marengo, to the north and west by open farm fields and residences and to the south by U.S. Highway 20 and commercial property. The Chicago and Northwestern railroad runs along the northern boundary and at the northwest portion of the parcel. A Commonwealth Edison electrical substation lies adjacent to the facility.

The wastewater treatment facility is located between the Arnox Building and manufacturing buildings on the north side of the property (Figure 2). During normal operation, treated water is discharged from the treatment lagoons to Pond #5 near the southwest corner of the parcel. During times of heavy precipitation, when the infiltration capacity of Pond #5 is exceeded, water is directed to the percolation fields.

3.2 Geology and Hydrogeology

The Arnold Engineering property is located on the Kishwaukee River lowland (Figure 3). The river lies approximately one mile north of the plant and flows west in this reach with an average gradient of five feet per mile. A small intermittent tributary to the Kishwaukee River is located one-half mile northeast of the plant. Slopes on the property are slight.

Geologic maps and reports available for the area indicate that glacial drift in excess of fifty

feet thick overlie dolomites of the Silurian System. A generalized geologic column for the vicinity is provided in Figure 4. Two distinct glacial till members exist on the property. The Henry Formation which is a thick, permeable and unconsolidated deposit of well sorted sand and gravel is present on the western third of the property and the remainder of the site is underlain by a uniform sandy-loam till of the Wedron Formation, except for a small area of made land in the area surrounding the Arnox Building.

At the outset of the study, it was anticipated that the water table would be encountered at a depth of fifteen to twenty feet below the surface and the general direction of ground-water flow would be slightly west of north. The predicted direction of ground-water flow is based on the assumption that the Kishwaukee River, located one-mile to the north, is the primary discharge area for shallow ground water.

4.0 FIELD ACTIVITIES

Roux Associates subcontracted with Fox Drilling, Inc. of Itasca, Illinois to provide soil boring and monitoring well installation services. All drilling and well installation activities were supervised by a Roux geologist. Geologic and monitoring well construction logs were prepared using data collected in the field during drilling operations, these logs are provided in the Appendices.

4.1 Well Installation

Installation of the three monitoring wells began on February 21, 1990 and was completed the following day. The wells were constructed of two-inch diameter stainless steel casing and eleven foot lengths of stainless steel slotted screen. Each borehole was advanced using a truck-mounted rotary drill rig equipped with 3-3/4" inside diameter hollow-stem augers. Each boring was advanced to a depth approximately four feet below the water table. Figure 5 depicts the locations of the ground-water monitoring wells. These locations were chosen based upon the predicted direction of ground-water flow determined from the review of published geologic information.

The specific location of monitoring well MW-3 was dictated by the presence of thirty-thousand kilovolt overhead power lines along the properties north side and a shed on the east side of the pond. These two factors necessitated that the pond be approached from the west with the drill rig. Permission to access the location from the substation property was obtained from Commonwealth Edison.

During well drilling, split spoon samples were retrieved at five foot intervals at each borehole. The samples were visually examined by a Roux Associates geologist and scanned with an Hnu photoionization detector for possible volatile organic compounds (VOCs.) No contamination was detected in any of the samples and all samples and cuttings were discarded on site. An eleven-foot long well screen was set six-inches above the bottom of the borehole. After decontamination with a steam cleaner. Washed filter sand was packed

around the well screen to a depth of two-feet above the screen. A two-foot thick bentonite plug was then placed above the filter sand and hydrated using distilled water. The remainder of the annular space was backfilled with cuttings and capped with a cement grout. A locking protective casing was placed over the wellhead in a concrete pad and secured with a padlock. All well materials were steam-cleaned and rinsed with distilled water prior to installation.

4.2 Well Development

Each of the monitoring wells were developed by purging using a one-quarter gallon bottom-fill teflon bailer. The wells were bailed until the water was free of sediment. The bailer was cleaned between wells using a non-phosphate soap and triple-rinsed with distilled water.

5.0 RESULTS OF GROUND-WATER FLOW INVESTIGATION

Upon completion of the well installation phase, Roux Associates Inc. subcontracted with Heritage Engineering Company of Rockford, Illinois to provide surveying services at the site. The top of each wellhead was established to the nearest one-hundredth foot using U.S. Geological Survey (U.S.G.S.) datum. The wells were also located on a survey plat of the property.

Depth to water table measurements were taken once a week for five successive weeks using

an electronic water-level indicator. This data was reduced to produce water table elevations with respect to U.S.G.S. datum. A summary of water-table elevation data is provided in Table 1.

A ground-water flow map was prepared for each week that water level measurements were taken, and these maps can be found in Appendix B. The data and maps indicate that during the five-week study period the ground-water flow direction was toward the north-northwest for every week but the week of March 15, 1990. During this week, the ground-water flow direction was toward the north. It should be noted that excessive rainfall occurred in the area prior to the time the March 15, 1990 measurements were taken and it is possible that levels had not yet equilibrated after heavy rains. Measurements taken during successive weeks show that flow had returned to a northwesterly direction.

6.0 CONCLUSIONS

Arnold Engineering Company was required to establish a monitoring well network around the perimeter of a wastewater treatment facility in Marengo as a condition of wastewater permit 1989-EO-3870. Roux Associates was retained by Arnold Engineering to install the monitoring well network according to permit requirements.

Based upon the geologic information available and a visual investigation of the site prior to the installation of monitoring wells, the general ground-water flow direction was predicted to be in a northwesterly direction. Monitoring well locations and depths were chosen based

on the preliminary information and constructed to facilitate their use as sampling wells to collect both floating and sinking constituents. During a five-week investigation, water levels in the wells were observed and recorded. A series of ground-water flow maps were prepared from the data which indicates that the hyrdogeologic conditions predicted from preliminary information were encountered, except for a possibly anomalous reading taken after a series of heavy rains in the area. Monitoring well MW-1 serves as the upgradient well and wells MW-2 and MW-3 serve as downgradient wells. MW-2 and MW-3 are downgradient of the percolation field and overflow ponds.

If the north-northwest ground-water flow direction is stable with time, the current monitoring network should produce representative ground-water samples from areas upgradient and downgradient of the diked percolation field and overflow ponds. We understand that NET Midwest personnel will conduct the required sampling of the wells.

Respectfully Submitted,

David L. Miller
Principal Hydrogeologist

Steven J. Wanner
Project Geologist

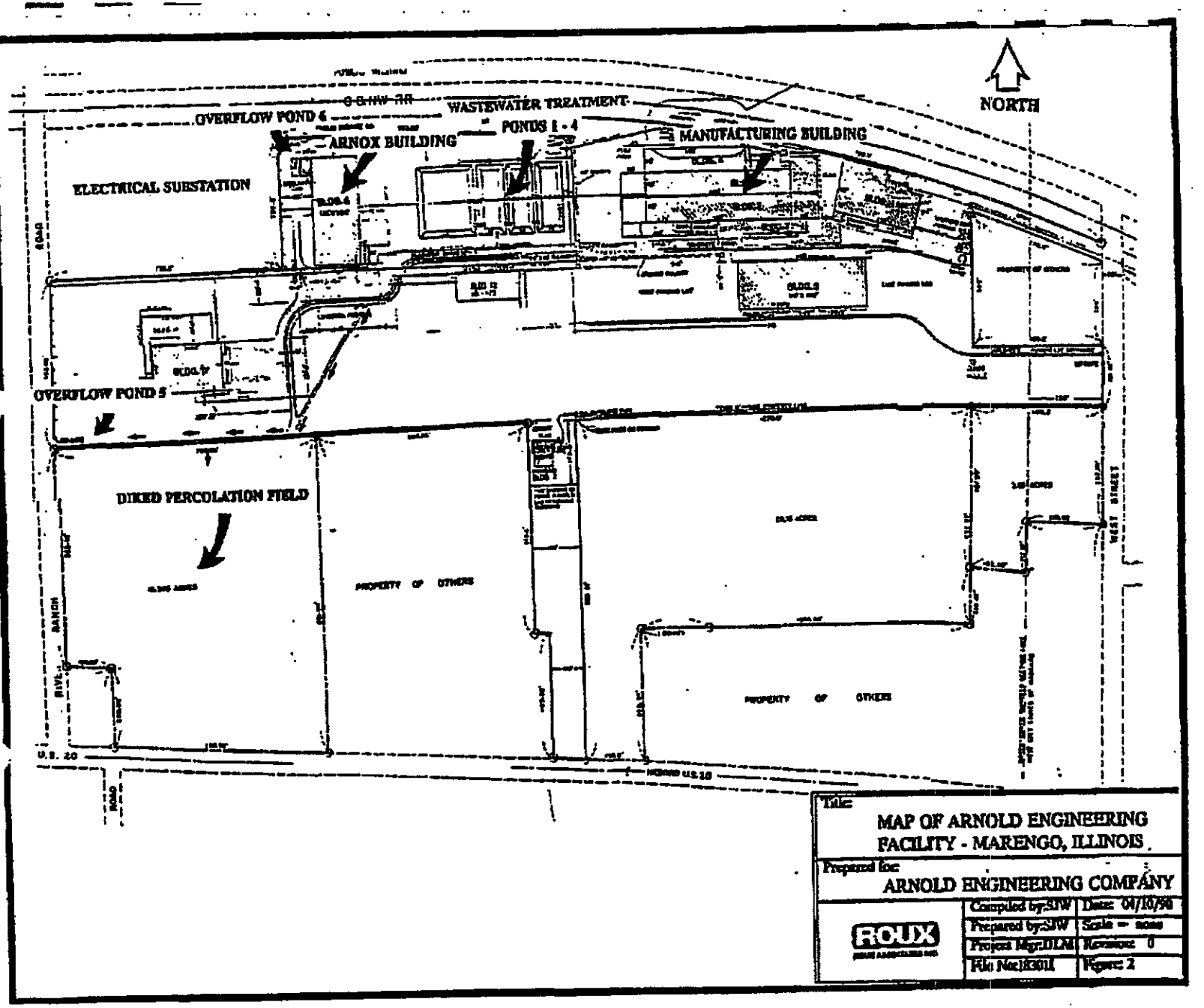
TABLE 1

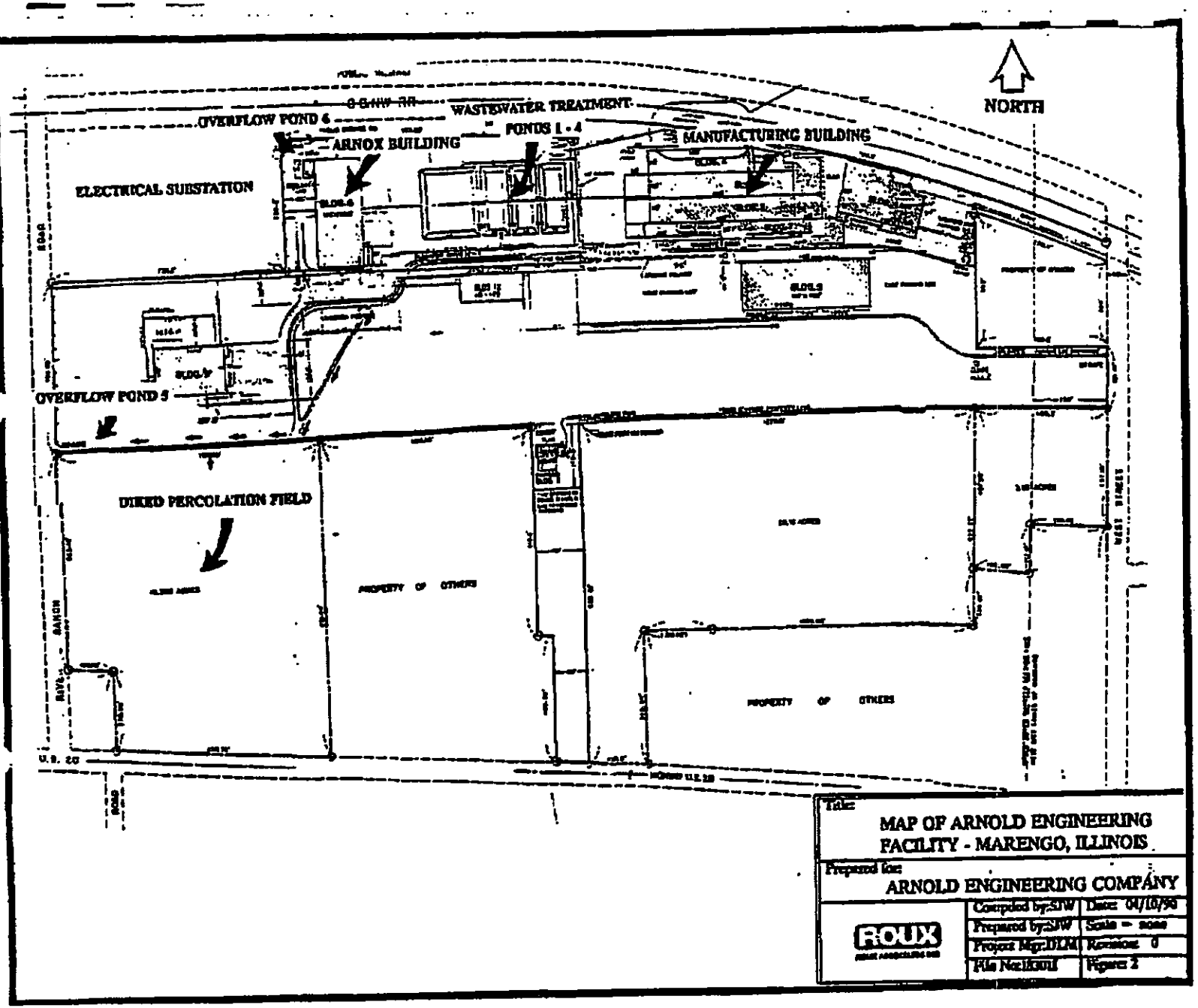
SUMMARY OF GROUND-WATER ELEVATION DATA
ARNOLD ENGINEERING MONITORING NETWORK
MARENGO, ILLINOIS

Monitoring Point	Top of Casing Elevation [1]	Depth to Ground Water (feet below top of casing)					Ground Water Elevation (feet above mean sea level)				
		3/2/90	3/7/90	3/15/90	3/22/90	3/27/90	3/2/90	3/7/90	3/15/90	3/22/90	3/27/90
MW-1	812.42	17.44	17.55	15.13	13.87	14.78	794.87	794.87	797.29	798.58	797.64
MW-2	809.60	17.06	17.09	13.58	14.48	15.53	792.54	792.51	796.02	795.12	794.09
MW-3	810.43	18.11	18.24	17.06	16.57	16.57	792.32	792.19	793.37	793.86	793.86

[1] Elevations Referenced to Mean Sea Level Datum

NORTH
MCHENRY COUNTY
CITY OF MARENGO
ARNOLD ENGINEERING
Title: SITE LOCATION MAP
Prepared for: ARNOLD ENGINEERING COMPANY
ROUX
Compiled by:SJW
Prepared by:SJW
Project Mgr:DLM
File No: 153701
Date: 04/19/06
Scale = none
Revision: 0
Figure: 1



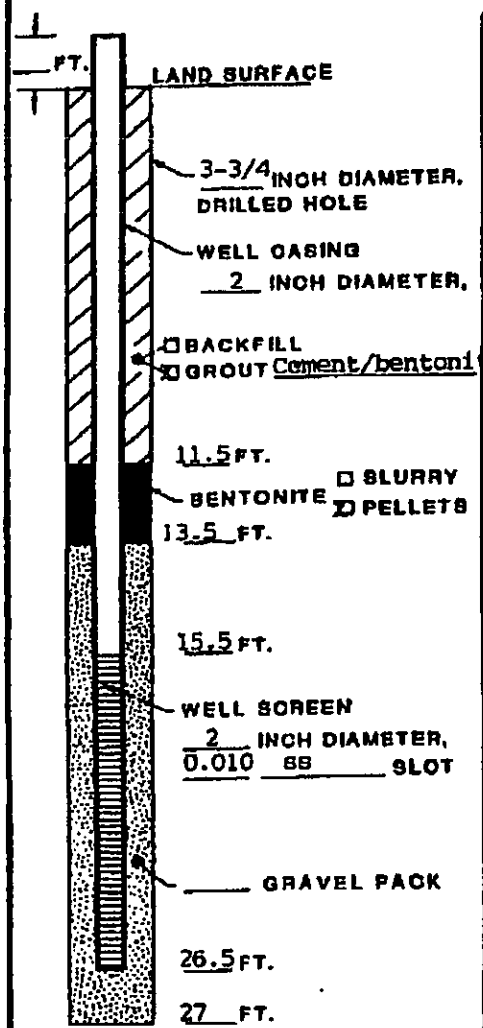


APPENDIX A

SOIL BORING LOGS AND WELL CONSTRUCTION SCHEMATICS

ROUX
Consulting Ground-Water Geologists
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Arnold Engineering NUMBER 18301I
WELL NO. MW-1 PERMIT NO. N/A
TOWN/CITY Marengo
COUNTY McHenry STATE Illinois
LAND-SURFACE ELEVATION
AND DATUM 810 FEET ☐ SURVEYED
☒ ESTIMATED
INSTALLATION DATE(S) February 21, 1990
DRILLING METHOD Hollow-stem auger
DRILLING CONTRACTOR Fox Drilling - Itasca, Illinois
DRILLING FLUID None
DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Developed by purging with a teflon bailer, 02/22/90

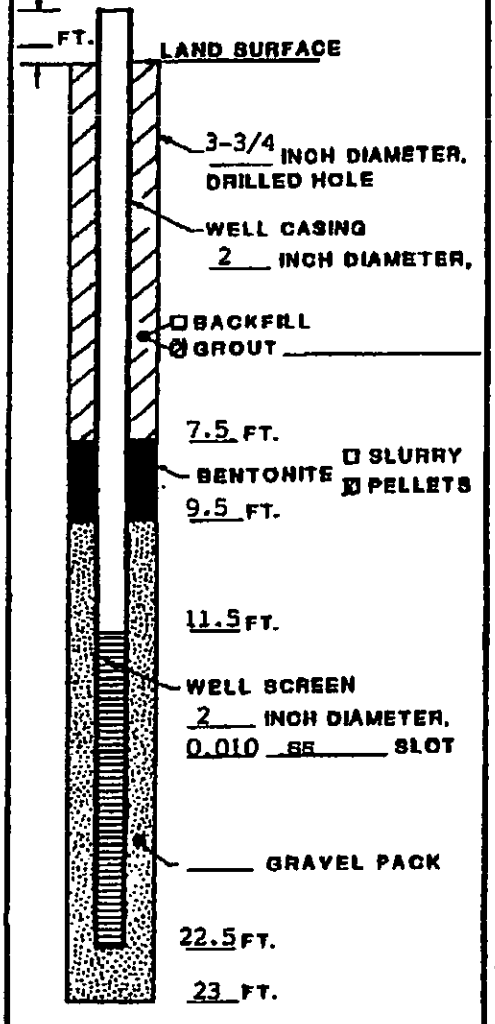
FLUID LOSS DURING DRILLING N/A GALLONS
WATER REMOVED DURING DEVELOPMENT 10 GALLONS
STATIC DEPTH TO WATER 17.5 FEET BELOW M.P.
PUMPING DEPTH TO WATER N/A FEET BELOW M.P.
PUMPING DURATION N/A HOURS
YIELD N/A GPM N/A DATE N/A
SPECIFIC CAPACITY N/A GPM/FT.
WELL PURPOSE Monitoring well downgradient of a percolation field.

REMARKS Stainless steel well screen and riser. Well was surveyed on March 15, 1990 by Heritage Engineering of Rockford, Il. Top of casing elevation (T/C) is 812.42 feet above mean sea level.

HYDROGEOLOGIST Steven Wanner

ROUX
Consulting Ground-Water Geologists
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Arnold Engineering NUMBER 183011
WELL NO. MW-2 PERMIT NO. N/A
TOWN/CITY Marengo
COUNTY McHenry STATE Illinois
LAND-SURFACE ELEVATION
AND DATUM 807 FEET ☐ SURVEYED ☒ ESTIMATED
INSTALLATION DATE(S) February 21, 1990
DRILLING METHOD Hollow-stem auger
DRILLING CONTRACTOR Fox Drilling - Itasca, Illinois
DRILLING FLUID None
DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Developed by purging with a teflon bailer, 02/22/90

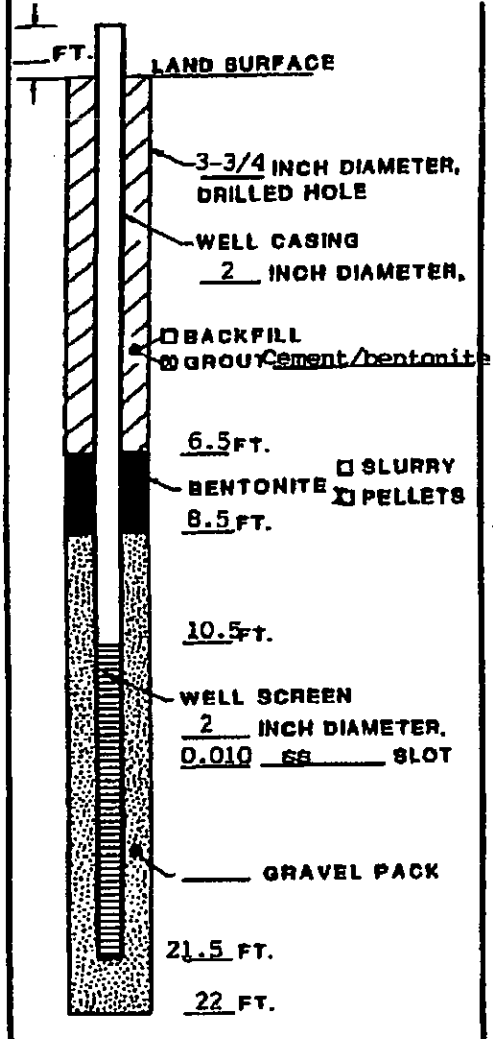
FLUID LOSS DURING DRILLING N/A GALLONS
WATER REMOVED DURING DEVELOPMENT 10 GALLONS
STATIC DEPTH TO WATER 17.5 FEET BELOW M.P.
PUMPING DEPTH TO WATER N/A FEET BELOW M.P.
PUMPING DURATION N/A HOURS
YIELD N/A GPM N/A DATE N/A
SPECIFIC CAPACITY N/A GPM/FT.
WELL PURPOSE Ground-water monitoring downgradient of a percolation field.

REMARKS Stainless steel well screen and riser. Well was surveyed on March 15, 1990 by Heritage Engineering of Rockford, IL. Top of casing (T/C) elevation is 809.60 ft. above mean sea level.

HYDROGEOLOGIST Steven Wanner

ROUX
Computing Ground-Water Geologists
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Arnold Engineering NUMBER 183011
WELL NO. MW-3 PERMIT NO. N/A
TOWN/CITY Marengo
COUNTY McHenry STATE Illinois
LAND-SURFACE ELEVATION
AND DATUM 810 FEET ☐ SURVEYED ☒ ESTIMATED
INSTALLATION DATE(S) February 22, 1990
DRILLING METHOD Hollow-stem auger
DRILLING CONTRACTOR Fox Drilling - Itasca, Illinois
DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Developed by purging with a teflon bailer, 02/22/90

FLUID LOSS DURING DRILLING N/A GALLONS
WATER REMOVED DURING DEVELOPMENT 10 GALLONS
STATIC DEPTH TO WATER 16 FEET BELOW M.P.
PUMPING DEPTH TO WATER N/A FEET BELOW M.P.
PUMPING DURATION N/A HOURS
YIELD N/A GPM N/A DATE N/A
SPECIFIC CAPACITY N/A GPM/FT.
WELL PURPOSE Monitoring well downgradient of a percolation field.

REMARKS Stainless steel well screen and riser. Well was surveyed on March 15, 1990 by Heritage Engineering of Rockford, Il. Top of casing elevation is 810.43 feet above mean sea level.

HYDROGEOLOGIST Steven Wanner

CONSULTING GROUND WATER GEOLOGISTS
ROUX ASSOCIATES INC

GEOLOGIC LOG MW1

Study No. 18301I Date 03/22/90
Project
Client Arnold Engineering
Page 1 of 1
Logged By Steven Wanner
Well No. MW1
Loc. Marengo, IL
M.P. Elevation 812.42
Drilling Started 02/21/90 Ended 02/21/90
Driller Fox Drilling
Type Of Rig 3-3/4 Hollow-stem auger

WELL DATA

Hole Diam. (in.) 3-3/4
Final Depth (ft.) 27 ft
Casing Diam. (in.) 2"
Casing Length (ft.) 18 ft
Screen Setting (ft.) 16
Screen Slot & Type
Well Status Active

G W READINGS(1)

Date	DTW MP(2)	Elev. W.T.

SAMPLER

Type split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Developed by purging with a teflon bailer

Hnu	SAMPLE No.	Rec.	Depth (ft.)	Blows/6"	Strata Change & Gen. Desc.	Depth (ft.)	SAMPLE DESCRIPTION
0	1	80	3 - 5'	10/17/20/21			Coarse gravel with medium sand matrix light brown - damp
0	2	70	8 - 10'	4/6/11/17		5	Light brown silty sandy clay till w/pebbles
0	3	100	13 - 15'	5/6/10/10		10	Dark brown silty clay till with a narrow sand lens at 14'
0	4	100	18 - 20'	5/5/7/9	▼	15	Dark gray silty clay till, wet
0	5	100	23 - 25'	4/6/5/9		20	Wet medium sand and gravel
						25	End of boring at 27 feet Well installed

REMARKS: (1) in feet relative to a common datum
(2) from top of PVC casing

CONSULTING GROUND WATER GEOLOGISTS
ROUX ASSOCIATES INC

GEOLOGIC LOG MW2

Study No: 18301I Date: 03/22/90
Project:
Client: Arnold Engineering
Page: 1 of 1
Logged By: Steven Wanner
Well No.: MW2
Loc.: Marengo, IL
M.P. Elevation: 809.60
Drilling Started: 02/21/90 Ended: 02/21/90
Driller: Fox Drilling
Type Of Rig: Hollow-stem auger

WELL DATA
Hole Diam. (in.): 3-3/4
Final Depth (ft.): 23
Casing Diam. (in.): 2
Casing Length (ft.): 14
Screen Setting (ft.): 12-23
Screen Slot & Type:
Well Status: Active

G W READINGS(1)

Date	DTW MP(2)	Elev. W.T.

SAMPLER
Type: split-spoon
Hammer: 140 lb.
Fall: 30 in.

DEVELOPMENT
Developed surge and purge with teflon bailer

Hnu	SAMPLE No.	Rec.	Depth (ft.)	Blows/6"	Strata Change & Gen. Desc.	Depth (ft.)	SAMPLE DESCRIPTION
0	1	80	3 - 5	4/4/4/5			Dry, light brown, medium- grained, gravelly sand
0	2	100	8 - 10	3/4/7/7		5	Light brown medium sand with some gravel, damp
0	3	80	13 - 15	4/5/8/8		10	Light brown fine to medium grained sand, damp.
0	4	80	18 - 20	6/REFUSAL	▼	15	Poorly sorted greenish gray wet sand
						20	End of boring at 23 feet Well Installed

REMARKS: (1) in feet relative to a common datum
(2) from top of PVC casing

CONSULTING GROUND WATER GEOLOGISTS
ROUX ASSOCIATES INC

GEOLOGIC LOG MW3

Study No. 18301I Date 03/22/90
Project
Client Arnold Engineering
Page 1 of 1
Logged By Steven Wanner
Well No. MW3
Loc. Marengo, IL
M.P. Elevation 810.43
Drilling Started 02/22/90 Ended 02/22/90
Driller Fox Drilling
Type Of Rig Hollow-stem auger

WELL DATA

Hole Diam. (in.) 3-3/4
Final Depth (ft.) 22
Casing Diam. (in.) 2
Casing Length (ft.) 13'
Screen Setting (ft.) 11-22
Screen Slot & Type
Well Status Active

G W READINGS(1)

Date	DTW MP(2)	Elev. W.T.

SAMPLER

Type split-spoon
Hammer 140 lb.
Fall 30 in.

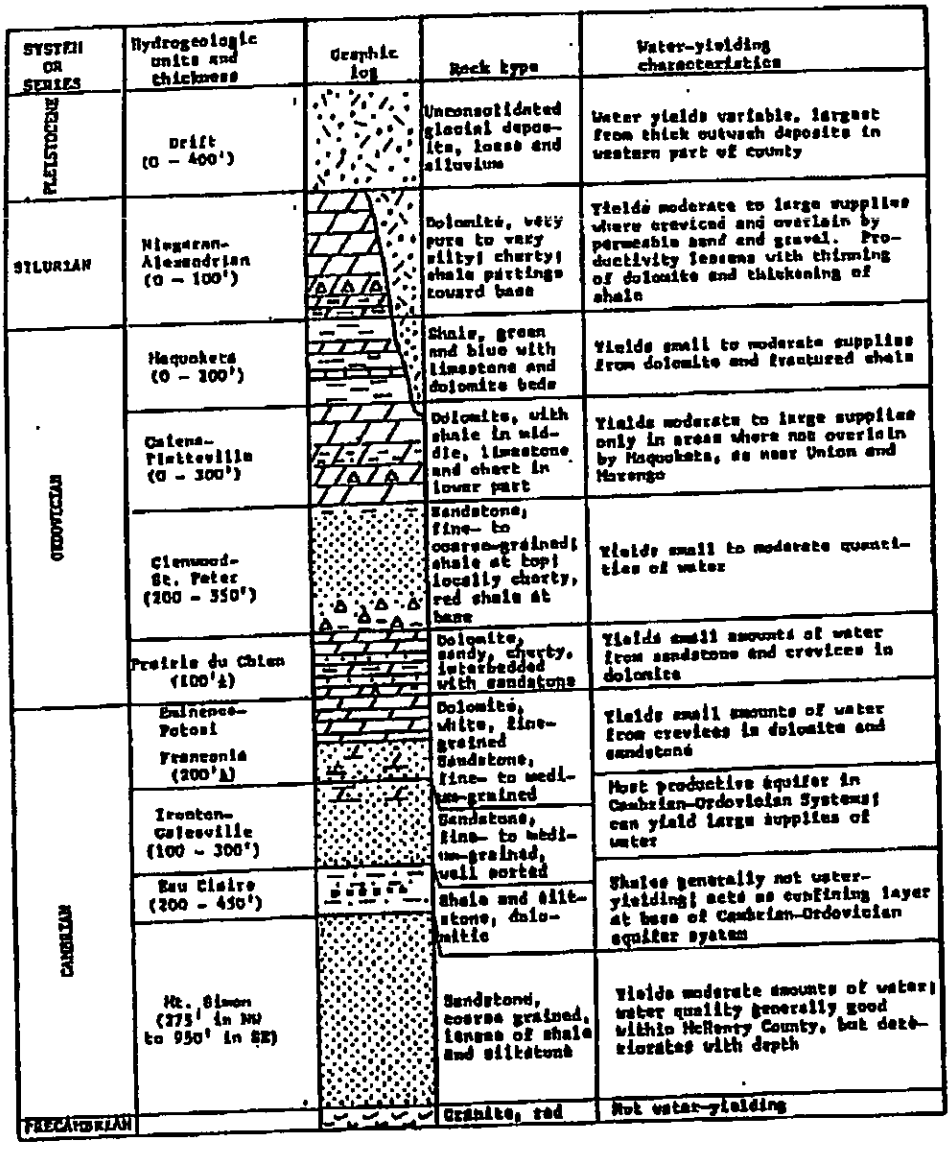
DEVELOPMENT

Developed surge and purge with teflon bailer

Hnu	SAMPLE No.	Rec.	Depth (ft.)	Blows/6"	Strata Change & Gen. Desc.	Depth (ft.)	SAMPLE DESCRIPTION
0	1	80%	3 - 5'	3/4/4/4			Brown medium grained dry sand
0	2	80%	8 - 10'	4/8/10/11		5	Medium to coarse grained light brown gravelly sand, damp
0	3	60	13 - 15'	5/10/18/R		10	Damp, medium to coarse grained light brown sand
0	4	100	18 - 20'	3/10/19/25	▼	15	Medium - coarse light brown wet sand
						20	End of boring at 22 feet Well installed

REMARKS: (1) in feet relative to a common datum

TOTAL P.74



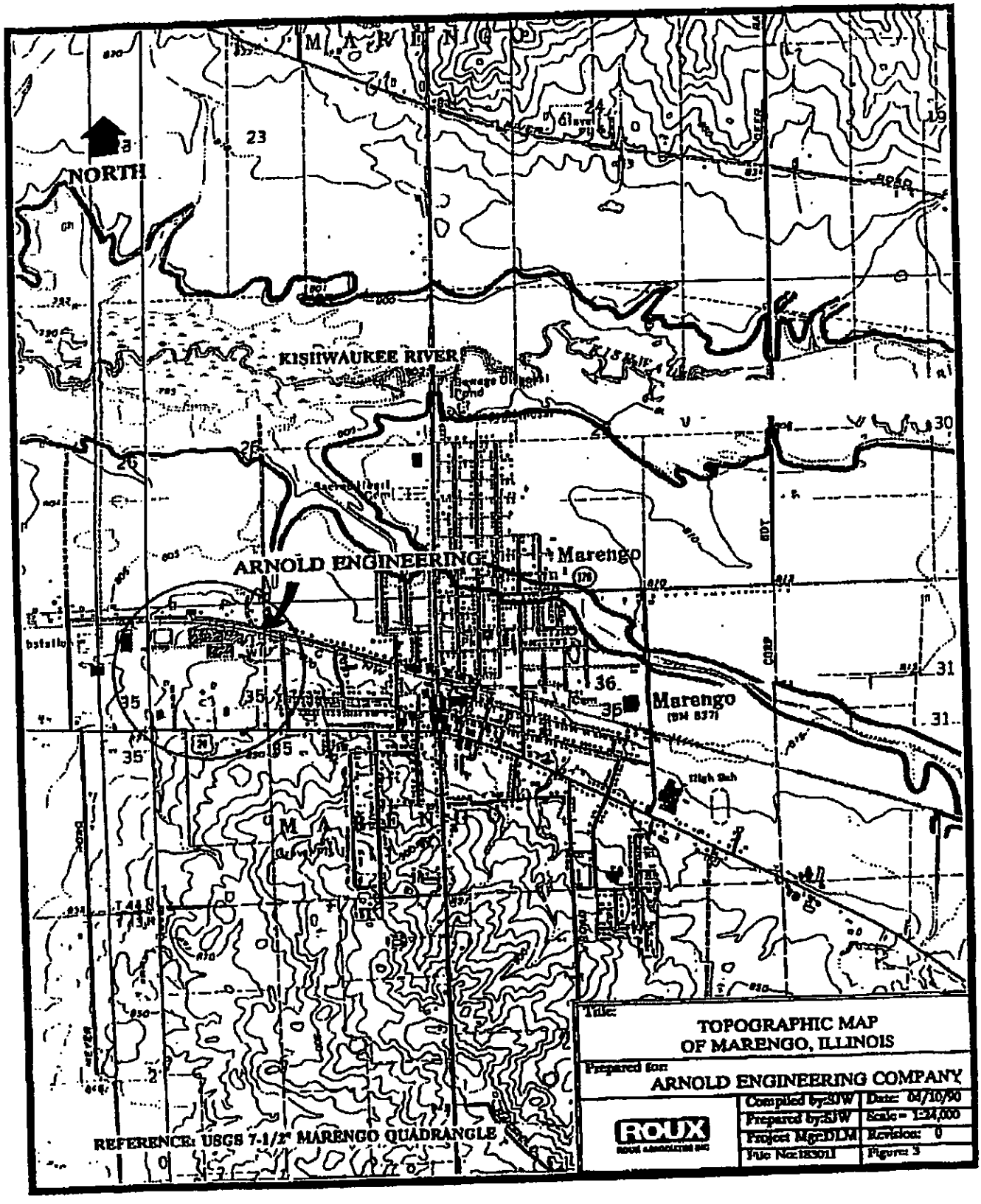
SYSTEM OR SERIES	Hydrogeologic units and thickness	Graphic log	Rock type	Water-yielding characteristics
PLEISTOCENE	Drift (0 – 400')		Unconsolidated glacial deposits, loess and alluvium	Water yields variable, largest from thick outwash deposits in western part of county
SILURIAN	Niagaran-Alexandrian (0 – 100')		Dolomite, very pure to very silty; cherty; shale partings toward base	Yields moderate to large supplies where crevriced and overlain by permeable sand and gravel. Productivity lessens with thinning of dolomite and thickening of shale
ORDOVICIAN	Maquoketa (0 – 300')		Shale, green and blue with limestone and dolomite beds	Yields small to moderate supplies from dolomite and fractured shale
	Galena-Platteville (0 – 300')		Dolomite, with shale in middle, limestone and chert in lower part	Yields moderate to large supplies only in areas where not overlain by Maquoketa, as near Union and Marengo
	Glenwood-St. Peter (200 – 350')		Sandstone, fine- to coarse-grained; shale at top; locally cherty, red shale at base	Yields small to moderate quantities of water
	Prairie du Chien (100'±)		Dolomite, sandy, cherty, interbedded with sandstone	Yields small amounts of water from sandstone and crevices in dolomite
CAMBRIAN	Eminence-Potosi Franconia (200'±)		Dolomite, white, fine-grained Sandstone, fine- to medium-grained	Yields small amounts of water from crevices in dolomite and sandstone
	Ironton-Galesville (100 – 300')		Sandstone, fine- to medium-grained, well sorted	Most productive aquifer in Cambrian-Ordovician Systems; can yield large supplies of water
	Eau Claire (200 – 450')		Shale and siltstone, dolomitic	Shales generally not water-yielding; acts as confining layer at base of Cambrian-Ordovician aquifer system
	Mt. Simon (275' in NW to 950' in SE)		Sandstone, coarse grained, lenses of shale and siltstone	Yields moderate amounts of water; water quality generally good within McHenry County, but deteriorates with depth
PRECAMBRIAN			Granite, red	Not water-yielding

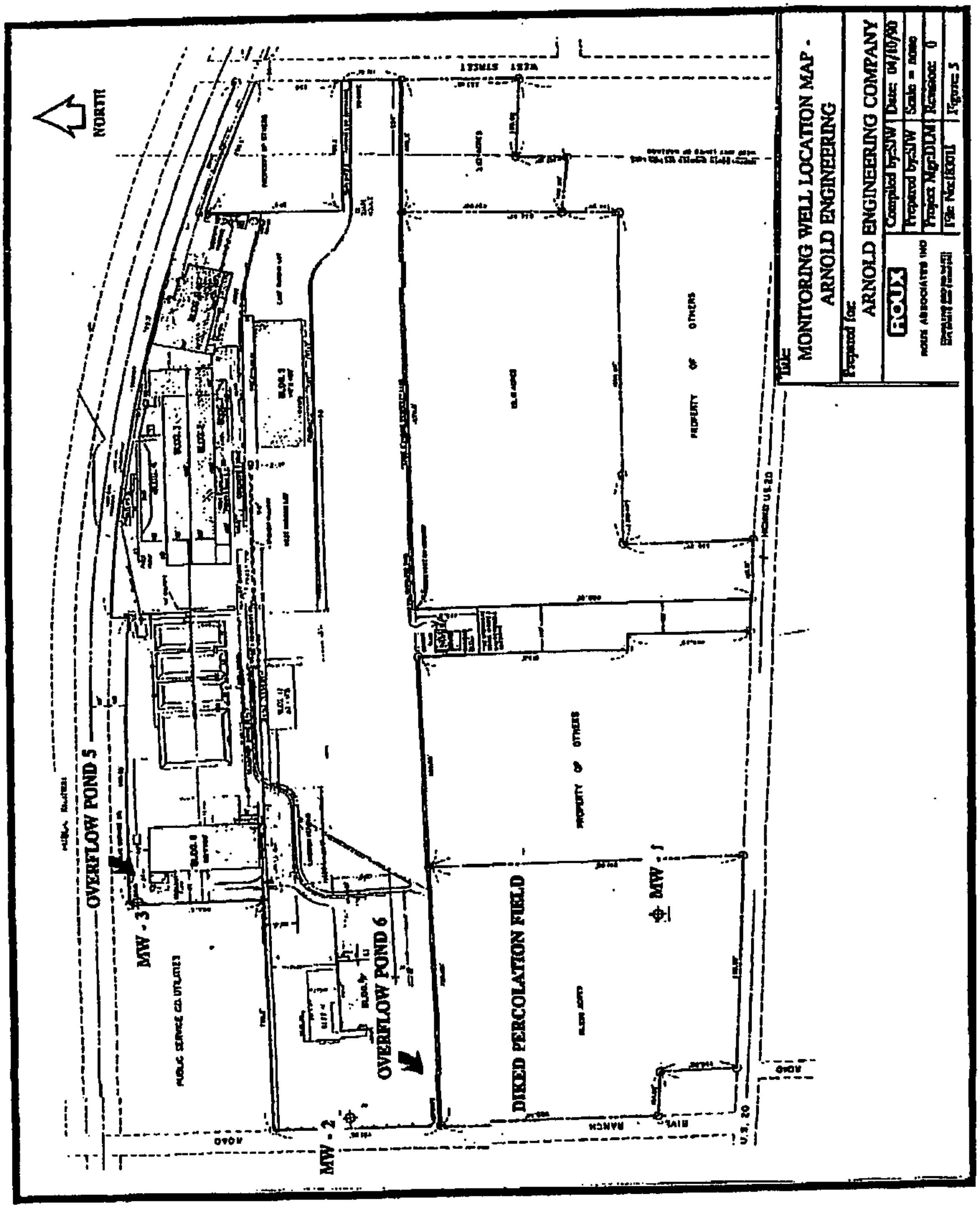
REFERENCE: GEOLOGY FOR LAND PLANNING (ISGS, 1969)

Title:
GENERALIZED GEOLOGIC COLUMN FOR SOUTHWEST MCHENRY COUNTY

Prepared for:
ARNOLD ENGINEERING COMPANY

ROUTE	Compiled by:SJW	Date: 04/10/00
ROUT ASSOCIATES INC	Prepared by:SJW	Scale: = none
	Project Mgr:DLM	Revision: 0
	File No:R0011	Figure: 4

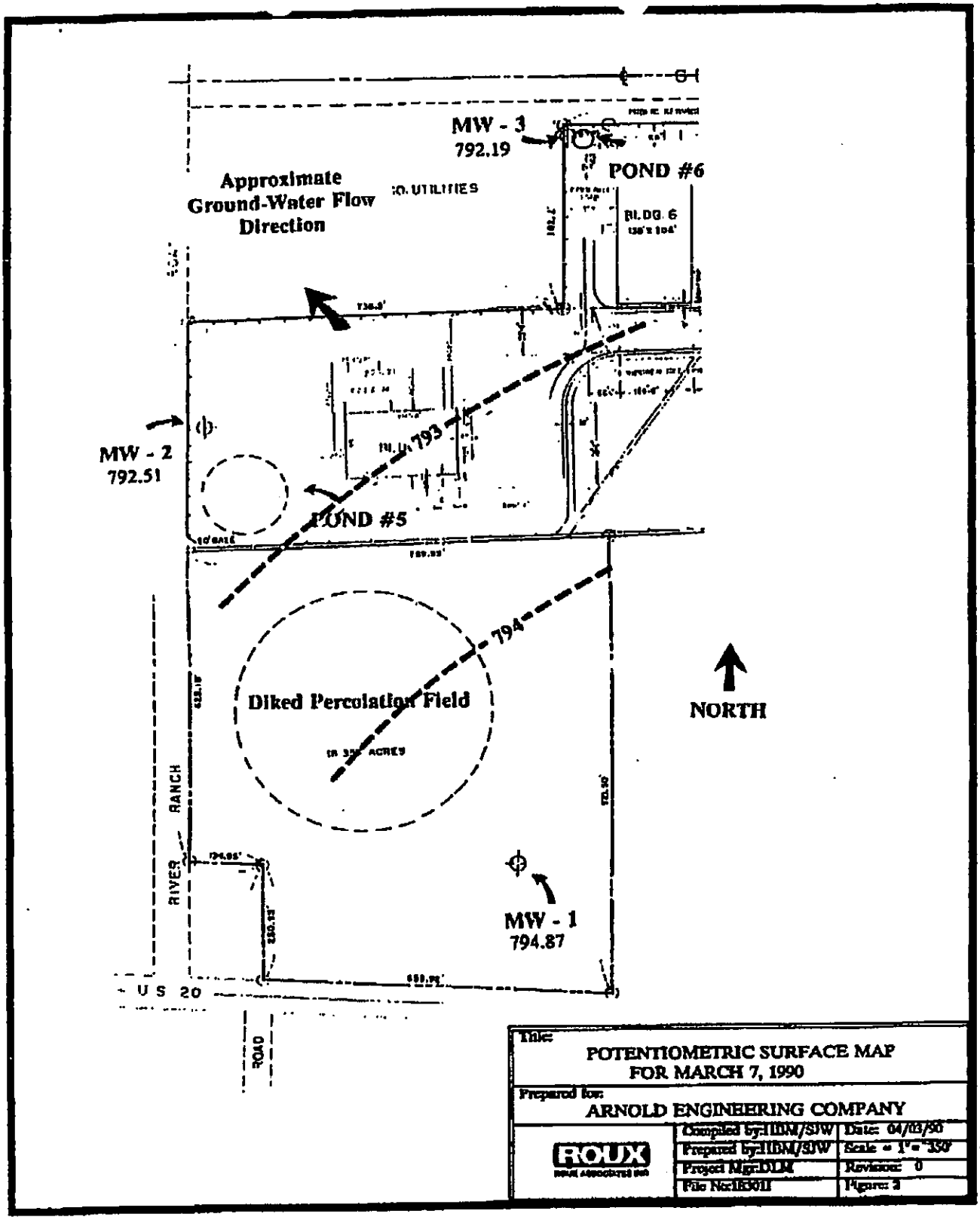

NORTH
KISHWAUKEE RIVER
ARNOLD ENGINEERING
Marengo
Marengo
REFERENCE: USGS 7-1/2' MARENGO QUADRANGLE
Title:
TOPOGRAPHIC MAP
OF MARENGO, ILLINOIS
Prepared for:
ARNOLD ENGINEERING COMPANY
ROUX
Compiled by:SJW
Date: 04/10/00
Prepared by:SJW
Scale = 1:24,000
Project Mgr:DLM
Revision: 0
File No:185011
Figure: 3

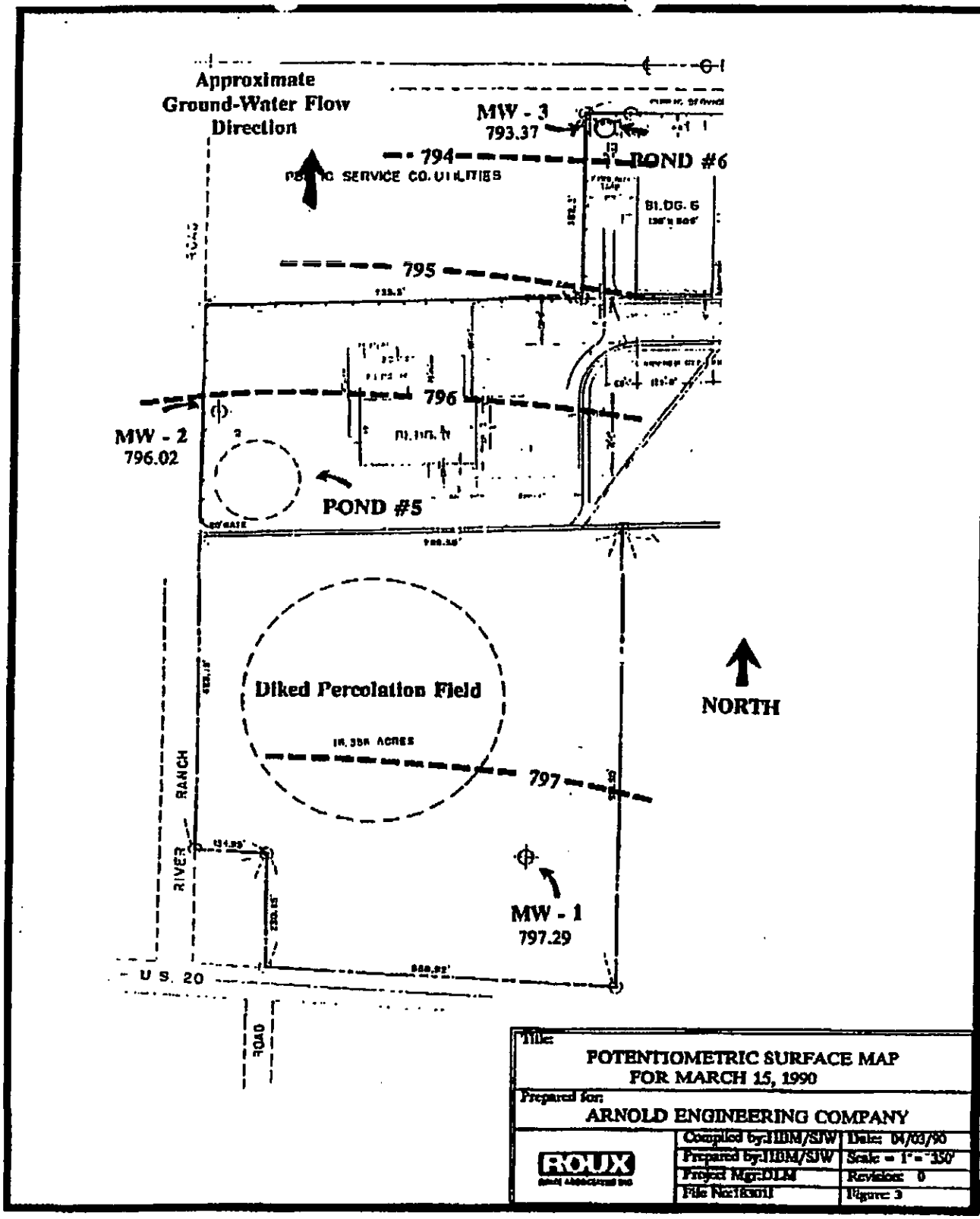


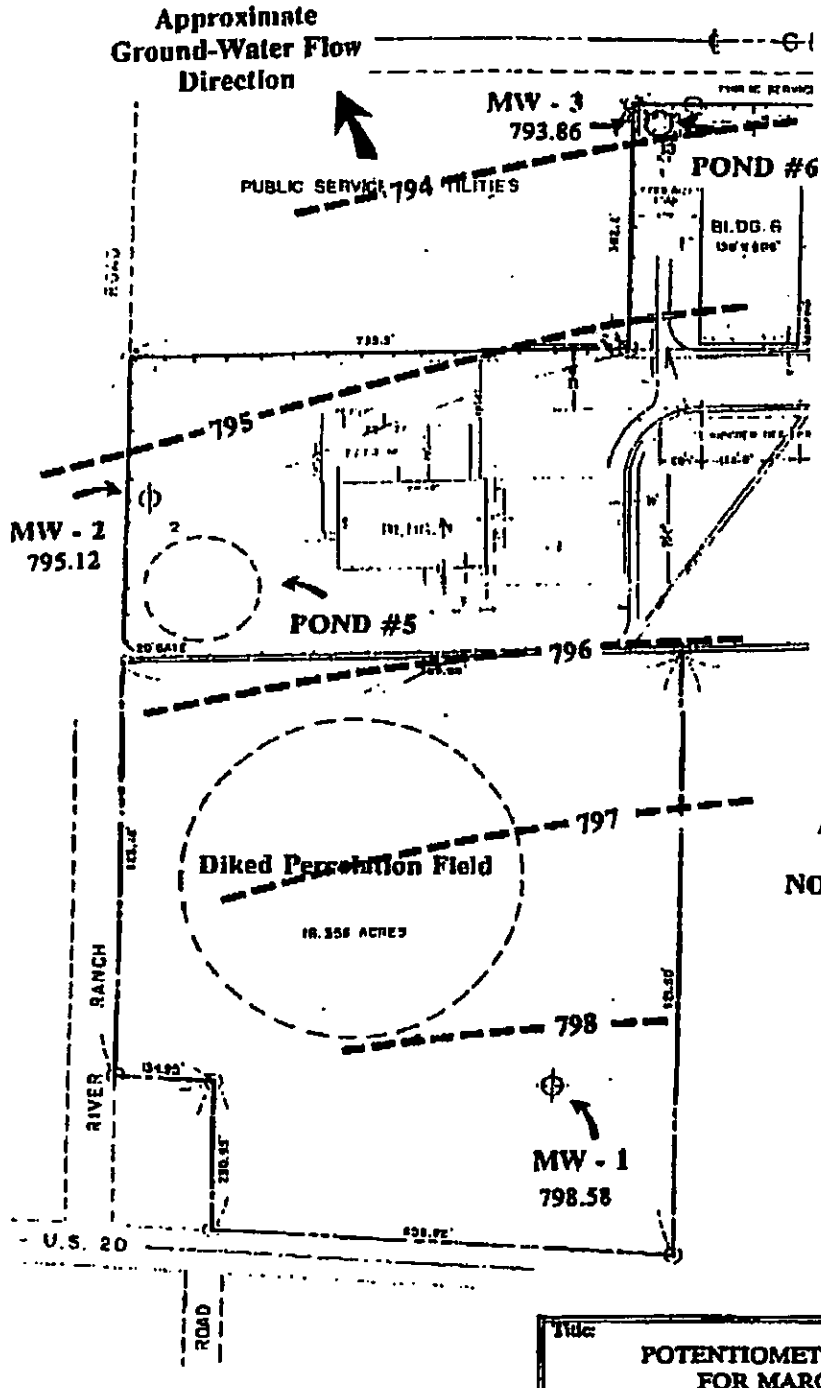
Title:
MONITORING WELL LOCATION MAP - ARNOLD ENGINEERING
Prepared for:
ARNOLD ENGINEERING COMPANY
ROUX
ROUX ASSOCIATES INC
Compiled by: SJW
Prepared by: SJW
Project Mgr: DLM
File No.:
Date: 04/10/30
Scale: none
Revision: 0
Figure: 5
NORTH
WEST STREET
OVERFLOW POND 5
OVERFLOW POND 6
MW - 3
MW - 2
MW - 1
DIKED PERCOLATION FIELD
PROPERTY OF OTHERS
PUBLIC SERVICE CO. UTILITIES
ROAD
RANCH
U.S. 20

APPENDIX B

GROUND WATER FLOW MAPS


MW - 3
792.19
POND #6
Approximate
Ground-Water Flow
Direction
BLDG. 6
MW - 2
792.51
793
POND #5
794
Diked Percolation Field
NORTH
RIVER RANCH
MW - 1
794.87
U S 20
ROAD
Title:
POTENTIOMETRIC SURFACE MAP
FOR MARCH 7, 1990
Prepared for:
ARNOLD ENGINEERING COMPANY
ROUX
Compiled by:HBM/SJW
Date: 04/03/90
Prepared by:HBM/SJW
Scale = 1" = 350'
Project Mgr:DLM
Revision: 0
File No:IB301I
Figure: 3


Approximate
Ground-Water Flow
Direction
MW - 3
793.37
794
POND #6
PUBLIC SERVICE CO. UTILITIES
BLDG. 6
795
796
MW - 2
796.02
POND #5
Diked Percolation Field
18.35A ACRES
797
NORTH
RIVER RANCH
MW - 1
797.29
U.S. 20
1040
Title:
POTENTIOMETRIC SURFACE MAP
FOR MARCH 15, 1990
Prepared for:
ARNOLD ENGINEERING COMPANY
ROUX
Compiled by:HBM/SJW
Date: 04/03/90
Prepared by:HBM/SJW
Scale = 1" = 350'
Project Mgr:DLM
Revision: 0
File No:18001
Figure: 3

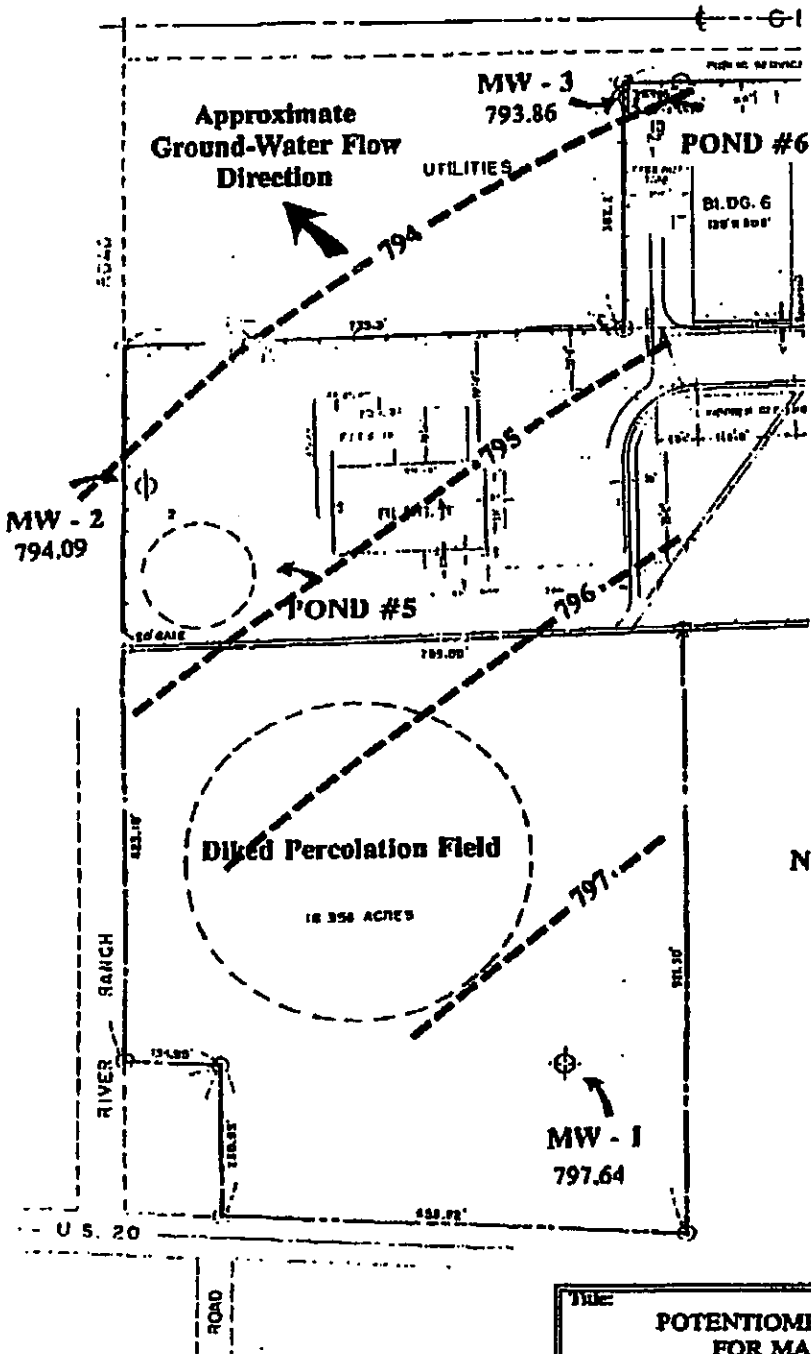


Title:
POTENTIOMETRIC SURFACE MAP
FOR MARCH 22, 1990

Prepared for:
ARNOLD ENGINEERING COMPANY

ROUX

Compiled by: HM/SJW	Date: 01/03/90
Prepared by: HM/SJW	Scale: 1" = 350'
Project Mgr: DLM	Revision: 0
File No: 18501	Figure: 4



Title:
POTENTIOMETRIC SURFACE MAP
FOR MARCH 27, 1990

Prepared for:
ARNOLD ENGINEERING COMPANY

ROUX

Compiled by:JHM/SJW	Date: 04/03/90
Prepared by:JHM/SJW	Scale = 1" = 250'
Project Mgr:DLM	Revision: 0
File No:183011	Figure: 5

TOTAL P.10

ATTACHMENT E – HYDRAULIC CONDUCTIVITY INPUT DATA AND RESULTS

PROJECT INFORMATION

Company: EGSL
Client: 300 West LLC
Project: 805247
Location: 300 West St.-Marengo
Test Date: 10/06/2012
Test Well: MW-16

AQUIFER DATA

Saturated Thickness: 12.82 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.0833 ft
Wellbore Radius: 0.1458 ft
Well Skin Radius: 0.1458 ft
Screen Length: 15. ft
Total Well Penetration Depth: 15. ft
Gravel Pack Porosity: 0.32

No. of observations: 21

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.	0.7	0.57	1.4	0.
0.1	0.93	0.8	0.49	1.5	0.
0.2	0.89	0.9	0.43	1.6	0.
0.3	0.8	1.	0.33	1.7	0.
0.4	0.73	1.1	0.24	1.8	0.
0.5	0.68	1.2	0.13	1.9	0.
0.6	0.62	1.3	0.05	2.	0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001966	ft/sec
y0	1.943	ft

PROJECT INFORMATION

Company: EGSL
Client: 300 West LLC
Project: 805247
Location: 300 West St.-Marengo
Test Date: 10/06/2012
Test Well: MW-10

AQUIFER DATA

Saturated Thickness: 15.85 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.0833 ft
Wellbore Radius: 0.1458 ft
Well Skin Radius: 0.1458 ft
Screen Length: 15. ft
Total Well Penetration Depth: 15. ft
Gravel Pack Porosity: 0.32

No. of observations: 21

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.	0.7	0.63	1.4	0.17
0.1	0.98	0.8	0.6	1.5	0.1
0.2	0.93	0.9	0.53	1.6	0.04
0.3	0.9	1.	0.42	1.7	0.01
0.4	0.85	1.1	0.34	1.8	0.
0.5	0.75	1.2	0.3	1.9	0.
0.6	0.71	1.3	0.23	2.	0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001611	ft/sec
y0	1.943	ft

PROJECT INFORMATION

Company: EGSL
Client: 300 West LLC
Project: 805247
Location: 300 West St.-Marengo
Test Date: 10/06/2012
Test Well: MW-13

AQUIFER DATA

Saturated Thickness: 14.49 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.0833 ft
Wellbore Radius: 0.1458 ft
Well Skin Radius: 0.1458 ft
Screen Length: 15. ft
Total Well Penetration Depth: 14.49 ft
Gravel Pack Porosity: 0.32

No. of observations: 21

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.	0.7	0.59	1.4	0.
0.1	0.97	0.8	0.48	1.5	0.
0.2	0.92	0.9	0.42	1.6	0.
0.3	0.88	1.	0.38	1.7	0.
0.4	0.8	1.1	0.2	1.8	0.
0.5	0.73	1.2	0.13	1.9	0.
0.6	0.7	1.3	0.07	2.	0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.00174	ft/sec
y0	1.943	ft

PROJECT INFORMATION

Company: EGSL
Client: 300 West LLC
Project: 805247
Location: 300 West St.-Marengo
Test Date: 10/06/2012
Test Well: MW-14

AQUIFER DATA

Saturated Thickness: 15.68 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.0833 ft
Wellbore Radius: 0.1458 ft
Well Skin Radius: 0.1458 ft
Screen Length: 15. ft
Total Well Penetration Depth: 15. ft
Gravel Pack Porosity: 0.32

No. of observations: 21

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.	0.7	0.52	1.4	0.07
0.1	0.99	0.8	0.41	1.5	0.03
0.2	0.97	0.9	0.4	1.6	0.
0.3	0.82	1.	0.32	1.7	0.
0.4	0.79	1.1	0.28	1.8	0.
0.5	0.7	1.2	0.21	1.9	0.
0.6	0.64	1.3	0.13	2.	0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001608	ft/sec
y0	1.943	ft

ATTACHMENT F – TIER 2 CALCULATION INPUT DATA AND RESULTS

TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-4 Chemical of Concern *1,1,1-TRICHLOROETHANE Concentration Detected (mg/L) 0.3	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_v/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	2950.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	295.00	cm
Vertical Dispersitivity	α_z	14.75	cm
Transverse Dispersitivity	α_y	98.33	cm
Source Concentration	GW_{source}	0.3	mg/L
Concentration at X (R-26)	C_x	2.00E-01	mg/L
Groundwater Objective		0.2	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies	Monitoring Well MW-1	Soil Type Sand
Address 300 West Street - Marengo Illinois	Chemical of Concern *1,1-DICHLOROETHYLENE	Class I / Class II Groundwater Class I
LPC# 1110650003	Concentration Detected (mg/L) 0.017	Objective Comparison Residential
EGSL Project # 805247		
Date 1/15/2013		

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	4900.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.38	cm^3/cm^3
Longitudinal Dispersitivity	α_x	490.00	cm
Vertical Dispersitivity	α_z	24.50	cm
Transverse Dispersitivity	α_y	163.33	cm
Source Concentration	GW_{source}	0.017	mg/L
Concentration at X (R-26)	C_x	6.96E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies	Monitoring Well MW-2	Soil Type Sand
Address 300 West Street - Marengo Illinois	Chemical of Concern *1,1-DICHLOROETHYLENE	Class I / Class II Groundwater Class I
LPC# 1110650003	Concentration Detected (mg/L) 0.044	Objective Comparison Residential
EGSL Project # 805247		
Date 1/15/2013		

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	11450.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	1145.00	cm
Vertical Dispersitivity	α_z	57.25	cm
Transverse Dispersitivity	α_y	381.67	cm
Source Concentration	GW_{source}	0.044	mg/L
Concentration at X (R-26)	C_x	6.99E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-4 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.036	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	18638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	9800.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	980.00	cm
Vertical Dispersitivity	α_z	49.00	cm
Transverse Dispersitivity	α_y	326.67	cm
Source Concentration	GW_{source}	0.036	mg/L
Concentration at X (R-26)	C_x	6.98E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/16/2013	Monitoring Well MW-5 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.013	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-05	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	3650.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	365.00	cm
Vertical Dispersitivity	α_z	18.25	cm
Transverse Dispersitivity	α_y	121.67	cm
Source Concentration	GW_{source}	0.013	mg/L
Concentration at X (R-26)	C_x	8.99E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 605247 Date 1/15/2013	Monitoring Well MW-6 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.012	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_v/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	3450.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	345.00	cm
Vertical Dispersitivity	α_z	17.25	cm
Transverse Dispersitivity	α_y	115.00	cm
Source Concentration	GW_{source}	0.012	mg/L
Concentration at X (R-26)	C_x	6.77E-03	mg/L
Groundwater Objective		0.007	mg/L

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Chicago, Illinois 60607

TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-7 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.031	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_v/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	18838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	8650.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	865.00	cm
Vertical Dispersitivity	α_z	43.25	cm
Transverse Dispersitivity	α_y	288.33	cm
Source Concentration	GW_{source}	0.031	mg/L
Concentration at X (R-26)	C_x	6.97E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-13 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.012	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	3350.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	336.00	cm
Vertical Dispersitivity	α_z	16.75	cm
Transverse Dispersitivity	α_y	111.67	cm
Source Concentration	GW_{source}	0.012	mg/L
Concentration at X (R-26)	C_x	8.94E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-17 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.01	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	2650.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.38	cm^3/cm^3
Longitudinal Dispersitivity	α_x	265.00	cm
Vertical Dispersitivity	α_z	13.25	cm
Transverse Dispersitivity	α_y	88.33	cm
Source Concentration	GW_{source}	0.01	mg/L
Concentration at X (R-26)	C_x	6.93E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-19 Chemical of Concern *1,1-DICHLOROETHYLENE Concentration Detected (mg/L) 0.016	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	4600.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	460.00	cm
Vertical Dispersitivity	α_z	23.00	cm
Transverse Dispersitivity	α_y	153.33	cm
Source Concentration	GW_{source}	0.016	mg/L
Concentration at X (R-26)	C_x	6.96E-03	mg/L
Groundwater Objective		0.007	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-4 Chemical of Concern * TETRACHLOROETHYLENE Concentration Detected (mg/L) 0.014	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.008	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	6150.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	615.00	cm
Vertical Dispersitivity	α_z	30.75	cm
Transverse Dispersitivity	α_y	205.00	cm
Source Concentration	GW_{source}	0.014	mg/L
Concentration at X (R-26)	C_x	4.99E-03	mg/L
Groundwater Objective		0.005	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies	Monitoring Well MW-7	Soil Type Sand
Address 300 West Street - Marengo Illinois	Chemical of Concern * TETRACHLOROETHYLENE	Class I / Class II Groundwater Class I
LPC# 1110650003	Concentration Detected (mg/L) 0.12	Objective Comparison Residential
EGSL Project # 805247		
Date 1/15/2013		

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.008	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	30500.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4840000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	3050.00	cm
Vertical Dispersitivity	α_z	152.50	cm
Transverse Dispersitivity	α_y	1016.67	cm
Source Concentration	GW_{source}	0.12	mg/L
Concentration at X (R-28)	C_x	4.85E-03	mg/L
Groundwater Objective		0.005	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies	Monitoring Well MW-8	Soil Type Sand
Address 300 West Street - Marengo Illinois	Chemical of Concern * TETRACHLOROETHYLENE	Class I / Class II Groundwater Class I
LPC# 1110650003	Concentration Detected (mg/L) 0.01	Objective Comparison Residential
EGSL Project # 805247		
Date 1/15/2013		

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_v/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16538.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	4250.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	425.00	cm
Vertical Dispersitivity	α_z	21.25	cm
Transverse Dispersitivity	α_y	141.67	cm
Source Concentration	GW_{source}	0.01	mg/L
Concentration at X (R-26)	C_x	4.99E-03	mg/L
Groundwater Objective		0.005	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-19 Chemical of Concern * TETRACHLOROETHYLENE Concentration Detected (mg/L) 0.0092	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_v/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	3850.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4840000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	385.00	cm
Vertical Dispersitivity	α_z	19.25	cm
Transverse Dispersitivity	α_y	128.33	cm
Source Concentration	GW_{source}	0.0092	mg/L
Concentration at X (R-26)	C_x	4.99E-03	mg/L
Groundwater Objective		0.005	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-6 Chemical of Concern * TRICHLOROETHYLENE (e) Concentration Detected (mg/L) 0.01	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	4300.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	430.00	cm
Vertical Dispersitivity	α_z	21.50	cm
Transverse Dispersitivity	α_y	143.33	cm
Source Concentration	GW_{source}	0.01	mg/L
Concentration at X (R-26)	C_x	4.98E-03	mg/L
Groundwater Objective		0.005	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-7 Chemical of Concern * TRICHLOROETHYLENE (e) Concentration Detected (mg/L) 0.0078	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_p/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	3150.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	315.00	cm
Vertical Dispersitivity	α_z	15.75	cm
Transverse Dispersitivity	α_y	105.00	cm
Source Concentration	GW_{source}	0.0078	mg/L
Concentration at X (R-26)	C_x	5.00E-03	mg/L
Groundwater Objective		0.005	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-18 Chemical of Concern *VINYL CHLORIDE (e) Concentration Detected (mg/L) 0.0025	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	2300.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	230.00	cm
Vertical Dispersitivity	α_z	11.50	cm
Transverse Dispersitivity	α_y	76.67	cm
Source Concentration	GW_{source}	0.0025	mg/L
Concentration at X (R-26)	C_x	1.98E-03	mg/L
Groundwater Objective		0.002	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-13 Chemical of Concern Aluminum Concentration Detected (mg/L) 44	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	21800.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.38	cm^3/cm^3
Longitudinal Dispersitivity	α_x	2180.00	cm
Vertical Dispersitivity	α_z	109.00	cm
Transverse Dispersitivity	α_y	726.67	cm
Source Concentration	GW_{source}	44	mg/L
Concentration at X (R-26)	C_x	3.49E+00	mg/L
Groundwater Objective		3.6	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-8 Chemical of Concern ANTIMONY Concentration Detected (mg/L) 0.0085	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	2800.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	280.00	cm
Vertical Dispersitivity	α_z	14.00	cm
Transverse Dispersitivity	α_y	93.33	cm
Source Concentration	GW_{source}	0.0085	mg/L
Concentration at X (R-26)	C_x	5.95E-03	mg/L
Groundwater Objective		0.006	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-8 Chemical of Concern ARSENIC Concentration Detected (mg/L) 0.28	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	12350.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	1235.00	cm
Vertical Dispersitivity	α_z	61.75	cm
Transverse Dispersitivity	α_y	411.67	cm
Source Concentration	GW_{source}	0.28	mg/L
Concentration at X (R-26)	C_r	4.98E-02	mg/L
Groundwater Objective		0.05	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-3 Chemical of Concern BARIUM Concentration Detected (mg/L) 2.7	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	2600.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	260.00	cm
Vertical Dispersitivity	α_z	13.00	cm
Transverse Dispersitivity	α_y	86.67	cm
Source Concentration	GW_{source}	2.7	mg/L
Concentration at X (R-26)	C_x	1.99E+00	mg/L
Groundwater Objective		2	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-13 Chemical of Concern CHROMIUM Concentration Detected (mg/L) 0.16	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	3300.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	330.00	cm
Vertical Dispersitivity	α_z	16.50	cm
Transverse Dispersitivity	α_y	110.00	cm
Source Concentration	GW_{source}	0.16	mg/L
Concentration at X (R-26)	C_x	9.94E-02	mg/L
Groundwater Objective		0.1	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-8 Chemical of Concern Iron Concentration Detected (mg/L) 360	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	56800.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	5680.00	cm
Vertical Dispersitivity	α_z	284.00	cm
Transverse Dispersitivity	α_y	1893.33	cm
Source Concentration	GW_{source}	360	mg/L
Concentration at X (R-26)	C_r	4.99E+00	mg/L
Groundwater Objective		5	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110850003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-9 Chemical of Concern LEAD Concentration Detected (mg/L) 0.17	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_p/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16838.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	30700.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	3070.00	cm
Vertical Dispersitivity	α_z	153.50	cm
Transverse Dispersitivity	α_y	1023.33	cm
Source Concentration	GW_{source}	0.17	mg/L
Concentration at X (R-26)	C_x	7.49E-03	mg/L
Groundwater Objective		0.0075	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-8 Chemical of Concern MANGANESE Concentration Detected (mg/L) 31	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.008	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-05	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	97500.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4840000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	9750.00	cm
Vertical Dispersitivity	α_z	487.50	cm
Transverse Dispersitivity	α_y	3250.00	cm
Source Concentration	GW_{source}	31	mg/L
Concentration at X (R-26)	C_x	1.49E-01	mg/L
Groundwater Objective		0.15	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 805247 Date 1/15/2013	Monitoring Well MW-9 Chemical of Concern NICKEL Concentration Detected (mg/L) 0.83	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	I	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	16700.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	1670.00	cm
Vertical Dispersitivity	α_z	83.50	cm
Transverse Dispersitivity	α_y	556.67	cm
Source Concentration	GW_{source}	0.83	mg/L
Concentration at X (R-26)	C_x	9.92E-02	mg/L
Groundwater Objective		0.1	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110650003 EGSL Project # 605247 Date 1/15/2013	Monitoring Well MW-8 Chemical of Concern THALLIUM Concentration Detected (mg/L) 0.0082	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	η	0.32	0.32	L_v/L_s
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_s
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_s

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	7000.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	I	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	700.00	cm
Vertical Dispersitivity	α_z	35.00	cm
Transverse Dispersitivity	α_y	233.33	cm
Source Concentration	GW_{source}	0.0082	mg/L
Concentration at X (R-26)	C_x	1.99E-03	mg/L
Groundwater Objective		0.002	mg/L

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TACO TIER 2 INPUT DATA AND RESULTS

Subject Property Arnold Magnetic Technologies Address 300 West Street - Marengo Illinois LPC# 1110850003 EGSL Project # 605247 Date 1/15/2013	Monitoring Well MW-8 Chemical of Concern VANADIUM Concentration Detected (mg/L) 0.27	Soil Type Sand Class I / Class II Groundwater Class I Objective Comparison Residential

Parameter	Symbol	Ing and Inh Value (0-3.2 feet)	Migration to GW Value (3.2 feet to groundwater)	units
Organic Carbon	f_{oc}	0.006	0.002	g/g
Porosity	n	0.32	0.32	L_v/L_t
Density	ρ_s	2.65	2.65	kg/L
Moisture Percentage	w	0.10	0.10	g_w/g_s
Water-Filled Soil Porosity	θ_w	0.18	0.18	L_w/L_t
Dry Soil Bulk Density	ρ_b	1.80	1.80	kg/L
Air-Filled Soil Porosity	θ_a	0.14	0.14	L_a/L_t

Parameter	Symbol	Value	Units
Target Risk Factor	trf	1.00E-06	unitless
Dilution Factor	DF	20	unitless
Mixing Zone Depth	d	2	m
Infiltration Rate	I	0.3	m/yr
Hydraulic Gradient	i	2.32E-02	m/m
Source Length	L	15.5	m
Hydraulic Conductivity	K	16638.39	m/yr
Aquifer Thickness	d_a	4.6	m

R-26

Parameter	Symbol	Value	Units
Distance	X	12150.00	cm
Source Width	S_w	1500.00	cm
Source Depth	S_d	2500.00	cm
Hydraulic Conductivity	K	4558.4640000	cm/d
Hydraulic Gradient	i	0.023240	m/m
Total Porosity	θ_t	0.36	cm^3/cm^3
Longitudinal Dispersitivity	α_x	1215.00	cm
Vertical Dispersitivity	α_z	60.75	cm
Transverse Dispersitivity	α_y	405.00	cm
Source Concentration	GW_{source}	0.27	mg/L
Concentration at X (R-26)	C_x	4.90E-02	mg/L
Groundwater Objective		0.049	mg/L

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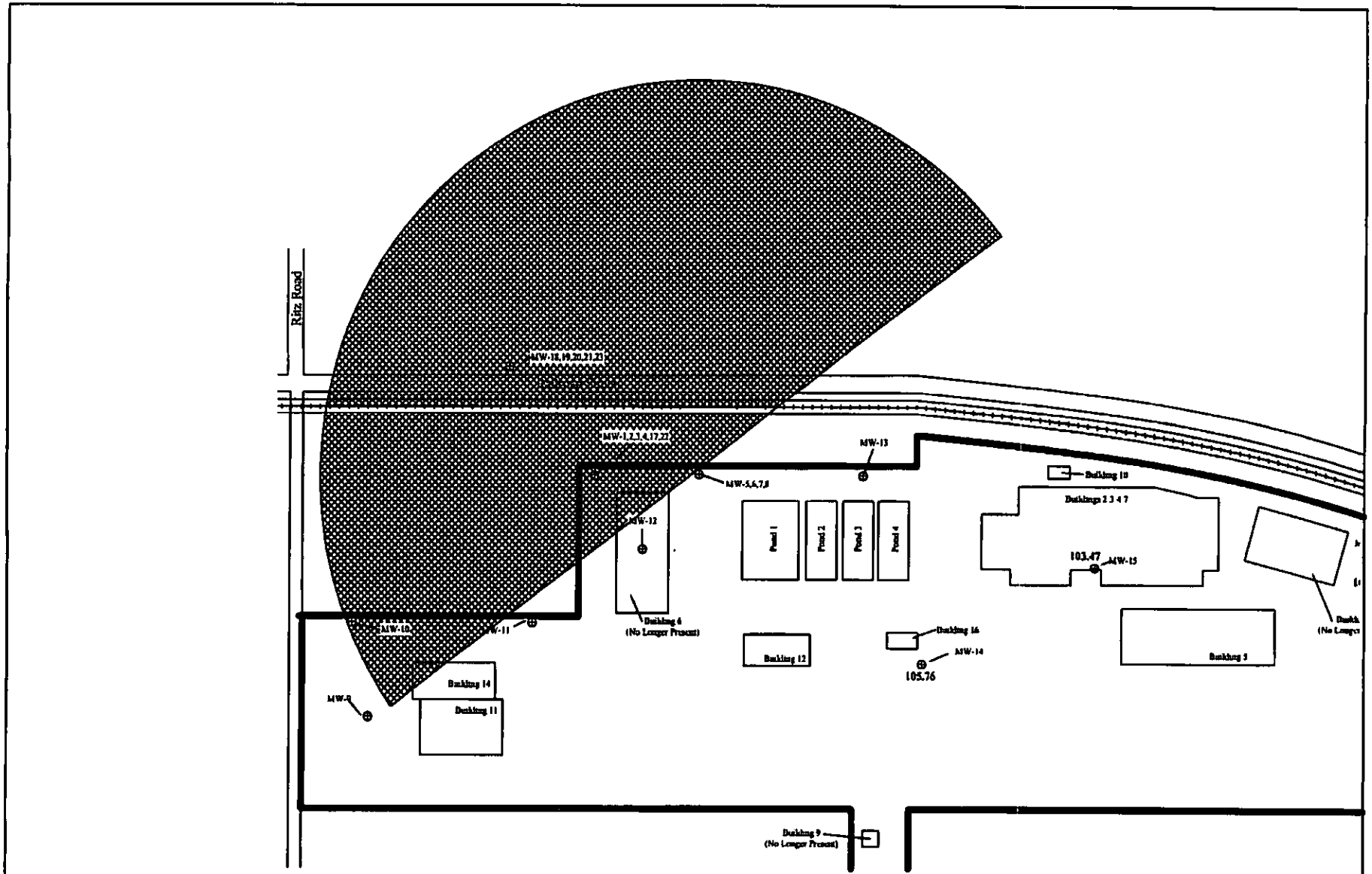
ATTACHMENT G – VOC (PCE) PLUME DIAGRAM

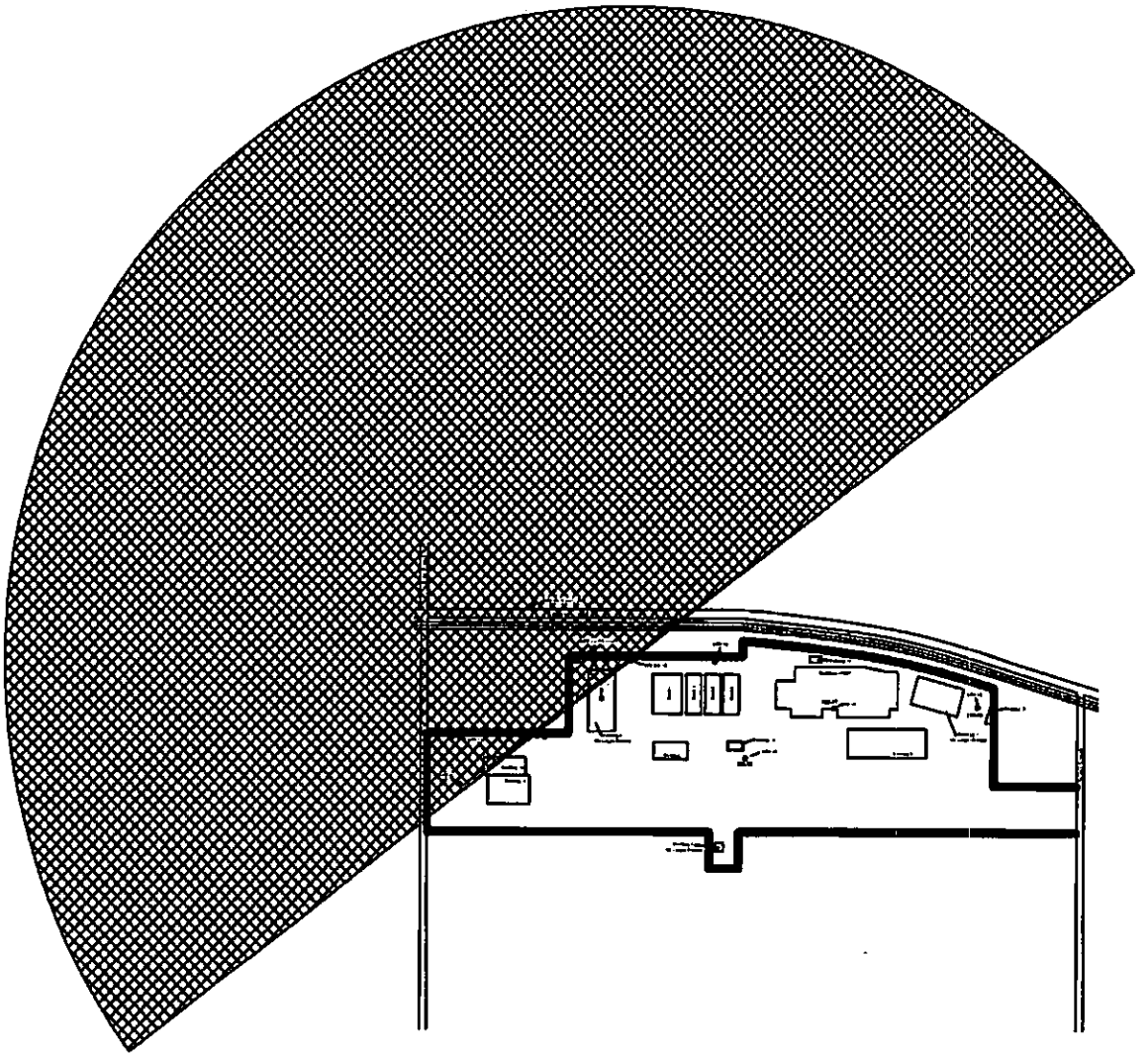


egsl ENVIRONMENTAL GROUP SERVICES LIMITED

Project Name: Arnold Technologies 300 West Street Marengo, Illinois	Drawing Title: PCE Plume	Drawing Legend: Monitoring Well ⊕ Plume Area Property Line	N
Project Number: 805247	Date: 01.15.2013		GRAPHIC SCALE 0 350

R 000167

ATTACHMENT H – INORGANIC (MANGANESE) PLUME DIAGRAM



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Project Name: Arnold Technologies 300 West Street Marengo, Illinois	Drawing Title: Manganese Plume	Drawing Legend: Monitoring Well ⊕ Plume Area Property Line	N
Project Number: 805247	Date: 01.15.2013		GRAPHIC SCALE

R 000169

ATTACHEMENT I – NORTH/NORTHWESTERLY PRIVATE WELL ADDRESSES

Illinois EPA FOIA Exemption Reference Sheet

SID: 12171

Agency ID: 170000116265 Media File Type: LAND
Bureau ID: 1110650003
Site Name: Arnold Magnetic Technologies
Site Address1: 300 N West St
Site Address2:
Site City: Marengo State: IL Zip: 60152-

This record has been determined to be partially or wholly exempt from public disclosure

Exemption Type:

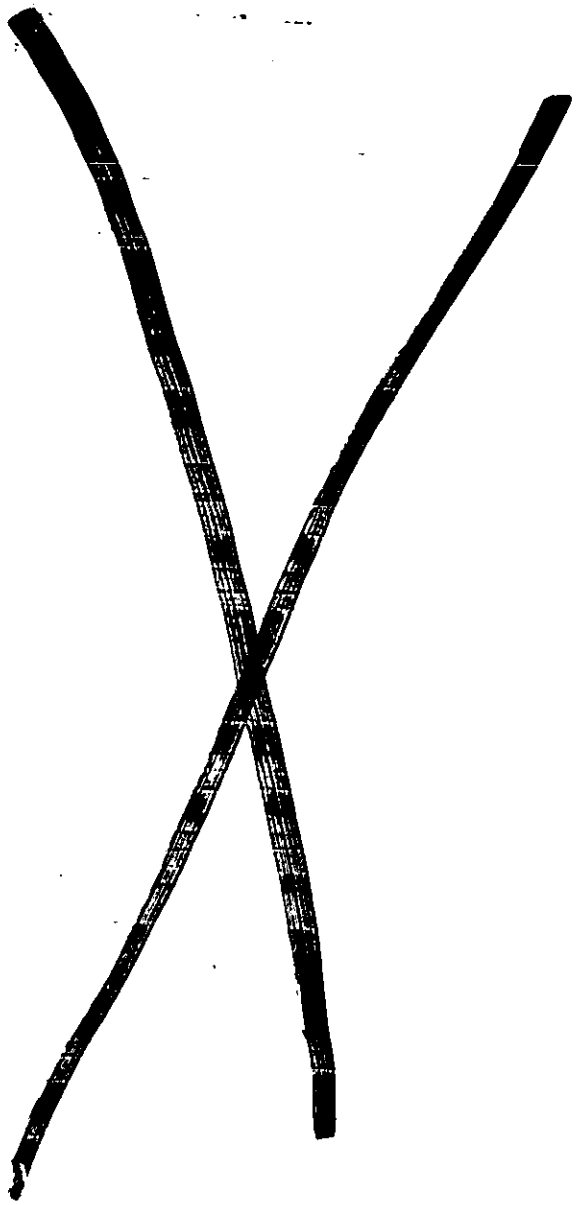
Redaction

Exempt Doc #: 7 **Document Date:** 1 /24/2013 **Staff:** EAV

Document Description: SITE REMEDIATION - RIGHT TO KNOW RESPONSE

Category ID: 31A **Category Description:** SITE REMEDIATION - TECHNICAL **Exempt Type:** Redaction
Permit ID: **Date of Determination:** 2 /1 /2013

Contact Info for Private Wells located north of Arnold Magnetics site:



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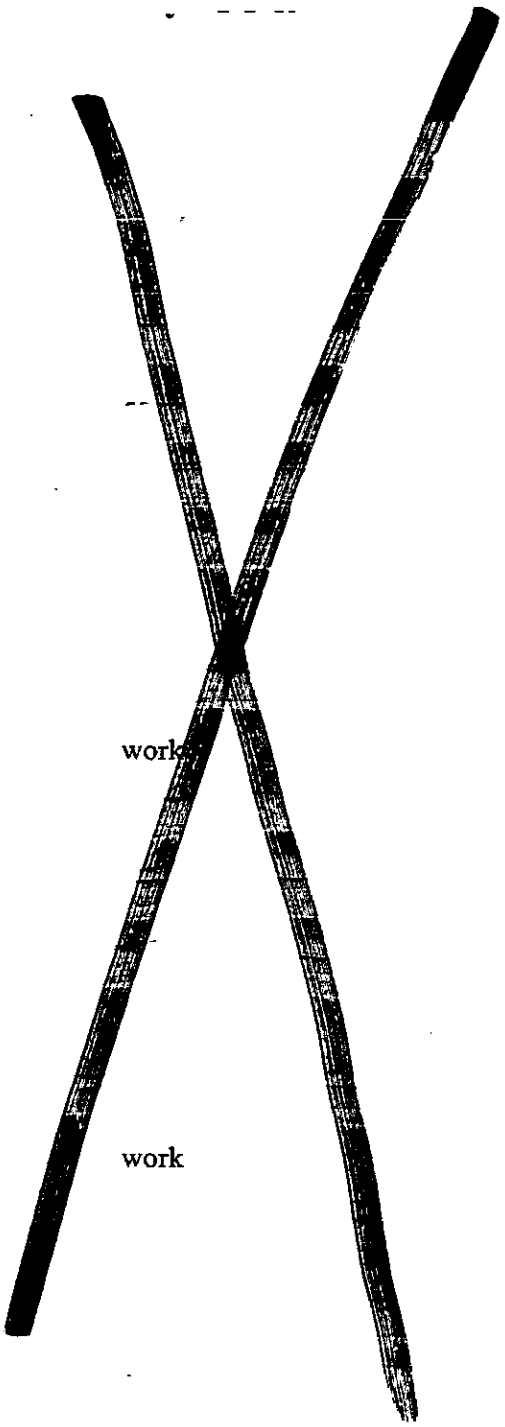
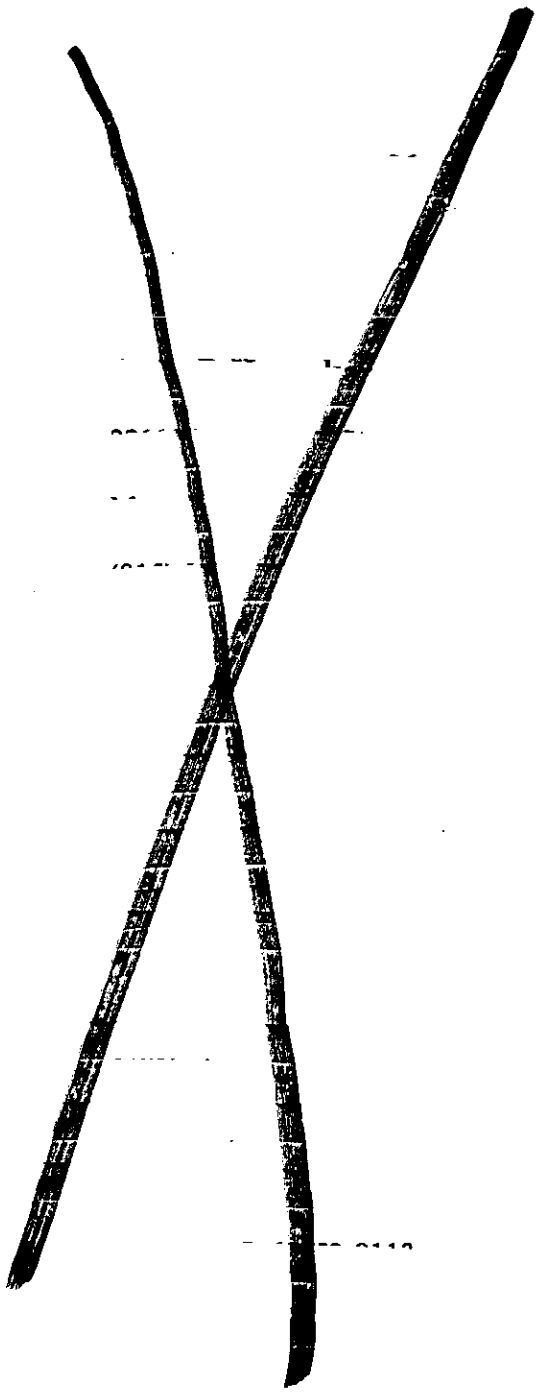
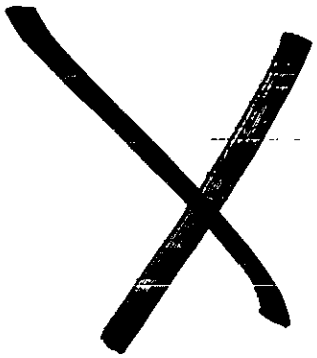

work
work





Farm Services & Supplies Inc

work

21606 W Railroad St

Marengo, IL 60152-9174

(815) 568-7225

Unable to Locate Contact Info for the following:

ATTACHMENT J – DRAFT REQUEST LETTER

DRAFT

May 5, 2008

Resident

[redacted]

Dear Resident:

The Illinois Environmental Protection Agency (Illinois EPA) and Environmental Group Services Limited (EGSL) are planning a private well water sampling event in your area. Due to manufacturing businesses that operate in your area, we would like to check to make sure that volatile organic compounds (VOCs) have not impacted private wells. Residences and businesses on Ritz Road and Railroad Street are locations that we would like to collect private well water samples and then have the samples analyzed for VOCs at an Illinois EPA accredited laboratory.

I highly recommend that you allow us to sample your private well. The sampling will be conducted at no charge to you and you'll be provided the VOC sample analytical results and a letter from an Illinois Department of Public Health (IDPH) Toxicologist approximately 6 weeks after your private well is sampled. Most likely we'll be able to collect the water sample directly from your outside water spigot. We have to collect the water sample from an unfiltered and unsoftened spigot after a 20 minute water purge is conducted.

Please contact me as soon as possible at **847/294-4079**; I would like to discuss this with you further. Please fill out the attached private well sampling access form and FAX it to my attention at **847/294-4083**, or mail it to me at the below listed address, or return it to me the day your water is sampled. If your not home you can tape the form to your front door.

Illinois EPA – Bureau of Land
Attention: Thomas Rivera
9511 W. Harrison, 3rd floor
Des Plaines, IL 60016

Sincerely,

Thomas A. Rivera
Project Manager
Field Operations Section
Bureau of Land

For Agency Use Only

WELL ID#: _____

Sample Date _____ Sampler Initials _____

To Be Completed by Resident

CONFIDENTIAL

Marengo, IL PRIVATE WELL SAMPLING ACCESS

(Please make corrections here if label is incorrect)

NAME: _____-label-_____

ADDRESS: _____

_____

PUBLIC WATER? _____

NOTE: If you have public water, no need to complete the rest of the form. Just mail it in.

PRIVATE WELL? X

RESIDENTS: ___ Adults (over age 18); ___ Children (Ages:_____)

Expectant Mother? _____

TELEPHONE: (Home: /_____); (Work:____/_____)

Best time to call _____; _____

Well Location, relative to house? _____ DEPTH of WELL?_____

Do you make use of the well water for:

DRINKING? _____Yes ____ No

COOKING? _____ Yes ____ No

BATHING? _____Yes ____ No

Do you use BOTTLED WATER? _____Yes ____ No

Do you use a WHOLE-HOUSE filter? _____Yes ____ No: Type - Fabric (for particles) ___ Activated charcoal ___

Other (kitchen only, etc.)- _____

Do you use a WATER SOFTENER? _____Yes ____ No

Is there an OUTSIDE, Unfiltered/Unsoftened Spigot/Tap? _____ Yes _____ No

Where is it? _____

(If you have no outside spigot/tap that we can access, we will contact you to make other arrangements).

COMMENTS (Dog/Locked Gate, Etc.):_____

_____

_____

_____

Permission To Sample Well? ____Yes ____ No

Date _____ Signature _____

ATTACHMENT K – PRIVATE RESPONSE LETTERS

For Agency Use Only
Thomas Rivera
Illinois EPA - BOL

WELL ID#: _____
Sample Date _____ Sampler Initials _____

To Be Completed by Resident

CONFIDENTIAL

Marengo, IL PRIVATE WELL SAMPLING ACCESS

(Please make corrections here if label is incorrect)

NAME: [redacted]

ADDRESS: [redacted]

PUBLIC WATER? _____

NOTE: If you have public water, no need to complete the rest of the form. Just mail it in.

PRIVATE WELL? Yes

RESIDENTS: 2 Adults (over age 18); ___ Children (Ages: _____)
Expectant Mother? _____

TELEPHONE: (Home: [redacted] (Work [redacted]
Best time to call after 5 pm ; my cell phone

Well Location, relative to house? South side of house DEPTH of WELL? 180

Do you make use of the well water for:

DRINKING?	✓ Yes	___ No
COOKING?	✓ Yes	___ No
BATHING?	✓ Yes	___ No
Do you use BOTTLED WATER?	___ Yes	✓ No
Do you use a WHOLE-HOUSE filter?	___ Yes	✓ No; Type - Fabric (for particles) ___ Activated charcoal ___

Other (kitchen only, etc.)- _____

Do you use a WATER SOFTENER? X Yes ___ No

Is there an OUTSIDE, Unfiltered/Unsoftened Spigot/Tap? X Yes ___ No

Where is it? back of our house

(If you have no outside spigot/tap that we can access, we will contact you to make other arrangements).

COMMENTS (Dog/Locked Gate, Etc.): [redacted]

Permission To Sample Well? X Yes ___ No

Date 5/27/08 Signature [redacted]

For Agency Use Only
Thomas Rivera
Illinois EPA - BOL

WELL ID#: ____
Sample Date ____ Sampler Initials ____

To Be Completed by Resident

CONFIDENTIAL

Marengo, IL

PRIVATE WELL SAMPLING ACCESS

[redacted]

(Please make corrections here if label is incorrect)

NAME: ____-label-__ ____

ADDRESS: [redacted]

PUBLIC WATER? ____

NOTE: If you have public water, no need to complete the rest of the form. Just mail it in

PRIVATE WELL? ✓

RESIDENTS: 2 Adults (over age 18); 0 Children (Ages: ____)
Expectant Mother? 0

TELEPHONE: (Home: [redacted]; CELL ~~(Work:~~ [redacted]
Best time to call 8:00 AM TO 6:00 PM.

Well Location, relative to house? 54' EAST of Porch behind guard rail DEPTH of WELL? 70'

Do you make use of the well water for:

DRINKING?	✓ Yes	___ No
COOKING?	✓ Yes	___ No
BATHING?	✓ Yes	___ No

Do you use BOTTLED WATER? ✓ Yes ___ No

Do you use a WHOLE-HOUSE filter? ___ Yes ✓ No; Type - Fabric (for particles) ___
Activated charcoal ___
Other (kitchen only, etc.)- ____

Do you use a WATER SOFTENER? ✓ Yes ___ No

Is there an OUTSIDE, Unfiltered/Unsoftened Spigot/Tap? ✓ Yes ___ No

Where is it? 4' north of well pump

(If you have no outside spigot/tap that we can access, we will contact you to make other arrangements).

COMMENTS (Dog/Locked Gate, Etc.): additional spigot near garden 100 ft North of well.

Permission To Sample Well? ✓ Yes ___ No

Date May 13, 2008 Signatu[redacted]

For Agency Use Only
Thomas Rivera
Illinois EPA - BOL

WELL ID#: _____
Sample Date _____ Sampler Initials _____

To Be Completed by Resident

CONFIDENTIAL

Marengo, IL PRIVATE WELL SAMPLING ACCESS

(Please make corrections here if label is incorrect)

NAME: _____-label-[redacted]

ADDRESS: [redacted]

PUBLIC WATER? _____ NOTE: If you have public water, no need to complete the rest of the form. Just mail it in. PRIVATE WELL? ✓

RESIDENTS: 1 Adults (over age 18); ___ Children (Ages: _____)
Expectant Mother? _____

TELEPHONE: (Home: [redacted] Work [redacted])
Best time to call After 3pm ; [redacted]

Well Location, relative to house? South Side of house DEPTH of WELL? 118 ft.

Do you make use of the well water for:

DRINKING?	✓ Yes	___ No
COOKING?	✓ Yes	___ No
BATHING?	✓ Yes	___ No

Do you use BOTTLED WATER? ___ Yes ✓ No

Do you use a WHOLE-HOUSE filter? ___ Yes ✓ No; Type - Fabric (for particles) ___
Activated charcoal ___
Other (kitchen only, etc.)- _____

Do you use a WATER SOFTENER? ✓ Yes ___ No

Is there an OUTSIDE, Unfiltered/Unsoftened Spigot/Tap? ✓ Yes ___ No

Where is it? back of house, left of stairs (larger spigot)

(If you have no outside spigot/tap that we can access, we will contact you to make other arrangements).

COMMENTS (Dog/Locked Gate, Etc.): _____

Permission To Sample Well? ✓ Yes ___ No

Date 5-23-08 Signature [redacted]

V

ATTACHMENT L – OFF-SITE SAMPLING ANALYTICAL (JUNE-2008)

Bill Lennon

From: Rivera, Thomas [Thomas.Rivera@Illinois.gov]
Sent: Monday, July 07, 2008 10:00 AM
To: Baughman, Tom
Cc: Bill Lennon; Katamay, Karen; Zook, Tim; john daley; mary@mprealty.net
Subject: CONFIDENTIAL INFORMATION - Review of Private Well Sample Results (Marengo)
Attachments: Private Well Analytical.pdf

Hi Tom,

Attached are sample results for 3 residential private well water samples that **Environmental Group Services Limited** and I collected on June 19, 2008, for the purpose of checking if VOC groundwater impacts have occurred from a nearby Manufacturing site. Please review the results and report your review information to the residences in writing, see the below list of addresses and names with the corresponding sample numbers. Please attach the appropriate sample results to your letters and disregard the trip blank sample results, chain of custody form and QC results. Pease copy Sarah Berg at the McHenry County Public Health Department on the letters and attached sample results. Sarah's is the lead groundwater person at the County now. I will copy Environmental Group Services Limited on the letters, via e-mail, when I receive my copy from you.

Thank You and here is the necessary information. As always, I appreciate your help.

Sample IDs: 1 and 1D (duplicate)

[redacted]

Sample ID: 2

[redacted]

Sample ID: 3

[redacted]

Thomas Rivera

Illinois EPA | Bureau of Land

Field Operation Section, Third Floor

9511 Harrison Street

Des Plaines, Illinois 60016

Office: 847/294-4079 | Fax: 847/294-4083

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 500-12141-1

Job Description: Marengo -- Drinking Water VOCs

For:
Environmental Group Services Ltd
557 West Polk Street
Suite 201
Chicago, IL 60607

Attention: Bill Lennon

Margaret Kniest

Margaret Kniest
Project Manager II
margaret.kniest@testamericainc.com
06/30/2008

These test results meet all the requirements of NELAC for accredited parameters.

The Lab Certification ID# is 100201.

All questions regarding this test report should be directed to the TestAmerica Project Manager whose signature appears on this report. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.
TestAmerica Chicago 2417 Bond Street, University Park, IL 60466
Tel (708) 534-5200 Fax (708) 534-5211 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

Job Narrative
500-J12141-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

EXECUTIVE SUMMARY - Detections

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method

No Detections

METHOD SUMMARY

Client: Environmental Group Services Ltd | Job Number: 500-12141-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Purgeable Organic Compounds in Water by GC/MS	TAL SAV	EPA-DW 524.2	

Lab References:

TAL SAV = TestAmerica Savannah

Method References:

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

METHOD / ANALYST SUMMARY

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Method	Analyst	Analyst ID
EPA-DW 524.2	Jakubsen, Melanie	MJ

SAMPLE SUMMARY

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
500-12141-1	1	Water	06/19/2008 0900	06/20/2008 1407
500-12141-2	1-D	Water	06/19/2008 0930	06/20/2008 1407
500-12141-3	2	Water	06/19/2008 0935	06/20/2008 1407
500-12141-4	3	Water	06/19/2008 1005	06/20/2008 1407
500-12141-5	TB	Water	06/19/2008 1015	06/20/2008 1407

SAMPLE RESULTS

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Client Sample ID: 1

Lab Sample ID: 500-12141-1
Client Matrix: Water

Date Sampled: 06/19/2008 0900
Date Received: 06/20/2008 1407

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/30/2008 0320
Date Prepared: N/A

Analysis Batch: 680-110309

Instrument ID: GC/MS Volatiles - U
Lab File ID: u062958.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,2,4-Trichlorobenzene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
Xylenes, Total	ND		0.50
Methylene Chloride	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
Vinyl chloride	ND		0.50
1,1-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1,1-Trichloroethane	ND		0.50
Carbon tetrachloride	ND		0.50
1,2-Dichloropropane	ND		0.50
Trichloroethene	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Chlorobenzene	ND		0.50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Styrene	ND		0.50
Methyl tert-butyl ether	ND		0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	86	70 - 130
4-Bromofluorobenzene	86	70 - 130

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Client Sample ID: 1-D

Lab Sample ID: 500-12141-2
Client Matrix: Water

Date Sampled: 06/19/2008 0930
Date Received: 06/20/2008 1407

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/30/2008 0340
Date Prepared: N/A

Analysis Batch: 680-110309

Instrument ID: GC/MS Volatiles - U
Lab File ID: u062959.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,2,4-Trichlorobenzene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
Xylenes, Total	ND		0.50
Methylene Chloride	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
Vinyl chloride	ND		0.50
1,1-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1,1-Trichloroethane	ND		0.50
Carbon tetrachloride	ND		0.50
1,2-Dichloropropane	ND		0.50
Trichloroethene	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Chlorobenzene	ND		0.50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Styrene	ND		0.50
Methyl tert-butyl ether	ND		0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	84	70 - 130
4-Bromofluorobenzene	87	70 - 130

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Client Sample ID: 2

Lab Sample ID: 500-12141-3
Client Matrix: Water

Date Sampled: 06/19/2008 0935
Date Received: 06/20/2008 1407

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/30/2008 0404
Date Prepared: N/A

Analysis Batch: 680-110309

Instrument ID: GC/MS Volatiles - U
Lab File ID: u062960.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,2,4-Trichlorobenzene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
Xylenes, Total	ND		0.50
Methylene Chloride	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
Vinyl chloride	ND		0.50
1,1-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1,1-Trichloroethane	ND		0.50
Carbon tetrachloride	ND		0.50
1,2-Dichloropropane	ND		0.50
Trichloroethene	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Chlorobenzene	ND		0.50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Styrene	ND		0.50
Methyl tert-butyl ether	ND		0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	86	70 - 130
4-Bromofluorobenzene	88	70 - 130

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Client Sample ID: 3

Lab Sample ID: 500-12141-4
Client Matrix: Water

Date Sampled: 06/19/2008 1005
Date Received: 06/20/2008 1407

524.2 Purgeable Organic Compounds In Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/30/2008 0423
Date Prepared: N/A

Analysis Batch: 680-110309

Instrument ID: GC/MS Volatiles - U
Lab File ID: u062961.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,2,4-Trichlorobenzene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
Xylenes, Total	ND		0.50
Methylene Chloride	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
Vinyl chloride	ND		0.50
1,1-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1,1-Trichloroethane	ND		0.50
Carbon tetrachloride	ND		0.50
1,2-Dichloropropane	ND		0.50
Trichloroethene	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Chlorobenzene	ND		0.50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Styrene	ND		0.50
Methyl tert-butyl ether	ND		0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	85	70 - 130
4-Bromofluorobenzene	86	70 - 130

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Client Sample ID: TB

Lab Sample ID: 500-12141-5
Client Matrix: Water

Date Sampled: 06/19/2008 1015
Date Received: 06/20/2008 1407

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/30/2008 0043
Date Prepared: N/A

Analysis Batch: 680-110309

Instrument ID: GC/MS Volatiles - U
Lab File ID: u062950.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,2,4-Trichlorobenzene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
Xylenes, Total	ND		0.50
Methylene Chloride	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
Vinyl chloride	ND		0.50
1,1-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1,1-Trichloroethane	ND		0.50
Carbon tetrachloride	ND		0.50
1,2-Dichloropropane	ND		0.50
Trichloroethene	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Chlorobenzene	ND		0.50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Styrene	ND		0.50
Methyl tert-butyl ether	ND		0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	83	70 - 130
4-Bromofluorobenzene	87	70 - 130

QUALITY CONTROL RESULTS

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:680-110309					
LCS 680-110309/9	Lab Control Spike	T	Water	524.2	
MB 680-110309/10	Method Blank	T	Water	524.2	
500-12141-1	1	T	Water	524.2	
500-12141-2	1-D	T	Water	524.2	
500-12141-3	2	T	Water	524.2	
500-12141-4	3	T	Water	524.2	
500-12141-5	TB	T	Water	524.2	

Report Basis
T = Total

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Surrogate Recovery Report

524.2 Purgeable Organic Compounds in Water by GC/MS

Client Matrix: Water

Lab Sample ID	Client Sample ID	12DCB %Rec	BFB %Rec
500-12141-1	1	86	86
500-12141-2	1-D	84	87
500-12141-3	2	86	88
500-12141-4	3	85	86
500-12141-5	TB	83	87
MB 680-110309/10		85	87
LCS 680-110309/9		98	97

Surrogate	Acceptance Limits
12DCB = 1,2-Dichlorobenzene-d4	70-130
BFB = 4-Bromofluorobenzene	70-130

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Method Blank - Batch: 680-110309

Method: 524.2
Preparation: N/A

Lab Sample ID: MB 680-110309/10
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/30/2008 0023
Date Prepared: N/A

Analysis Batch: 680-110309
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - U
Lab File ID: uq062912.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
1,2,4-Trichlorobenzene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
Xylenes, Total	ND		0.50
Methylene Chloride	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
Vinyl chloride	ND		0.50
1,1-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1,1-Trichloroethane	ND		0.50
Carbon tetrachloride	ND		0.50
1,2-Dichloropropane	ND		0.50
Trichloroethene	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Chlorobenzene	ND		0.50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Styrene	ND		0.50
Methyl tert-butyl ether	ND		0.50

Surrogate	% Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	85	70 - 130
4-Bromofluorobenzene	87	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Lab Control Spike - Batch: 680-110309

Method: 524.2
Preparation: N/A

Lab Sample ID: LCS 680-110309/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/29/2008 2324
Date Prepared: N/A

Analysis Batch: 680-110309
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - U
Lab File ID: uq062911.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
1,2,4-Trichlorobenzene	20.0	21.1	106	70 - 130	
cis-1,2-Dichloroethene	20.0	18.6	93	70 - 130	
Methylene Chloride	20.0	18.3	92	70 - 130	
1,2-Dichlorobenzene	20.0	20.4	102	70 - 130	
1,4-Dichlorobenzene	20.0	20.4	102	70 - 130	
Vinyl chloride	20.0	18.2	91	70 - 130	
1,1-Dichloroethene	20.0	19.2	96	70 - 130	
trans-1,2-Dichloroethene	20.0	18.2	91	70 - 130	
1,2-Dichloroethane	20.0	19.1	95	70 - 130	
1,1,1-Trichloroethane	20.0	19.3	96	70 - 130	
Carbon tetrachloride	20.0	20.4	102	70 - 130	
1,2-Dichloropropane	20.0	19.2	96	70 - 130	
Trichloroethene	20.0	18.1	90	70 - 130	
1,1,2-Trichloroethane	20.0	19.1	95	70 - 130	
Tetrachloroethene	20.0	20.0	100	70 - 130	
Chlorobenzene	20.0	20.4	102	70 - 130	
Benzene	20.0	18.7	94	70 - 130	
Toluene	20.0	19.1	96	70 - 130	
Ethylbenzene	20.0	19.0	95	70 - 130	
Styrene	20.0	20.4	102	70 - 130	
Methyl tert-butyl ether	16.0	14.8	93	70 - 130	

Surrogate	% Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	98	70 - 130
4-Bromofluorobenzene	97	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Chicago
2417 Bond Street

University Park, IL 60466
phone 708.534.5200 fax 708.534.5363

Chain of Custody Record

500-12141

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

R 000203

Client Contact	Project Manager: BELL	Site Contact:	Date:	COC No:
EGSL	Tel/Fax: 312. 447. 1200 x15	Lab Contact:	Carrier:	1 of 1 COCs
557 West Polk Street - Suite 201	Analysis Turnaround Time			Job No.
Chicago, Illinois 60613	Calendar (C) or Work Days (W)			
(312) 447-1200	TAT if different from Below			SDG No.
(312) 447-0922 FAX	☒ 2 weeks			
Project Name: Marengo	☐ 1 week			
Site: Marengo	☐ 2 days			
PO#	☐ 1 day			

	Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Diluting Hyp VOCs	Sample Specific Notes:
1	1	6/19	9:00	W	W	3	X	
2	1-D	↓	9:00	↓	↓	3	X	
3	2	↓	9:35	↓	↓	3	X	
4	3	↓	10:05	↓	↓	3	X	
5	TB	↓	10:15	↓	↓	1	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant Poison B ☐ Unknown ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	EGSL	6/19 2000		TA	6/20/08 745
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	TA	6/20		TestAmerica	06/20/08 1420
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Login Sample Receipt Check List

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Login Number: 12141
Creator: Kelsey, Shawn M
List Number: 1

List Source: TestAmerica Chicago

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background		
The cooler's custody seal, if present, is intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
There are no discrepancies between the sample IDs on the containers and the COC.		
Samples are received within Holding Time.		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.		
If necessary, staff have been informed of any short hold time or quick TAT needs		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		

Login Sample Receipt Check List

Client: Environmental Group Services Ltd

Job Number: 500-12141-1

Login Number: 12141
Creator: Conner, Keaton
List Number: 1

List Source: TestAmerica Savannah
List Creation: 06/24/08 05:01 PM

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	

ATTACHMENT M – OFF-SITE ANALYTICAL (MARCH-2011)

STAT Analysis Corporation
2242 West Harrison St., Suite 200, Chicago, IL 60612-3766
Tel: (312) 733-0551 Fax: (312) 733-2386 STATInfo@STATAnalysis.com
Accreditation Numbers: IEPA ELAP 100445; ORELAP IL300001;AIHA 101160; NVLAP LabCode 101202-

April 07, 2011

Environmental Group Services, Ltd.
557 W. Polk
Chicago, IL 60610
Telephone: (312) 447-1200
Fax: (312) 447-0922

RE: Marengo Private STAT Project No 11030902

Dear Bill Lennon:

STAT Analysis received 3 samples for the referenced project on 3/31/2011 5:10:00 PM. The analytical results are presented in the following report.

All analyses were performed in accordance with the requirements of 35 IAC Part 186 / NELAC standards. Analyses were performed in accordance with methods as referenced on the analytical report. Those analytical results expressed on a dry weight basis are also noted on the analytical report.

All analyses were performed within established holding time criteria, and all Quality Control criteria met EPA or laboratory specifications except when noted in the Case Narrative or Analytical Report. If required, an estimate of uncertainty for the analyses can be provided. A listing of accredited methods/parameters can also be provided.

Thank you for the opportunity to serve you and I look forward to working with you in the future. If you have any questions regarding the enclosed materials, please contact me at (312) 733-0551.

Sincerely,

Craig Chawla
Project Manager

Client: Environmental Group Services, Ltd.
Project: Marengo Private
Lab Order: 11030902

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Tag Number	Collection Date	Date Received
11030902-001A	MW-22110		3/31/2011 1:00:00 PM	3/31/2011
11030902-002A	MW-22104		3/31/2011 1:30:00 PM	3/31/2011
11030902-003A	MW-22012		3/31/2011 2:00:00 PM	3/31/2011

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Tel: (312) 733-0551 Fax: (312) 733-2386 STATinfo@STATAnalysis.com
Accreditation Numbers: IEPA ELAP 100445; ORELAP IL300001; AIHA 101160; NVLAP LabCode 101202

Report Date: April 07, 2011
Print Date: April 07, 2011

Client:	Environmental Group Services, Ltd.	**Client Sample ID:**	MW-22110
Lab Order:	11030902	**Tag Number:**	
Project:	Marengo Private	**Collection Date:**	3/31/2011 1:00:00 PM
Lab ID:	11030902-001A	**Matrix:**	Aqueous

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Volatile Organic Compounds by GC/MS	**SW8260B (SW5030B)**			Prep Date:		Analyst: EJH
Acetone	ND	0.02		mg/L	1	4/1/2011
Benzene	ND	0.005		mg/L	1	4/1/2011
Bromodichloromethane	ND	0.005		mg/L	1	4/1/2011
Bromoform	ND	0.005		mg/L	1	4/1/2011
Bromomethane	ND	0.01		mg/L	1	4/1/2011
2-Butanone	ND	0.02		mg/L	1	4/1/2011
Carbon disulfide	ND	0.01		mg/L	1	4/1/2011
Carbon tetrachloride	ND	0.005		mg/L	1	4/1/2011
Chlorobenzene	ND	0.005		mg/L	1	4/1/2011
Chloroethane	ND	0.01		mg/L	1	4/1/2011
Chloroform	ND	0.005		mg/L	1	4/1/2011
Chloromethane	ND	0.01		mg/L	1	4/1/2011
Dibromochloromethane	ND	0.005		mg/L	1	4/1/2011
1,1-Dichloroethane	ND	0.005		mg/L	1	4/1/2011
1,2-Dichloroethane	ND	0.005		mg/L	1	4/1/2011
1,1-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
cis-1,2-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
trans-1,2-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
1,2-Dichloropropane	ND	0.005		mg/L	1	4/1/2011
cis-1,3-Dichloropropene	ND	0.001		mg/L	1	4/1/2011
trans-1,3-Dichloropropene	ND	0.001		mg/L	1	4/1/2011
Ethylbenzene	ND	0.005		mg/L	1	4/1/2011
2-Hexanone	ND	0.02		mg/L	1	4/1/2011
4-Methyl-2-pentanone	ND	0.02		mg/L	1	4/1/2011
Methylene chloride	ND	0.005		mg/L	1	4/1/2011
Methyl tert-butyl ether	ND	0.005		mg/L	1	4/1/2011
Styrene	ND	0.005		mg/L	1	4/1/2011
1,1,2,2-Tetrachloroethane	ND	0.005		mg/L	1	4/1/2011
Tetrachloroethene	ND	0.005		mg/L	1	4/1/2011
Toluene	ND	0.005		mg/L	1	4/1/2011
1,1,1-Trichloroethane	ND	0.005		mg/L	1	4/1/2011
1,1,2-Trichloroethane	ND	0.005		mg/L	1	4/1/2011
Trichloroethene	ND	0.005		mg/L	1	4/1/2011
Vinyl chloride	ND	0.002		mg/L	1	4/1/2011
Xylenes, Total	ND	0.015		mg/L	1	4/1/2011

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H - Holding time exceeded

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Accreditation Numbers: IEPA ELAP 100445; ORELAP IL300001; AIHA 101160; NVLAP LabCode 101202

Report Date: April 07, 2011
Print Date: April 07, 2011

Client:	Environmental Group Services, Ltd.	**Client Sample ID:**	MW-22104
Lab Order:	11030902	**Tag Number:**	
Project:	Marengo Private	**Collection Date:**	3/31/2011 1:30:00 PM
Lab ID:	11030902-002A	**Matrix:**	Aqueous

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Volatile Organic Compounds by GC/MS	**SW8260B (SW5030B)**			Prep Date:		Analyst: **EJH**
Acetone	ND	0.02		mg/L	1	4/1/2011
Benzene	ND	0.005		mg/L	1	4/1/2011
Bromodichloromethane	ND	0.005		mg/L	1	4/1/2011
Bromoform	ND	0.005		mg/L	1	4/1/2011
Bromomethane	ND	0.01		mg/L	1	4/1/2011
2-Butanone	ND	0.02		mg/L	1	4/1/2011
Carbon disulfide	ND	0.01		mg/L	1	4/1/2011
Carbon tetrachloride	ND	0.005		mg/L	1	4/1/2011
Chlorobenzene	ND	0.005		mg/L	1	4/1/2011
Chloroethane	ND	0.01		mg/L	1	4/1/2011
Chloroform	ND	0.005		mg/L	1	4/1/2011
Chloromethane	ND	0.01		mg/L	1	4/1/2011
Dibromochloromethane	ND	0.005		mg/L	1	4/1/2011
1,1-Dichloroethane	ND	0.005		mg/L	1	4/1/2011
1,2-Dichloroethane	ND	0.005		mg/L	1	4/1/2011
1,1-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
cis-1,2-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
trans-1,2-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
1,2-Dichloropropane	ND	0.005		mg/L	1	4/1/2011
cis-1,3-Dichloropropene	ND	0.001		mg/L	1	4/1/2011
trans-1,3-Dichloropropene	ND	0.001		mg/L	1	4/1/2011
Ethylbenzene	ND	0.005		mg/L	1	4/1/2011
2-Hexanone	ND	0.02		mg/L	1	4/1/2011
4-Methyl-2-pentanone	ND	0.02		mg/L	1	4/1/2011
Methylene chloride	ND	0.005		mg/L	1	4/1/2011
Methyl tert-butyl ether	ND	0.005		mg/L	1	4/1/2011
Styrene	ND	0.005		mg/L	1	4/1/2011
1,1,2,2-Tetrachloroethane	ND	0.005		mg/L	1	4/1/2011
Tetrachloroethene	ND	0.005		mg/L	1	4/1/2011
Toluene	ND	0.005		mg/L	1	4/1/2011
1,1,1-Trichloroethane	ND	0.005		mg/L	1	4/1/2011
1,1,2-Trichloroethane	ND	0.005		mg/L	1	4/1/2011
Trichloroethene	ND	0.005		mg/L	1	4/1/2011
Vinyl chloride	ND	0.002		mg/L	1	4/1/2011
Xylenes, Total	ND	0.015		mg/L	1	4/1/2011

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H - Holding time exceeded

STAT Analysis Corporation
2242 West Harrison St., Suite 200, Chicago, IL 60612-3766
Tel: (312) 733-0551 Fax: (312) 733-2386 STATinfo@STATAnalysis.com
Accreditation Numbers: IEPA ELAP 100445; ORELAP IL300001; AIHA 101160; NVLAP LabCode 101202

Report Date: April 07, 2011
Print Date: April 07, 2011

Client:	Environmental Group Services, Ltd.	**Client Sample ID:**	MW-22012
Lab Order:	11030902	**Tag Number:**	
Project:	Marengo Private	**Collection Date:**	3/31/2011 2:00:00 PM
Lab ID:	11030902-003A	**Matrix:**	Aqueous

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Volatile Organic Compounds by GC/MS	**SW8260B (SW5030B)**			Prep Date:		Analyst: **EJH**
Acetone	ND	0.02		mg/L	1	4/1/2011
Benzene	ND	0.005		mg/L	1	4/1/2011
Bromodichloromethane	ND	0.005		mg/L	1	4/1/2011
Bromoform	ND	0.005		mg/L	1	4/1/2011
Bromomethane	ND	0.01		mg/L	1	4/1/2011
2-Butanone	ND	0.02		mg/L	1	4/1/2011
Carbon disulfide	ND	0.01		mg/L	1	4/1/2011
Carbon tetrachloride	ND	0.005		mg/L	1	4/1/2011
Chlorobenzene	ND	0.005		mg/L	1	4/1/2011
Chloroethane	ND	0.01		mg/L	1	4/1/2011
Chloroform	ND	0.005		mg/L	1	4/1/2011
Chloromethane	ND	0.01		mg/L	1	4/1/2011
Dibromochloromethane	ND	0.005		mg/L	1	4/1/2011
1,1-Dichloroethane	ND	0.005		mg/L	1	4/1/2011
1,2-Dichloroethane	ND	0.005		mg/L	1	4/1/2011
1,1-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
cis-1,2-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
trans-1,2-Dichloroethene	ND	0.005		mg/L	1	4/1/2011
1,2-Dichloropropane	ND	0.005		mg/L	1	4/1/2011
cis-1,3-Dichloropropene	ND	0.001		mg/L	1	4/1/2011
trans-1,3-Dichloropropene	ND	0.001		mg/L	1	4/1/2011
Ethylbenzene	ND	0.005		mg/L	1	4/1/2011
2-Hexanone	ND	0.02		mg/L	1	4/1/2011
4-Methyl-2-pentanone	ND	0.02		mg/L	1	4/1/2011
Methylene chloride	ND	0.005		mg/L	1	4/1/2011
Methyl tert-butyl ether	ND	0.005		mg/L	1	4/1/2011
Styrene	ND	0.005		mg/L	1	4/1/2011
1,1,2,2-Tetrachloroethane	ND	0.005		mg/L	1	4/1/2011
Tetrachloroethene	ND	0.005		mg/L	1	4/1/2011
Toluene	ND	0.005		mg/L	1	4/1/2011
1,1,1-Trichloroethane	ND	0.005		mg/L	1	4/1/2011
1,1,2-Trichloroethane	ND	0.005		mg/L	1	4/1/2011
Trichloroethene	ND	0.005		mg/L	1	4/1/2011
Vinyl chloride	ND	0.002		mg/L	1	4/1/2011
Xylenes, Total	ND	0.015		mg/L	1	4/1/2011

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H - Holding time exceeded

STAT Analysis Corporation
2242 W. Harrison, Suite 200, Chicago, Illinois 60612 Phone: (312) 733-0551 Fax: (312) 733-2386
e-mail address: STATinfo@STATAnalysis.com AIHA-LAP and NELAP accredited

CHAIN OF CUSTODY RECORD

Nº: 835733 Page: ____ of ____

Company: EESI
Project Number: Client Tracking No.:
Project Name: MARENGO DRIVE
Project Location:
Sampler(s):
Report To: BILL Phone:
Fax:
QC Level: 1 2 3 4 e-mail:
P.O. No.:
Quote No.:
Turn Around: 5-DAY
Results Needed

Client Sample Number/Description:	Date Taken	Time Taken	Matrix	Comp	Grab	Preserv	No of Containers	VOCs	Remarks	Lab No.:
MW-22110	3/31	100	W		X		3	X		001
MW-22107	↓	135	↓		↓		↓	X		002
MW-22013		200						X		003

Relinquished by (Signature) Date/Time: 3/31 1503
Received by (Signature) Date/Time: 3/31/11 1540
Relinquished by: (Signature) Date/Time: 3/31/11 2310
Received by (Signature) Date/Time:
Relinquished by (Signature) Date/Time
Received by (Signature) Date/Time

Comments:

Preservation Code: A = None B = HNO_3 C = NaOH
D = H_2SO_4 E = HCl F = 5035/EnCore G = Other

Laboratory Work Order No.: 1030902

Received on Ice: Yes ☑ No ☐
Temperature: 2.1 °C

STAT Analysis Corporation

Sample Receipt Checklist

Client Name EGSL | Date and Time Received: 3/31/2011 5:10:00 PM

Work Order Number 11030902 | Received by: JJM

Checklist completed by: Signature Date | Reviewed by: Initials CG Date 4/1/11

Matrix: | Carrier name STAT Analysis

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels/containers?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container or Temp Blank temperature in compliance?	Yes ☑	No ☐	Temperature 2.1 °C
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐
Water - Samples pH checked?	Yes ☐	No ☐	Checked by.
Water - Samples properly preserved?	Yes ☐	No ☐	pH Adjusted?

Any No response must be detailed in the comments section below.

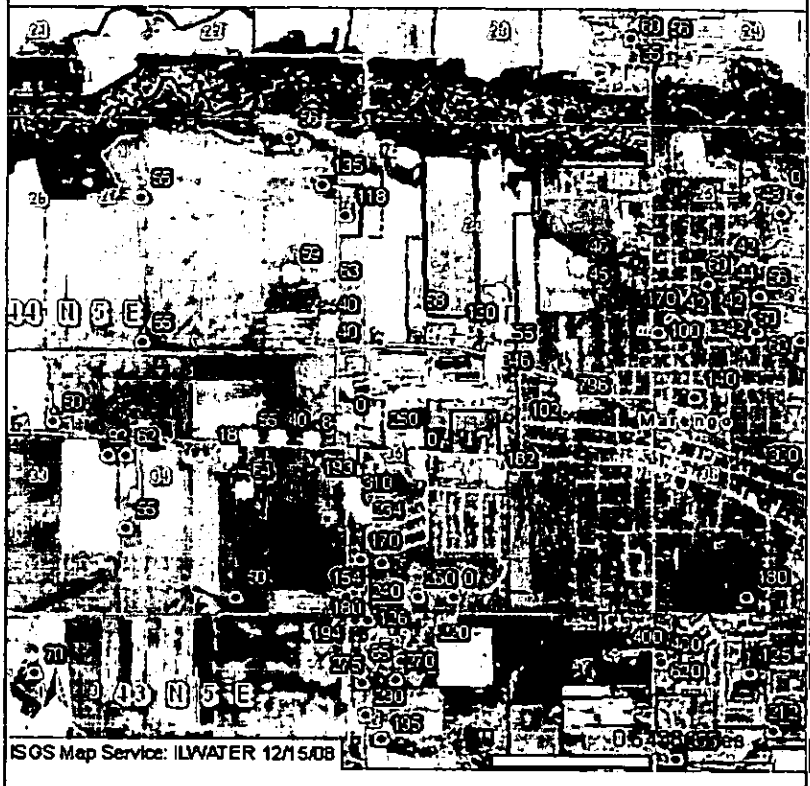
Comments:

Client / Person contacted: | Date contacted: | Contacted by:

Response:

ATTACHMENT N – PRIVATE WELL SEARCH RESULTS

ArcIMS HTML Viewer Map



Legend

Water and Related Wells

Well Status

- Water
- Dry
- Engineering
- Stratigraphic
- Observation
- Mineral Test
- Outcrop
- Mine-related
- Hazardous Waste or Leaking Tank

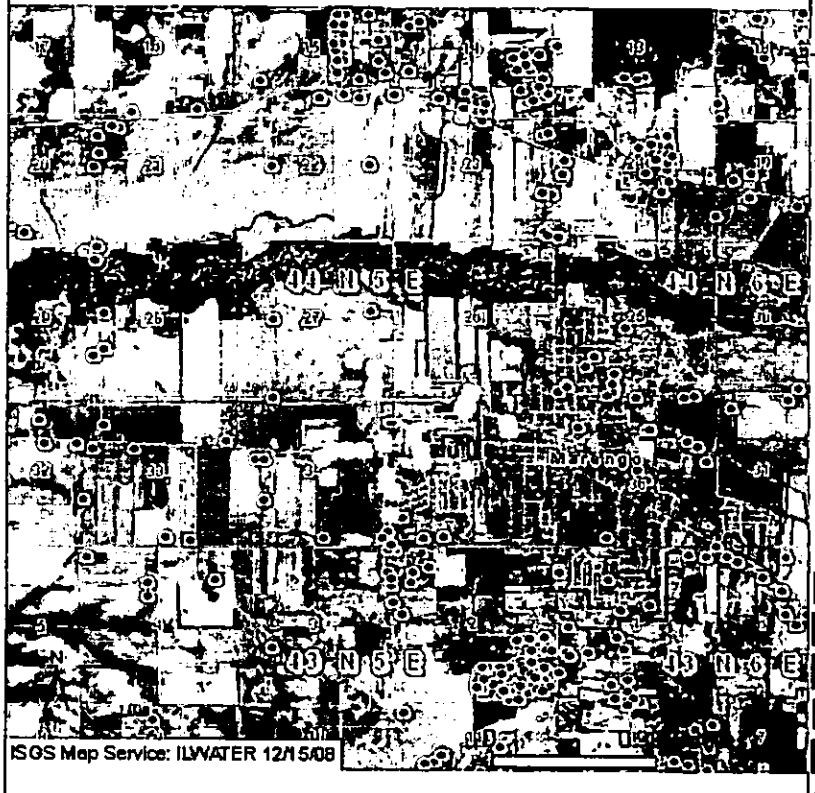
Sections
Townships
Counties
Lakes
Municipalities

CUA 2005 UTM 16 (east)

RGB

Red: Band_1
Green: Band_2
Blue: Band_3

ArcIMS HTML Viewer Map



Legend

Water and Related Wells

Well Status

- Water
- Dry
- Engineering
- Stratigraphic
- Observation
- Mineral Test
- Outcrop
- Mine-related
- Hazardous Waste or Leaking Tank

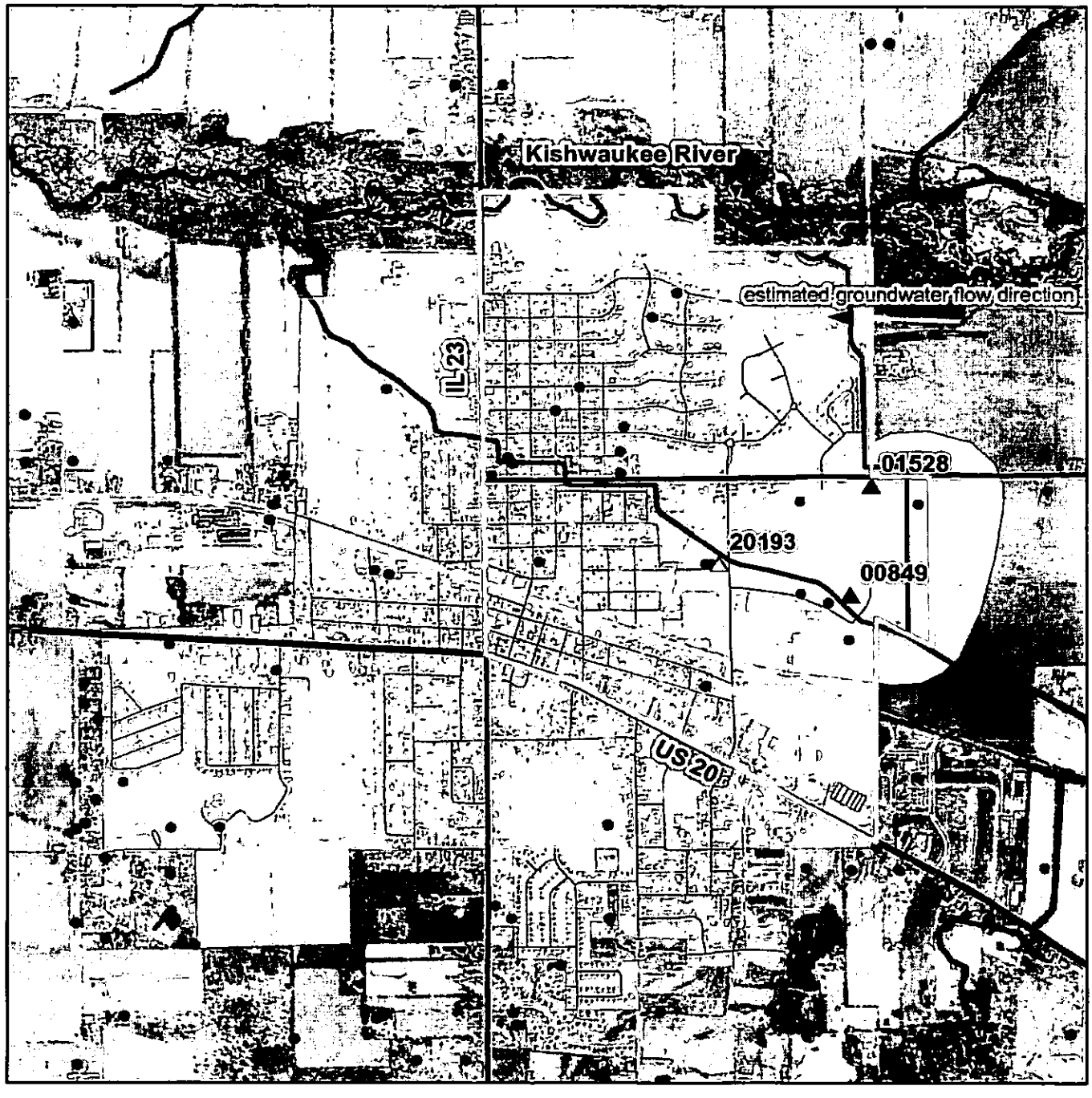
- Sections
- Townships
- Counties
- Lakes
- Municipalities

CUA 2005 UTM 16 (east)

RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

Public Notice Area for Marengo (IL1110650)



Legend

- Community Water Supply Wells
- Affected CWS Wells
- ISGS Database Wells
- Notice Area Boundary
- Estimated Groundwater Flow Direction
- US Highways
- State Highways
- Local Roads
- Water
- 5-Year Recharge Area
- Municipal Boundaries
- County Boundaries

0 0.25 0.5 1 Miles

Illinois EPA
Groundwater Section

Source Information:
Aerial Photography from NAAP 2005.
CWS Wells and Recharge Areas from Illinois EPA, 2010.
Transportation from Navteq, 2008. Hydrology from NHD, 2009.
NonCWS Wells from IDPH, 2008. Geology and ISGS Database Wells from ISGS, 2009.

NEWS RELEASE

Illinois Department of Public Health

FOR IMMEDIATE RELEASE
September 9, 2010

CONTACT:
Melaney Arnold 217/558.0500 (IDPH)
Maggie Carson 217/558.1536 (IEPA)
www.idph.state.il.us

State Health Department Recommends Water Well Testing for Private Wells Near Marengo

SPRINGFIELD - The Illinois Department of Public Health (IDPH) is advising residents who obtain their drinking water from private wells in the Marengo (McHenry County) area to test their water for possible groundwater contamination. Routine testing of Marengo's community water supply wells by the Illinois Environmental Protection Agency (IEPA) indicates contaminants could be present in the area's private wells.

The contaminants benzene and methyl tert-butyl ether (MTBE) were detected at levels lower than the Illinois Groundwater Standard. Although the contaminants' levels were lower than the standard, this is the same groundwater that serves private wells and it is possible the levels of the contaminants may be higher in private wells.

Residents with private wells located within the area (map below) north of U.S. 20, east of Illinois 23, south of the Kishwaukee River, and west of the Marengo eastern city limits are encouraged to have their water tested for volatile organic compounds by a private laboratory.

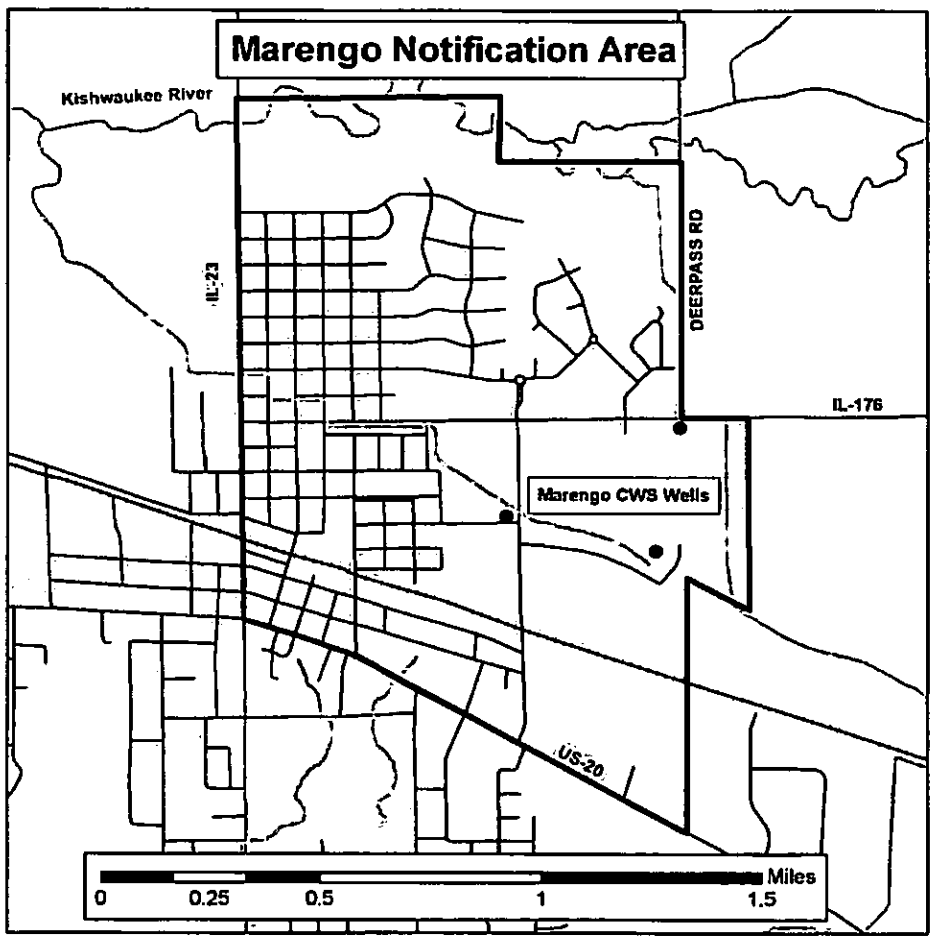
For a list of laboratories certified to analyze drinking water for volatile organic compounds, interpretation of test results, contaminant health effects information, and recommendations for individuals who regularly consume well water, contact Joe O'Connor, IDPH West Chicago Regional Office, 245 West Roosevelt Road, Bldg 5, West Chicago, IL. 60185, phone (630) 293-6800 or joe.o'connor@illinois.gov.

The risk of adverse health effects depends on the levels of contaminants in the water and the length of exposure. Long-term exposure to these chemicals may result in an increased health risk to the liver and kidneys.

-more-

No violations of State of Illinois or federal drinking water standards have occurred in Marengo's community water supply. For information concerning the community water supply contact Dean Studer at 217-558-8280 or via email at dean.studer@illinois.gov

This information has been compiled from historic data and is provided to the public to ensure full disclosure of state records.



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Illinois EPA FOIA Exemption Reference Sheet

SID: 12171

Agency ID: 170000116265 Media File Type: LAND
Bureau ID: 1110650003
Site Name: Arnold Magnetic Technologies
Site Address1: 300 N West St
Site Address2:
Site City: Marengo State: IL Zip: 60152-

This record has been determined to be partially or wholly exempt from public disclosure

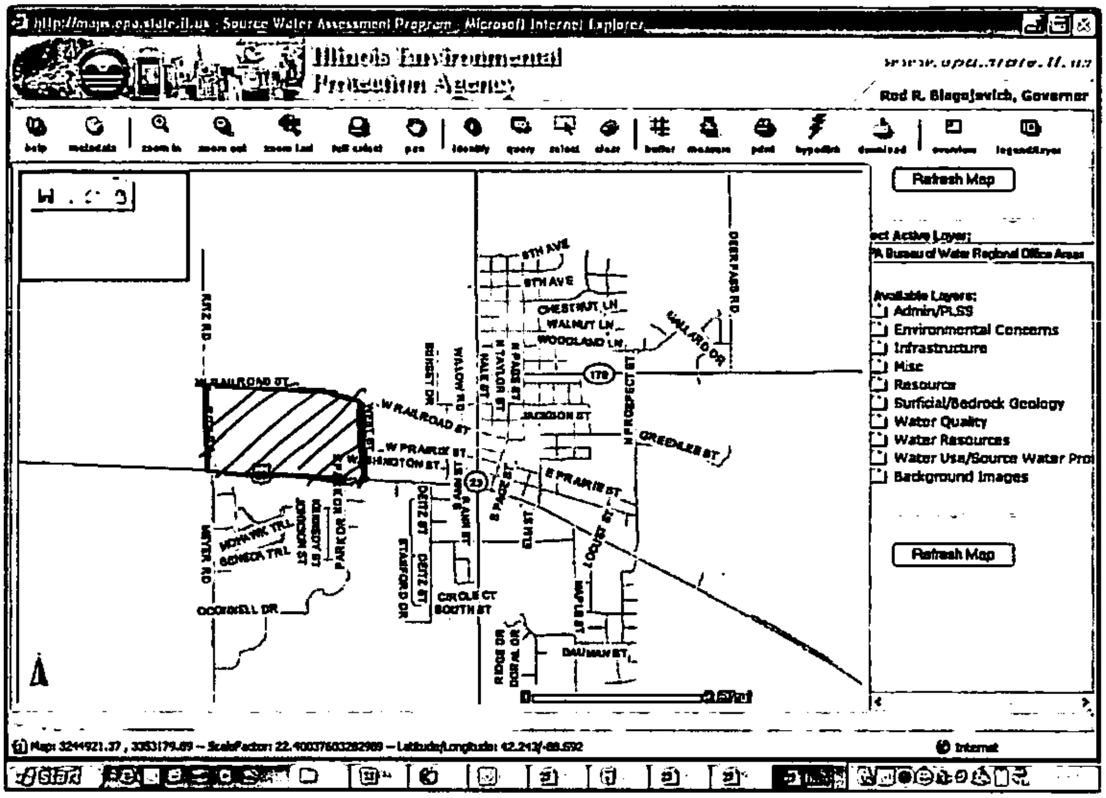
Exemption Type:

Portion Removed

Exempt Doc #: 8 **Document Date:** 1 /24/2013 **Staff:** EAV

Document Description: SITE REMEDIATION - RIGHT TO KNOW RESPONSE - ATTACHMENT N

Category ID: 31A **Category Description:** SITE REMEDIATION - TECHNICAL **Exempt Type:** Portion Removed
Permit ID: **Date of Determination:** 2 /1 /2013



Illinois Environmental Protection Agency
Rod R. Blagojevich, Governor
Refresh Map
Available Layers:
Admin/PLSS
Environmental Concerns
Infrastructure
Misc
Resource
Surficial/Bedrock Geology
Water Quality
Water Resources
Background Images
Refresh Map
8TH AVE
CHESTNUT LN
WALNUT LN
WOODLAND LN
JACKSON ST
GREENLEE ST
W RAILROAD ST
W PRAIRIE ST
E PRAIRIE ST
MOHAWK TRL
SENECA TRL
O'CONNELL DR
CIRCLE CT
SOUTH ST
STAMFORD DR
PARKER DR
MAPLE ST
LOCUST ST
DEER PASS RD
N PROSPECT ST
Internet

Municipality: **Marengo**

County: **McHenry**

LPC Number:

OC: **00083007**

ORDINANCE NO. 00-5-1

ORDINANCE PROHIBITING THE USE OF GROUNDWATER AS A POTABLE WATER SUPPLY BY THE INSTALLATION OR USE OF POTABLE WATER SUPPLY WELLS OR BY ANY OTHER METHOD

WHEREAS, certain property in the City of Marengo, located McHenry County in the State of Illinois, with the common addresses of 536 North State Street, 600 North State Street, and 602 North State Street, and legally described in Exhibit A, and all property within a 2500 feet radius of these properties, as fully described and shown as Exhibit B hereto and hereinafter referred to as the "Affected Area," has been used over a period of time for commercial/industrial purposes; and

WHEREAS, because of said use concentrations of certain chemicals constituents in the groundwater beneath the City may exceed Class I groundwater quality standards for potable resource groundwater as set forth in 35 Illinois Administrative Code 620 or Tier 1 residential remediation objectives as set forth in 35 Illinois Administrative Code 742; and

WHEREAS, the City of Marengo currently has an ordinance requiring mandatory hookup to the City's water supply system, Ordinance No. 92-7-2, passed and approved July 13, 1992; and

WHEREAS, the City of Marengo desires to further limit potential threats to human health from groundwater contamination while facilitating the redevelopment and productive use of properties that are the source of said chemical constituents;

NOW, THEREFORE, BE IT ORDAINED by the City Council of Marengo, McHenry County, Illinois, as follows:

Section One: Recitals.

The recitals set forth above are incorporated by reference as if fully set forth and they are hereby made an integral part of this ordinance.

Attachments A & B

Section Two: Use of Groundwater as a Potable Water Supply Prohibited by the Installation of New Wells.

The use or attempt to use as a potable water supply, groundwater from within the Affected Area, by the installation or drilling of wells or by any other method is hereby prohibited, except at points of withdrawal by the City within the Affected Area. This ordinance shall not prohibit the continued use of wells within the Affected Area in operation on the effective date of this ordinance, only the installation of new wells within Affected Area from the effective date of this ordinance forward.

Section Three: Penalties.

Any person violating the provisions of this ordinance shall be subject to a fine of not less than $25.00 and not more than $500.00 per day for each day said person is deemed to be in violation of this ordinance.

Section Four: Definitions.

1. "Person" is any individual, partnership, co-partnership, firm, company, limited liability company, corporation, association, joint stock company, trust, estate, political subdivision, or any other legal entity, or their legal representatives, agents, or assigns.

2. "Potable water" is any water used for human or domestic consumption, including, but not limited to, water used for drinking, bathing, swimming, washing dishes, or preparing foods.

Section Five: Repealer.

All ordinances, including but not limited to City of Marengo Ordinance No. 92-7-2, or parts of ordinances in conflict with this ordinance are hereby repealed insofar as they are in conflict with this ordinance.

Section Six: Severability.

If any provision of this ordinance or its application to any person or under any circumstances in adjudged invalid, such adjudication shall not affect the validity of the ordinance as a whole or of any portion not adjudged invalid.

Section Six: **Miscellaneous.**

The City will establish a registry to all sites within its corporate limits that have received "No Further Remediation"determinations from the Illinois Environmental Protection Agency. Carls Oil Company, Inc. will establish this registry on behalf of the City and will bear the expense of this registry in an amount not to exceed $3,000.00. Carls Oil Company will update this registry for two years from the date this Ordinance is in full force and effect. Carls Oil Company will bear the expense to update the registry for two years in an amount not to exceed $1,000.00.

Section Seven: **Effective Date**

THIS ORDINANCE shall be in full force and effect from and after its passage, approval and publication as required by law.

ADOPTED this 8th **day of** May **, 2000, pursuant to a roll call vote as follows:**

Alderman Elected and Qualified to vote: 8

AYES: Brandt, Keenum, Peacock, Remke, Secor, Hammortree, Jenkner and Kolberg

NAYS: None

ABSENT: None

APPROVED by me this 8th **day of** May **, 2000.**

Dennis Hammortree, Mayor

ATTEST:

Clerk, City of Marengo

Passed: May 8, 2000

Approved: May 8, 2000

Published: June 26, 2000

H:\MARENGO\ordinance.carlsoil

CERTIFICATE

I, MARYIDA MONTGOMERY, DO HEREBY CERTIFY that I am the duly qualified and serving City Clerk and as such am the keeper of the books and records of the City Council of Marengo, McHenry County, Illinois; and

I DO FURTHER CERTIFY that the above attached Ordinance 00-5-1, An ORDINANCE PROHIBITING THE USE OF GROUNDWATER AS A POTABLE WATER SUPPLY BY THE INSTALLATION OR USE OF POTABLE WATER SUPPLY WELLS OR BY ANY OTHER METHOD is a true and correct copy of said Ordinance which was passed by the City Council of Marengo, McHenry County, Illinois, on May 8, 2000.

Dated this 13th day of July, 2000

Maryida Montgomery, City Clerk

[SEAL]

PLAT OF SURVEY

JOHN JENNINGS
PROFESSIONAL LAND SURVEYOR
515 N. HALE STREET
MARENGO, ILLINOIS 60152
PH. (815) 568-8775

That part of the Southeast Quarter of Section 26, and of the Northeast Quarter of Section 35, Towhship 44 North, Range 5 East of the Third Principal Meridian, described as follows: Commencing at the Southeast corner of said Section 26, and running thence North along the East line thereof 4 rods; thence West parallel with the South line of said Section, 18 rods; thence South parallel with the East line of said Sections 26 and 35, 6 rods; thence East parallel with the North line of said Section 35, 18 rods to the East line of said Section 35; thence North along the said East line, 2 rods to the place of beginning, in McHenry County, Illinois.
ALSO:
That part of the Southeast Quarter of the Southeast Quarter of Section 26, Township 44 North, Range 5 East of the Third Principal Meridian, described as follows: Commencing on the East line of said Section 26 at a point 4 rods North of the Southeast corner of said Section; thence North along the said East line 4 rods; thence West parallel with the South line of said Section 26, 18 rods; thence South parallel with the East line of said Section 26, 4 rods; thence East parallel with the South line of said Section, 18 rods to the place of beginning, situated in the City of Marengo, McHenry County, Illinois.

EXHIBIT
A

CERTIFICATE

I, MARYIDA MONTGOMERY, DO HEREBY CERTIFY that I am the duly qualified and serving City Clerk and as such am the keeper of the books and records of the City Council of Marengo, McHenry County, Illinois; and

I DO FURTHER CERTIFY that the above attached Ordinance 00-5-1, An ORDINANCE PROHIBITING THE USE OF GROUNDWATER AS A POTABLE WATER SUPPLY BY THE INSTALLATION OR USE OF POTABLE WATER SUPPLY WELLS OR BY ANY OTHER METHOD is a true and correct copy of said Ordinance which was passed by the City Council of Marengo, McHenry County, Illinois, on May 8, 2000.

Dated this 13th day of July, 2000

Maryida Montgomery, City Clerk

[SEAL]

CONSENT AGENDA

The following items were brought up for approval:

A. Approval of Minutes for April 24, 2000 C.O.W. Meeting and April 10, 2000 City Council Minutes.
B. Approval of Spectrum Contract.
C. Approval of Environmental Technology & Assessment Contract.
D. Authorization for Mayor to sign COPS Agreement.
E. Authorization for Attorney to do codification.
F. Approval for Legion to use City Hall for their "Poppy Days."
G. Approval for Chamber to sell raffle tickets.

A motion was made by Alderman Remke and seconded by Alderman Keenum to approve the consent agenda with a "yes" vote by all. Alderman Brandt requested that an addendum be added to the April 10, 2000 City Council minutes to read that he abstained from the Brandt Bros. Oil bill.

APPROVAL OF BILLS FOR PAYMENT

Approval was given to pay the bills with a few questions.

OLD BUSINESS

A. An ordinance prohibiting the use of Groundwater as a potable water supply. After some discussion the ordinance stating a radius of 2500 feet from the corner of Rts. 23 and 176 will not be allowed to drill a new well but must hook up to city water, was passed with a motion by Alderman Remke and a second by Alderman Hammortree. This ordinance is number 00-05-01. All voted "yes".

Attorney McArdle recommended that the Mayor sign a Memorandum of Understanding that would exempt the City of Marengo from Ordinance 00-05-01 was moved by Alderman Peacock with a second by Alderman Keenum and a "yes" vote by all.

B. Northwest Pallet was deferred to Executive Session.

C. Harold Warren could not make the meeting tonight to discuss the bonding issue, so he has been asked to appear at the May C.O.W. meeting.

OFFICER AND STAFF REPORTS

The Treasurer's report, the Engineer's report and the Attorney's report was given with a few minor questions. The attorney brought up a project which will be brought up later in the Zecchin subdivision. Mr. Zecchin was present and his engineer, Mr. Loeppert. Mr. Loeppert presented to the council a rough concept map on what Mr. Zecchin would like to do with the property he

EXHIBIT

C

MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF MARENGO AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY REGARDING THE USE OF A LOCAL GROUNDWATER OR WATER WELL ORDINANCE AS AN ENVIRONMENTAL INSTITUTIONAL CONTROL

I. PURPOSE AND INTENT

A. This Memorandum of Understanding ("MOU") between the City of Marengo (the "City") and the Illinois Environmental Protection Agency ("Illinois EPA") is entered into for the purpose of satisfying the requirements of 35 Ill. Adm. Code 742.1015 for the use of groundwater or water well ordinances as environmental institutional controls. The Illinois EPA has reviewed the City's groundwater or water well ordinance, Ordinance No. 00 - 5-1____ (the "Ordinance")(Attachment A) and determined that the Ordinance prohibits the use of groundwater for potable purposes and/or the installation and use of new potable water supply wells by private entities but does not expressly prohibit those activities by the City itself. In such cases, 35 Ill. Adm. Code 742.1015(a) provides that the City may enter into an MOU with the Illinois EPA to allow the use of the Ordinance as an institutional control.

B. The intent of this Memorandum of Understanding is to specify the responsibilities that must be assumed by the City to satisfy the requirements for MOUs as set forth at 35 Ill. Adm. Code 742.1015(i).

II. DECLARATIONS AND ASSUMPTION OF RESPONSIBILITY

In order to ensure the long-term integrity of the Ordinance as an environmental institutional control and that risk to human health and the environment from contamination left in place in reliance on the Ordinance is effectively managed, the City of Marengo hereby assumes the following responsibilities pursuant to 35 Ill. Adm. Code 742.1015(i):

A. The City will notify the Illinois EPA Bureau of Land of any proposed ordinance changes or requests for variance at least 30 days prior to the date the local government is scheduled to take action on the proposed change or request (35 Ill. Adm. Code 742.1015(i)(4);

B. The City will maintain a registry of all sites within its corporate limits that have received "No Further Remediation" determinations from the Illinois EPA (35 Ill. Adm. Code 742.1015(i)(5));

C. The City will review the registry of sites established under paragraph II.B. prior to siting public potable water supply wells within the area covered by the ordinance (35 Ill. Adm. Code 742.1015(i)(6)(A));

D. The City will determine whether the potential source of potable water has been or may be affected by contamination left in place at the sites traced and reviewed under paragraphs II. B. and C. (35 Ill. Adm. Code 742.1015(i)(6)(B)); and

E. The City will take action as necessary to ensure that the potential source of potable water is protected from contamination or treated before it is used as a potable water supply (35 Ill. Adm. Code 742.1015(i)(6)(C)).

NOTE: Notification under paragraph II. A. above or other communications concerning this MOU should be directed to:

Manager, Division of Remediation Management
Bureau of Land
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, IL 62794-9276

III. SUPPORTING DOCUMENTATION

The following documentation is required by 35 Ill. Adm. Code 742.1015(i) and is attached to this MOU:

A. Attachment A: A copy of City of Marengo Ordinance No. 00 - 5-1 certified by the city clerk that it is the current, controlling law (35 Ill. Adm. Code 742.1015(i)(3));

B. Attachment B: Identification of the legal boundaries within which the ordinance is applicable (certification by city clerk or other official that the ordinance is applicable everywhere within the corporate limits; if ordinance is not applicable throughout the entire city or village, legal description and map of area showing sufficient detail to determine where ordinance is applicable) (35 Ill. Adm. Code 742.1015(i)(2));

C. Attachment C: A statement of the authority of the City to enter into this MOU (council resolution, code of ordinances, inherent powers of mayor or other official signing MOU – attach copies) (35 Ill. Adm. Code 742.1015(i)(1)).

IN WITNESS WHEREOF, the lawful representatives of the parties have caused this MOU to be signed as follows:

For: The City of Marengo

BY: Dennis Hammortree DATE: 5/8/00
Acting Mayor, Dennis Hammortree

FOR: Illinois Environmental Protection Agency

BY: Gary P. King DATE: 9/15/00
(Name and title of signatory)

COVER PAGE

13-55324

1110650003
Arnold Magnetic Technologies
Category: 19C Superfund Technical
Document Date: 11/20/2013

Volume 1 of 10

CONTENTS:

Focused Site Investigation Report

THIS PAGE FOR IMAGING PURPOSES

13-55324

1110650003
Arnold Magnetic Technologies
SR/Tech

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FILE COPY

egsl
ENVIRONMENTAL GROUP
SERVICES LIMITED

557 West Polk Street, Suite 201
Chicago, IL 60607
312.447.1200 p
312.447.0922 f
www.egsl.com w

Focused Site Investigation Report

LPC # 1110650003 – McHenry County
Marengo – Arnold Magnetic Technologies
300 West LLC
Site Remediation Program/Technical Reports

Prepared for:
Mr. John Daley
300 West LLC
2340 South River Road – Suite 310
Des Plaines, Illinois 60018

Prepared by:
Bill Lennon
Project Manager
Steve Boom
Project Manager
November 18, 2013

SUBJECT PROPERTY

300 West LLC
300 West Street
Marengo, Illinois 60152

Prepared For

Illinois Environmental Protection Agency
Site Remediation Program/Tim Zook, Project Manager
1021 North Grand Avenue East
Springfield, Illinois 62702

Prepared By

ENVIRONMENTAL GROUP SERVICES, LTD.
557 WEST POLK STREET, SUITE 201
CHICAGO, ILLINOIS 60607

On Behalf of

Mr. John Daley
300 West LLC
2340 South River Road – Suite 310
Des Plaines, Illinois 60018

November 18, 2013

EGSL Project Number: 805247

egsl

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LIST OF APPENDICIES

1. EXECUTIVE SUMMARY

Environmental Group Services, Limited (EGSL) was contracted by *300 West LLC* to perform a Focused Site Investigation (FSI) under the Illinois Environmental Protection Agency (IEPA) Site Remediation Program (SRP). The FSI was performed at the Arnold Magnetic Technologies property located at 300 N. West Street in Marengo, Illinois (Site). The FSI was performed pursuant to a Violation Notice issued to the owner and former owner of the property on or about February 28, 2008 with subsequent April 29, 2008 Memorandum, and in compliance with a Verified Complaint for Injunction and Civil Penalties suit filed by the Attorney General of the State of Illinois dated June 14, 2013 and the Agreed Preliminary Injunction Order filed by the Attorney General of the State of Illinois dated August 23, 2013. Copies of these documents are presented in Appendix A.

The purpose of this report is to compile all of EGSL's subsurface soil and groundwater investigations to-date, and to present all areas of concern that contain contaminants above Tier 1 Remediation Objectives within the boundaries of the northern half of the site. Upon concurrence that the vertical and horizontal extent of subsurface VOC impacted soil and groundwater has been adequately defined, EGSL will begin a Tier 2 analysis and shall develop remediation objectives for the contaminants of concern. A Remediation Objectives Report will be prepared stating the applicable remediation objectives for the contaminants of concern and the methods utilized to determine them.

The Site is geographically located in McHenry County in northeast Illinois, see Figure 1. The site is situated at the northwest side of Marengo an elevation of approximately 830 feet msl (see Figure 2). The land surface in this area generally slopes from east to west. The northern portion of the Site is the focus of this Site Investigation (see Figure 3). Onsite features included in this FSI include combined manufacturing Building 2/3/4/7 (vacant manufacturing building), Building 8 (pump house), Building 10 (former drum disposal area), former manufacturing Buildings 1 and 6 (demolished), asphalt/concrete pavement, the waste water treatment plant building (located north of Pond 4), fire system pump house (located west of Pond 1), former pond 6 (located in the northwestern corner of the Subject Property), and wastewater settling Ponds 1 thru 4.

Additional manufacturing and support buildings (Building 11/14, Building 5, and Building 12), pond 5 and open vegetated land (including a percolation field) are located onsite on the southern portion of the property. A stream leading from the settling ponds to pond 5 transects the southern portion of the property. These areas are outside the scope of this investigation.

A search of the Office of the Illinois State Fire Marshal documents 17 underground storage tanks currently or formerly located at the Site. The aggregate capacity of all of the tanks is 60,000 gallons. The contents are identified as unknown (7), cutting oil (2), solvent (2), kerosene (1), gasoline (1) and hazardous substance (4). Six tanks are listed as "abandoned in place", 5 are listed as "removed" and 6 are listed as "exempt from registration". A copy of the OSFM database search result is included in Appendix B.

A chlorinated solvent was identified in the wastewater influent settling ponds in August 1989 during a sampling event required in accordance with Arnold's wastewater facility operation permit. Based on this finding, the IEPA required the installation of groundwater monitoring wells as a requirement for the renewal of their Water Pollution Control Permit number 1989-EO-3870. *Roux Associates* supervised the installation of three groundwater monitoring wells in February 1990. The wells were installed along the western third of the property with primary focus on the potential impacts that the wastewater ponds and percolation field were having on the local groundwater (Roux, 1990, contained in the EGSL 2013 Right to Know report).

Various chlorinated solvents have been identified in the groundwater under the site dating back to before 1999 (Arnold, 2001, Appendix B). Phase I and other Environmental Assessment Reports (ESAs) prepared by *Environ* dating back to 2004 identified chlorinated solvents including trichloroethane (TCA), trichloroethylene (TCE), methylene chloride and perchloroethylene (PEC) as being used as a degreasing agent for parts washing. The reports also identify a total of 16 underground storage tanks located or formerly located on the site. The content of one of the tanks was identified as trichloroethane (TCA). The Environ 2008 ESA states that all use of chlorinated solvents ceased in September 2001. The Environ: 2004 Environmental Review of Nine Arnold Magnetics Facilities, 2006 Updated Environmental Review of Six Facilities of Arnold Magnetics, and 2008 Phase I Environmental Site Assessment and Limited Environmental Compliance Review of Arnold Magnetic Technologies Corporation reports are included in Appendix C.

EGSL performed a Ground Penetrating Radar Survey, in 2006. The purpose of this investigation was to confirm or deny the presence of 12 possible USTs at nine separate areas of the site. GPR results indicated the possible presence of four USTs and four possible excavation areas. A copy of the EGSL GRP report is included as Appendix D.

EGSL conducted a Limited Phase II Subsurface Soil investigation on March 3, 2006. A total of 27 soil borings were advanced around the Site. Eighteen of the soil borings were advanced within the boundaries of this investigation. A total of 18 soil samples were collected from the borings and submitted to a laboratory for analysis of the IEPA Target Compound List (TCL). Arsenic was detected at a concentration of 450 mg/Kg along the northern portion of the Subject Property, between the pump house and Building 2/3/4. Chlorinated solvents were reported above IEPA ROs in soil from 5 boring locations (GP-3, 5, 20, 21 and 22). Groundwater samples were collected from monitoring wells MW-3, 6 and A7 (previously installed by others). Chlorinated solvents were reported by the laboratory above IEPA ROs in all the groundwater samples collected from the wells.

Two, 8,000-gallon underground storage tanks (contents unknown) were removed in the immediate vicinity of this area of concern on November 16, 2007. Both tanks were reported in poor condition at the time of removal, and olfactory and visual observations indicated that the subsurface soil had been impacted; as such, OSFM personnel determined that the USTs had been leaking. The incident was subsequently reported to the Illinois Emergency Management Agency (IEMA) and the IEPA Leaking Underground Storage Tank (LUST) section. LUST Incident number 20071279 was assigned to the site. A copy of the EGSL 2006 Phase II report is included in Appendix E.

On April 24, 2008, EGSL personnel advanced nine additional soil borings (SP-1 thru 9) in the above-referenced areas of concern. A total of 13 soil samples were submitted to *STAT Analysis Corporation* for analyses of BTEX/PNAs and/or Total Arsenic/TCLP Arsenic. According to the laboratory results, none of the samples contained chemicals of concern above IEPA Tier 1 Remediation Objectives (ROs), with the exception of arsenic, which was detected at SP-7 at a concentration of 14.0 mg/Kg, which is slightly above the Tier 1 RO of 13.0 mg/Kg for the ingestion exposure route. A copy of the EGSL 2008 Phase II report is included in Appendix F.

EGSL conducted a Phase I Environmental Site Assessment (ESA) at the Site in 2009. The purpose of the assessment was to identify recognized environmental concerns associated with the subject property. A copy of the EGSL 2009 Phase I ESA report is included in Appendix G.

In May 2010, EGSL personnel completed a Phase II Subsurface Investigation at the Site. This investigation was performed in accordance with the regulations set forth in 35 IAC 740 Site Remediation Program, (SRP) and 35 IAC 742 Tiered Approach to Corrective Action Objectives (TACO), Tier 1, for Industrial/Commercial and Residential properties. A copy of the EGSL 2010 Phase II report is included in Appendix H.

A total of 40 soil borings were advanced throughout the Subject Property (GP-1 thru GP-40). Soil boring nomenclature has been inadvertently repeated from the 2006 sampling event. Care should be exercised when evaluating data from borings GP-1 thru GP-27 throughout this report. Forty-nine soil samples were submitted for analysis in order to determine the presence and concentration of COC in the areas of concern. Additionally, a total of 16 groundwater monitoring wells (MW-1 thru MW-16) were installed at the Subject Property. The results of the investigation revealed the presence of chlorinated solvents above IEPA RO's in soils at two locations (GP-34 and 35). Chlorinated solvents were also reported above IEPA RO's in the groundwater collected from 8 wells (MW-1, 2, 4, 5, 6, 7, 8 and 13).

On October 28-29, 2010, five additional monitoring wells were installed (MW-17, 18, 19, 20, and 21). One deep well (MW-17, screened from 60-70 feet) was installed along the northwestern-most nest of wells in order to delineate the vertical extent of VOC impaction in that area. The four remaining permanent monitoring wells were installed off-site directly north of Railroad Street in order to delineate the horizontal extent of groundwater impaction along the northwestern portion of the Subject Property. Analytical results indicated that these wells still contained contaminants of concern above Tier 1 Remediation Objectives for Class I Groundwater. A memorandum was issued to *300 West LLC* on December 13, 2010. A copy of the EGSL memorandum report is included in Appendix I.

On February 23-24, 2011, two additional monitoring wells were installed (MW-22 and MW-23). MW-22 was installed on-site within the northwestern nest of wells and screened from a depth of 80-90 feet in order to delineate the vertical extent of groundwater impaction in that area. MW-23 was installed within the off-site nest of wells and screened from a depth of 60-70 feet in order to delineate the vertical extent of groundwater impaction in that area. Both of these wells were sampled on March 31, 2011. Neither of the wells contained any contaminants of concern above Tier 1 Remediation Objectives for Class I Groundwater.

Illinois EPA FOIA Exemption Reference Sheet

SID: 12171

Agency ID: 170000116265 Media File Type LAND
Bureau ID: 1110650003
Site Name: Arnold Magnetic Technologies
Site Address1: 300 N West St
Site Address2:
Site City: Marengo State: IL Zip: 60152-

This record has been determined to be partially or wholly exempt from public disclosure

Exemption Type:

Redaction

Exempt Doc #: 10 **Document Date:** 11/18/2013 **Staff:** EMI

Document Description: FOCUSED SITE INVESTIGATION REPORT - VOL. 1 PAGES 8 AND 25

Category ID: 31A **Category Description:** SITE REMEDIATION - TECHNICAL **Exempt Type:** Redaction
Permit ID: **Date of Determination:** 11/26/2013

On March 31, 2011, EGSL was able to access the private, potable water wells from three residential properties located northwest of the Site. With permission from the homeowners, each well was sampled and submitted for analysis of VOCs. The addresses of the homes, and approximate depths of the wells, are as follows: [redacted] (60 feet deep), [redacted] (~107 feet deep), [redacted] (>120 feet deep). Analytical results indicated that no VOCs were detected above laboratory detection limits.

On December 2, 2011, EGSL advanced an additional 11 soil borings (GP-40 thru 50) at the Subject Property in order to delineate previous detections of elevated contaminants of concern. GP-40 nomenclature has been inadvertently repeated from the May 2010 investigation event. The purpose of the delineation was to obtain more accurate source widths and depths for future Tier 2 analysis. The laboratory reported that none of the soil samples analyzed for chlorinated solvents contained detections above the SRO. EGSL submitted a Site Investigation Report dated March 23, 2012 documenting the activities performed in 2010 and 2011. A copy of the report is included in Appendix J.

In January 2013 EGSL addressed comments by the IEPA dated November 20, 2012 regarding the fate and transport of on and offsite contaminants of concern related to the Arnold facility. The report provided information on groundwater flow direction and hydraulic gradient, well setback zones, concentrations of contaminants of concern, maps of onsite wells with contaminants of concern and the sampling of private wells within 1500 feet of the property in the direction of groundwater flow. A copy of the report is included in Appendix K.

The focus of the site investigation was modified in 2013 as a result of the litigation filed by the IEPA. Activities performed and analysis requested focused on chlorinated solvents identified in soil and/or groundwater both on and off-site.

On May 14, 2013, EGSL personnel collected groundwater from 13 private residential wells on properties located northwest of the Site. Analysis of the groundwater revealed the presence of chlorinated solvents present in six wells. Two of the wells contained concentrations of chlorinated solvents above the IEPA drinking water standards. As a result, the residents in the area affected or potentially affected by the release of chlorinated solvents into the groundwater are being supplied with bottled drinking water.

In September and October 2013 EGSL advanced an additional 38 soil borings (GP-100 thru 132 and GP-201 thru 205) and installed an additional 23 groundwater monitoring wells (MW-24 thru 46) at the Site in an attempt to further define and refine the vertical and horizontal extent of COCs exceeding IEPA SROs and GROs. Fifteen of the wells (MW-24 thru 37) were seated at 30 feet and the remaining 9 monitoring wells were seated at 50 feet into the till aquifer to further delineate the vertical extent of the migration of the COCs. The 50 foot deep wells were located based on the analytical results of the 30 foot deep wells. The laboratory reported that soil analyzed from seven soil borings (GP-34, 35, 118, 120, 121, 203 and 204) in, east and north of Building 2/3/4/7 contained COCs exceeding IEPA SROs for

chlorinated solvents. The laboratory reported that 10 monitoring wells (MW-20, 24, 25, 27, 28, 29, 31, 32, 36 and 37) contained groundwater above Class I GROs.

On October 17, 2013, the Attorney General requested that chloroform and bromodichloromethane be added to the list of groundwater COCs to be analyzed for at the private resident's wells. This request was made as a result of the discovery of these two compounds in the settling pond water and groundwater adjacent to the settling ponds.

The results of the Focused Site Investigation have identified soil and groundwater contamination associated with chlorinated solvents at the site. Soil contamination exceeding IEPA Tier 1 SROs appears to be limited to two source areas; former building one and building 2/3/4/7 (See Figure, 5, 6 and 7 and their associated subsets). Concentrations of PCE have been identified in soils beneath both areas to depths of at least 20 feet below ground surface north of building 2/3/4/7 and 6 feet below former building 1. 1,1,1-TCA and 1,1-DCE appear to be associated with former building 1. However, EGSL does not have data from soil samples beneath the identified impacted depths and therefore has not identified the vertical extent of VOC contaminants of concern in these areas. As such, EGSL cannot infer that the soil impacts in these areas are the source of groundwater contamination discussed below.

Chlorinated solvent impacted groundwater exceeding IEPA GROs for Class I groundwater appears to extend across virtually the entire limits of this investigation site with the exception of the eastern property boundary (see Figure 9 and their associated subsets). Well depths range from 20 feet below ground surface to 90 feet below ground surface across the site. Several source areas are likely and include: former building 1, building 2/3/4/7, the settling ponds, former building 6 and/or buildings/structures located on the southern section of the site that are currently outside the scope of this investigation.

PCE has been detected across the site in concentrations above the GRO. The contaminant has been reported at a depth of 20 feet below ground surface at the northwest corner of the property to >50 feet north of building 2/3/4/7 and south of pond 3 respectively. It appears that possible source areas for this contaminant include building 2/3/4/7, former building 6 and the ponds at a minimum. The vertical extent of PCE contamination does not appear to be defined north of building 2/3/4/7.

1,1-DCE has been detected across the site in concentrations above the GRO. The contaminant has been reported at a depth of <50 feet at the eastern end of the property, >50 feet north of building 2/3/4/7 and <90 feet at the northwest corner of the property. It appears that there is more than one source area associated with this contaminant and could include former building 1, building 2/3/4/7, the ponds and former building 6 at a minimum. The vertical extent of 1,1-DCE does not appear to be defined north of building 2/3/4/7.

1,1,1-TCA has been detected above the GRO in several wells across the site associated with former building 1, building 2/3/4/7, pond 3 and former pond 6. Depths of the contaminant have been reported at 30 feet to 50 feet bgs (north of building 2/3/4/7). The vertical extent of 1,1,1-TCA does not appear to be defined north of building 2/3/4/7.

TCE has been detected above the GRO in several wells across the site associated with building 2/3/4/7, Pond 3 and possibly former building 6 at a minimum. Depths of the contaminant have been reported at 30 and 50 feet bgs associated with building 2/3/4/7, <50 feet at Pond 3 and <50 feet northeast of former building 6.

1,1,2 TCA and 1,2 DCE has been reported above the GRO under building 2/3/4/7 at a depth of 30 feet bgs. The vertical extent of 1,1,2-TCA and DCE does not appear to be defined at this time as a deeper well at this location has currently not been installed and sampled.

Carbon Tetrachloride was detected slightly above the GRO in one well at 30 feet deep in building 2/3/4/7. The GRO for carbon tetrachloride is 0.005 mg/L. The laboratory reported a concentration of 0.0066 mg/L from groundwater analyzed at this location.

Chloroform has been detected above the GRO at locations associated with building 2/3/4/7, the pond system and at the southeast corner of former building 6. The depth of this contaminant is currently identified to be 30 feet bgs however this contaminant by be present at greater depths south of Pond 1 and in building 2/3/4/7. The vertical extent of this contaminant does not appear to be defined at these two locations.

Bromodichloromethane has been detected above the GRO at one location south of Pond 4 at a depth of 30 feet bgs. The laboratory reported the contaminant at a concentration of 0.0017mg/L, slightly above the GRO of 0.0002mg/L. The contaminant does not appear to be defined at this location.

Bromomethane has been detected above the GRO at the northwest corner of the property at the former Pond 6 location. The laboratory reported the contaminant present in a sample collected from 50 feet bgs but absent from a sample collected from a depth of 70 feet bgs. It appears that the vertical and horizontal extent of this contaminant has been defined onsite.

2. SITE CHARACTERIZATION

A number of sources were consulted in the preparation of this Focused Site Investigation Report. These sources include but are not limited to state government agencies and previous environmental reports prepared by environmental consulting firms including EGSL. Information and data collected from these sources was used to identify contaminants of concern and evaluate the site fate and transport mechanism to determine the vertical and horizontal extents of contaminants of concern present in the soil and groundwater under the site.

2.1 SOURCES REVIEWED

The sources consulted in the preparation of this report include but are not limited to:

- *Monitoring Well Network Installation and Ground-Water Flow Assessment* prepared by Roux Associates, Inc. dated May 17, 1990.

- *The Arnold Engineering Co, Marengo, IL, Permit No. 1999-EO-4027* dated August 30, 2001.
- *Environmental Review of Nine Arnold Magnetics Facilities* prepared by ENVIRON International Corporation, dated December 2004.
- *Unidentified Document: Monthly Summary of Groundwater Sampling Results; Arnold Magnetic Technologies, Marengo, IL.*
- *Updated Environmental Review of six facilities of Arnold Magnetics* prepared by ENVIRON International Corporation, dated March 2006. This document was severely redacted.
- *Phase I Environmental Site Assessment and Limited Environmental Compliance Review of Arnold Magnetic Technologies Corporation, 300 N. West Street, Marengo, Illinois* prepared by ENVIRON International Corporation, dated April 2008.
- *Phase I Environmental Assessment* prepared by EGSL, dated September 30, 2009.
- *Limited Phase II Subsurface Soil and Groundwater Investigation Report* prepared by EGSL, dated March 3, 2006.
- *Limited Phase II Subsurface Soil Investigation Report* prepared by EGSL, dated May 27, 2008.
- *Phase II Subsurface Soil Investigation Report* prepared by EGSL, dated July 15, 2010.
- *Illinois State Geological Survey web site.* www.isgs.illinois.edu.
- *United States Department of Agriculture web site.* www.websoilsurvey.sc.egov.usda.gov.
- *Illinois State Water Survey web site.* www.sws.uiuc.edu.
- *Verified Complaint for Injunction and Civil Penalties No. 13CH1046* dated June 14, 2013.
- *Agreed Preliminary Injunction Order No. 13CH1046* dated August 23, 2013.

2.2 SITE HISTORY

The Subject Property was originally developed in the late 1890s and was first utilized as a rail yard and railroad engine manufacturing/maintenance facility. The Subject Property was reportedly purchased by Arnold in the early 1900s, with their magnetic operations/manufacturing beginning in the 1950s.

The following buildings are currently, or have been historically, located on the Subject Property (see Site map, Figure 3):

- Building 1: Built in the late 1890s and demolished around 2002. The building was approximately 40,000-square-feet in size and was originally utilized for railroad engine manufacturing and repair. Arnold later utilized Building 1 for magnet production, pressing operations, and heat treating.

- Building 2/3/4/7: The original portion of the building (Bldg. 2) was constructed in the 1950s, with subsequent additions (Bldgs. 3, 4, and 7) added later. The entire building is approximately 135,000-square-feet in size and was formerly utilized for office space, maintenance, shipping, and miscellaneous storage. Building 2/3/4/7 was historically utilized for tape-core, powder-core and winding operations associated with magnetic manufacturing; all manufacturing operations ceased in this building in approximately 2002 and the building is currently unused.

- Building 5: Constructed in the 1950s-1960s and is approximately 74,000-square-feet in size. Currently and historically has been utilized by Arnold for their Alnico Products Division, which manufactures magnetic components by molting, melting, and finishing Aluminum, Nickel, and Cobalt. This building is currently outside the scope of this investigation.

- Building 6: Constructed in the 1950s-1960s and demolished in the 1990s. Building 6 was approximately 42,000-square-feet in size and was historically occupied by the Strontium Ferrite Department, which conducted wet processing, mixed metal sludge pressing, iron powder compressing, and baking/grinding operations associated with motor-arc manufacturing.
- Building 8: Constructed between 1950-1970 and is approximately 3,000-square-feet in size. Building 8 is utilized for the storage of landscaping and maintenance equipment, and also contains an approximately 850-foot deep water well that is utilized for potable water for the Subject Property; an associated 100,000-gallon above-ground water holding tank is located directly south of Building 8.
- Building 9: Constructed at an unknown date and demolished in the 1990s. Building 9 was approximately 5,000-square-feet in size and was utilized as an airplane hangar associated with an adjacent private runway (no longer present). This building location is currently outside the scope of this investigation.
- Building 10: Constructed at an unknown date. Building 10 is approximately 3,000-square-feet in size is currently/has historically been utilized for miscellaneous storage, 55-gallon drum storage, and drum cleaning.
- Building 11/14. Original portion of the building (Bldg. 11) constructed in the 1950s, with subsequent addition (Bldg. 14) added later. The entire building is approximately 54,000-square-feet in size and has been utilized by Arnold's Rolled Products Division since the late 1960s. Operations that currently exist within Building 11/14 involve the rolling and finishing operations associated with the production of thin-gauge rolled steel products. This building is currently outside the scope of this investigation.
- Building 12: Constructed by 1970 and is approximately 14,000-square-feet in size. Currently and historically utilized as a parts/storage warehouse. This building is currently outside the scope of this investigation.
- Building 16: Constructed after 1987 and is approximately 3,200-square-feet in size. Currently and historically utilized as a hazardous and non-hazardous storage shed. This building is currently outside the scope of this investigation.

Other buildings associated with the Subject Property include a security booth (outside the scope of this investigation) located by the main entrance, a pump house associated with the wastewater treatment system and pond system and a pump house associated with the fire suppression system.

2.3 SITE DESCRIPTION

The Site is located at 300 N. West Street, northwest of the Town of Marengo in McHenry County on 72 acres of land. The property is currently owned by 300 West LLC and occupied by the Arnold Magnetic Technologies Company which has been in existence since around the turn of the 20th century.

The site is located at an elevation of approximately 830 feet msl. The land surface in this area generally slopes from east to west. The northern portion of the site (as identified on the Site Base Map) is the focus of this Site Investigation. Onsite features included in this focus site investigation include combined manufacturing buildings 2/3/4/7, 8 and 10, former manufacturing building 1 and asphalt/concrete pavement on the eastern half of the property and the waste water treatment plant building, fire system pump house, former pond 6, former building 6 and wastewater settling ponds 1 thru 4.

Additional manufacturing buildings, pond 5 and open vegetated and agricultural land (including the percolation field) are located onsite on the southern portion of the property. A stream leading from the settling ponds to pond 5 transects the southern portion of the property. These areas are outside the scope of this investigation.

The site is bound by West Street and residential properties to the east, the Union Pacific (UP) railroad to the north, Commonwealth Edison substation to the west and the southern portion of the Site. Residential and commercial properties and IL Route 20 are located at the southern property boundary. Additional residential and commercial properties are located north and northwest of the UP railroad and Railroad Drive.

The major soil formation at the Site consists of the Pleistocene Wisconsinan Stage glacial till. The till in the Marengo area consists of sands and gravels up to 200 feet thick with a silt/clay cap. The till in this area is the major source of private potable water for residents outside of the city limits. Groundwater elevations in this aquifer are generally 20 to 40 feet below ground surface (bgs). The Site obtains potable water from an onsite well seated in the Ordovician sandstone formation approximately 850 bgs.

Site soils consist of sands, sandy silts and silty clay overlying the major sand and gravel aquifer. The thickness of silt and clay layer is generally approximately 40 feet bgs. Static onsite groundwater elevation is approximately 20 feet bgs. This static water level tends to correspond with static water levels on well driller logs from surrounding private property wells. The logs were viewed on the Illinois State Geologic Survey web based water well interactive map (http://www.isgs.illinois.edu/?q=ilwater).

Onsite utilities include electricity provided by Commonwealth Edison, natural gas supplied by Nicor. The site contains an onsite sewage treatment system.

Previous Phase I Environmental Assessment (ESA) report dated December 2004 indicate the presence of 12 underground storage tanks (USTs) that are or were located on the property (Environ). The report states that 4 of the tanks were removed from the ground, seven were abandoned in place and one is empty in place. Contents of the tanks were reported to be mineral oil, acetone, methanol, TCA, Kerosene and gasoline. Many of the tanks were reportedly installed in the 1950's - 1960's. A majority of the tanks were taken out of service in 1990 with the last tank reportedly taken out of service before 2004. Four additional USTs were identified in an Environ 2008 Phase I ESA report. The contents were reportedly "hazardous substance" and lube oil and heating oil. The status of these tanks is unknown.

A search of the Office of the Illinois State Fire Marshal documents 17 underground storage tanks currently or formerly located at the Site. The total aggregate capacity of the tanks is 60,000 gallons. The contents are identified as unknown (7), cutting oil (2), solvent (2), kerosene (1), gasoline (1) and hazardous substance (4). Six tanks are listed as "abandoned in place", 5 are listed as "removed" and 6 are listed as "exempt from registration".

EGSL performed a Ground Penetrating Radar (GPR) investigation of suspect areas of the Site in 2006 in an attempt to determine if USTs are still present. The results of the investigation indicated the presence of disturbed soils consistent with UST excavation activities. EGSL identified nine areas suspected of containing or previously containing USTs. One of the areas, area 9, is located adjacent to building 11/14 which is outside the scope of this investigation. EGSL identified four USTs suspected of still being in place. Three of the tanks are known to be properly abandoned in place, (areas 3 and 4). One suspected improperly abandoned tank is suspected to be present in area 5. Since 2004 EGSL is aware of two of the tanks being removed from the ground. RW Collins was contracted to remove two tanks (area 8) in 2007 and properly abandoned three others in areas 3 and 4.

EGSL is unable to confirm the total number of tanks present and/or removed, their size, their location and/or former contents of the 17 tanks identified by the OSFM. EGSL identified the number, size and former contents of the tanks listed in the GPR report through a review of historical site drawings.

3. PHASE II SUBSURFACE INVESTIGATION ACTIVITIES

A Phase II Subsurface Investigation was performed in order to assess the potential for the presence of contaminants of concern (COC) in the subsurface soil and groundwater at the site. The investigation was performed in accordance with Part 740.430 Focused Site Investigation with analysis of soil and groundwater samples for contaminants identified on Target Compound List (TCL) indicator contaminants identified in Appendix A of Part 740. The contaminants of concern specific to this project as identified in Count 1)16 of the Verified Complaint for Injunction and Civil Penalties dated June 14, 2013 are included in the IEPA TLC and include the following:

- I,I-Dichloroethylene (1,1-DCE)
- Cis-1,2-Dichloroethylene (cis-1,2-DCE)
- 1,2-Dichloroethane (DCA)
- Trans-1,2-Dichloroethylene (trans-1,2-DCE)
- Trichloroethylene (TCE)
- Tetrachloroethylene (PCE)
- Vinyl Chloride
- Chloroform*
- Bromodichloromethane*

Additional COCs* were added, via email, from the Assistant Attorney General on October 17, 2013 based on the discovery of chloroform and bromodichloromethane in the water from the settling ponds and groundwater adjacent to the settling ponds. Site investigations performed prior to 2013 may not have focused on these COCs as in injunction was not in force at that time and tank contents were

identified as products not associated with chlorinated solvents.

In the past, Arnold personnel used 1,1,1-trichloroethane and tetrachloroethylene as degreasers during the manufacturing process of products produced at the Arnold facility. The pathway by which these contaminants entered the environment is unclear, however; they and their associate byproducts have been detected in the site soils and groundwater. Subsequent to their discovery, offsite investigations have confirmed that these chemicals have migrated offsite and are currently being reported, by laboratory analysis, to be present in potable water wells located to the north and northwest of the Site in concentrations above IEPA Class I groundwater standards. Figure 4 illustrates the soil boring and groundwater monitoring well locations advanced or installed by EGSL to date.

Site investigation activities have been performed in various stages by EGSL from 2006 before the issuance of the injunction order to the presence. As such, many of the soil and groundwater samples were analyzed for COCs other than those stipulated in the Injunction Order issued in 2013. A brief history of each phase of the investigation activities and results is presented below.

3.1 2006 INVESTIGATION

On February 15, 2006, EGSL completed a Phase II Subsurface Soil and Groundwater Investigation at the Site. This investigation was performed in accordance with the regulations set forth in 35 IAC 740 SRP and 35 IAC 742 TACO Tier 1, for Residential properties. The purpose of this investigation was to confirm or deny the presence of subsurface soil and/or groundwater contamination that may be present at the Subject Property. A copy of the report is included in Appendix E.

EGSL advanced a total of 27 soil borings (GP-1 thru 27) from suspect areas throughout the Subject Property. A total of 27 soil samples were submitted for analysis of Target Compound List (TCL) indicator contaminants in order to analytically determine the presence and concentration of COCs in the areas of concern. The depth and the type of analysis requested of the samples submitted to STAT Laboratory are listed below:

Boring Number	Depth	Location	TCL
GP-1	7.5-8.5	Adjacent to the northeast exterior of the footprint of former Building #1	X
GP-2	4-5	Northwest interior of former Building #1	X
GP-3	5-6	Central interior portion of Building #2	X
GP-4	4-5	Northwestern interior of Building #2	X
GP-5	6-7	Western interior of Building #2	X
GP-6	4-5	Northeastern interior of Building #5	X
GP-7	6-7	Northwestern interior of Building #5	X
GP-8	5-6	Western interior of Building #5	X
GP-9	5-6	Northern interior of Building #14	X
GP-10	7.5-8.5	Adjacent to western exterior of former Building #6	X
GP-11	9-10	Adjacent to northern exterior of former Building #6	X

Boring Number	Depth	Location	TCL
GP-12	8-9	North of Pond #4	X
GP-13	4-5	Adjacent to northern exterior of former Building #1	X
GP-14	4-6	Northeast exterior of Building #2	X
GP-15	5-7	Southeast exterior of Building #2	X
GP-16	6-8	Northern exterior of Building #5	X
GP-17	5-6	Northeast interior of Building #2	X
GP-18	6-8	Southern interior of Building #2	X
GP-19	5-7	Southeast interior of Building #2	X
GP-20	4-5	Northwest exterior of Building #2	X
GP-21	5-6	Northern exterior of Building #2	X
GP-22	4-6	Northern exterior of Building #2	X
GP-23	4-5	Central portion of the Subject Property	X
GP-24	5-6	Central portion of the Subject Property	X
GP-25	4-5	Western interior of former Building #6	X
GP-26	5-6	Southeastern vacant portion of the Subject Property	X
GP-27	5-6	Southwestern vacant portion of the Subject Property	X

The analytical test results of the soil samples were compared to the SROs derived from the IEPA "adopted" IAC 742, TACO, Tier I for Industrial/Commercial properties and for Soil Component of the Groundwater Ingestion Route (SCGIR) (Class I Groundwater).

Listed below are the soil contaminants of concern that were detected above IEPA Tier 1 Soil Remediation Objectives:

Chemical	Sample Number (Depth)	Concentration Detected (mg/Kg)	TACO Tier 1 RO (mg/Kg)	Exposure Pathway
Tetrachloroethene (PCE)	GP-3 (5-6) GP-5 (6-7) GP-20 (4-5) GP-21 (5-6) GP-22 (4-6)	1.3 0.092 0.13 1.5 9.7	0.06 0.3	SCGIR Class I Groundwater SCGIR Class II Groundwater
TCLP Arsenic	GP-2 (4-5)	2.0	0.05 0.2	SCGIR Class I Groundwater SCGIR Class II Groundwater
Arsenic	GP-2 (4-5)	450	13.0 13.0 29 120	Residential Ingestion Background Concentration* SCGIR Class I Groundwater SCGIR Class II Groundwater
Chromium	GP-13 (4-5) GP-17 (5-6) GP-21 (5-6) GP-26 (5-6)	19.0 18.0 22.0 24.0	16.2	Background Concentration*

Cobalt	GP-14 (4-6) GP-15 (5-7) GP-20 (4-5) GP-25 (4-5)	170.0 51.0 40.0 22.0	8.9	Background Concentration*
Copper	GP-14 (4-6) GP-19 (5-7)	36.0 20.0	19.6	Background Concentration*
Iron	GP-13 (4-5) GP-21 (5-6) GP-26 (5-6)	17,000 20,000 19,000	15,900	Background Concentration*
Manganese	GP-13 (4-5)	660	636	Background Concentration*
Nickel	GP-14 (4-6) GP-15 (5-7)	160 210	18.0	Background Concentration*
Vanadium	GP-2 (4-5) GP-13 (4-5) GP-17 (5-6) GP-21 (5-6) GP-26 (5-6)	28.0 28.0 33.0 34.0 32.0	25.2	Background Concentration*

EGSL collected three groundwater samples from the groundwater monitoring wells, located along the northwestern portion of the Subject Property (MW-3, MW-A6, MW-A7), using a new dedicated disposable polyethylene bailer. The groundwater samples were then transferred to the appropriate glass vials and containers for the analysis of TCL indicator contaminants. The groundwater samples were kept on ice in coolers and sent to the laboratory for analysis. Proper chain-of-custody procedures were followed.

The analytical test results of the groundwater samples were compared to the GRO derived from the IEPA IAC 742, TACO Tier I for Class I Groundwater.

Listed below are the groundwater contaminants of concern that were detected above IEPA Tier 1 Remediation Objectives:

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	TACO Tier 1 RO (mg/L)	Exposure Pathway
1,1-Dichlorethene	MW-A7	0.13	0.007 0.035	Class I Groundwater Class II Groundwater
Tetrachloroethene	MW-3	0.011	0.005	Class I Groundwater
1,1,1-Trichloroethane	MW-A7	0.46	0.2	Class I Groundwater
Iron	MW-A6	5.5	5.0 5.0	Class I Groundwater Class II Groundwater
Manganese	MW-3 MW-A6 MW-A7	0.3 1.8 0.54	0.15	Class I Groundwater

On February 15, 2006, EGSL performed an in-situ hydraulic conductivity test (slug test) at MW-3. Slug tests are a method of obtaining approximate values for the hydraulic conductivity of the water-bearing formations in the vicinity of each respective well screen. This field procedure consists of displacing a volume of water in the well with a solid "slug" of known volume and recording the change in water level as it recovers to static hydraulic conditions over time. The data collected was input into the Aqtesolv® Hydraulic Conductivity program.

The site-specific hydraulic conductivity results, as concluded from the hydraulic conductivity testing, was **6.812E-04 cm/sec**. Based on these results, the Subject Property groundwater is classified as Class I groundwater as per 35 IAC 620, Subpart B.

The Subject Property groundwater flow direction, as previously determined by site-specific survey data, was determined to be towards the **north-northwest**.

3.2 2008 INVESTIGATION

EGSL performed a Limited Phase II Subsurface Soil investigation on March 3, 2006. According to the report, arsenic was detected at a concentration of 450 mg/Kg along the northern portion of the Subject Property, between the pump house and Building 2/3/4. Additionally, two, 8,000-gallon underground storage tanks were removed in the immediate vicinity of this area of concern on November 16, 2007. Both tanks were in poor condition at the time of removal, and olfactory and visual observations indicated that the subsurface soil had been negatively impacted; as such, Office of the State Fire Marshal (OSFM) personnel identified that the USTs had been leaking. The incident was subsequently reported to the Illinois Emergency Management Agency (IEMA) and the IEPA Leaking Underground Storage Tank (LUST) section (LUST Incident number 20071279).

EGSL conducted a Limited Phase II Subsurface Soil investigation in April 24, 2008. EGSL advanced a total of nine soil borings (SP-1 thru SP-9) surrounding previously referenced areas of concern. See Appendix F for a copy of the report.

A total of 13 soil samples were submitted for analysis in order to analytically determine the presence and concentration of COC in the areas of concern. The depth and the type of analysis requested of the samples submitted to *STAT Analysis* are listed below:

Boring Number	Depth (feet)	BTEX/PNAs	Total Arsenic/ TCLP Arsenic
SP-1	5-7	X	
SP-1	13-15	X	
SP-2	4-6	X	
SP-3	4-6	X	
SP-4	5-7	X	

Boring Number	Depth (feet)	BTEX/PNAs	Total Arsenic/ TCLP Arsenic
SP-5	6-8	X	
SP-5	8-10		X
SP-6	13-15		X
SP-7	8-10		X
SP-7	4-6		X
SP-8	8-10		X
SP-9	4-6		X
SP-9	8-10		X

The analytical test results of the soil samples were compared to the IEPA SROs Tier I for Industrial/Commercial and Residential properties and for Soil Component of the Groundwater Ingestion Route (SCGIR) (Class I Groundwater).

Listed below are the soil contaminants of concern that were detected above IEPA Tier 1 Remediation Objectives:

Chemical	Sample Number (Depth)	Concentration Detected (mg/Kg)	TACO Tier 1 RO (mg/Kg)	Exposure Pathway
Arsenic	GP-7 (4-6)	14.0	13.0	Residential Ingestion Industrial/Commercial Ingestion

3.3 2010 INVESTIGATION

In May 2010, EGSL completed a Phase II Subsurface Investigation at the Site. The basis of the investigation was the findings of EGSL personnel in the performance of a Phase I ESA performed in 2009. The ESA identified several areas of concern and recommended additional investigation and sampling activities be performed at the site to identify the nature and extent of contaminants of concern identified during the site assessment. Areas of concern identified included the industrial nature of business conducted at the site and the anticipated contaminants associated with those activities. A copy of the text of the Phase I ESA is included in Appendix G. This investigation was performed in accordance with the regulations set forth in 35 IAC 740 and 35 IAC 742, Tier 1, for Industrial/Commercial and Residential properties. A copy of the report is included in Appendix H.

A total of 40 soil borings (GP-1 thru 40) were advanced throughout the Subject Property. Forty-nine soil samples were submitted for analysis in order to analytically determine the presence and concentration of COCs in the areas of concern (nine of the boring locations had two soil samples submitted). The soil

sample locations, sampling date, depth, and the type of analysis requested of the samples are listed below:

Boring Number	Date Obtained	Depth of Sample Submitted for Analysis (feet)	TCL	VOCs	SVOCs	RCRA Metals (+pH)
GP-1	5/10/2010	6-8	X			
GP-2	5/10/2010	4-6		X		
GP-3	5/10/2010	4-6		X		
GP-4	5/10/2010	3-5		X	X	X
GP-5	5/10/2010	1-3		X	X	X
GP-6	5/10/2010	5-7		X		
GP-7	5/10/2010	4-6		X	X	X
GP-8	5/10/2010	2-4		X		
GP-9	5/10/2010	5-7	X			
GP-10	5/10/2010	2-4		X		
GP-11	5/10/2010	1-3		X		
GP-11	5/10/2010	5-7		X	X	X
GP-12	5/10/2010	3-5	X			
GP-13	5/10/2010	4-6		X		
GP-14	5/10/2010	3-5		X		
GP-15	5/10/2010	1-3		X	X	X
GP-15	5/10/2010	6-8		X		
GP-16	5/10/2010	2-4		X		
GP-17	5/10/2010	4-6	X			
GP-18	5/10/2010	5-7	X			
GP-19	5/10/2010	2-4		X	X	X
GP-20	5/10/2010	8.5-9.5		X	X	X
GP-21	5/10/2010	8-10		X	X	X
GP-22	5/10/2010	2-4		X		
GP-23	5/10/2010	5-7		X		
GP-24	5/10/2010	3-5		X	X	X
GP-25	5/10/2010	2-4		X	X	X
GP-26	5/10/2010	2-4		X	X	X
GP-27	5/11/2010	1-3	X			
GP-28	5/11/2010	1-3		X	X	X
GP-28	5/11/2010	7-9		X		
GP-29	5/11/2010	1-3		X		
GP-29	5/11/2010	8-10		X	X	X
GP-30	5/11/2010	1-3		X		
GP-30	5/11/2010	6-8		X	X	X
GP-31	5/11/2010	3-5	X			
GP-32	5/11/2010	1-3		X	X	X
GP-32	5/11/2010	5-7		X		

Boring Number	Date Obtained	Depth of Sample Submitted for Analysis (feet)	TCL	VOCs	SVOCs	RCRA Metals (+pH)
GP-33	5/11/2010	3-5	X			
GP-34	5/11/2010	5-6	X			
GP-35	5/11/2010	1-3		X	X	X
GP-35	5/11/2010	5-6		X		
GP-36	5/11/2010	3-5		X	X	X
GP-37	5/11/2010	1-3	X			
GP-38	5/11/2010	1-3	X			
GP-38	5/11/2010	5-7		X	X	X
GP-39	5/11/2010	2-4	X			
GP-40	5/11/2010	1-3		X	X	X
GP-40	5/11/2010	6-8		X		

Additionally, a total of 16 groundwater monitoring wells (MW-1 thru 16) were installed at the Subject Property. On May 3-5, 2010, *Earth Solutions, Inc.* installed two nests of four wells (eight total wells) in the northwestern portion of the Subject Property. On May 10-12, 2010, EGSL installed an additional eight wells throughout the Subject Property. The depth of the wells and screen intervals are as follows:

Well Number	Date Installed	Company	Well Depth (feet below ground surface)	Screen Interval (feet below ground surface)
MW-1	5/3/2010	Earth Solutions	50	40-50
MW-2	5/3/2010	Earth Solutions	40	30-40
MW-3	5/3/2010	Earth Solutions	30	20-30
MW-4	5/4/2010	Earth Solutions	20	10-20
MW-5	5/4/2010	Earth Solutions	50	40-50
MW-6	5/4/2010	Earth Solutions	40	30-40
MW-7	5/5/2010	Earth Solutions	30	20-30
MW-8	5/5/2010	Earth Solutions	20	10-20
MW-9	5/10/2010	EGSL	20	10-20
MW-10	5/10/2010	EGSL	20	10-20
MW-11	5/10/2010	EGSL	20	10-20
MW-12	5/10/2010	EGSL	20	10-20
MW-13	5/10/2010	EGSL	20	10-20
MW-14	5/10/2010	EGSL	20	10-20
MW-15	5/10/2010	EGSL	20	10-20
MW-16	5/10/2010	EGSL	20	10-20

All groundwater samples were submitted for Target Compound List indicator contaminants.

The analytical results of the soil and groundwater samples were compared to the SROs and GROs Tier I for Industrial/Commercial and Residential properties and for Soil Component of the Groundwater Ingestion Route (SCGIR) Class I Groundwater and Class I Groundwater. Analytical results indicate that the following contaminants of concern were detected above IEPA Tier 1 Remediation Objectives:

Soil

Chemical	Sample Number (Depth)	Concentration Detected (mg/Kg)	Remediation Objective (mg/Kg)	Exposure Route
PCB				
Aroclor 1242	GP-17 (4-6)	1.7	1.0 1.0 1.0	Residential Ingestion Construction Worker Ingestion Industrial/Commercial Ingestion
INORGANIC				
Chromium	GP-9 (5-7)	150	28	pH Specific SCGIR Class I
Iron	GP-9 (5-7) GP-34 (5-6)	200,000 76,000	55,000 140,000	Residential Ingestion Construction Worker Ingestion
Manganese	GP-34 (5-6)	26,000	1,600 4,100 8,700	Residential Ingestion Construction Worker Ingestion Construction Worker Inhalation
TCLP INORGANIC (units in mg/L)				
Cadmium	GP-34 (5-6)	0.0099	0.005	SCGIR Class I Groundwater
Lead	GP-34 (5-6)	0.015	0.0075	SCGIR Class I Groundwater
Manganese	GP-34 (5-6) GP-38 (1-3)	85 0.19	0.15	SCGIR Class I Groundwater
Nickel	GP-34 (5-6)	0.24	0.1	SCGIR Class I Groundwater
Zinc	GP-34 (5-6)	210	5.0	SCGIR Class I Groundwater
VOC				
1,1,1-Trichloroethane	GP-34 (5-6) GP-35 (5-6)	200 2.7	2.0	SCGIR Class I Groundwater
1,1-Dichloroehene	GP-34 (5-6)	0.94	0.06	SCGIR Class I Groundwater
Tetrachloroethene	GP-34 (5-6)	0.28	0.06	SCGIR Class I Groundwater

Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
INORGANIC				
Aluminum	MW-3 MW-4 MW-8 MW-9 MW-10	8.1 4.8 35 30 12	3.5	Class I Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
	MW-11	7.2		
	MW-12	23		
	MW-13	44		
	MW-15	6.9		
	MW-16	5.3		
Antimony	MW-2	0.0069	0.0060	Class I Groundwater
	MW-8	0.0085		
Arsenic	MW-8	0.28	0.05	Class I Groundwater
Barium	MW-3	2.7	2.0	Class I Groundwater
	MW-8	2.4		
Chromium	MW-8	0.12	0.1	Class I Groundwater
	MW-13	0.16		
Iron	MW-2	11	5.0	Class I Groundwater
	MW-3	29		
	MW-4	26		
	MW-7	18		
	MW-8	360		
	MW-9	120		
	MW-10	41		
	MW-11	11		
	MW-12	39		
	MW-13	110		
	MW-15	13		
	MW-16	11		
Lead	MW-2	0.016	0.0075	Class I Groundwater
	MW-3	0.073		
	MW-4	0.036		
	MW-6	0.0085		
	MW-8	0.13		
	MW-9	0.17		
	MW-10	0.11		
	MW-11	0.014		
	MW-12	0.041		
	MW-13	0.099		
	MW-15	0.013		
	MW-16	0.0085		

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Manganese	MW-1	0.27	0.15	Class I Groundwater
	MW-2	0.5		
	MW-3	1.2		
	MW-4	0.75		
	MW-5	0.24		
	MW-6	0.26		
	MW-7	2		
	MW-8	31		
	MW-9	6.3		
	MW-10	2.8		
	MW-11	0.62		
	MW-12	2.5		
	MW-13	2.3		
	MW-14	0.19		
	MW-15	0.63		
	MW-16	0.58		
Nickel	MW-8	0.32	0.1	Class I Groundwater
	MW-9	0.83		
	MW-13	0.13		
	MW-15	0.36		
Thallium	MW-8	0.0062	0.002	Class I Groundwater
Vanadium	MW-8	0.27	0.049	Class I Groundwater
	MW-9	0.12		
	MW-12	0.055		
	MW-13	0.13		
SVOC				
Bis(2-ethylhexyl)phthalate	MW-1	0.011	0.006	Class I Groundwater
VOC				
1,1,1-Trichloroethane	MW-4	0.3	0.2	Class I Groundwater
1,1-Dichloroehene	MW-1	0.017	0.007	Class I Groundwater
	MW-2	0.044		
	MW-4	0.036		
	MW-5	0.013		
	MW-6	0.012		
	MW-7	0.031		
	MW-13	0.012		
Tetrachloroethene	MW-4	0.014	0.005	Class I Groundwater
	MW-7	0.12		
	MW-8	0.01		
Trichloroethene	MW-6	0.01	0.005	Class I Groundwater
	MW-7	0.0078		

3.4 2010-12 INVESTIGATION

EGSL performed additional Site Investigation activities from 2010 thru 2012 at the Site. The purpose of the investigation was to further delineate the vertical and horizontal extent of subsurface soil and groundwater COCs at the site.

Subsequent to the performance of the 2010 Phase II Subsurface Investigation, EGSL performed the following additional activities on and offsite.

On October 28-29, 2010, five additional monitoring wells were installed (MW-17, 18, 19, 20, and 21). One deep well (MW-17, screened from 60-70 feet) was installed along the northwestern-most nest of wells in order to delineate the vertical extent of VOC impaction in that area. The remaining four permanent monitoring wells were installed off-site directly north of Railroad Street in order to delineate the horizontal extent of groundwater impaction along the northwestern portion of the Subject Property. Analytical results indicated that groundwater collected from these wells contained COCs above Tier 1 Remediation Objectives for Class I Groundwater. A memorandum was issued to *300 West LLC* on December 13, 2010. A copy of this report is included in Appendix I.

On February 23-24, 2011, two additional monitoring wells were installed (MW-22 and MW-23). MW-22 was installed on-site within the northwestern nest of wells and screened from a depth of 80-90 feet in order to delineate the vertical extent of groundwater impaction in that area. MW-23 was installed within the off-site nest of wells and screened from a depth of 60-70 feet in order to delineate the vertical extent of groundwater impaction in that area. Both of these wells were sampled on March 31, 2011. The laboratory reported that groundwater collected from these wells did not contain any COCs above Tier 1 GRO for Class I Groundwater.

On March 31, 2011, EGSL was able to access the private, potable wells of the three northern residential properties. With the permission from the homeowners, each well was sampled and submitted for analysis of VOCs. The addresses of the homes, and approximate depths of the wells, are as follows: [redacted] (>60 feet deep), [redacted] (~107 feet deep), [redacted] (>120 feet deep). Analytical results indicated that no VOCs were detected above laboratory detection limits.

On December 2, 2011, EGSL advanced an additional 11 soil borings (GP-40 thru 50) at the Site in order to delineate previous detections of elevated chemicals of concern. The purpose of the delineation was to obtain more accurate source widths and depths for future Tier 2 analysis. GP-40 was inadvertently repeated from the previous investigation activities.

Sixty soil samples were submitted for analysis in order to analytically determine the presence and concentration of COC in the areas of concern (several of the boring locations had two soil samples

submitted). The soil sample locations, sampling date, depth, and the type of analysis requested of the samples are listed below:

Boring Number	Date Obtained	Depth of Sample Submitted for Analysis (feet)	TCL	VOCs	SVOCs	RCRA Metals (+pH)	PCBs
GP-40*	12/02/2011	5-7				Cr/Pb	
GP-41	12/02/2011	5-7				Cr/Pb	
GP-42	12/02/2011	5-7				Cr/Pb	
GP-43	12/02/2011	9-10				Cr/Pb	
GP-44	12/02/2011	4-6					X
GP-45	12/02/2011	4-6					X
GP-46	12/02/2011	4-6					X
GP-47	12/02/2011	9-10					X
GP-48	12/02/2011	5-6		PCE 11-DCE 111-TCA		Pb/Mn	
GP-49	12/02/2011	5-6		PCE 11-DCE 111-TCA		Pb/Mn	
GP-50	12/02/2011	8-10		PCE 11-DCE 111-TCA		Pb/Mn	

An additional seven groundwater monitoring wells (MW-17 thru 23) were installed at the Site (2 onsite and 5 off-site). The depth of the wells and screen intervals are as follows:

Well Number	Date Installed	Company	Well Depth (feet below ground surface)	Screen Interval (feet below ground surface)
MW-17	10/28/2010	Earth Solutions	70	60-70
MW-18 (off-site)	10/28/2010	Earth Solutions	50	40-50
MW-19 (off-site)	10/29/2010	Earth Solutions	40	30-40
MW-20 (off-site)	10/29/2010	Earth Solutions	30	20-30
MW-21 (off-site)	10/29/2010	Earth Solutions	20	10-20
MW-22	02/23/2011	Earth Solutions	90	80-90
MW-23 (off-site)	02/23/2011	Earth Solutions	70	60-70

The analytical test results of the soil and groundwater samples were compared to the SROs/GROs derived from the IEPA adopted IAC 742, TACO Tier I for Industrial/Commercial and Residential properties and for Soil Component of the Groundwater Ingestion Route (SCGIR) Class I Groundwater and

Class 1 Groundwater. Analytical results confirm the following COCs were detected in the following submitted samples above the RO:

Soil

Chemical	Sample Number (Depth)	Concentration Detected (mg/Kg)	Remediation Objective (mg/Kg)	Exposure Route
INORGANIC				
Chromium	GP-40 (5-7) GP-43 (9-10)	298 705	28 230 270 420 690	pH Specific SCGIR Class I Residential Ingestion Residential Inhalation Industrial/Commercial Inhalation Construction Worker Inhalation
Lead	GP-40 (5-7)	292	107	pH Specific SCGIR Class I

Groundwater

Chemical	Monitoring Well Number	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
VOC				
1,1,1-Trichloroethane	MW-4	0.3	0.2	Class I Groundwater
1,1-Dichloroehene	MW-17 MW-19	0.010 0.016	0.007	Class I Groundwater
Tetrachloroethene	MW-19	0.0092	0.005	Class I Groundwater
Vinyl Chloride	MW-18	0.0025	0.002	Class I Groundwater

3.5 2013 INVESTIGATION

In June 2013 the State Attorney of Illinois issued an injunction order naming *300 West LLC* and *The Arnold Engineering Co.* as defendants on two counts: for substantial danger to the environment, public health and welfare and water pollution. As a result, the site investigation was modified from a Comprehensive Site Investigation to a Focused Site Investigation to include only those COCs identified in the injunction order identified in section 3.0.

In September and October 2013 EGSL performed additional Phase II subsurface investigation activities to further define and delineate VOC COCs identified during the previous investigation activities. The focus of this investigation is the chlorinated solvents identified in the Injunction Order.

In September and October 2013 EGSL personnel directed the advancement of 38 additional soil borings (GP-100 thru 132, Discharge (a shallow grab sample from the drainage ditch located southeast of Pond 4) and GP-201 thru 205), and the installation of an additional 23 groundwater monitoring wells (MW-24 thru 46). The soil borings and groundwater monitoring wells were placed to further refine the vertical and horizontal extent of soil and groundwater exceedances previously identified. Grab samples of the water from Ponds 1-4 and the discharge from Pond 4 were also obtained.

3.5.1 FIELD SAMPLING PROCEDURES-SOIL SAMPLES

EGSL contracted Earth Solutions to provide personnel and equipment required to advance additional soil borings at the Site. Earth Solutions utilized a Geoprobe® 6610DT to advance an acetate lined 5-foot soil sampler through the depth of the boring. EGSL personnel logged each borehole in the field. A copy of the boring logs are included in Appendix L.

A soil sample from each boring interval was placed into a sealed plastic bag for volatile organic vapor headspace analysis. The headspace in the bagged samples were analyzed in the field with Photo-Ionization Detector (PID). The PID was used to screen each soil interval from each boring location for relative concentrations of VOCs but does not provide separation of the contaminants into individual constituents. The utilization of this field-screening device provided immediate on-site data for use in the assessment of the site and identifying suspect soil for laboratory analysis.

Soil samples were selected for laboratory analysis based on the presence of elevated PID deflections or, in the absence of PID deflections, intervals were the contaminants of concern are most likely to be present. The soil samples were placed in laboratory provided containers, labeled and placed in a cooler for transport to the laboratory. A chain of custody was prepared tracking the sample from time of collection through analysis.

The soil samples targeted for laboratory analysis of VOCs were collected utilizing a 10 gramTerra Core sampler. The sample was placed into new laboratory supplied 40-milliliter glass vials, pre-preserved with sodium bisulfate or methanol in accordance with *US EPA SW-846* Method 5035. Additional soil from each sample collected was placed into a non-preserved 4 or 8-ounce wide-mouth jar with a Teflon-lined cap for soil moisture analysis. STAT Analytical supplied all glass vials and jars. All soil samples were stored on ice during soil sample collection activities and while being transported to either STAT Analysis or First Environmental Laboratory.

Cross-contamination during soil sampling was minimized by using a Liquinox detergent wash and tap water rinse to decontaminate the sampling tools between each sampling interval and location. Soil sample collection equipment (steel trowels) were hand washed with a Liquinox detergent wash and rinsed with potable water between soil sample intervals. The tools were then placed on clean, decontaminated surfaces to air dry. Disposable latex gloves were worn during the collection of soil samples and were changed between each sample interval.

3.5.2 SOIL SAMPLING ANALYSIS

In September and October 2013 an additional 38 soil borings (GP-100 thru GP-132, Discharge and GP-201 thru GP-205) were advanced to 15-20 feet bgs throughout the site to further delineate the vertical and horizontal extent of COCs previously identified. Seventy-seven soil samples were submitted for analysis in order to refine the extent of COCs in the areas of concern. The soil samples were submitted

to either STAT Analysis Corporation or First Environmental Laboratories, Inc. for quantitative chemical analysis. The soil sample locations, sampling date, depth, and the type of analysis requested for the 2013 investigation are listed on below:

Boring Number	Date Obtained	Depth of Sample Submitted for Analysis (feet)	VOCs	PCBs
GP-100	9/3/2013	5-7, 15-17	X	
GP-101	9/3/2013	7-9, 13-15	X	
GP-102	9/3/2013	7-9, 13-15	X	
GP-103	9/4/2013	1-3, 8-10	X	
GP-104	9/4/2013	3-5, 8-10	X	
GP-105	9/4/2013	6-7, 11-12	X	
GP-106	9/4/2013	5-7, 9-11	X	
GP-107	9/5/2013	8-10, 12-14	X	
GP-108	9/5/2013	6-8, 10-12	X	
GP-109	9/5/2013	7-9, 9-11	X	
GP-110	9/5/2013	5-7, 7-9	X	
GP-111	9/5/2013	5-7, 8-10	X	
GP-112	9/5/2013	4-6, 8-10	X	
GP-113	9/5/2013	8-10, 10-12	X	
GP-114	9/18/2013	6-7, 12-13	X	
GP-115	9/18/2013	8-10, 12-13	X	
GP-116	9/18/2013	5-7, 13-15	X	
GP-117	9/18/2013	9-10, 13-14	X	
GP-118	9/18/2013	9-10, 11-13	X	
GP-119	9/18/2013	5-7, 12-14	X	
GP-120	9/18/2013	4-6, 8-10	X	
GP-121	9/18/2013	8-9, 13-14	X	
GP-122	9/18/2013	9-10, 12-14	X	
GP-123	9/18/2013	5-7, 8-10	X	
GP-124	9/18/2013	5-7, 10-12	X	
GP-125	9/18/2013	7-8, 12-13	X	
GP-126	9/18/2013	4-6, 8-10	X	
GP-127	9/18/2013	8-9, 11-12	X	
GP-128	9/18/2013	7-9, 10-12	X	
GP-129	9/18/2013	9-10, 12-13	X	
GP-130	9/18/2013	8-10, 12-14	X	
GP-131	9/18/2013	5-7, 13-14	X	
GP-132	9/18/2013	6-8, 10-12	X	
Discharge	9/18/2013	1-2	X	
GP-201	10/18/2013	6-8, 12-14	X	
GP-202	10/18/2013	5-7, 12-14	X	
GP-203	10/18/2013	1-3, 7-8, 17-18	X	X
GP-204	10/18/2013	1-3, 16-17	X	
GP-205	10/18/2013	7-8, 18-19	X	

3.5.3 GROUNDWATER MONITORING WELLS INSTALLATION

A groundwater investigation was performed in order to assess the potential for the presence of contaminants of concern (COC) in the subsurface groundwater present at the site. The investigation was performed in accordance with Part 740 (SRP) with analysis of groundwater samples for contaminants identified on the from the Target Compound List (TCL) indicator contaminants identified in Appendix A of Part 740. The contaminants of concern specific to this project as identified in Count 1)16 of the Verified Complaint for Injunction and Civil Penalties are included in the IEPA TCL.

Earth Solutions was contracted by EGSL to provide personnel and equipment necessary to install 23 additional groundwater monitoring wells (MW-24 thru 46) throughout the site. Fourteen of the wells (MW-24 thru 37) were installed in September and seated 30 feet bgs. The wells were screened from 10 to 30 feet bgs to evaluate the shallow groundwater column in these areas. Analytical results of groundwater collected confirmed the presence of COCs above the GROs from several of these wells. As a result, in October monitoring wells MW-38 thru 46 were installed adjacent to above referenced wells and were seated 50 feet bgs. The wells were screened from 45-50 feet bgs and were used to evaluate the water column at this depth.

Earth Solution utilized a rotary drill rig complete with hollow stem augers to drill each well to the desired depth. Soil cuttings were placed in labeled drums for future offsite disposal. PVC threaded well construction materials consisting of solid riser and 0.010" slotted screen were used in the construction of each well. The completed well was lowered through the well string and seated at the bottom of the borehole. Sand filter pack was emplaced around the well screen as the rods were extracted from the borehole. The sand filter pack extended two feet above the top of the screen. Bentonite slurry was pumped into the borehole to within 10 feet of the surface. Bentonite chips were placed on top of the slurry to within one foot of the surface. Each well was completed with a flush mount steel cap set in a concrete mix to grade. A copy of the well completion logs is included as Appendix M. The wells were allowed to stabilize prior to development. Each well was developed by removing water and sediment from the water column until groundwater ran clear.

The depth of the groundwater monitoring wells and screen intervals of each well are as follows:

Well Number	Date Installed	Company	Well Depth (feet below ground surface)	Screen Interval (feet below ground surface)
MW-24	9/03/2013	Earth Solutions	30	10-30
MW-25	9/03/2013	Earth Solutions	30	10-30
MW-26	9/04/2013	Earth Solutions	30	10-30
MW-27	9/04/2013	Earth Solutions	30	10-30
MW-28	9/05/2013	Earth Solutions	30	10-30
MW-29	9/35/2013	Earth Solutions	30	10-30
MW-30	9/06/2013	Earth Solutions	30	10-30
MW-31	9/06/2013	Earth Solutions	30	10-30
MW-32	9/18/2013	Earth Solutions	30	10-30
MW-33	9/18/2013	Earth Solutions	30	10-30

Well Number	Date Installed	Company	Well Depth (feet below ground surface)	Screen Interval (feet below ground surface)
MW-34	9/18/2013	Earth Solutions	30	10-30
MW-35	9/18/2013	Earth Solutions	30	10-30
MW-36	9/18/2013	Earth Solutions	30	10-30
MW-37	9/18/2013	Earth Solutions	30	10-30
MW-38	10/18/2013	Earth Solutions	50	45-50
MW-39	10/18/2013	Earth Solutions	50	45-50
MW-40	10/22/2013	Earth Solutions	50	45-50
MW-41	10/22/2013	Earth Solutions	50	45-50
MW-42	10/23/2013	Earth Solutions	50	45-50
MW-43	10/23/2013	Earth Solutions	50	45-50
MW-44	10/24/2013	Earth Solutions	50	45-50
MW-45	10/24/2013	Earth Solutions	50	45-50
MW-46	10/24/2013	Earth Solutions	50	45-50

3.5.4 FIELD SAMPLING PROCEDURES-GROUNDWATER

Groundwater samples were collected utilizing one of 2 methods. Dedicated disposable poly bailers were used to purge the wells prior to sampling. Purge water was placed into labeled drums temporally being stored in a designated place onsite. Once purged, the bailer was used to collect a water sample from the well. Samples were transferred into laboratory supplied 40 ml VOA vials complete with hydrochloric acid. The sample was labeled and placed in a cooler on ice for transport to the laboratory for quantitative chemical analysis. A chain of custody was prepared tracking the samples from collection through analysis.

The second method of collection consisted of the use of a Grunfos pump and poly tubing. The pump was used to purge each well prior to sampling. Upon completion of purging, the velocity of the pump was reduced to allow for low flow sampling for VOCs. The groundwater was pumped into laboratory supplied containers, labeled and transported as described above. The groundwater samples were transported to either STAT Analysis or First Environmental for analysis under chain of custody control.

3.5.5 Soil Sample Analytical Result Exceedances

The exceedances of the COCs as reported by the laboratory are presented below. Tabulated soil sample results and laboratory analytical reports are presented in Appendix N.

The analytical test results of the soil samples were compared to the SROs derived from the IEPA IAC 742, TACO Tier I for Industrial/Commercial and Residential properties and for Soil Component of the Groundwater Ingestion Route (SCGIR) Class I Groundwater. Figure 5 illustrates estimated soil contaminant plume extents for each chlorinated COC. Analytical results indicate that the following contaminants of concern were detected above IEPA Tier 1 Soil Remediation Objectives:

Chemical	Sample Number (Depth)	Concentration Detected (mg/Kg)	Remediation Objective (mg/Kg)	Exposure Route
VOC				
1,1,1-Trichloroethane	GP-118 (9-10) (11-13)	28.1 19.5	2.0	SCGIR Class I Groundwater
1,1-Dichloroethene	GP-118 (9-10) (11-13)	4.42 3.4	0.06	SCGIR Class I Groundwater
Tetrachloroethene	GP-118 (9-10) (11-13) GP-120 (4-6) (8-10) GP-121 (8-9) (13-14) GP-203 (1-3) (7-8) (17-18) GP-204 (1-3) (16-17)	3.67 2.11 0.081 0.089 3.5 7.01 26.4 0.769 19.3 1.55 3.78	0.06	SCGIR Class I Groundwater

3.5.6 Groundwater Sample Analytical Result Exceedances

The analytical test results of the groundwater samples were compared to the IEPA IAC 742, TACO, Tier I Groundwater Remediation Objectives for Class I Groundwater. Figure 9 illustrates estimated groundwater contaminant plume extents for each COC. Tabulated groundwater sample results and laboratory analytical reports are presented in Appendix O. Analytical results indicate that the following contaminants of concern were detected above IEPA Tier 1 Groundwater Remediation Objective:

Groundwater Sampled 10/01/ and 11/05/2013

Chemical	Monitoring Well Number	Depth (ft.)	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
VOC					
Bromodichloromethane	MW-27 Pond 1 (9/4/13) Pond 1 (9/18/13) Pond 2 Pond 3 Pond 4 Discharge	30	0.0017 0.0072 0.0041 0.0043 0.0043 0.0045 0.0042	0.0002	Class I Groundwater
Bromomethane	MW-1 MW-20	50 30	0.0108 0.0104	0.0098	Class I Groundwater
Carbon Tetrachloride	MW-36	30	0.0066	0.005	Class I Groundwater

Chemical	Monitoring Well Number	Depth (ft.)	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Chloroform	MW-13	20	0.0025	0.0002	Class I Groundwater
	MW-24	30	0.0017		
	MW-25	30	0.0011		
	MW-27	30	0.0405		
	MW-28	30	0.0016		
	MW-29	30	0.0014		
	MW-36	30	0.005		
	MW-37	30	0.0242		
	Pond 1 (9/4/13)		0.0959		
	Pond 1 (9/18/13)		0.0710		
	Pond 2		0.0782		
	Pond 3		0.0896		
	Pond 4		0.0983		
	Discharge		0.0896		
1,1,1-Trichloroethane	MW-31	30	8.9	0.2	Class I Groundwater
	MW-32	30	1.34		
	MW-35	30	0.718		
	MW-37	30	0.98		
	MW-46	50	0.249		
1,1,2-Trichloroethane	MW-37	30	0.0085	0.005	Class I Groundwater
1,2-Dichloroethene	MW-37	30	0.0177	0.005	Class I Groundwater
1,1-Dichloroethene	MW-6	40	0.0093	0.007	Class I Groundwater
	MW-7	30	0.0261		
	MW-8	20	0.0086		
	MW-24	30	0.0586		
	MW-26	30	0.0094		
	MW-31	30	0.0419		
	MW-32	30	0.103		
	MW-35	30	0.231		
	MW-37	30	0.626		
	MW-41	50	0.0867		
	MW-44	50	0.0152		
	MW-46	50	0.0177		
Tetrachloroethene	MW-4	20	0.0069	0.005	Class I Groundwater
	MW-7	30	0.0534		
	MW-8	20	0.0393		
	MW-26	30	0.144		
	MW-27	30	0.0069		
	MW-30	30	0.152		
	MW-31	30	0.46		
	MW-32	30	0.0156		
	MW-36	30	0.0087		
	MW-37	30	0.602		
	MW-3URS		0.0113		
	MW-41	50	0.323		
	MW-46	50	0.0117		

Chemical	Monitoring Well Number	Depth (ft.)	Concentration Detected (mg/L)	Remediation Objective (mg/L)	Exposure Route
Trichloroethene	MW-6	40	0.0237	0.005	Class I Groundwater
	MW-7	30	0.0194		
	MW-26	30	0.0184		
	MW-37	30	0.0105		
	MW-41	50	0.027		

4. CONCLUSIONS

EGSL has performed a Focused Site Investigation at the 300 West LLC/Arnold Magnetic Technologies site under the IEPA SRP program. The investigation was performed pursuant to an Injunction Order filed by the Illinois Attorney General. EGSL reviewed numerous documents in the preparation of this report including environmental reports prepared by EGSL and others.

A total of 17 USTs have been documented as being present at the site at one time or another. EGSL has been able to confirm the presence of 6 of these tanks and have identified three possible excavation areas that may have contained USTs at one time but have since been removed.

EGSL performed several Phase II investigations dating back to 2006 in an attempt to identify and quantify contaminants of concern present on the property. In 2013 the AG Injunction modified the investigation to include chlorinated solvents that have been identified in on and offsite groundwater.

Since 2006 EGSL personnel have advanced a total of 125 soil borings throughout the site. Soil samples were collected from each of the borings and submitted to a laboratory for quantitative chemical analysis for various contaminants of concern. In 2013 the sampling and analysis focused on chlorinated solvents identified as being used in historical manufacturing processes. In addition, 46 groundwater monitoring wells were installed in stages on and offsite and sampled for chlorinated solvents. The depths of the wells varied from 20 feet bgs to 90 feet bgs based on the identification of COCs in surrounding wells.

The results of the investigation indicate that two areas (former building 1 and building 2/3/4/7) contained soil with exceedances of SROs for chlorinated solvents. The vertical extent of the impacted soil in these areas has not been determined to date. Since these areas are limited it is unclear if these areas are the source of on and offsite impacted groundwater.

The investigation revealed that a majority of the site groundwater has been impacted by chlorinated solvents. A total of 24 of the 41 onsite groundwater monitoring wells contained chlorinated solvents above the IEPA Class I GROs. Many of the wells without exceedances were wells installed deeper and adjacent to wells with exceedances. The groundwater at the eastern limits of the site appeared to be unaffected by the release of chlorinated solvents.

Well depths range from 20 feet below ground surface to 90 feet below ground surface across the site. Several source areas are likely and include: former building 1, building 2/3/4/7, the settling ponds, former building 6 and/or buildings/structures located on the southern section of the site that are currently outside the scope of this investigation.

PCE has been detected across the site in concentrations above the GRO. The contaminant has been reported at a depth of 20 feet below ground surface at the northwest corner of the property to >50 feet north of building 2/3/4/7 and south of pond 3 respectively. It appears that possible source areas for this contaminant include building 2/3/4/7, former building 6 and the ponds at a minimum. The vertical extent of PCE contamination does not appear to be defined north of building 2/3/4/7.

1,1-DCE has been detected across the site in concentrations above the GRO. The contaminant has been reported at a depth of <50 feet at the eastern end of the property, >50 feet north of building 2/3/4/7 and <90 feet at the northwest corner of the property. It appears that there is more than one source area associated with this contaminant and could include former building 1, building 2/3/4/7, the ponds and former building 6 at a minimum. The vertical extent of 1,1-DCE does not appear to be defined north of building 2/3/4/7.

1,1,1-TCA has been detected above the GRO in several wells across the site associated with former building 1, building 2/3/4/7, pond 3 and former pond 6. Depths of the contaminant have been reported at 30 feet to 50 feet bgs (north of building 2/3/4/7). The vertical extent of 1,1,1-TCA does not appear to be defined north of building 2/3/4/7.

TCE has been detected above the GRO in several wells across the site associated with building 2/3/4/7, Pond 3 and possibly former building 6 at a minimum. Depths of the contaminant have been reported at 30 and 50 feet bgs associated with building 2/3/4/7, <50 feet at Pond 3 and <50 feet northeast of former building 6.

1,1,2 TCA and 1,2 DCE has been reported above the GRO under building 2/3/4/7 at a depth of 30 feet bgs. The vertical extent of 1,1,2-TCA and DCE does not appear to be defined at this time as a deeper well at this location has currently not been installed and sampled.

Carbon Tetrachloride was detected slightly above the GRO in one well at 30 feet deep in building 2/3/4/7. The GRO for carbon tetrachloride is 0.005 mg/L. The laboratory reported a concentration of 0.0066 mg/L from groundwater analyzed at this location.

Chloroform has been detected above the GRO at locations associated with building 2/3/4/7, the pond system and at the southeast corner of former building 6. The depth of this contaminant is currently identified to be 30 feet bgs however this contaminant by be present at greater depths south of Pond 1 and in building 2/3/4/7. The vertical extent of this contaminant does not appear to be defined at these two locations.

Bromodichloromethane has been detected above the GRO at one location south of Pond 4 at a depth of 30 feet bgs. The laboratory reported the contaminant at a concentration of 0.0017mg/L, slightly above the GRO of 0.0002mg/L. The contaminant does not appear to be defined at this location.

Bromomethane has been detected above the GRO at the northwest corner of the property at the former Pond 6 location. The laboratory reported the contaminant present in a sample collected from 50 feet bgs but absent from a sample collected from a depth of 70 feet bgs. It appears that the vertical and horizontal extent of this contaminant has been defined onsite.

As indicated above the vertical extent of several of the COCs in the groundwater have not been delineated. The installation of five additional groundwater monitoring wells adjacent to MW-36, 37, 41, 44 and 46, and sampling and analysis of the groundwater in these areas to a depth of 100 feet bgs is warranted as a next phase of the investigation.

5. SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

This report pertains to the property located at 300 West Street, Marengo, Illinois. Our professional services have been performed using the degree of care and skill ordinarily exercised under similar circumstances by environmental professionals practicing in this field. The representations made in this report are accurate and true to the best knowledge of the undersigned.

Sincerely,

ENVIRONMENTAL GROUP SERVICES, LIMITED

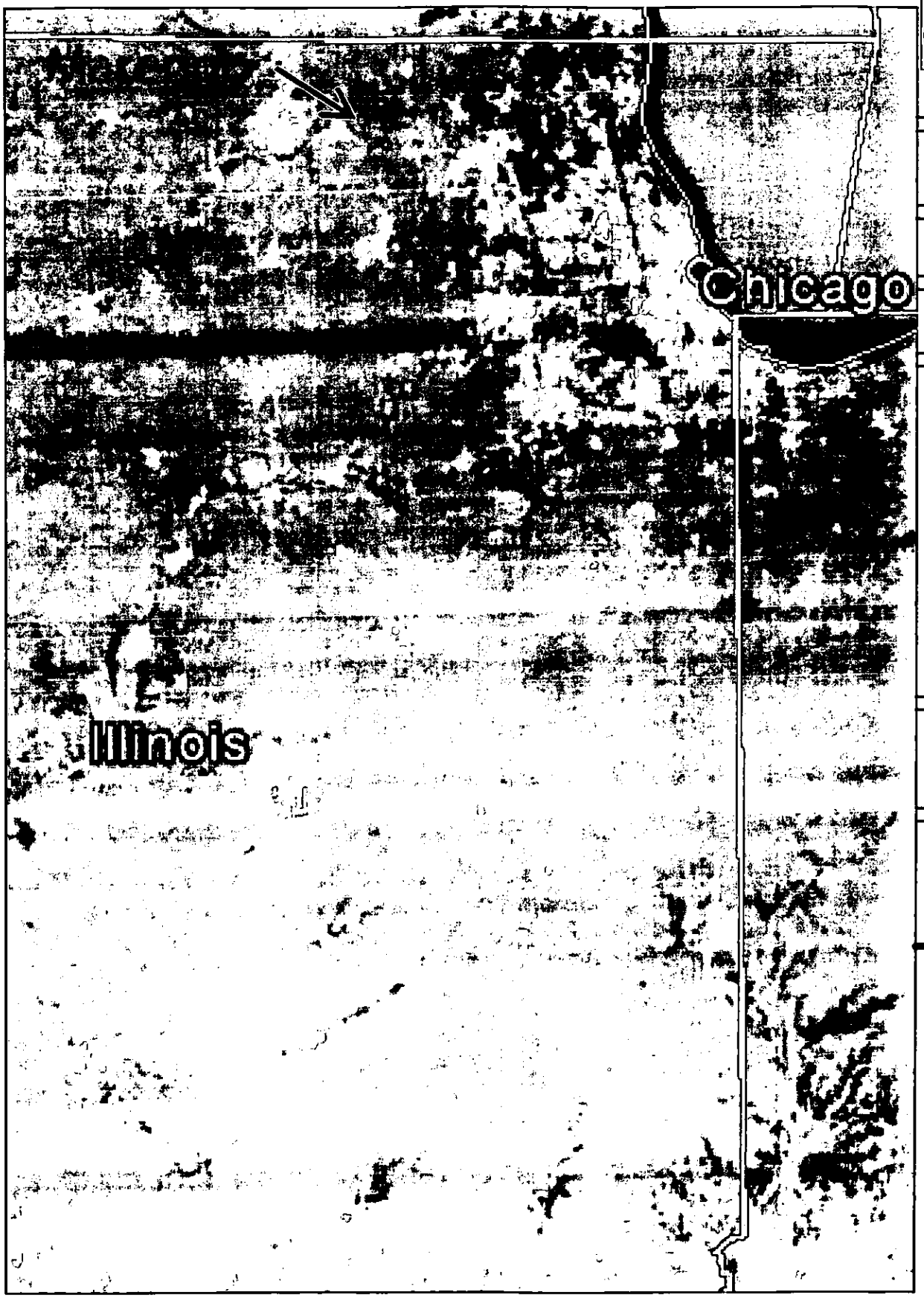
Steve Boom
Project Manager

Bill Lennon
Project Manager

Vahooman Mirkhaef
President

egsl

FIGURE 1 – GENERAL SITE LOCATION MAP



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Pitch Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street,
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 1. General Site Location

Drawing Legend:

Graphic Scale

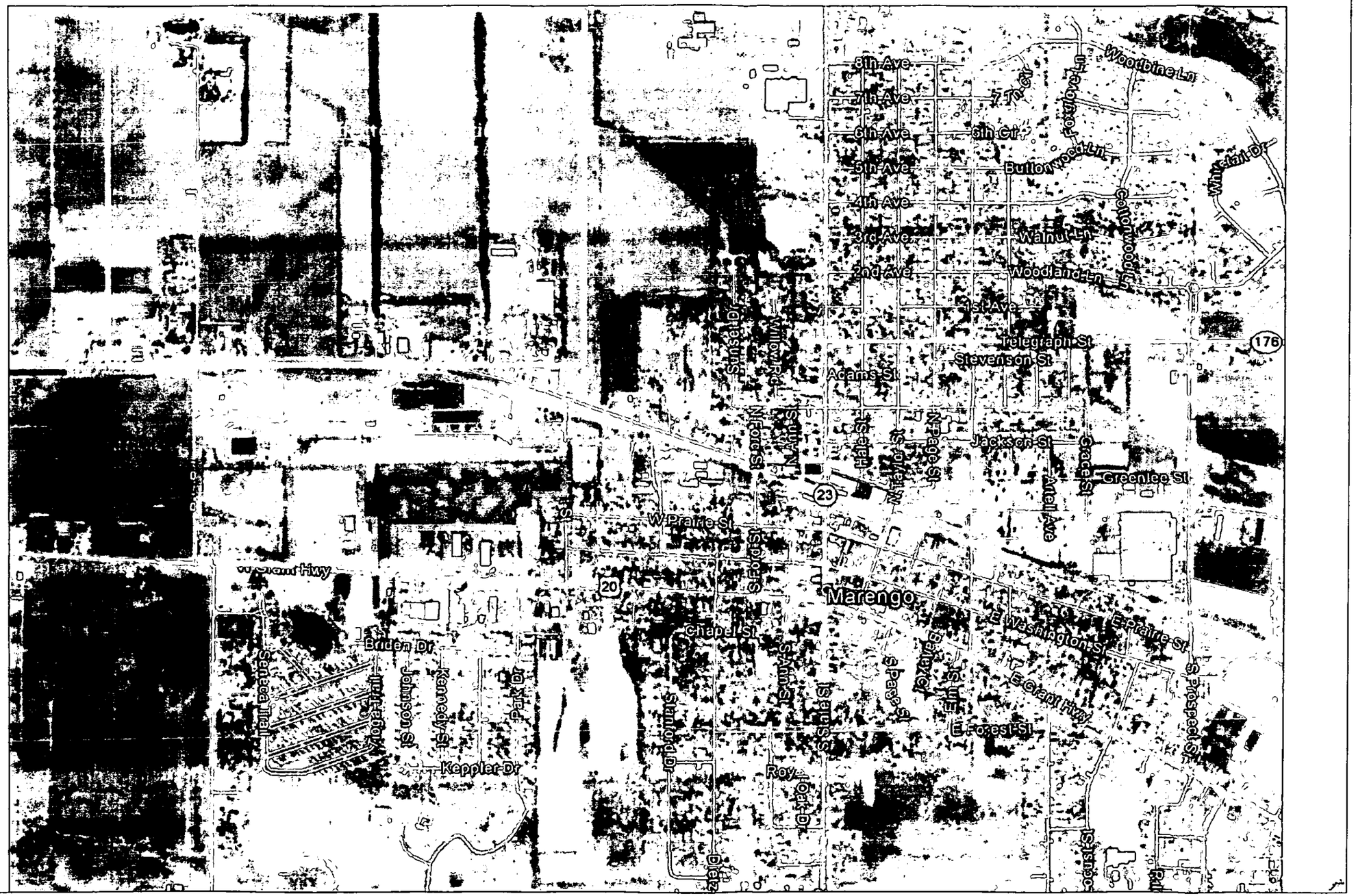
0 0 0

NO SCALE

N

Date: 11/15/2013

FIGURE 2 – SITE LOCATION MAP



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

357 W. Pitch Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street,
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 2.
Site Location Map

Drawing Legend:

Arnold Property
Affected Properties

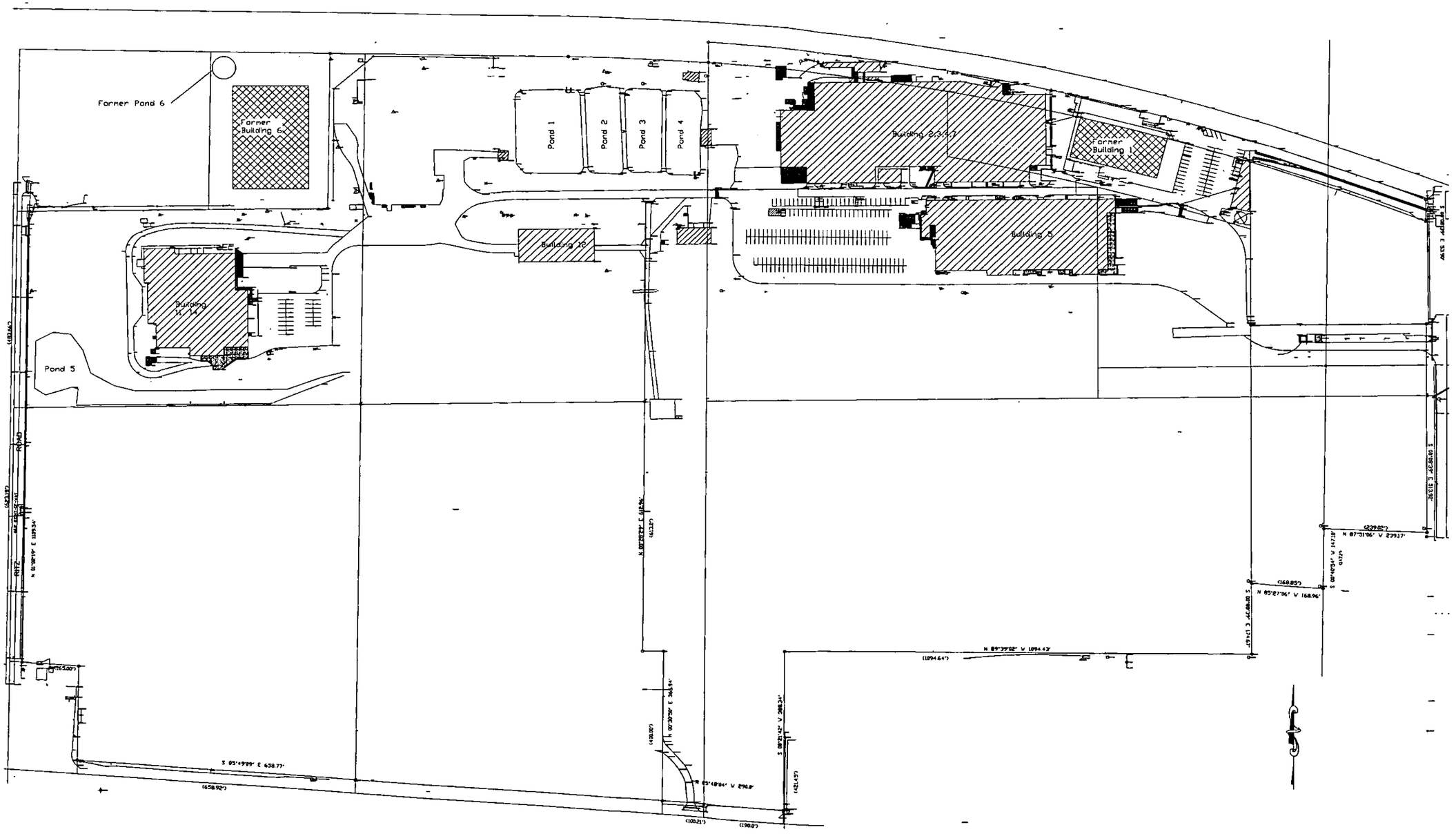
Graphic Scale

0 420 840
1" = 840'

N

Date: 11/15/2013

FIGURE 3 – SITE FEATURES MAP



egsl ENVIRONMENTAL GROUP SERVICES, LIMITED

557 W. Polk Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 3
Site Map

Drawing Legend:

Building

Former Building

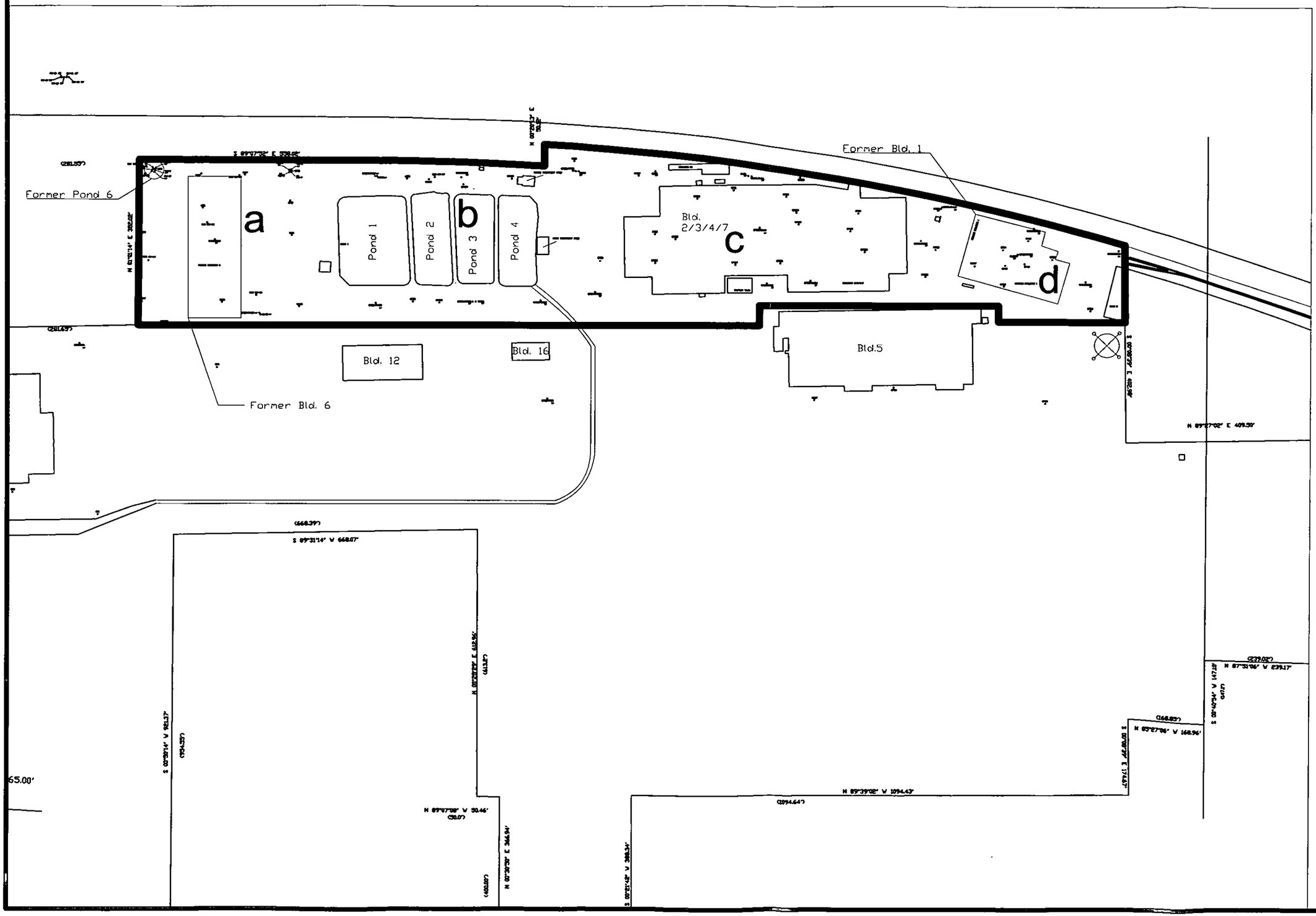
Graphic Scale

0 120 240
1 inch = 240 feet

N

Date: November 2013

FIGURE 4 – SOIL BORING AND GROUNDWATER MONITORING WELL LOCATIONS MAP



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 4
Soil Boring and
Groundwater Monitoring
Well Location Map

Subject Property Focused Site Investigation Boundary

GP101/MW25

30'

Soil Boring/Monitoring Well Location

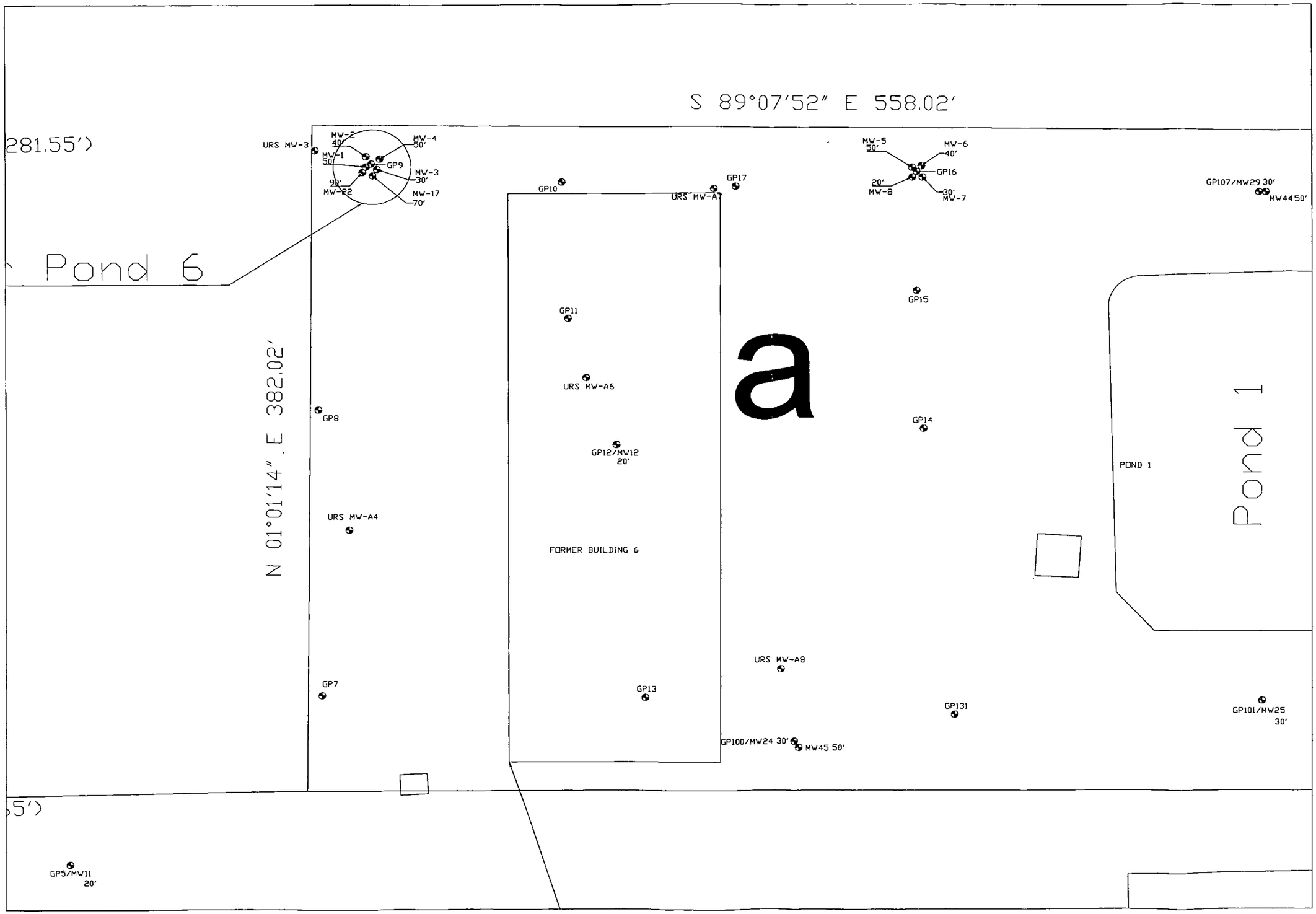
Graphic Scale

0 200

1" = 200'

N

R 000277



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 4

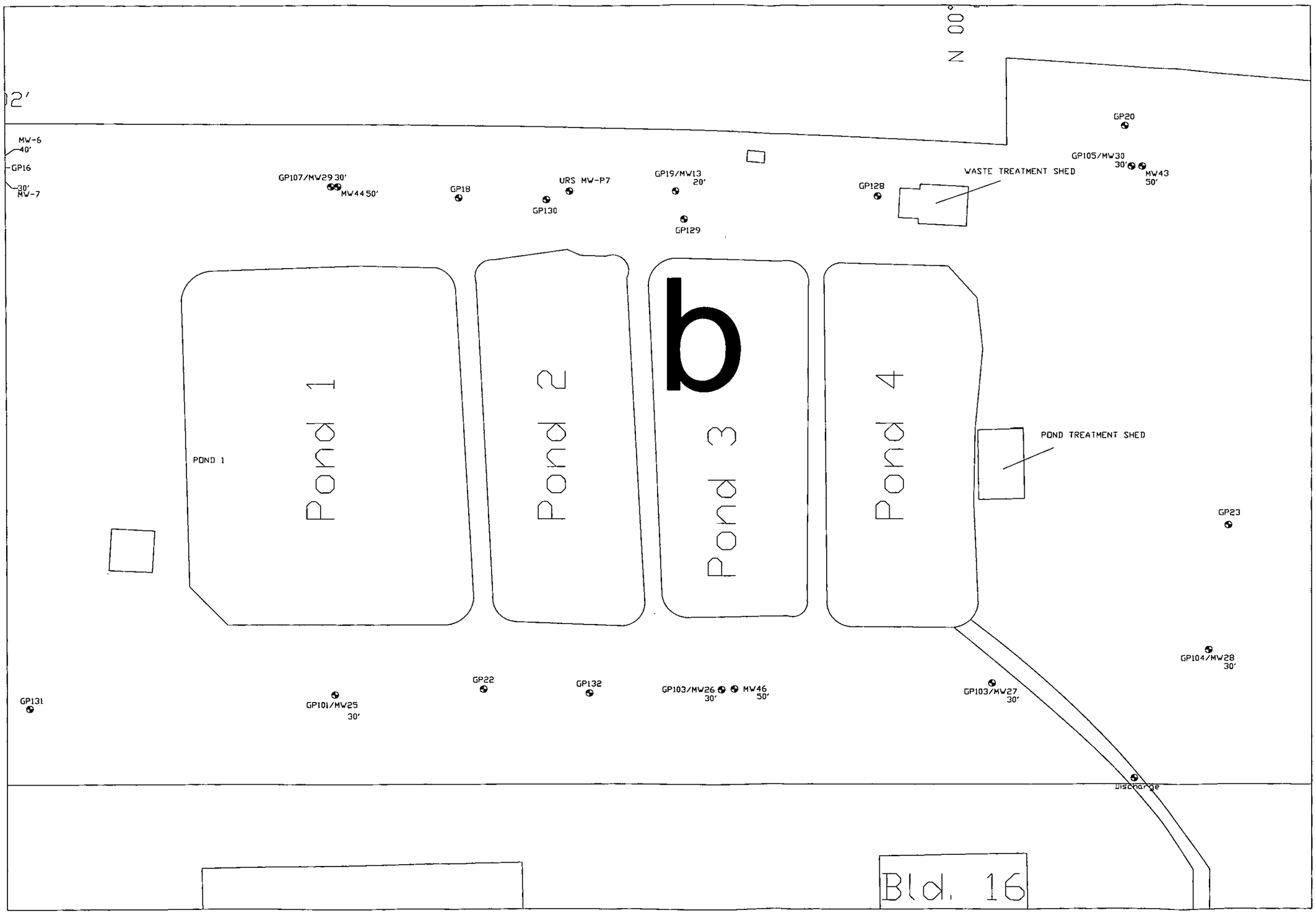
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000278



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Polk Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 4

Subject Property

Contaminant Plume

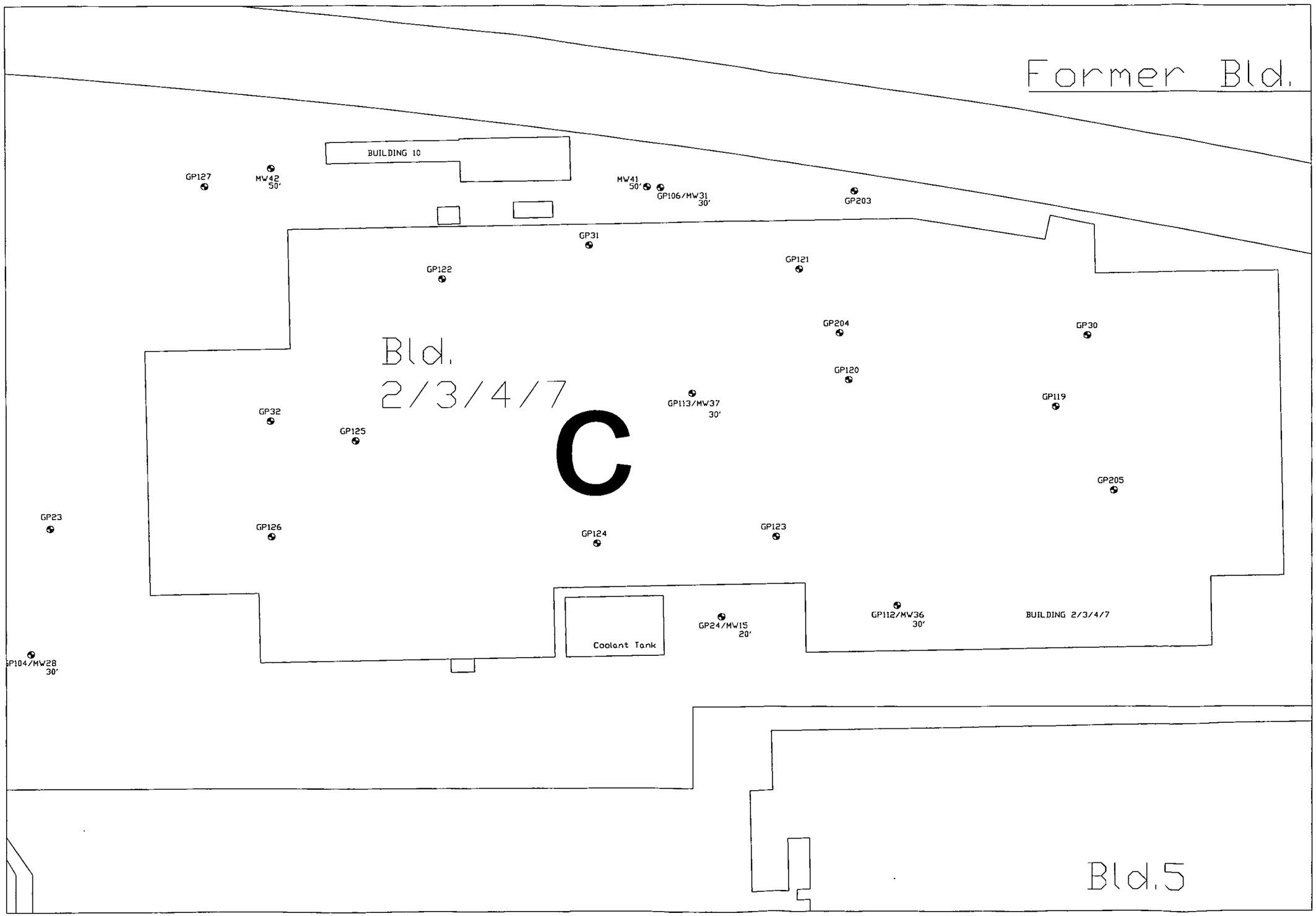
Graphic Scale

0 50

1" = 50'

N

R 000279



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 4

Subject Property

Contaminant Plume

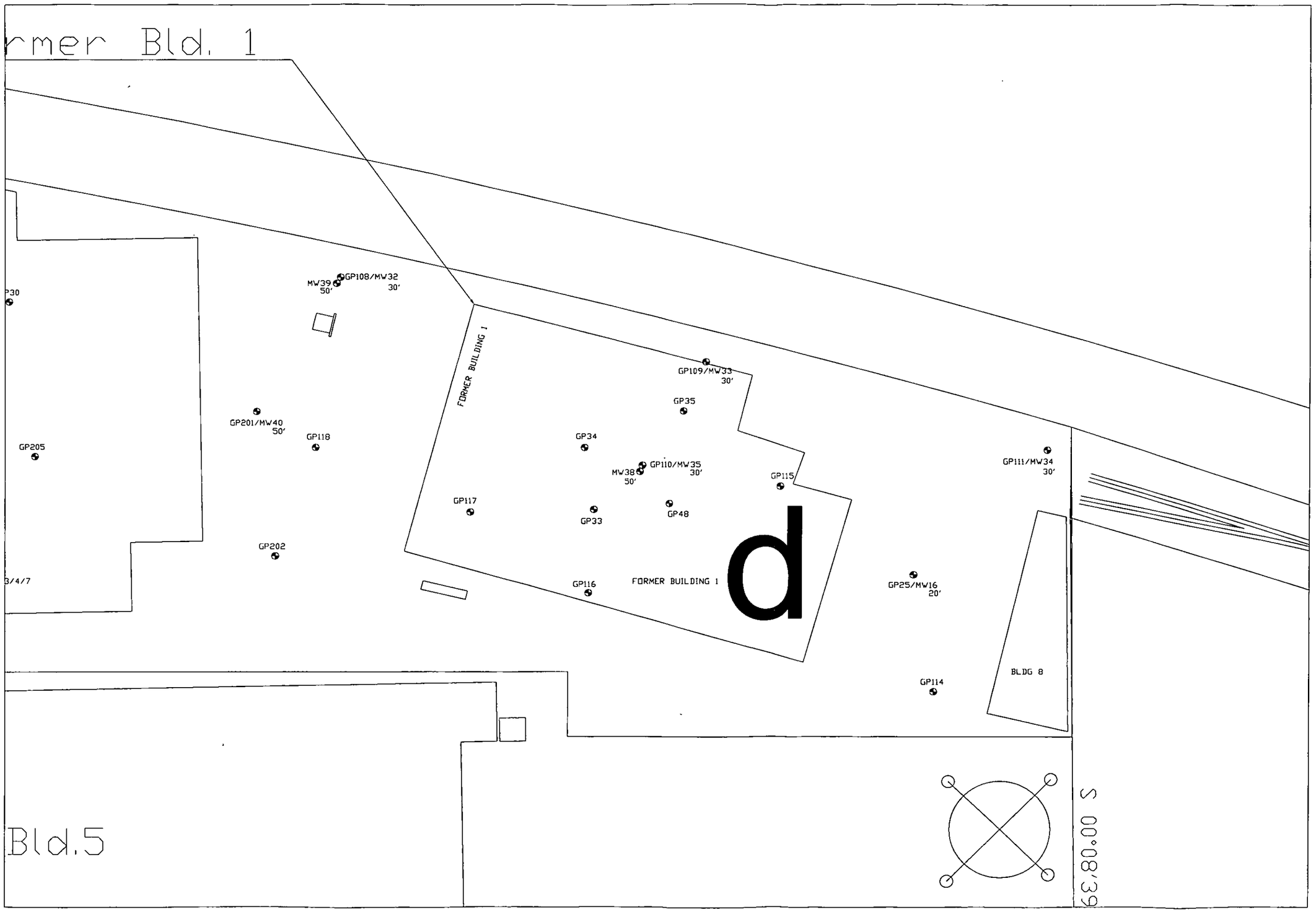
Graphic Scale

0 50

1" = 50'

N

R 000280



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 4

Subject Property

Contaminant Plume

Graphic Scale

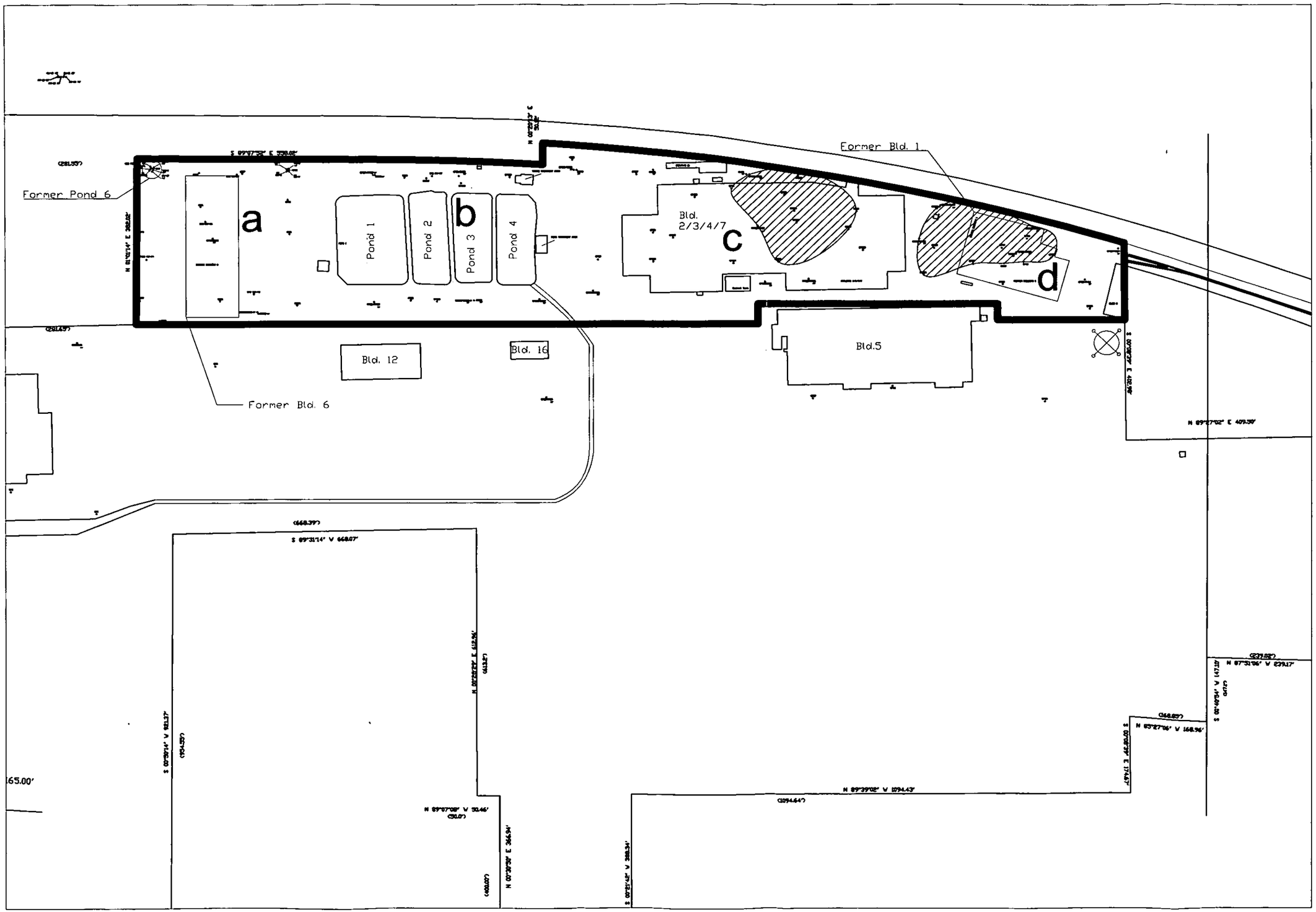
0 50

1" = 50'

N

R 000281

FIGURE 5 – SOIL VOC EXCEEDANCE MAP



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 5
SOIL - VOC Plume

Subject Property

Contaminant Plume

Graphic Scale

0 200

1" = 200'

N

R 000283

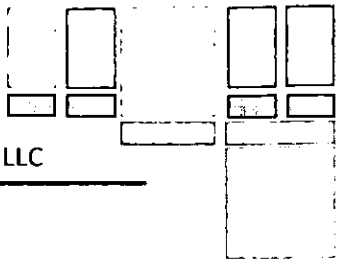
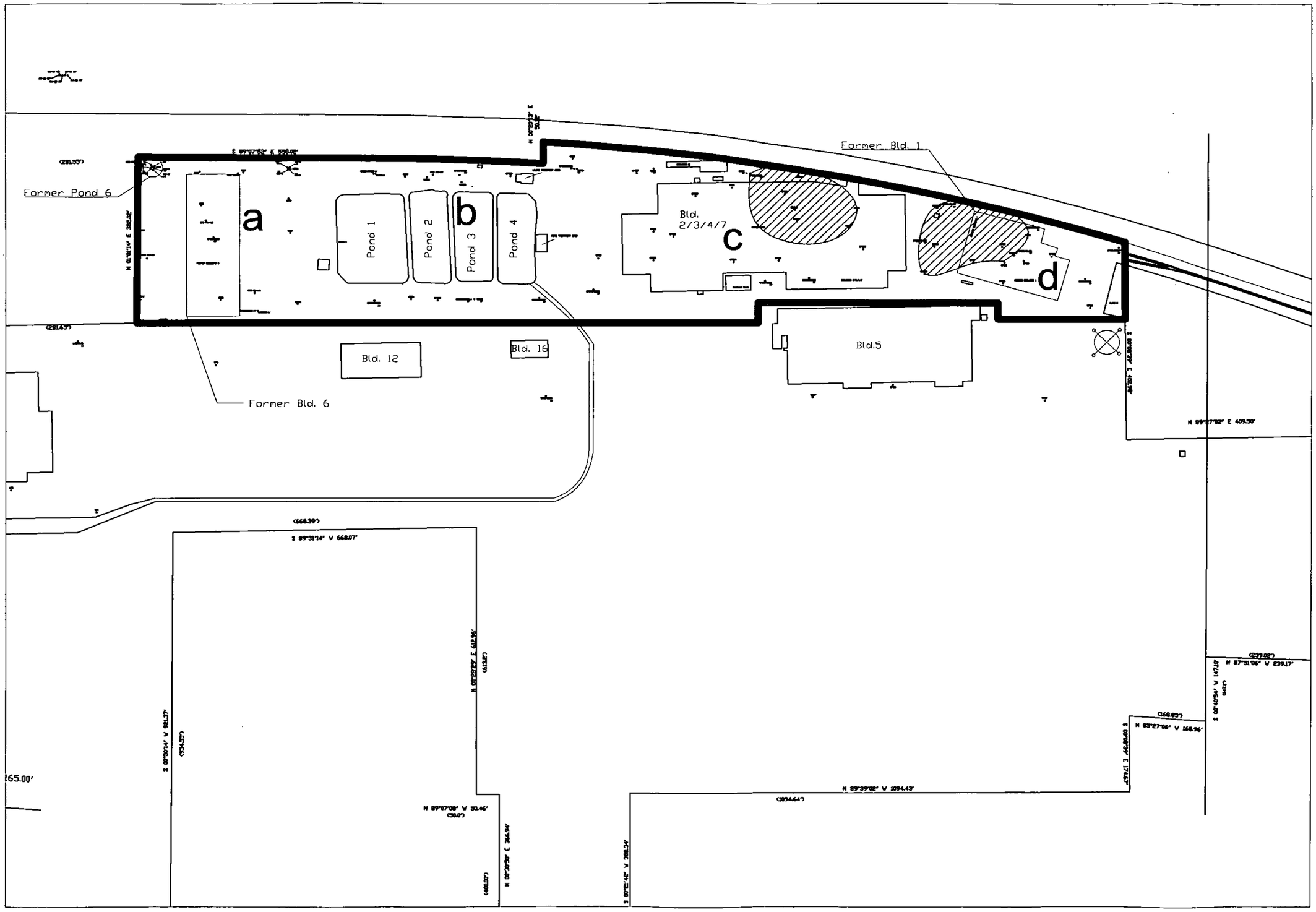


FIGURE 6 A-D – SOIL PCE COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 6
SOIL - PCE Plume

Subject Property

Contaminant Plume

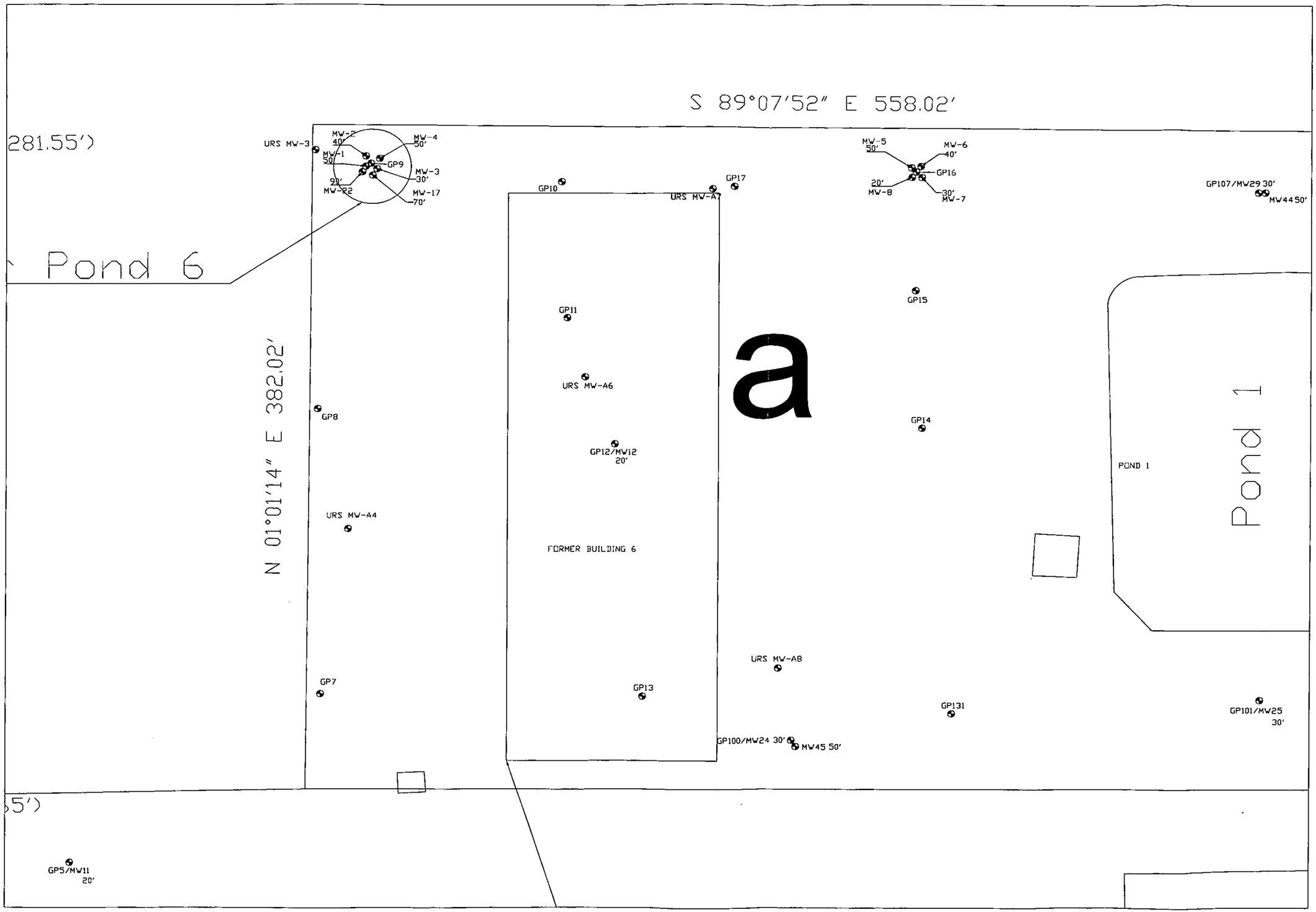
Graphic Scale

0 200

1" = 200'

N

R 000285



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 6a
SOIL - PCE Plume

Subject Property

Contaminant Plume

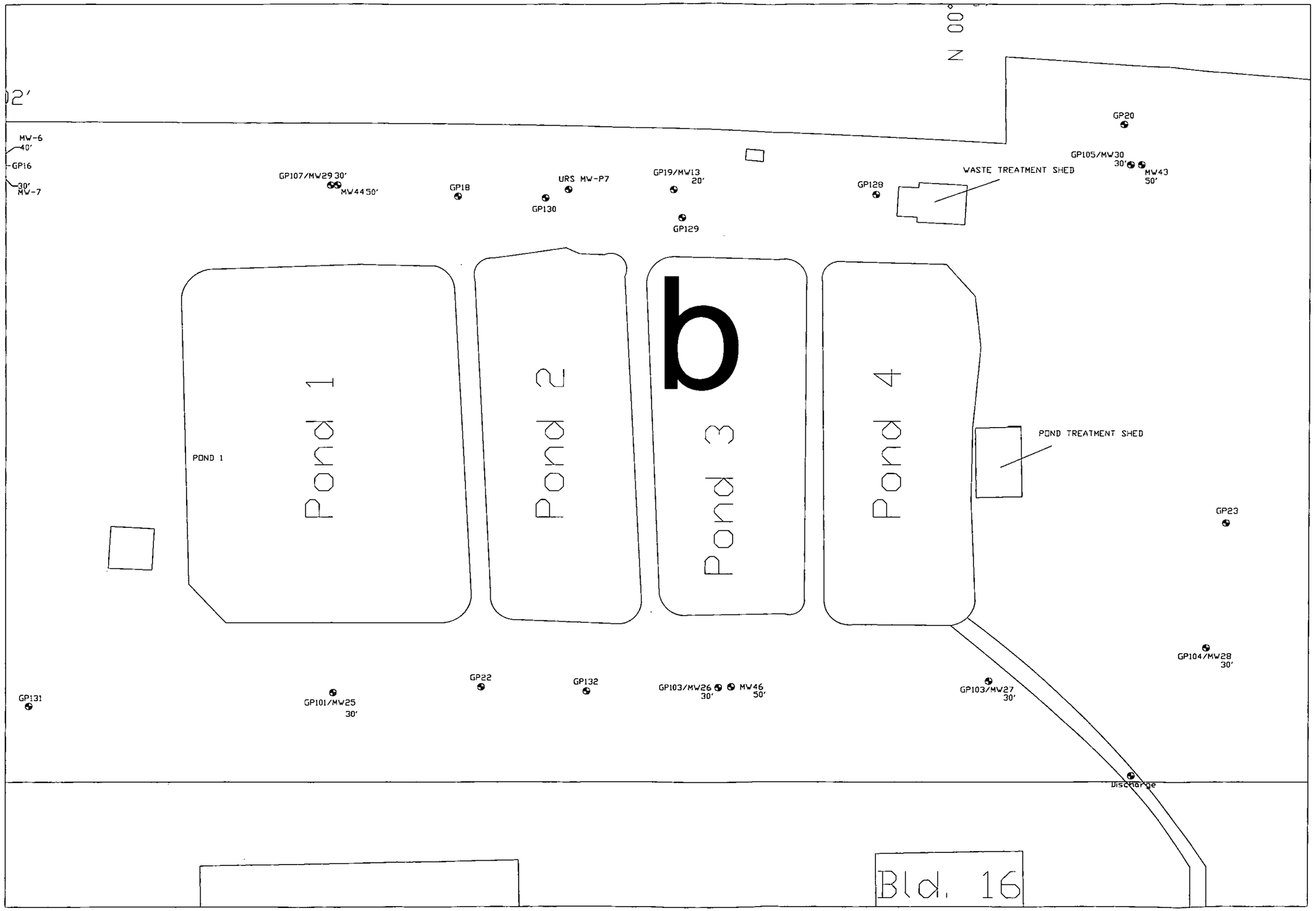
Graphic Scale

0 50

1" = 50'

N

R 000286



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 6b
SOIL - PCE Plume

Subject Property

Contaminant Plume

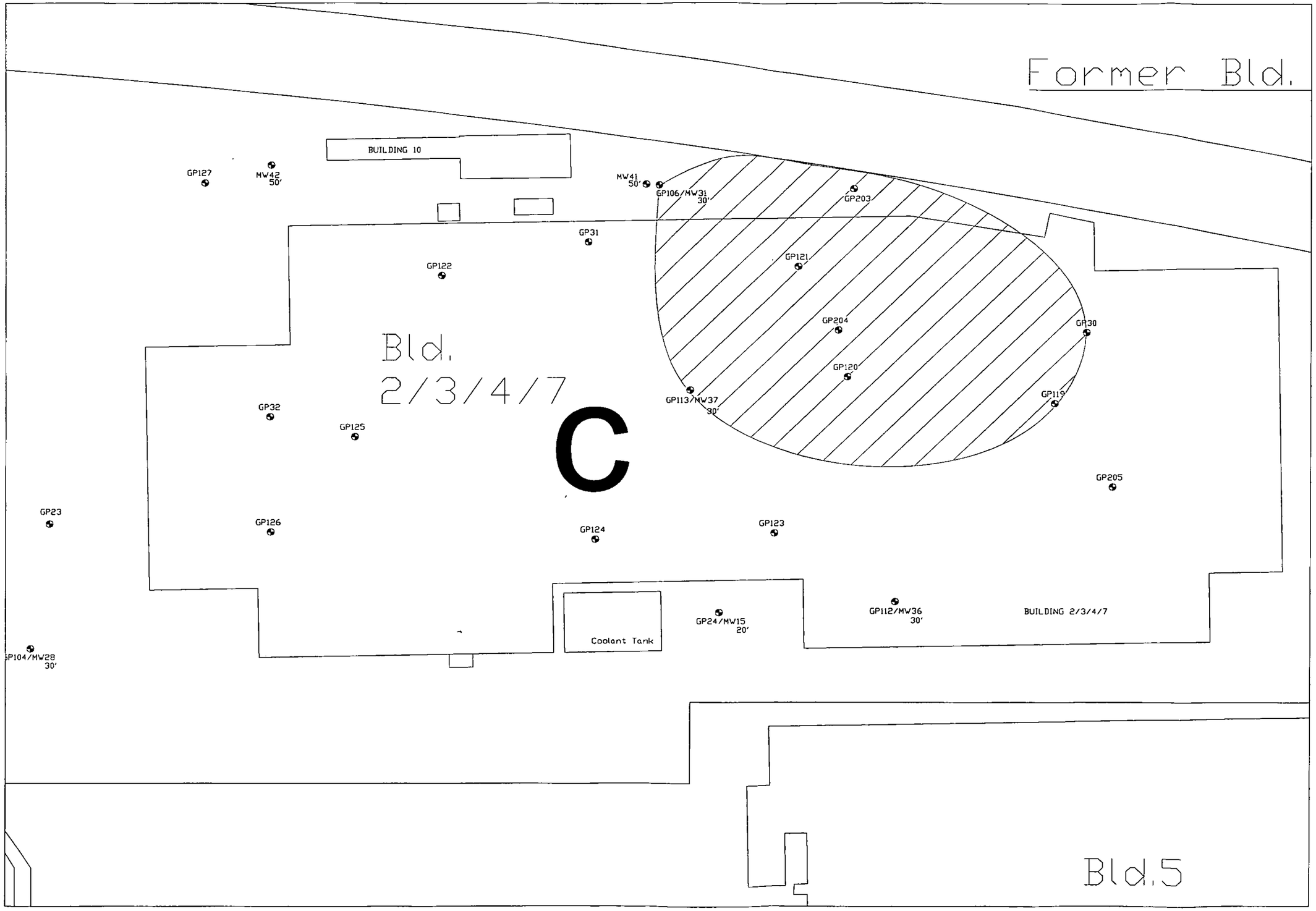
Graphic Scale

0 50

1" = 50'

N

R 000287



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 6c
SOIL - PCE Plume

Subject Property

Contaminant Plume

Graphic Scale

0 50

1" = 50'

N

R 000288

rmer Bld. 1

MW39 50'
GP108/MW32 30'
GP109/MW33 30'
GP35
GP201/MW40 50'
GP118
GP34
GP110/MW35 30'
MW38 50'
GP115
GP111/MW34 30'
GP117
GP33
GP48
GP202
GP205
GP116
FORMER BUILDING 1
GP25/MW16 20'
BLDG 8
GP114
Bld.5
S 00°80'39

d

egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 6d
SOIL - PCE Plume

Subject Property

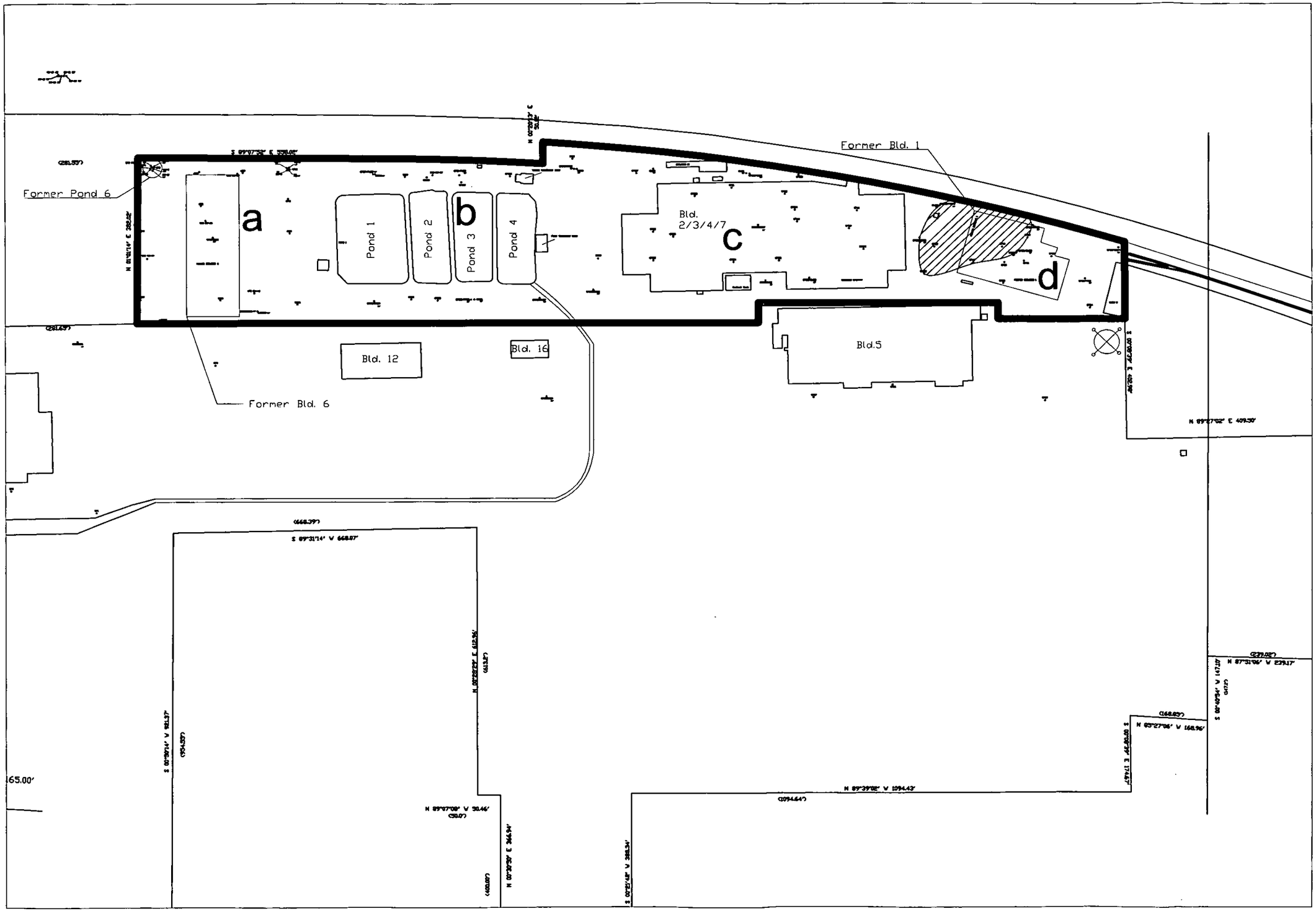
Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000289

FIGURE 7 A-D – SOIL 1,1-DCE COMPONENT MAPS



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 7
SOIL - 11 DCE Plume

Subject Property

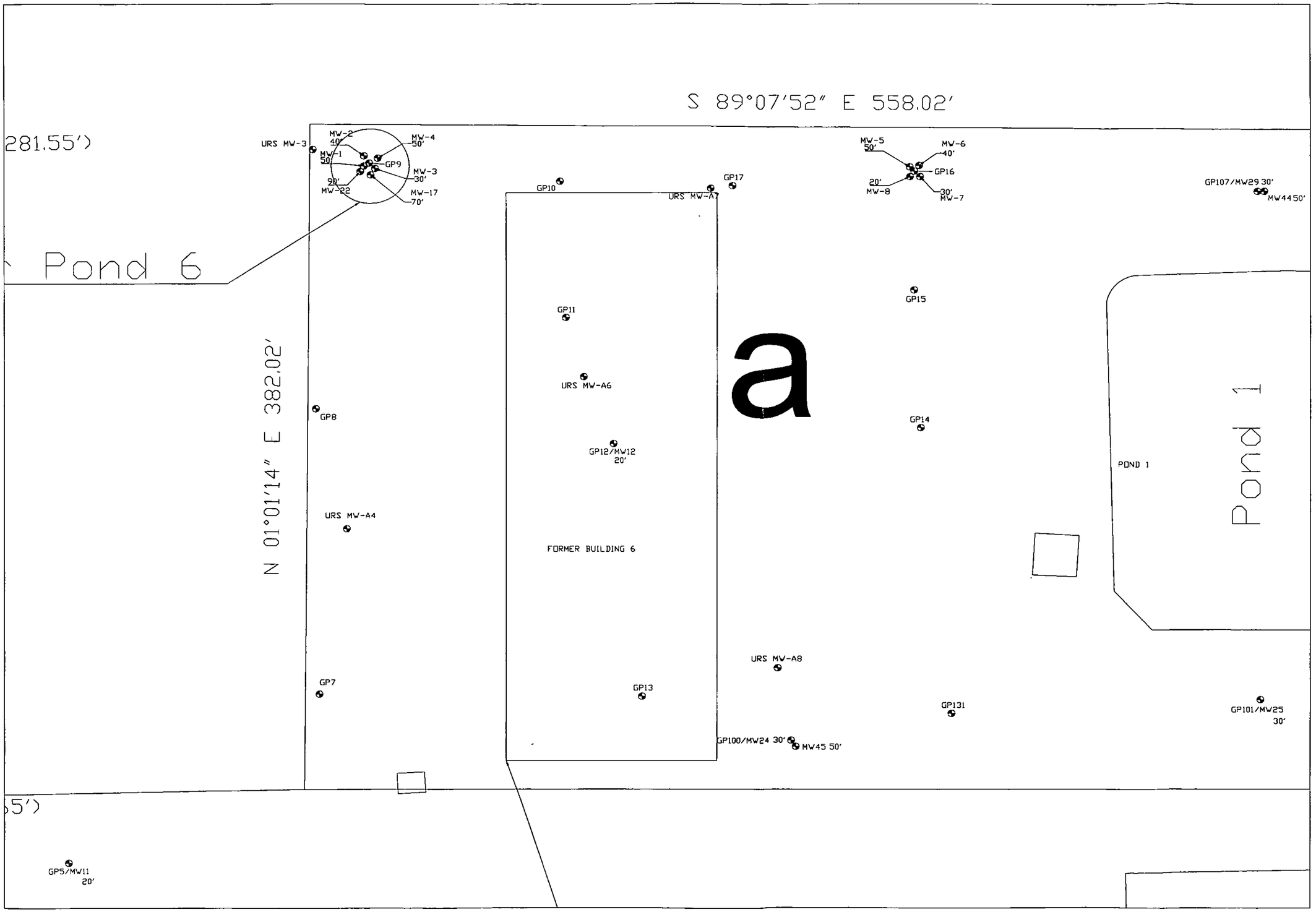
Contaminant Plume

Graphic Scale

0 200

1" = 200'

N



egsl ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 7a
SOIL - 11 DCE Plume

Subject Property

Contaminant Plume

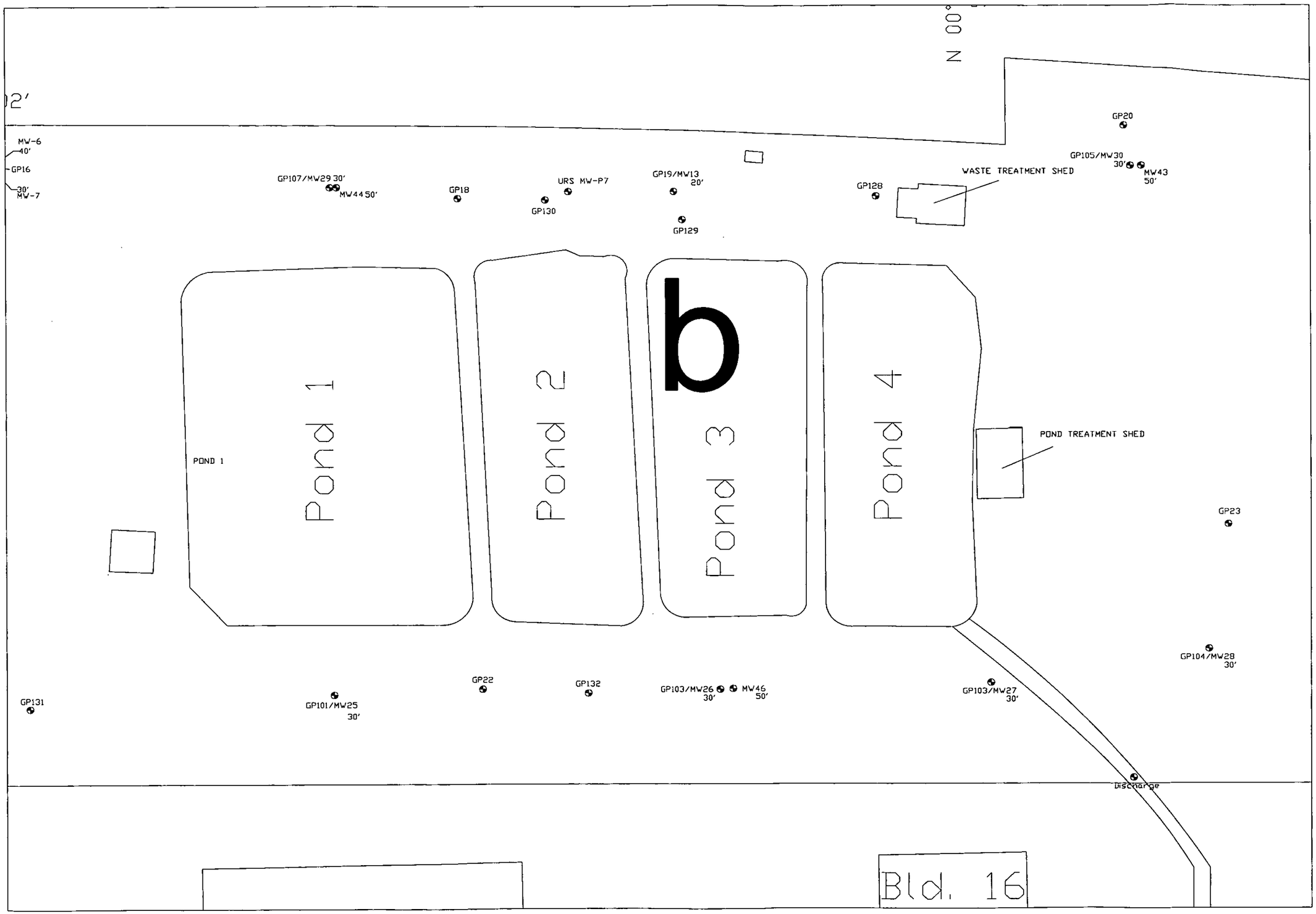
Graphic Scale

0 50

1" = 50'

N

R 000292



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 7b
SOIL - 11 DCE Plume

Subject Property

Contaminant Plume

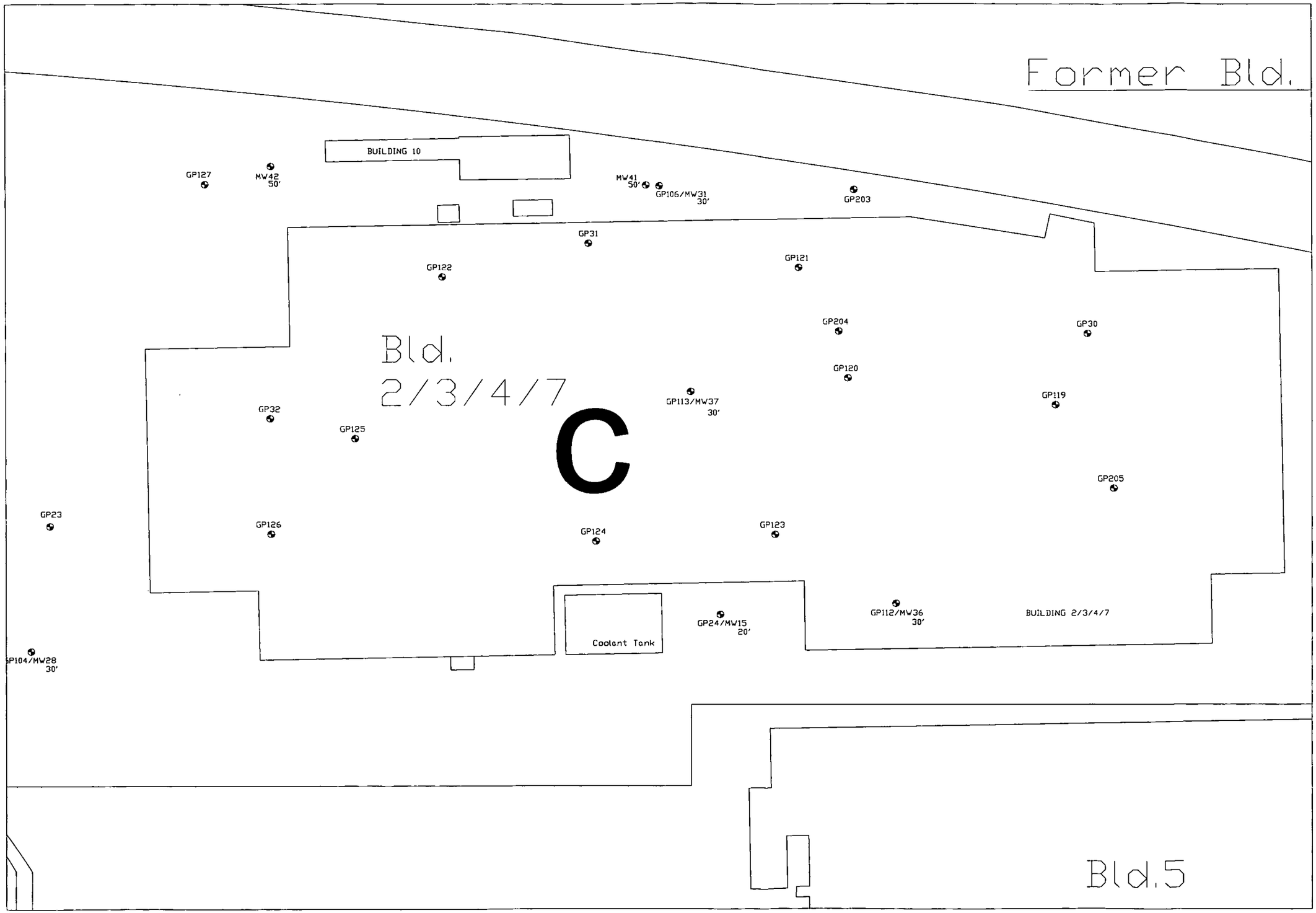
Graphic Scale

0 50

1" = 50'

N

R 000293



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 7c
SOIL - 11 DCE Plume

Subject Property

Contaminant Plume

Graphic Scale

0 50

1" = 50'

N

R 000294

rmer Bld. 1

P30

GP205

B/4/7

MW39
50'

GP108/MW32
30'

GP201/MW40
50'

GP118

GR202

FORMER BUILDING 1

GP109/MW33
30'

GP35

GP34

MW38
50'

GP110/MW35
30'

GP117

GP33

GP48

GP115

GP116

FORMER BUILDING 1

d

GP111/MW34
30'

GP25/MW16
20'

GP114

BLDG 8

S 00°08'39

Bld.5

egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 7d
SOIL - 11 DCE Plume

Subject Property

Contaminant Plume

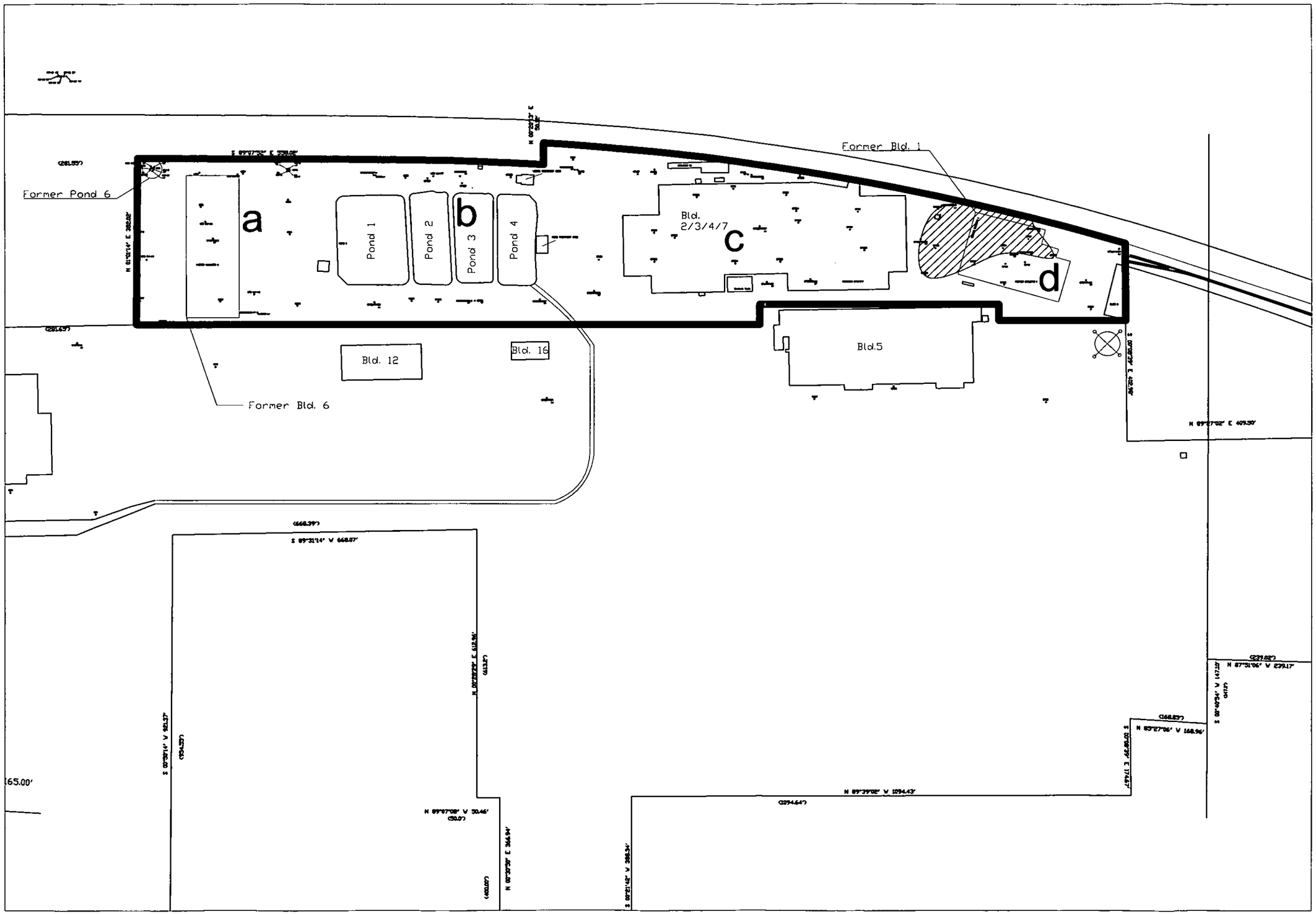
Graphic Scale

0 50

1" = 50'

N

FIGURE 8 A-D – SOIL 1,1,1-TCA COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 8
SOIL - 111 TCA Plume

Subject Property

Contaminant Plume

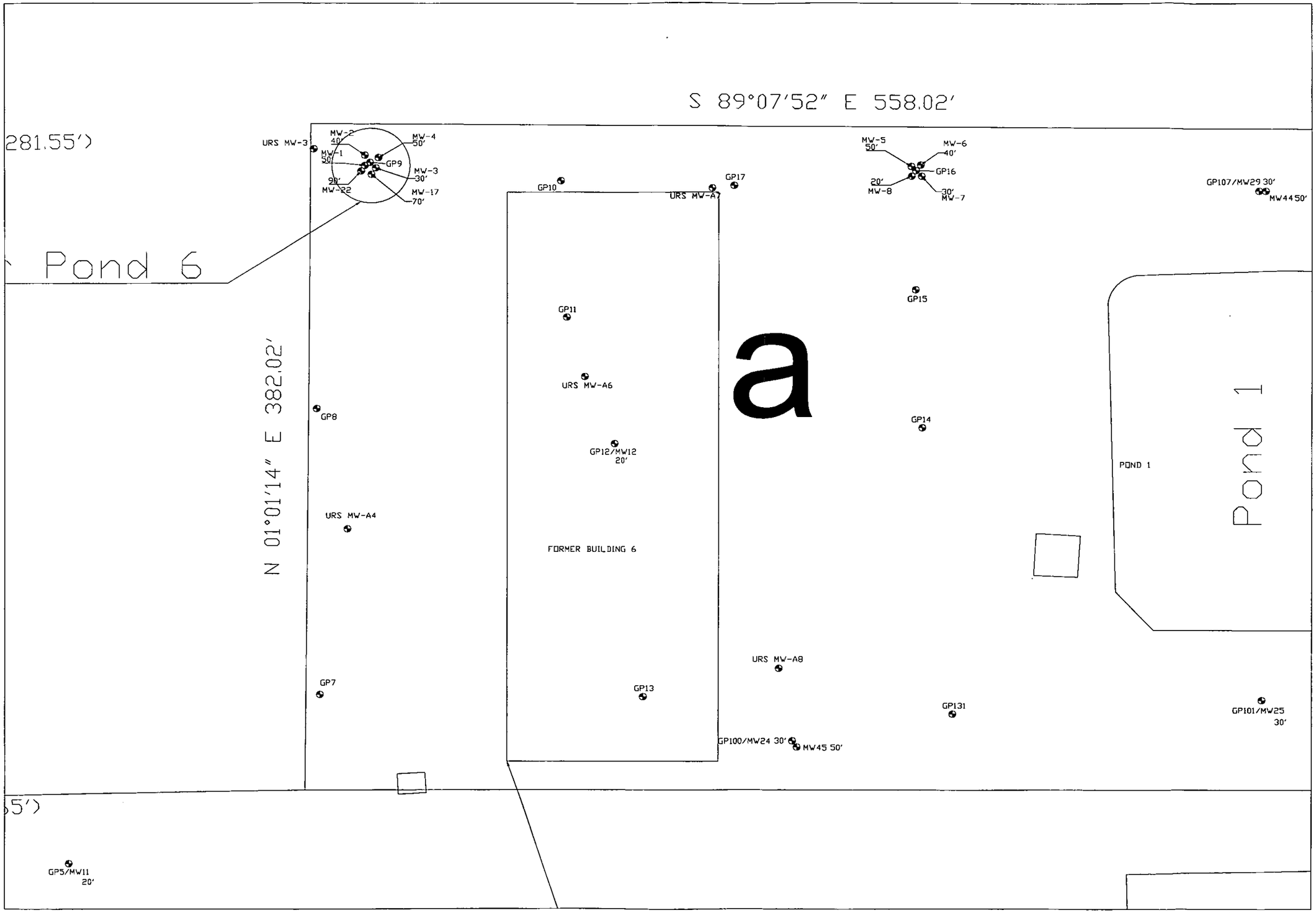
Graphic Scale

0 200

1" = 200'

N

R 000297



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 8a
SOIL - 111 TCA Plume

Subject Property

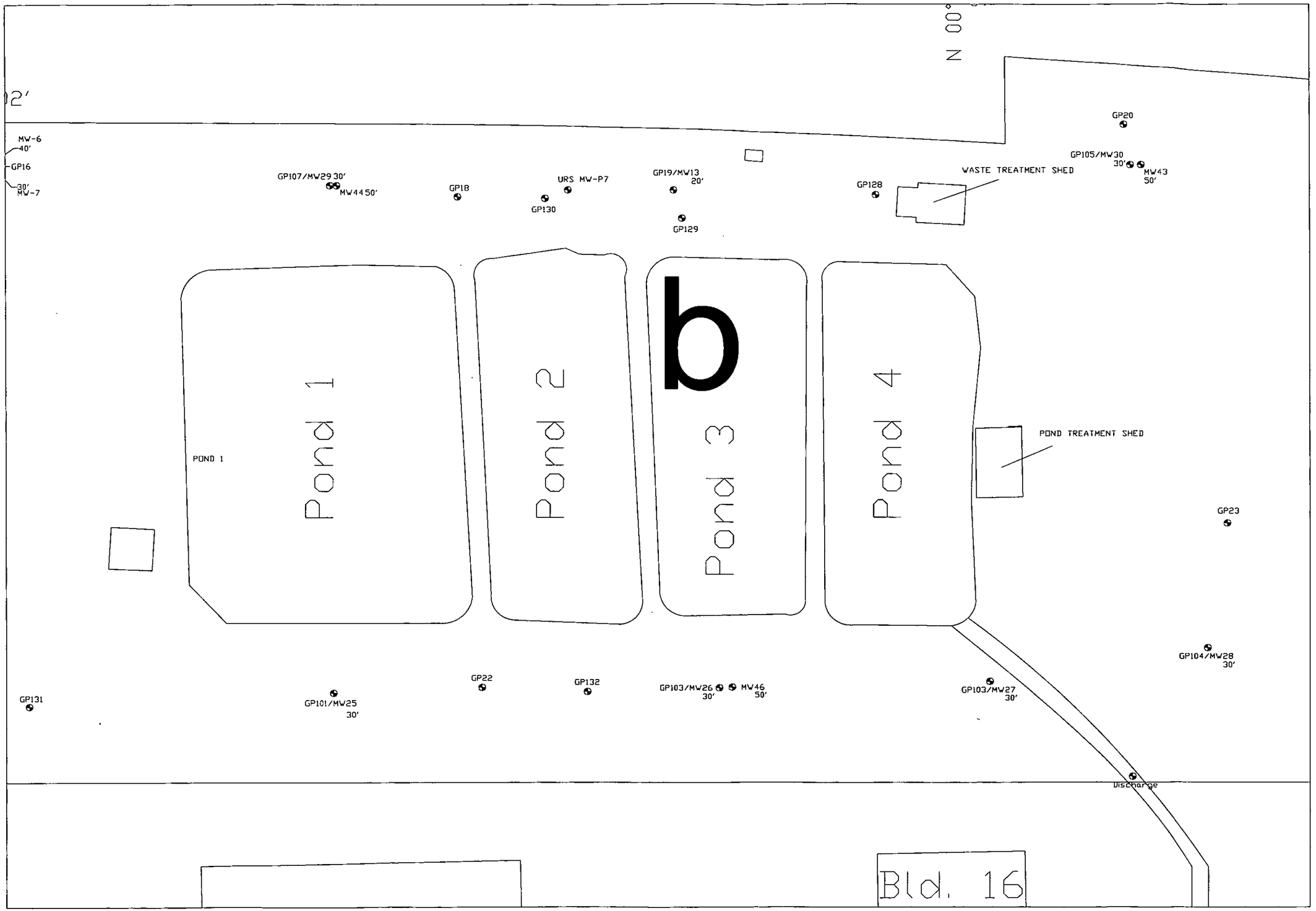
Contaminant Plume

Graphic Scale

0 50

1" = 50'

R 000298



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 8b
SOIL - 111 TCA Plume

Subject Property

Contaminant Plume

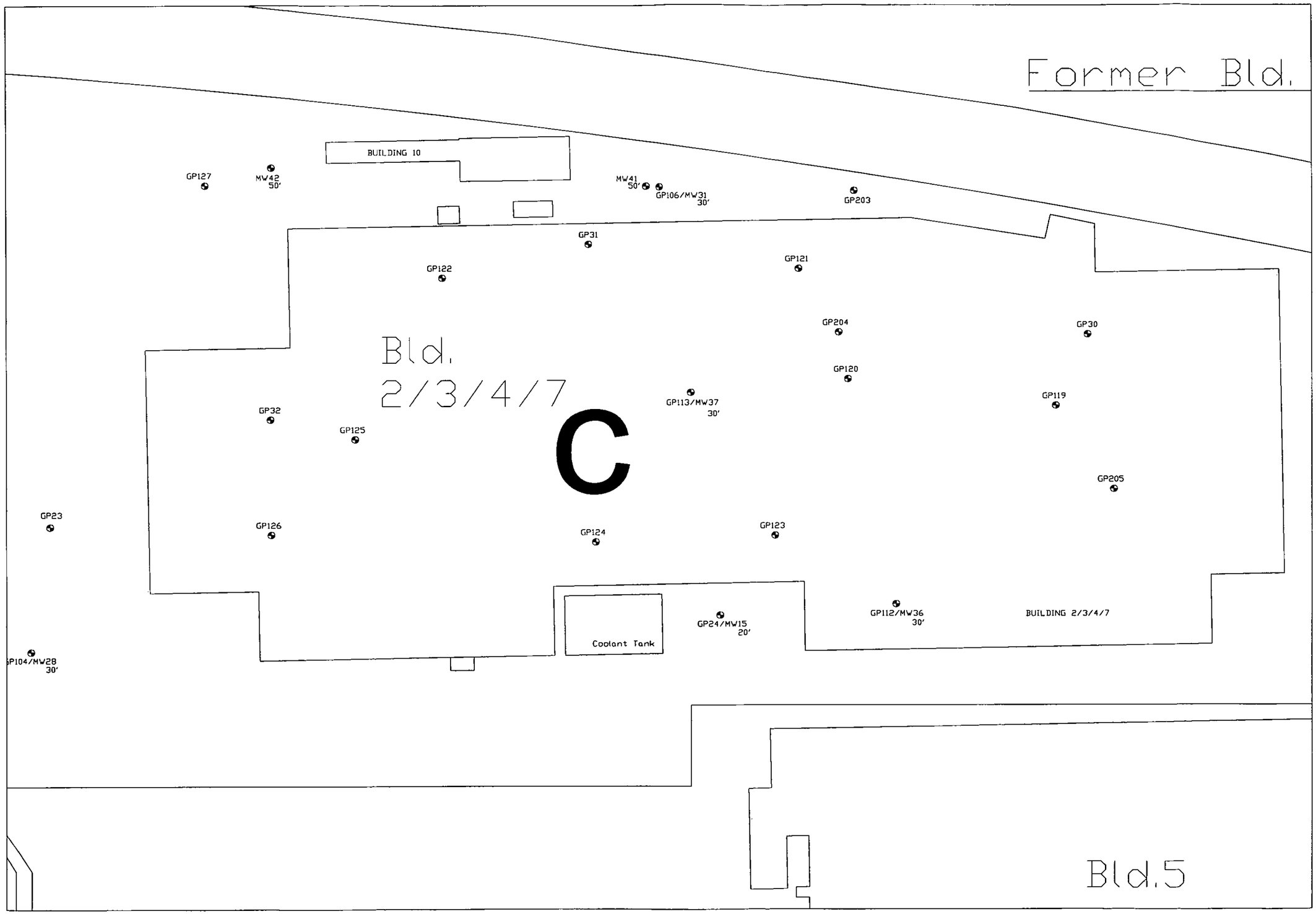
Graphic Scale

0 50

1" = 50'

N

R 000299



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 8c
SOIL - 111 TCA Plume

Subject Property

Contaminant Plume

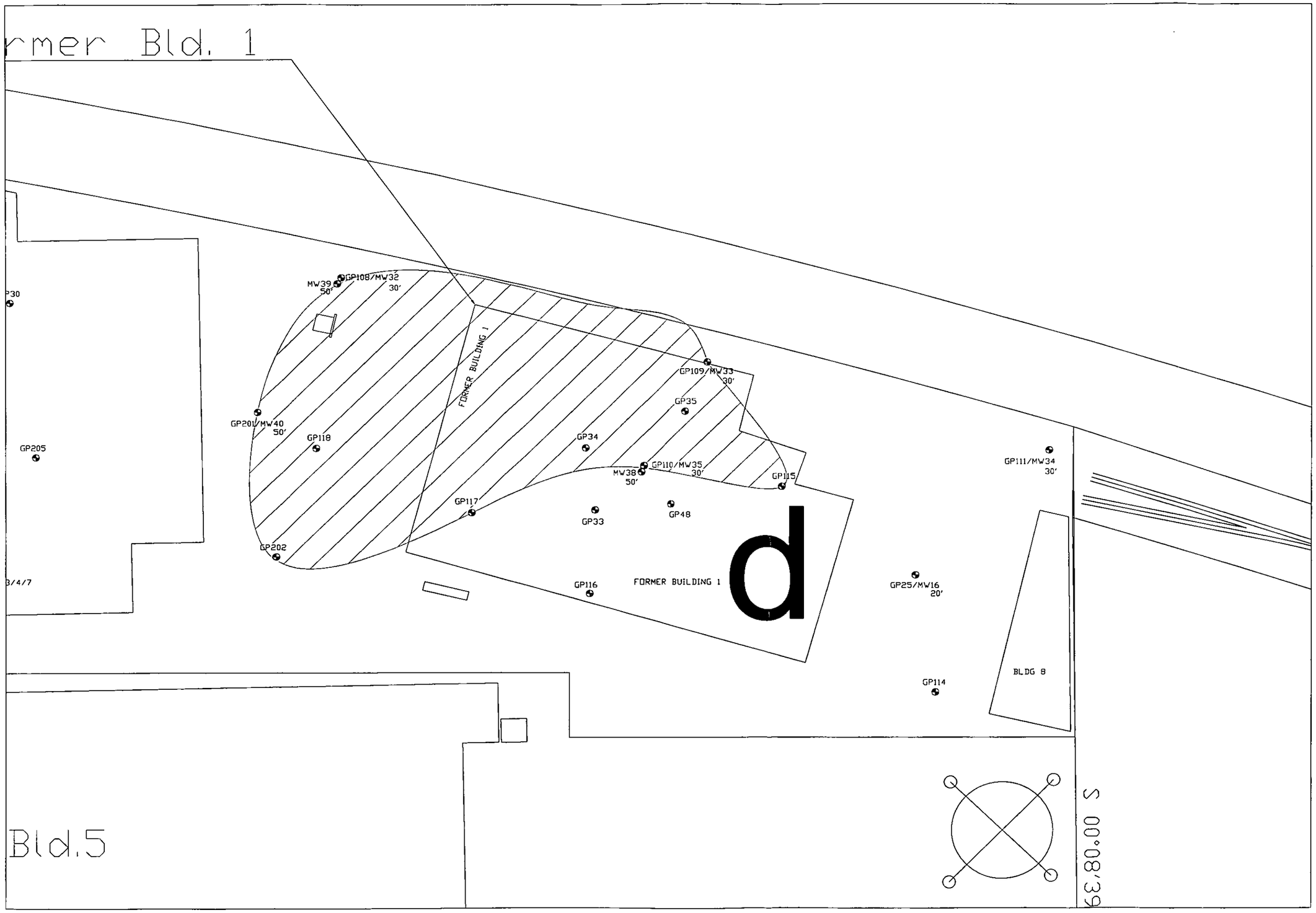
Graphic Scale

0 50

1" = 50'

N

R 000300



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 8d
SOIL - 111 TCA Plume

Subject Property

Contaminant Plume

Graphic Scale

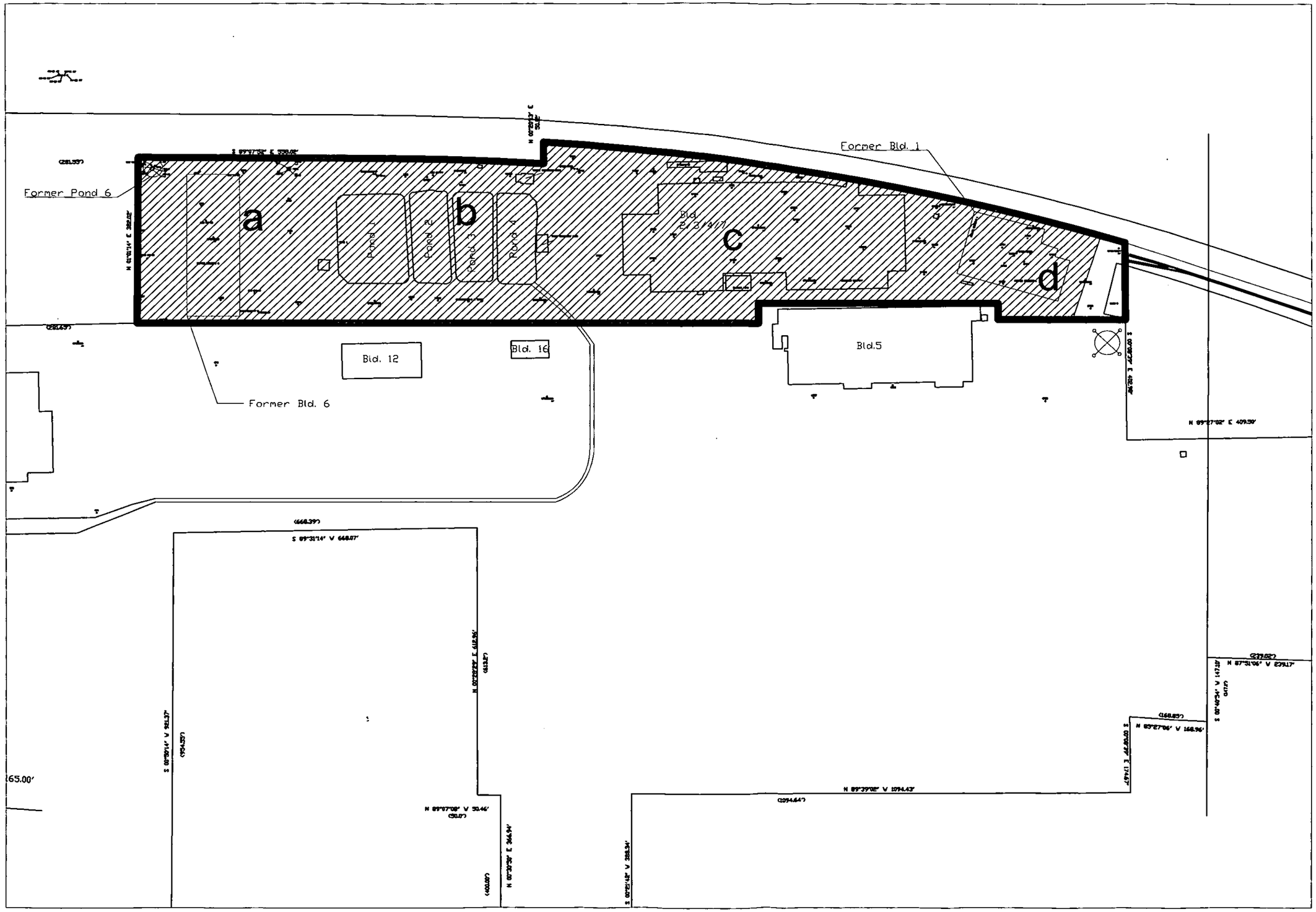
0 50

1" = 50'

N

R 000301

FIGURE 9 – GROUNDWATER VOC EXCEEDANCE MAP



egsl
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Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 9
Water - VOC Plume

Subject Property

Contaminant Plume

Graphic Scale

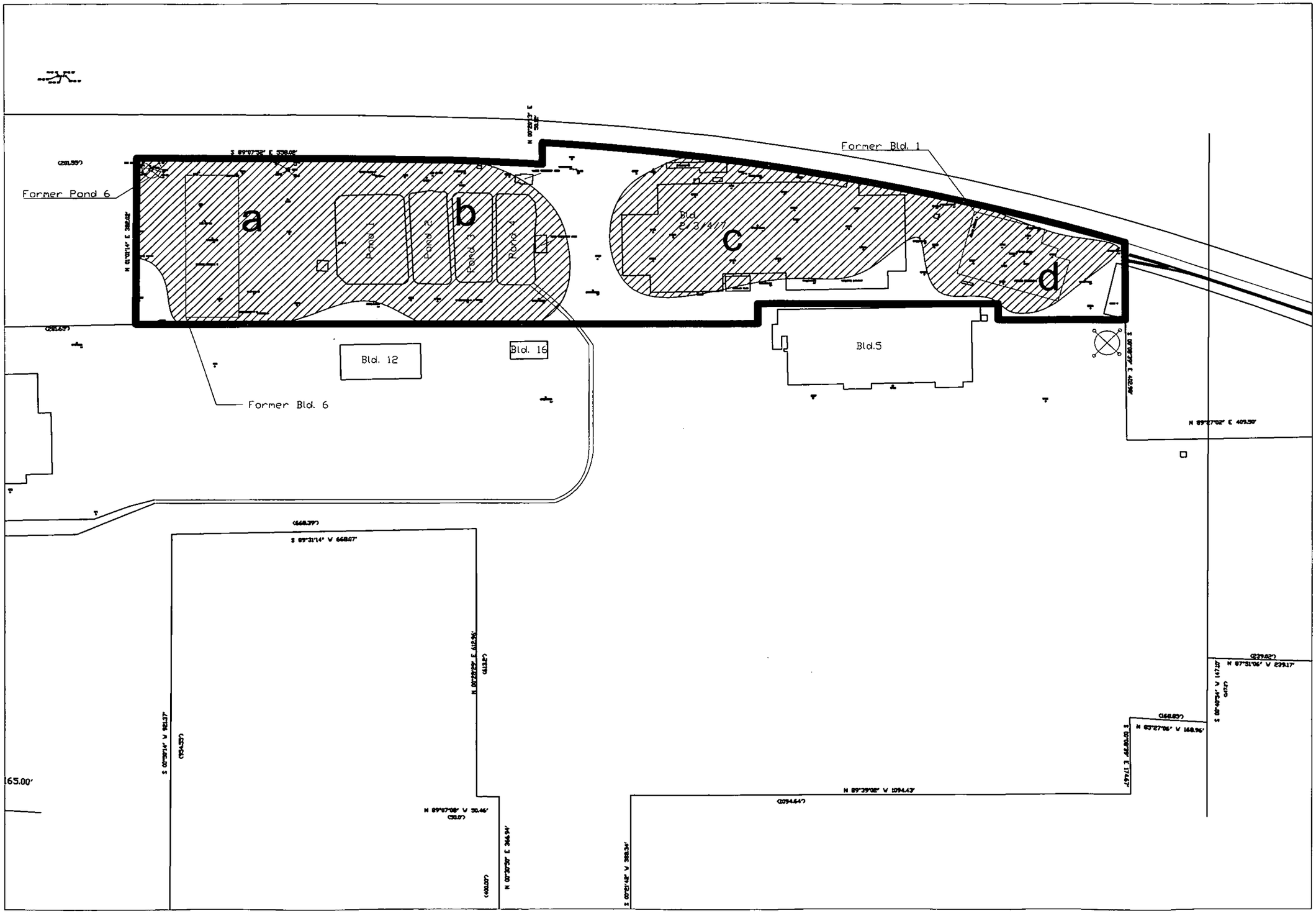
0 200

1" = 200'

N

R 000303

FIGURE 10 A-D – GROUNDWATER 1,1 –DCE COMPONENT MAPS



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 10
Water - 11 DCE Plume

Subject Property

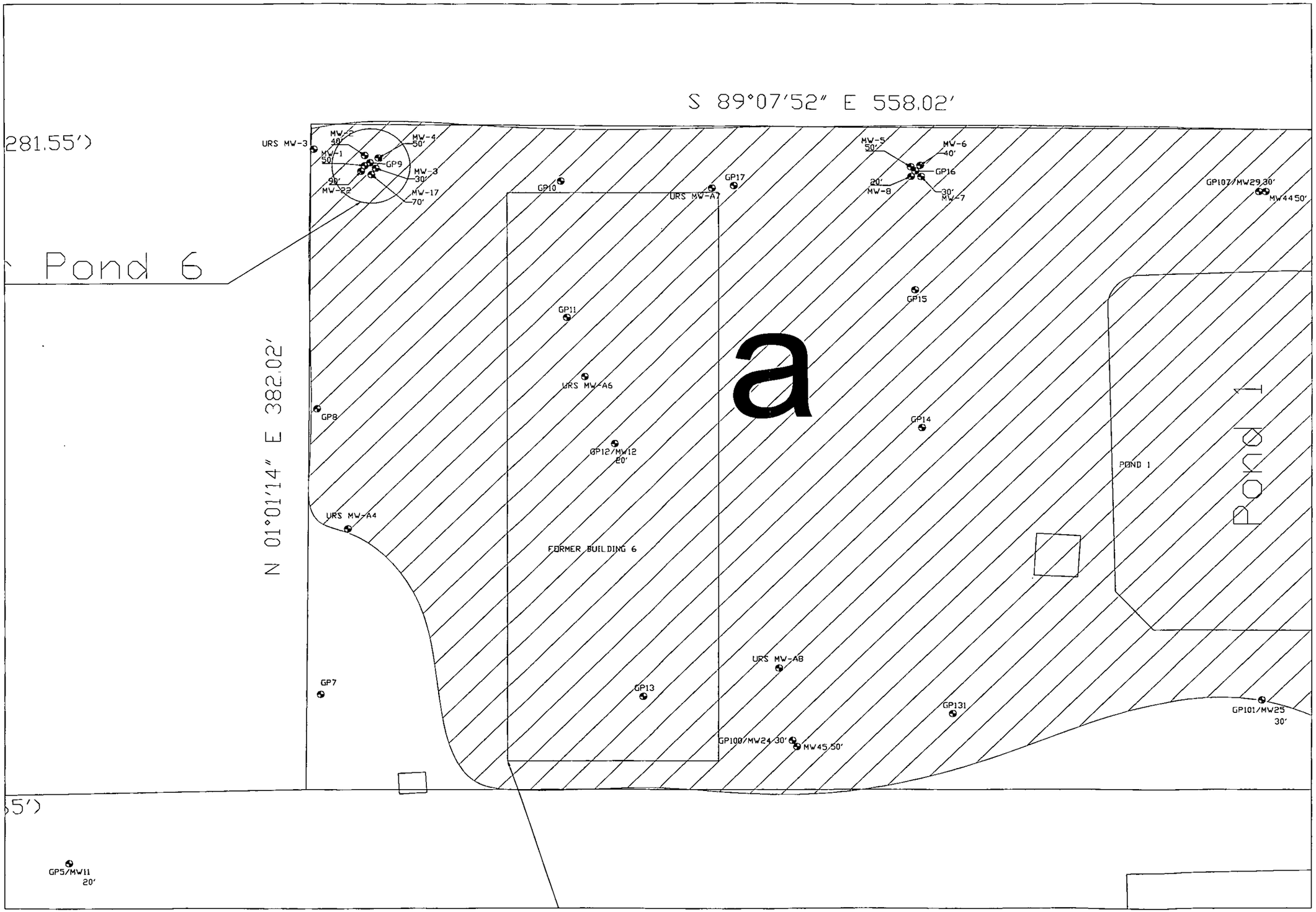
Contaminant Plume

Graphic Scale

0 200

1" = 200'

N



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 10a
WATER - 11 DCE Plume

Subject Property

Contaminant Plume

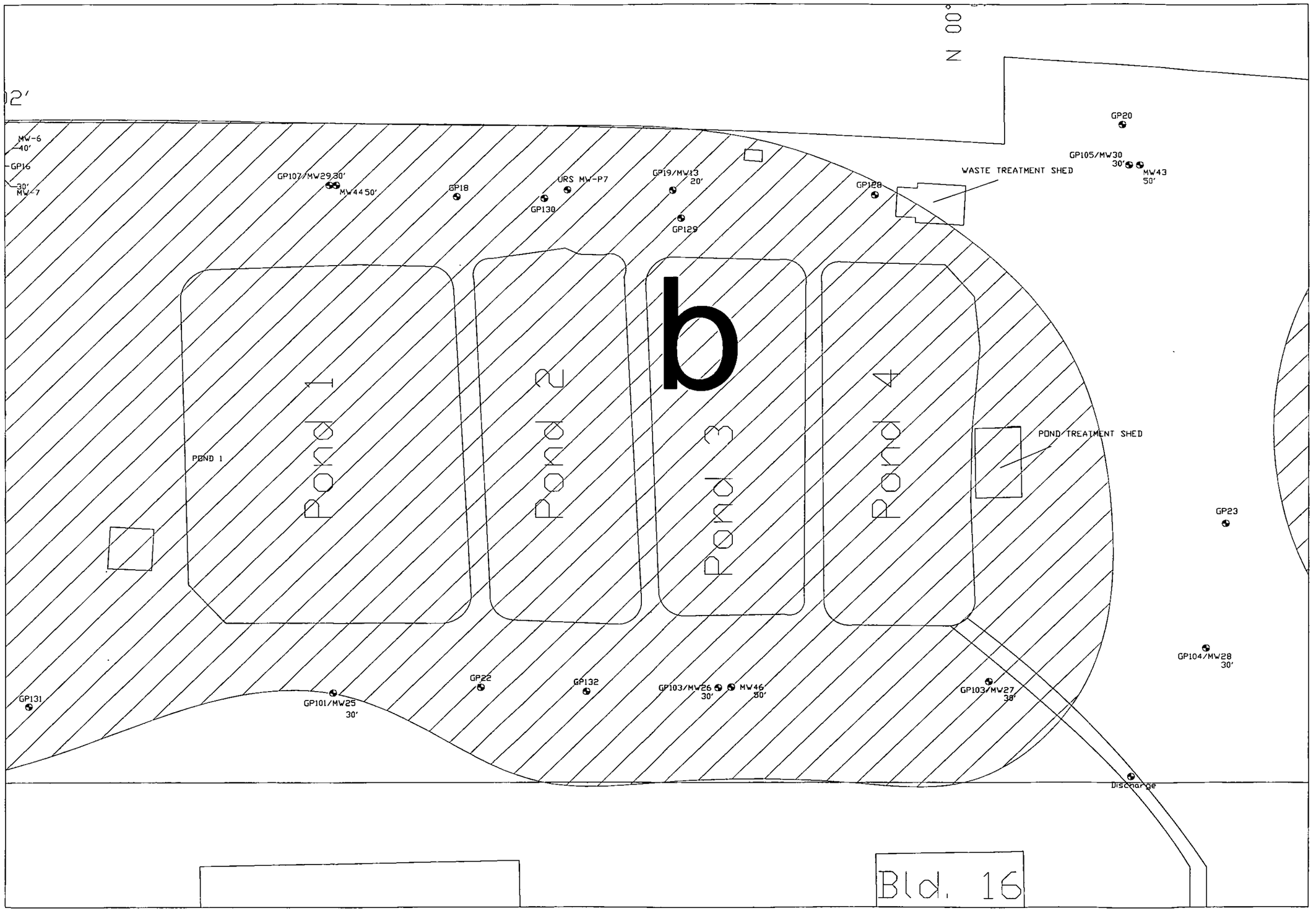
Graphic Scale

0 50

1" = 50'

N

R 000306



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 10b
WATER - 11 DCE Plume

Subject Property

Contaminant Plume

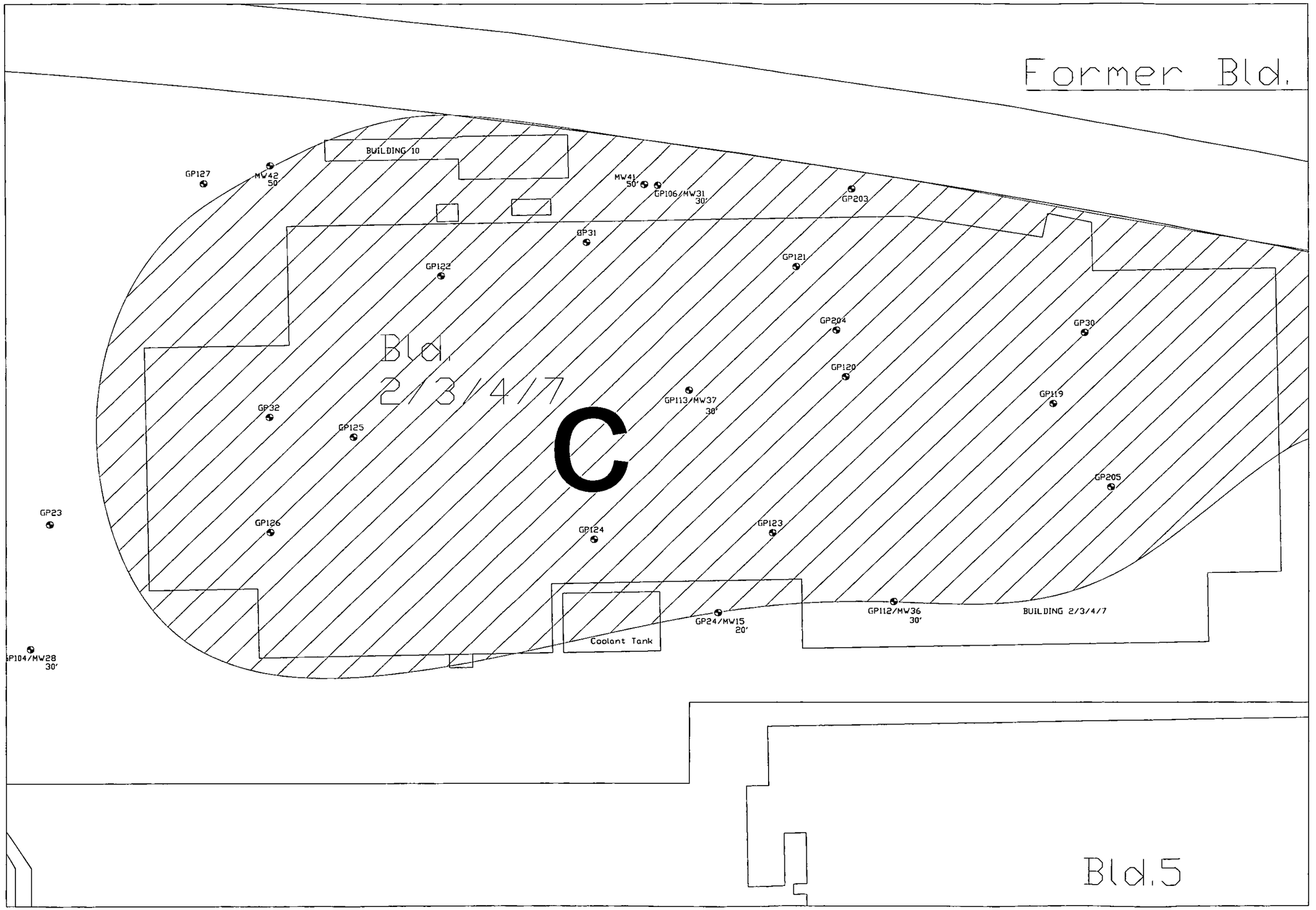
Graphic Scale

0 50

1" = 50'

N

R 000307



egsl ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 10c
WATER - 11 DCE Plume

Subject Property

Contaminant Plume

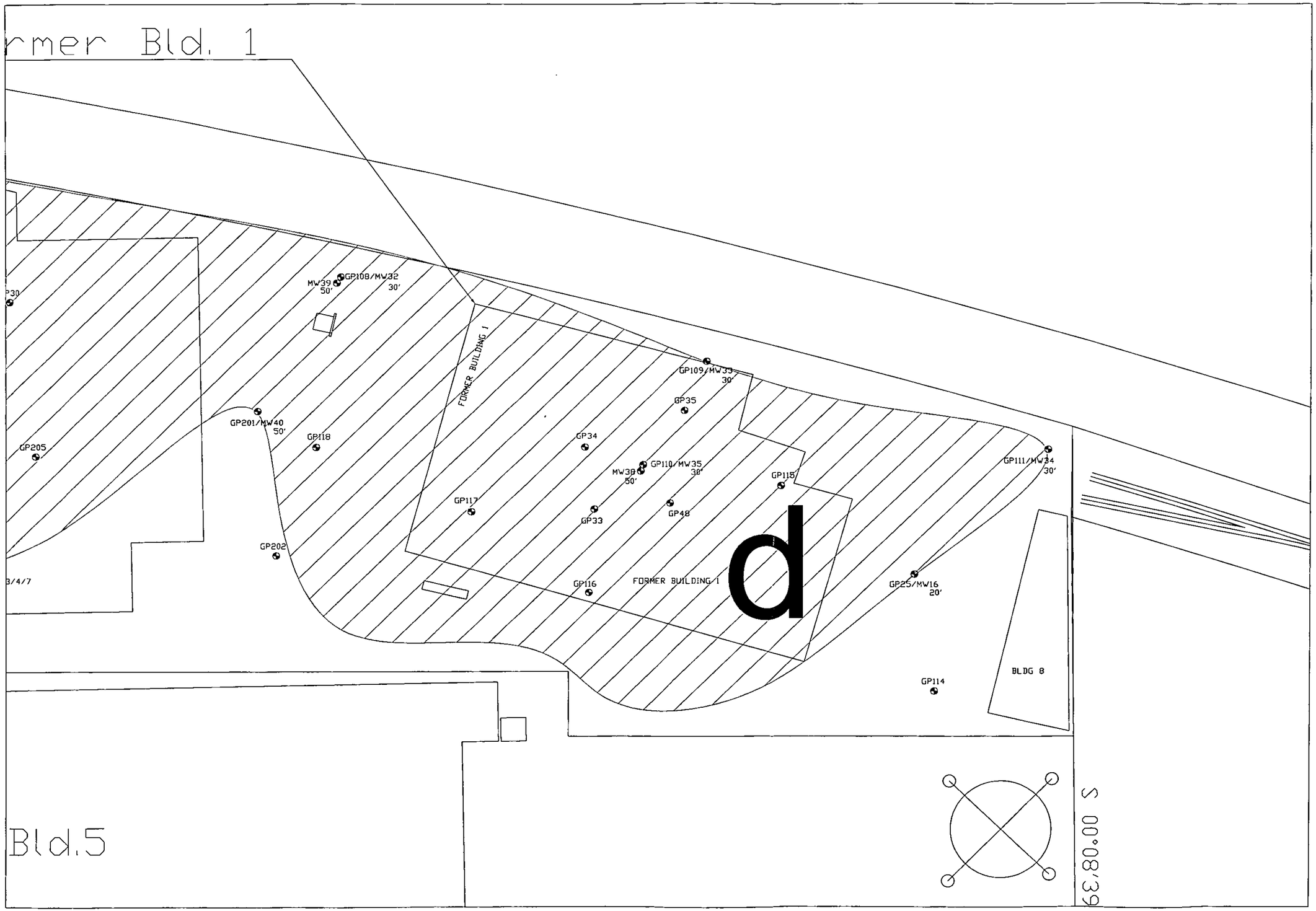
Graphic Scale

0 50

1" = 50'

N

R 000308



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 10d
WATER - 11 DCE Plume

Subject Property

Contaminant Plume

Graphic Scale

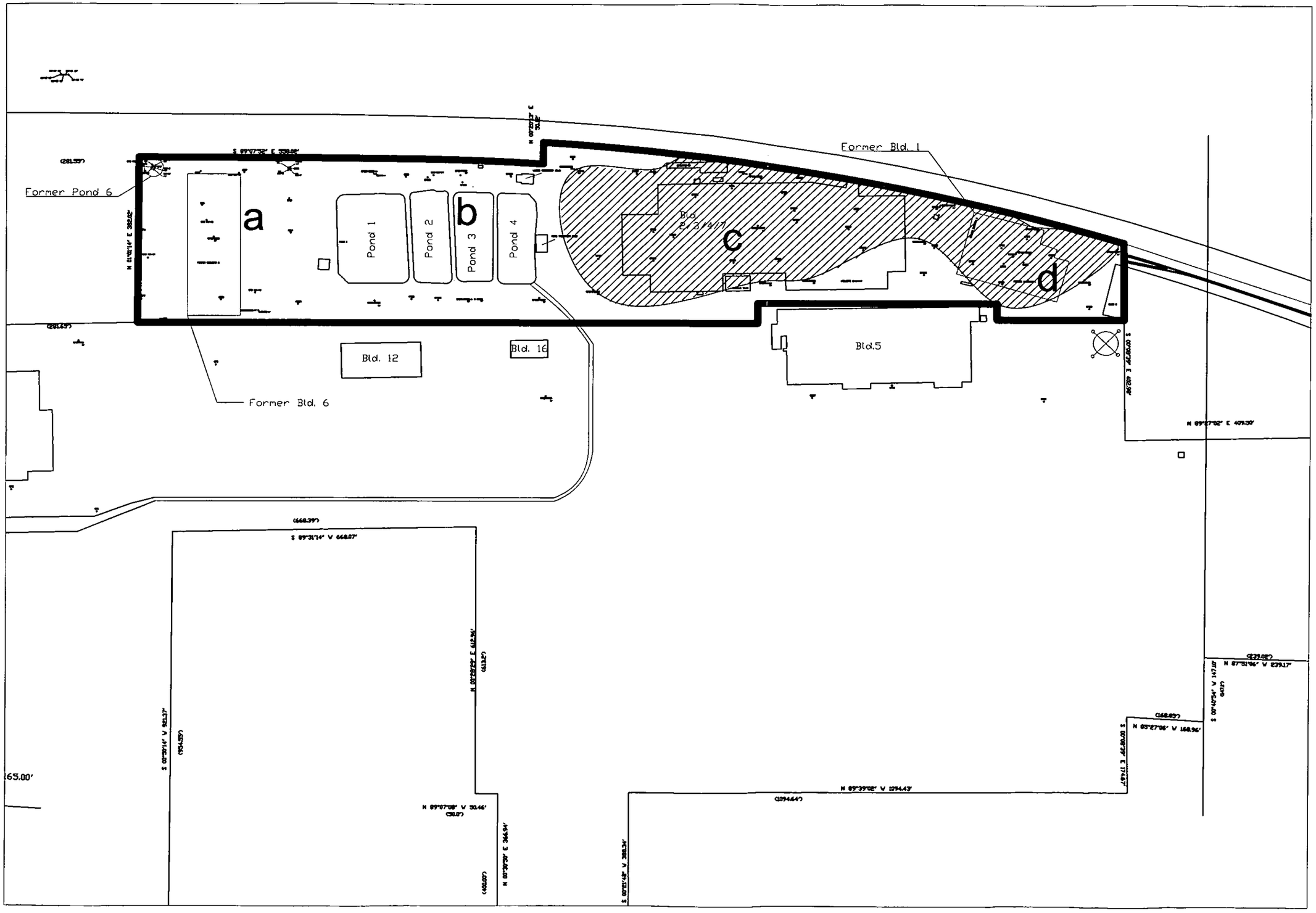
0 50

1" = 50'

N

R 000309

FIGURE 11 A-D – GROUNDWATER 1,1,1 –TCA COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 11
Water - 111 TCA Plume

Subject Property

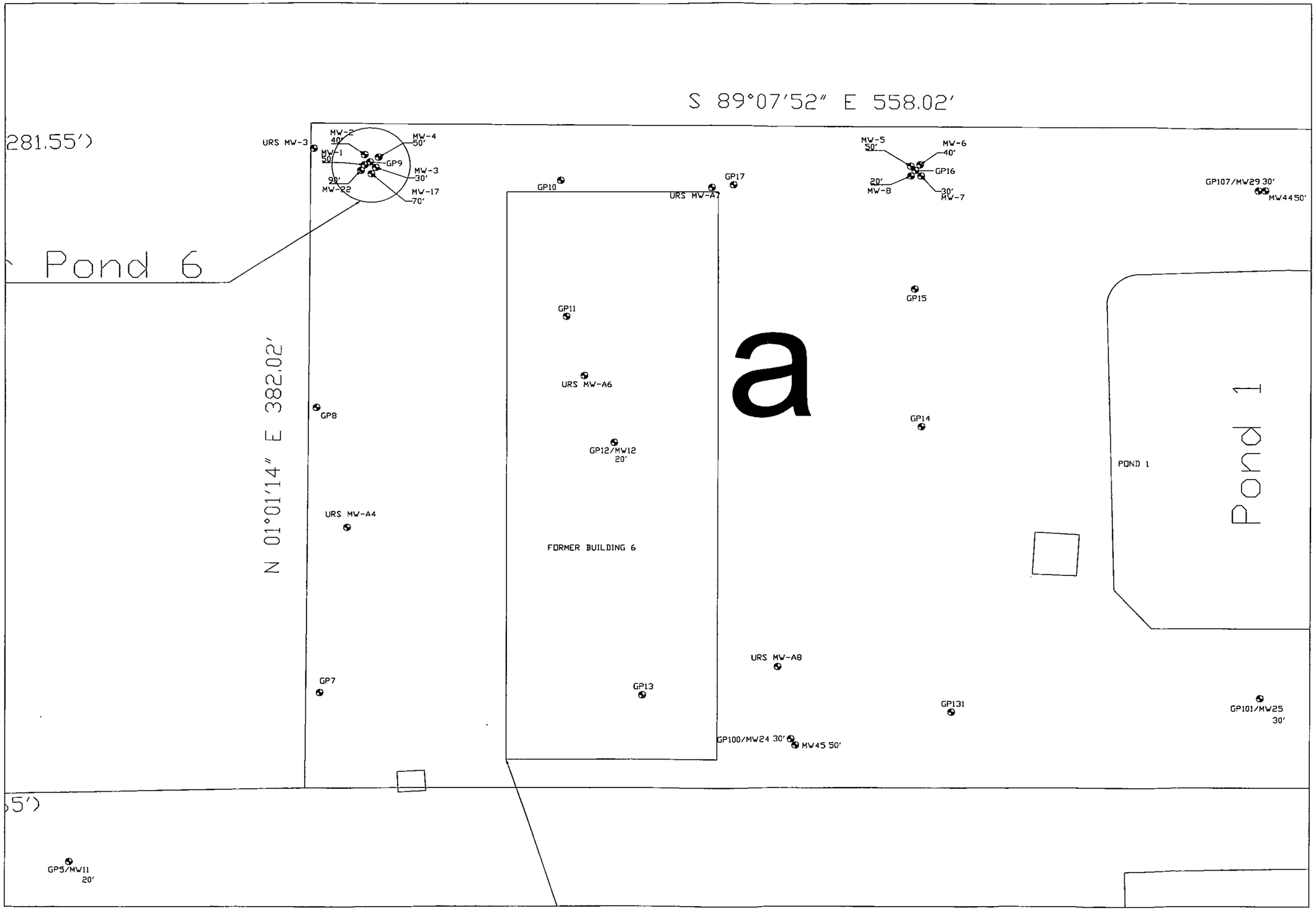
Contaminant Plume

Graphic Scale

0 200

1" = 200'

N



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 11a
WATER - 111 TCA Plume

Subject Property

Contaminant Plume

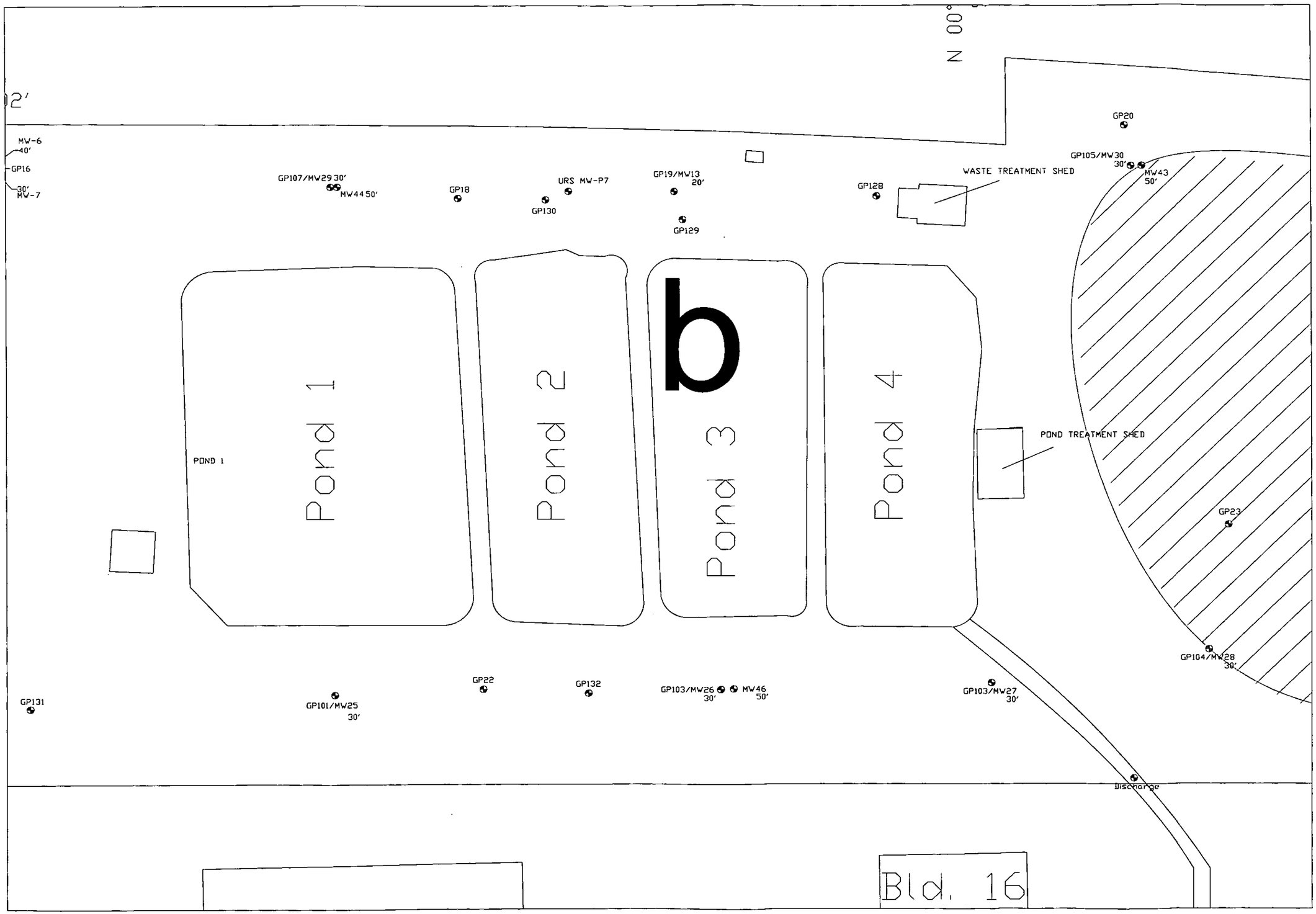
Graphic Scale

0 50

1" = 50'

N

R 000312



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 11b
WATER - 111 TCA Plume

Subject Property

Contaminant Plume

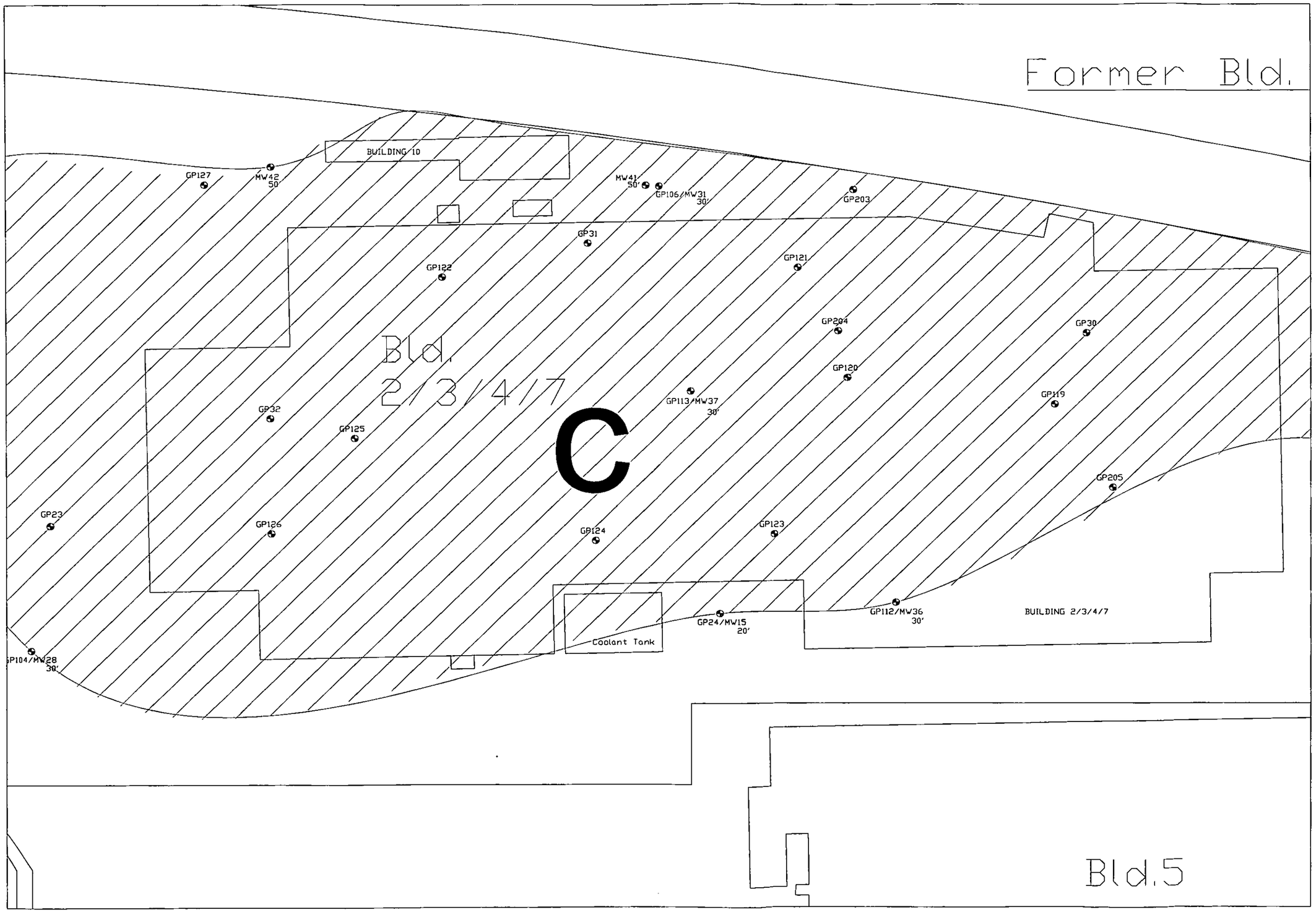
Graphic Scale

0 50

1" = 50'

N

R 000313



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 11c
WATER - 111 TCA Plume

Subject Property

Contaminant Plume

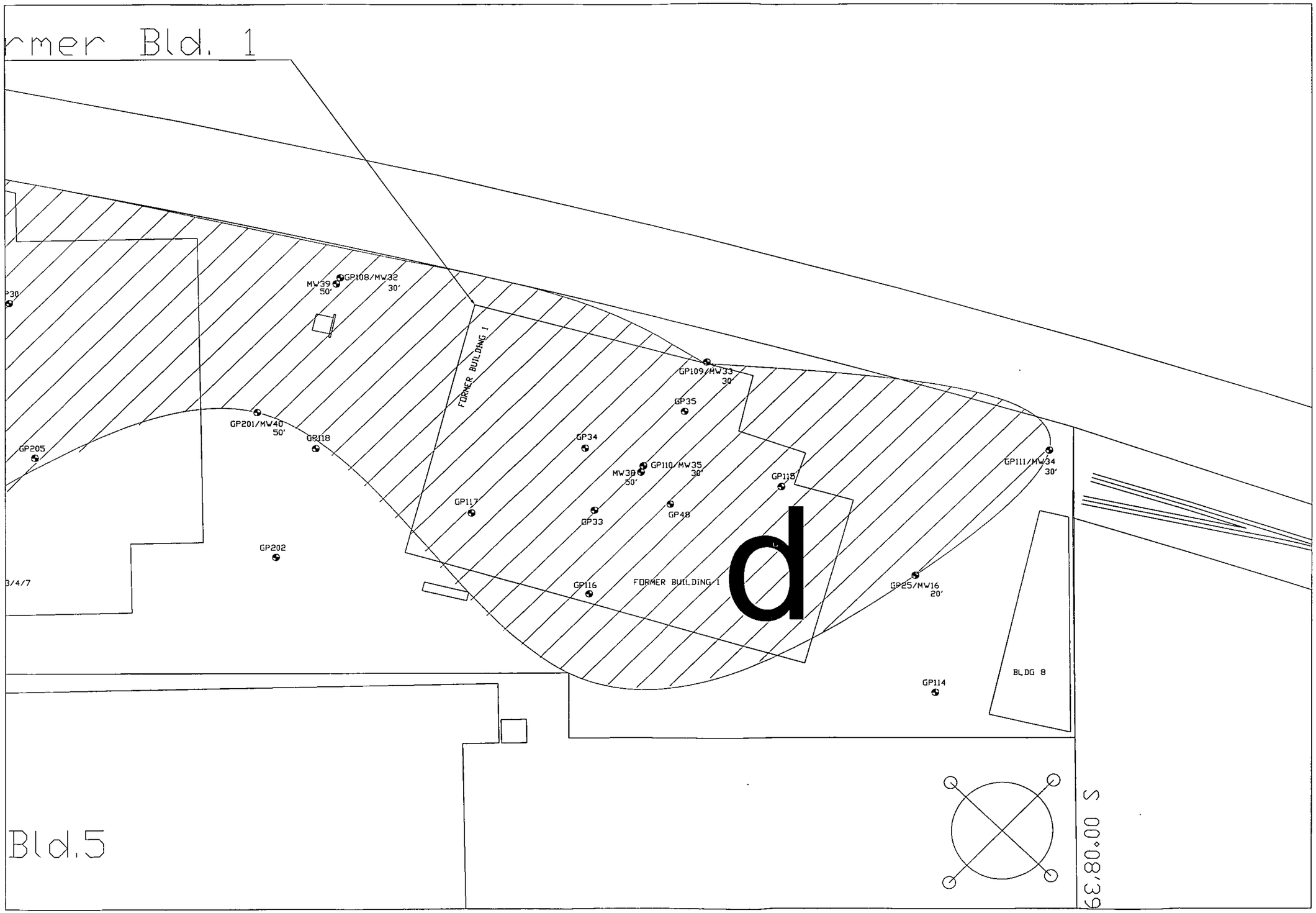
Graphic Scale

0 50

1" = 50'

N

R 000314



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 11d
WATER - 111 TCA Plume

Subject Property

Contaminant Plume

Graphic Scale

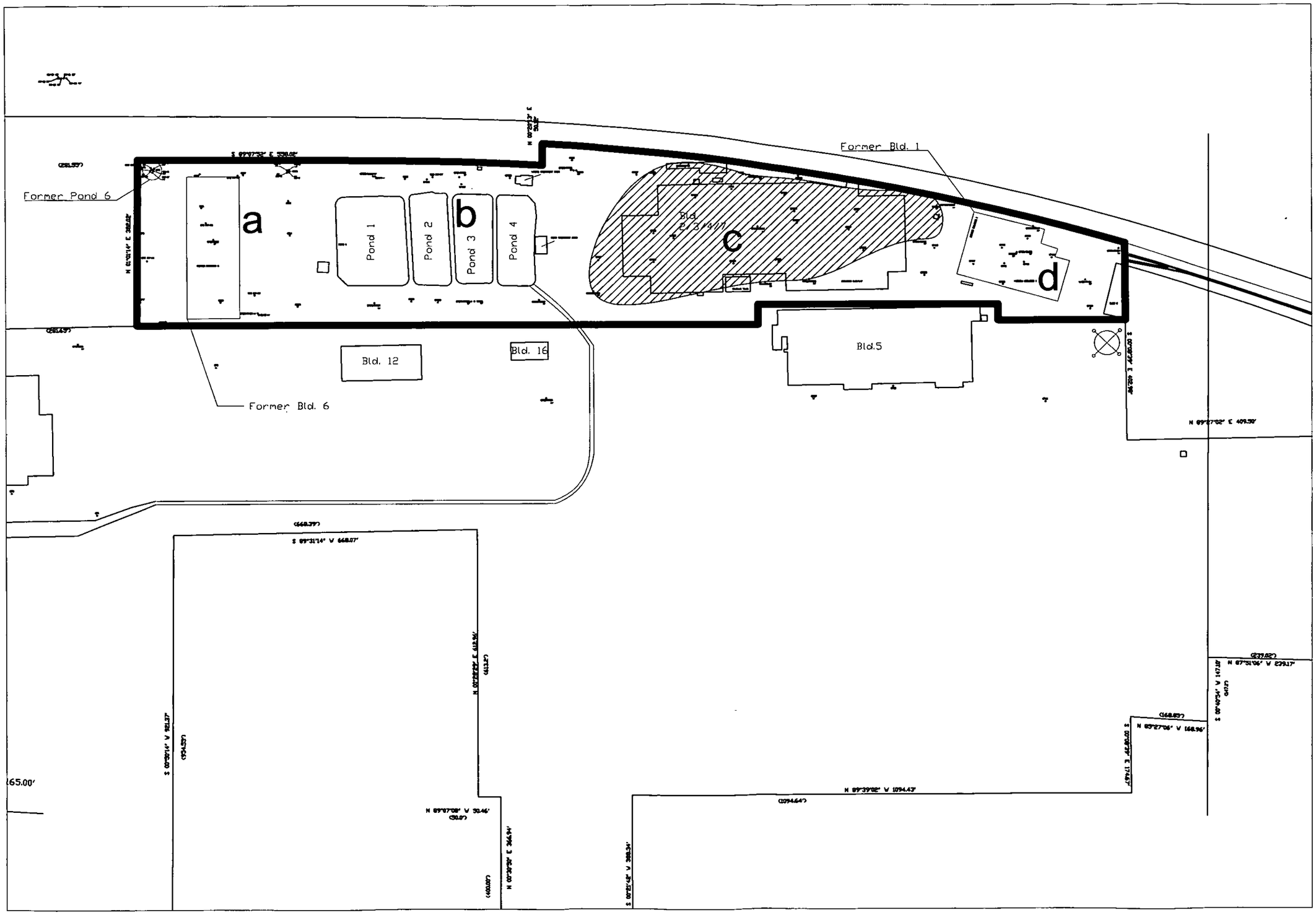
0 50

1" = 50'

N

R 000315

FIGURE 12 A-D – GROUNDWATER 1,1,2 –TCA & 1,2 DCE COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 12
Water - 112 TCA + 12 DCE
Plume

Subject Property

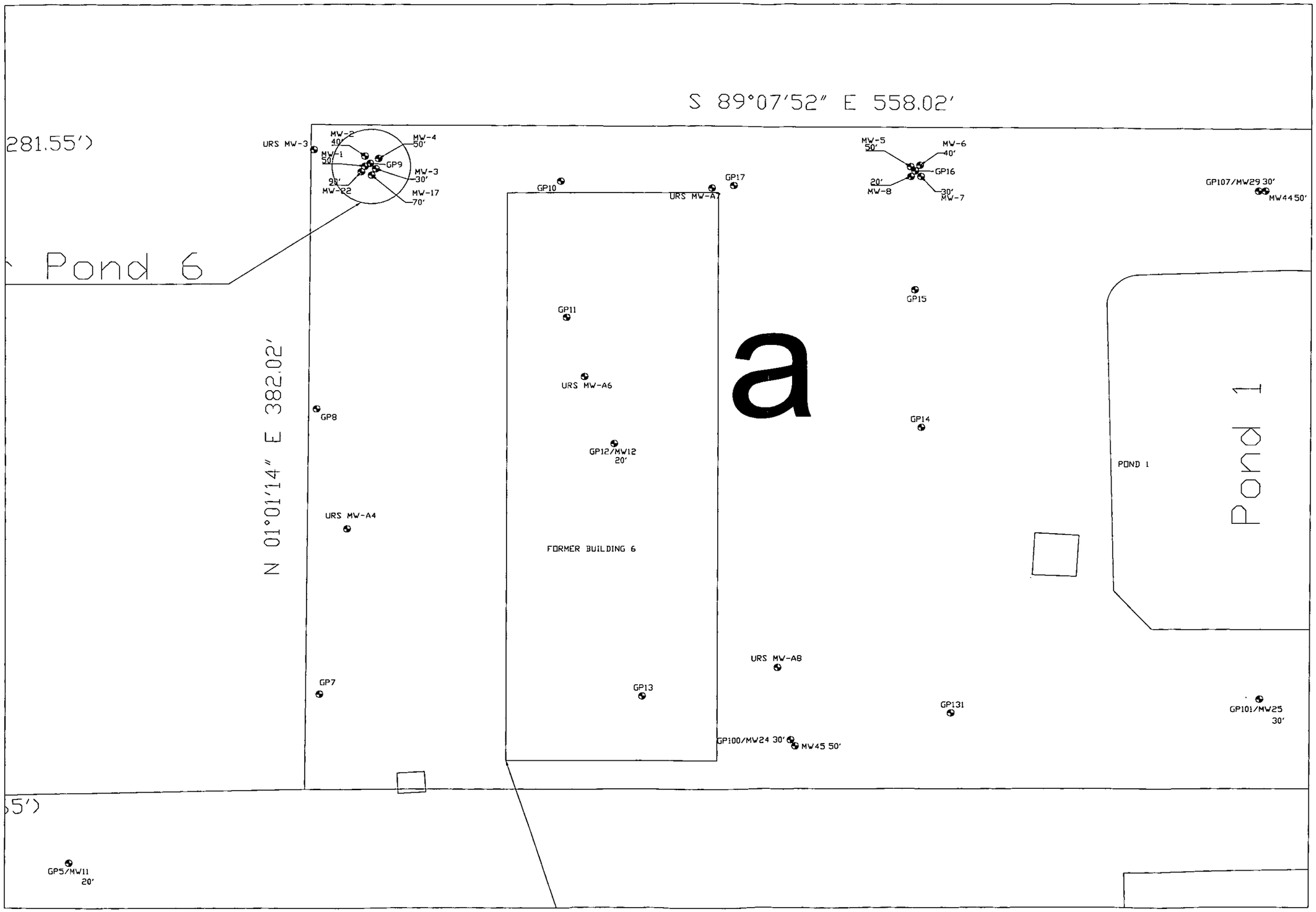
Contaminant Plume

Graphic Scale

0 200

1" = 200'

N



egsl ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 12a
Water - 112 TCA + 12 DCE Plume

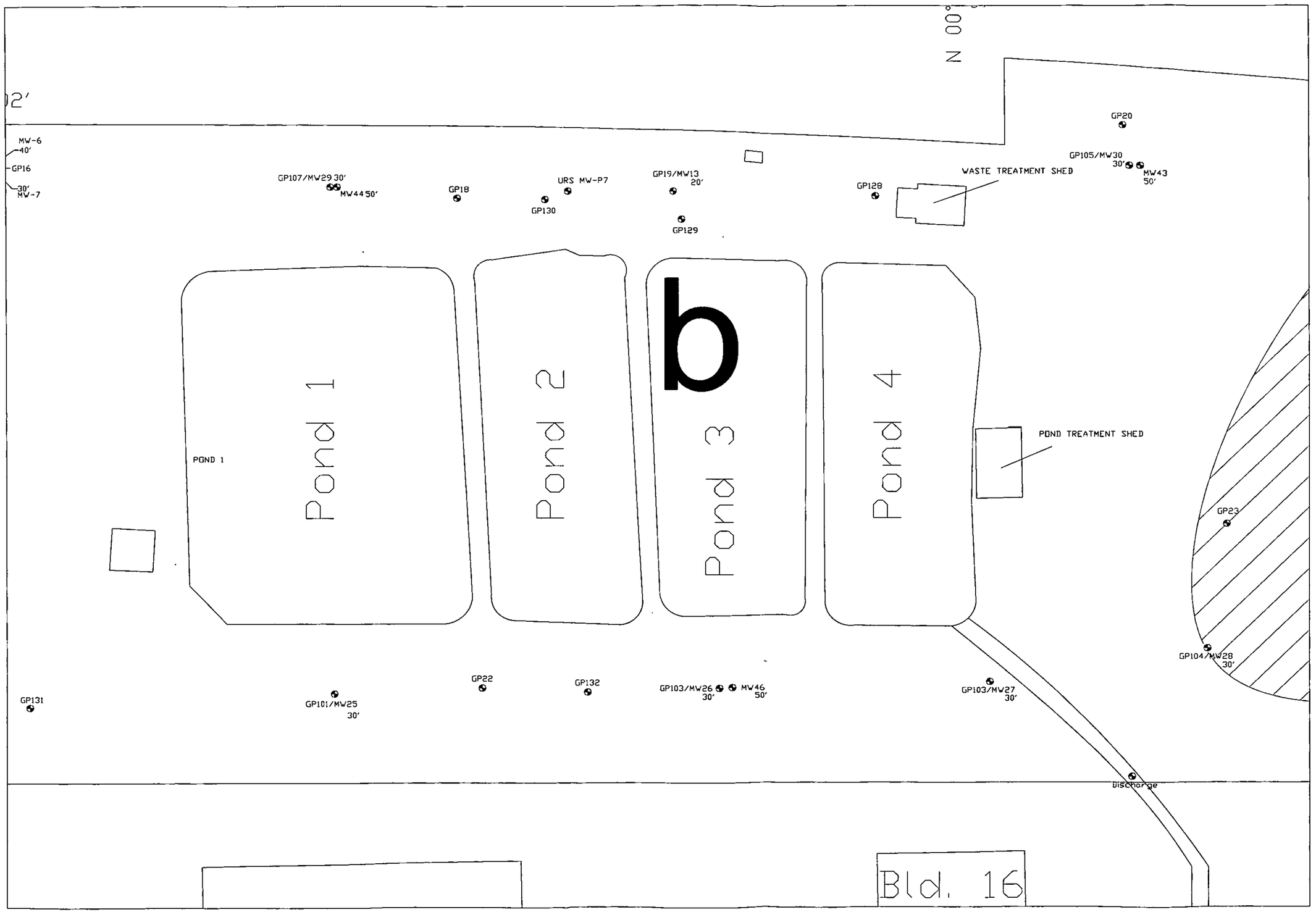
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000318



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 12b
Water - 112 TCA + 12 DCE
Plume

Subject Property

Contaminant Plume

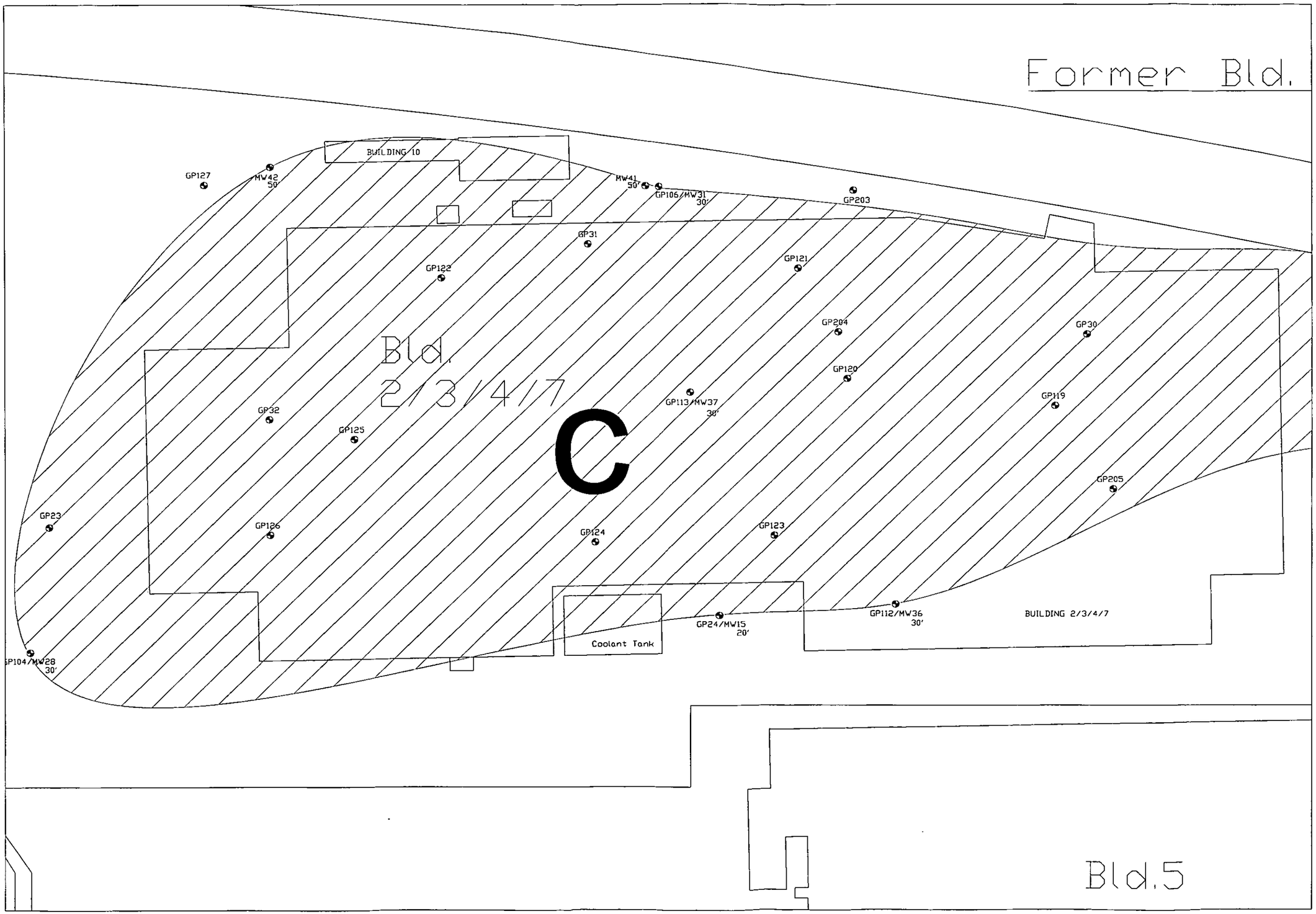
Graphic Scale

0 50

1" = 50'

N

R 000319



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 12c
Water - 112 TCA + 12 DCE
Plume

Subject Property

Contaminant Plume

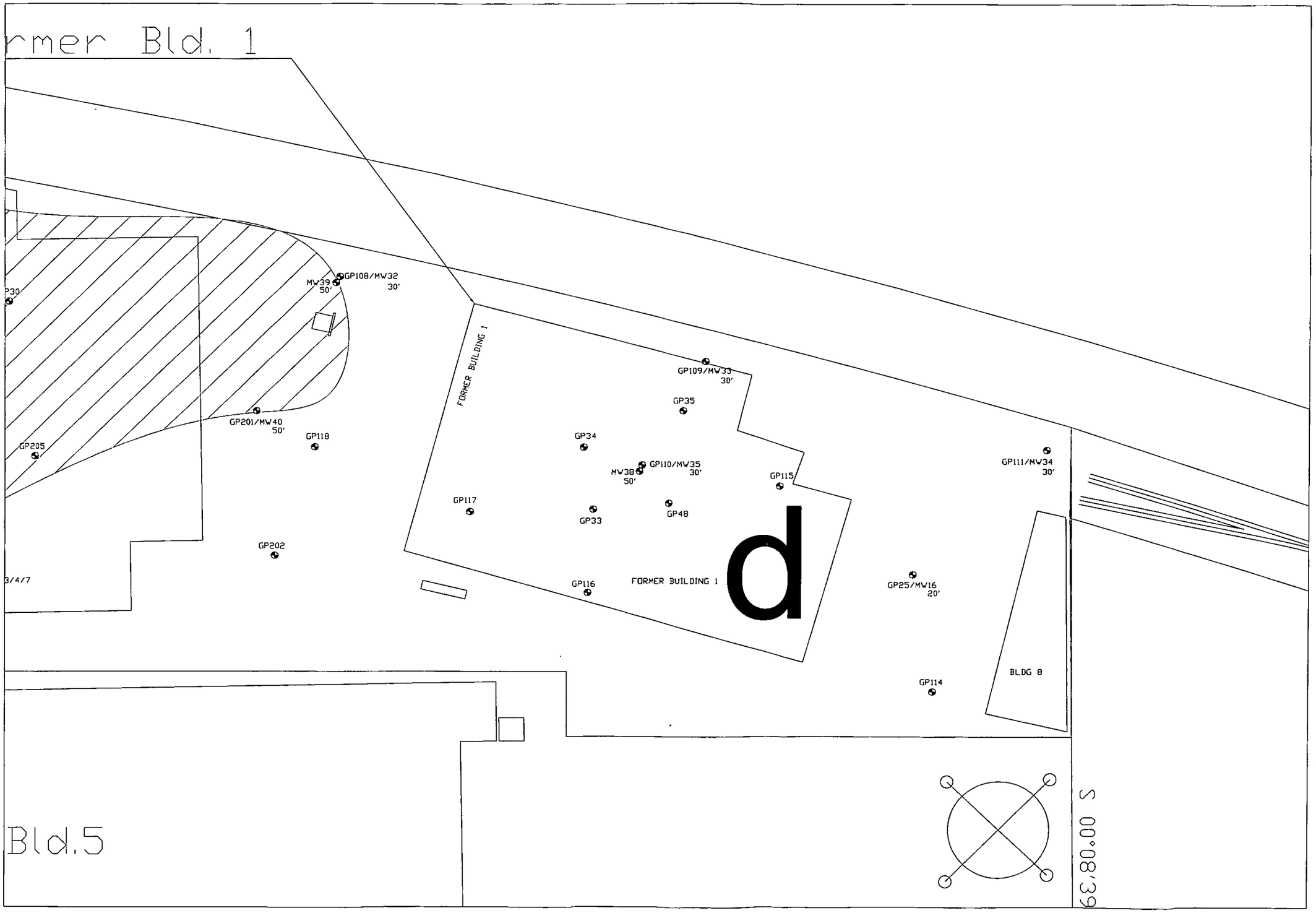
Graphic Scale

0 50

1" = 50'

N

R 000320



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 12d
Water - 112 TCA + 12 DCE Plume

Subject Property

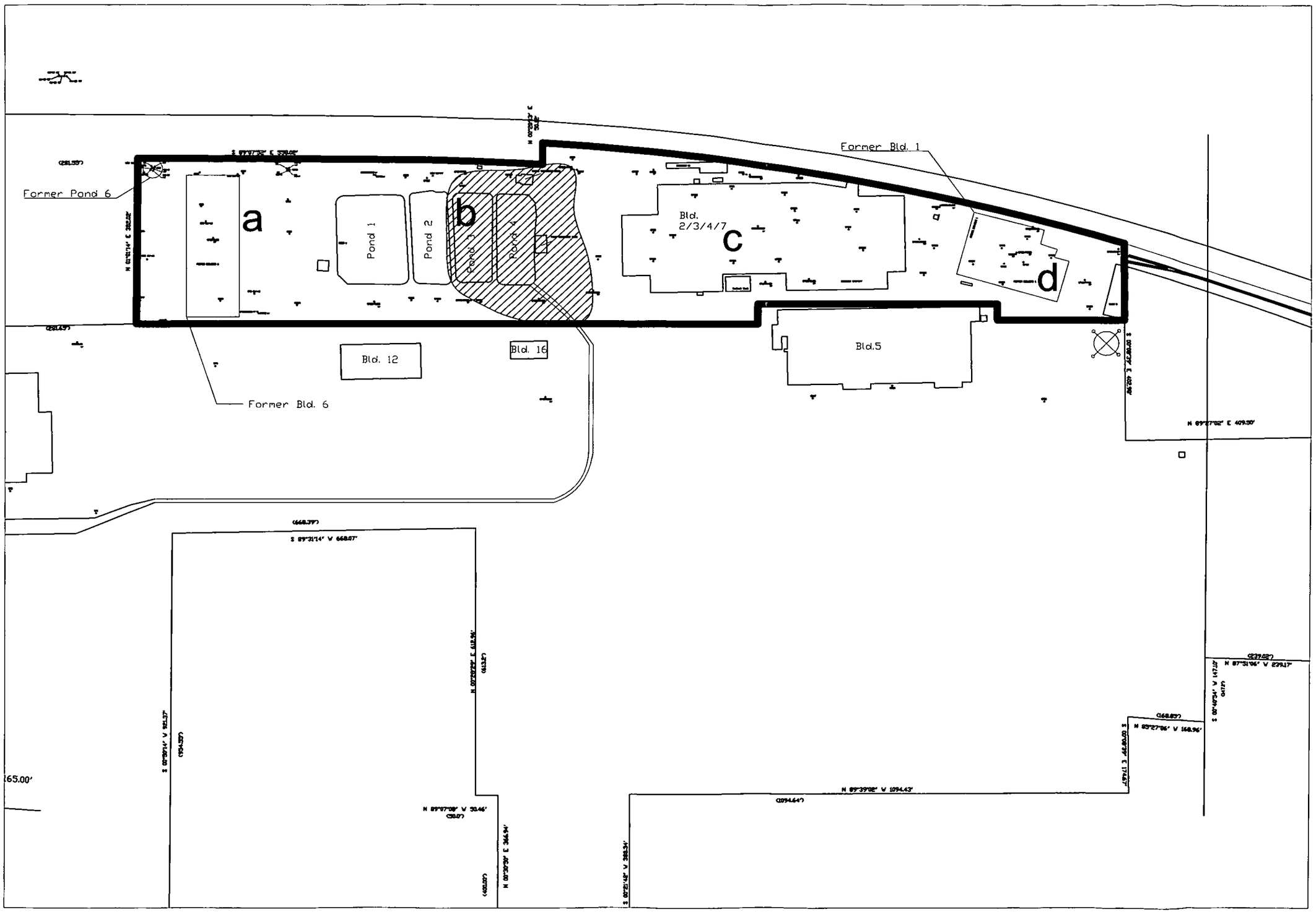
Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000321

FIGURE 13 A-D – GROUNDWATER BROMODICHLOROMETHANE COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 13
Water - Bromodichloromethane Plume

Subject Property

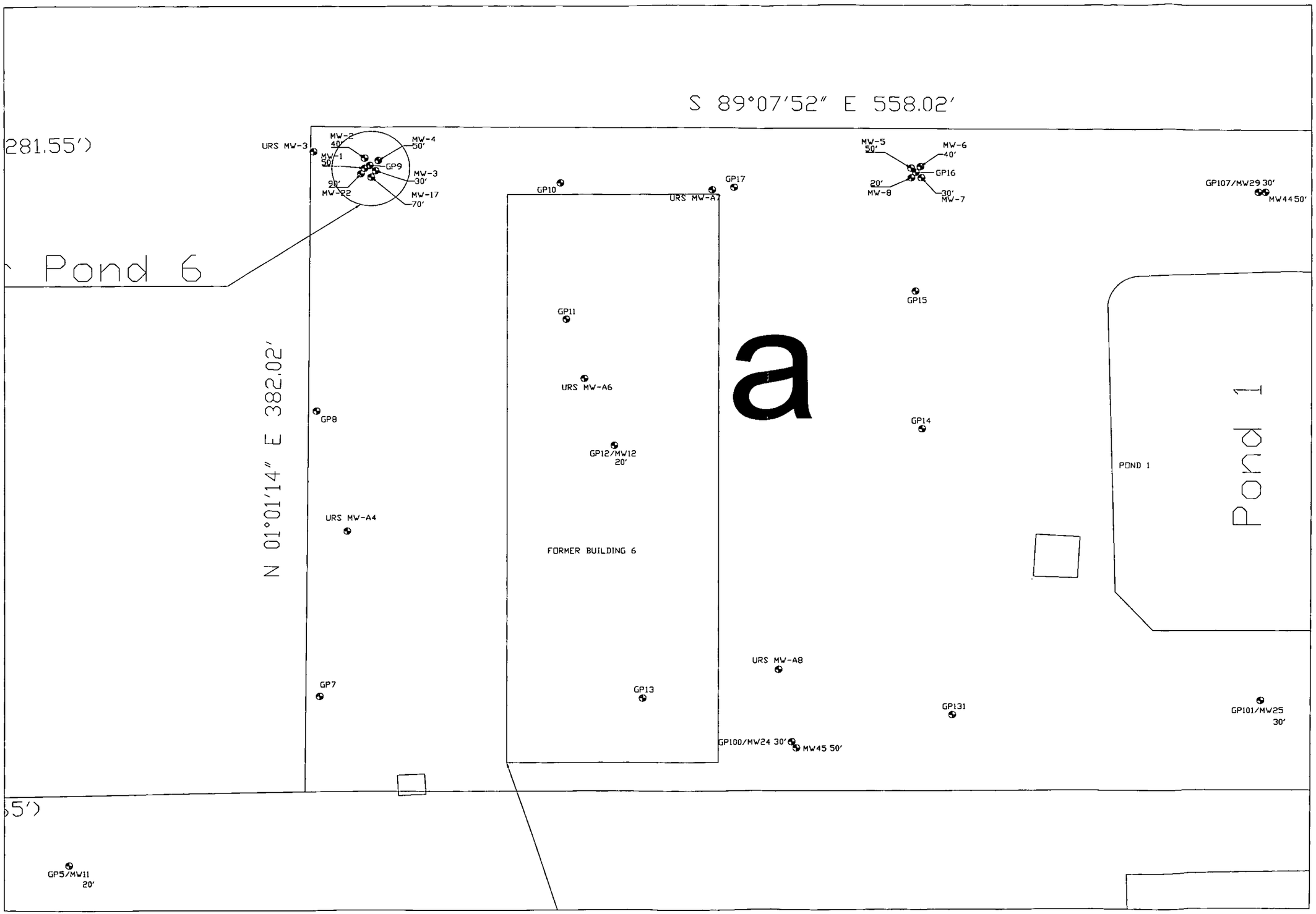
Contaminant Plume

Graphic Scale

0 200

1" = 200'

N



egsl ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 13a
Water - Bromodichloromethane Plume

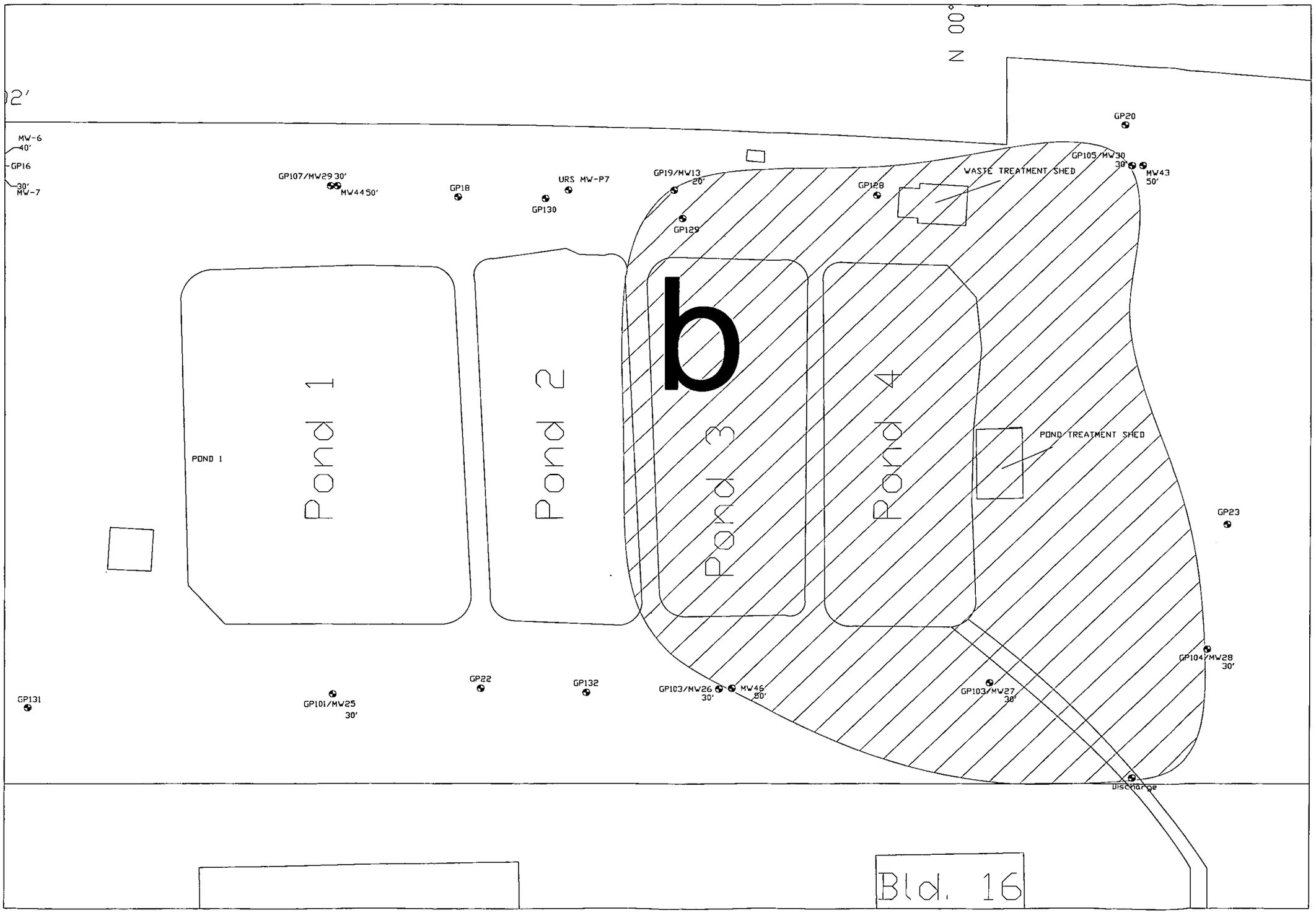
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000324



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Polk Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 13b
Water - Bromodichloromethane Plume

Subject Property

Contaminant Plume

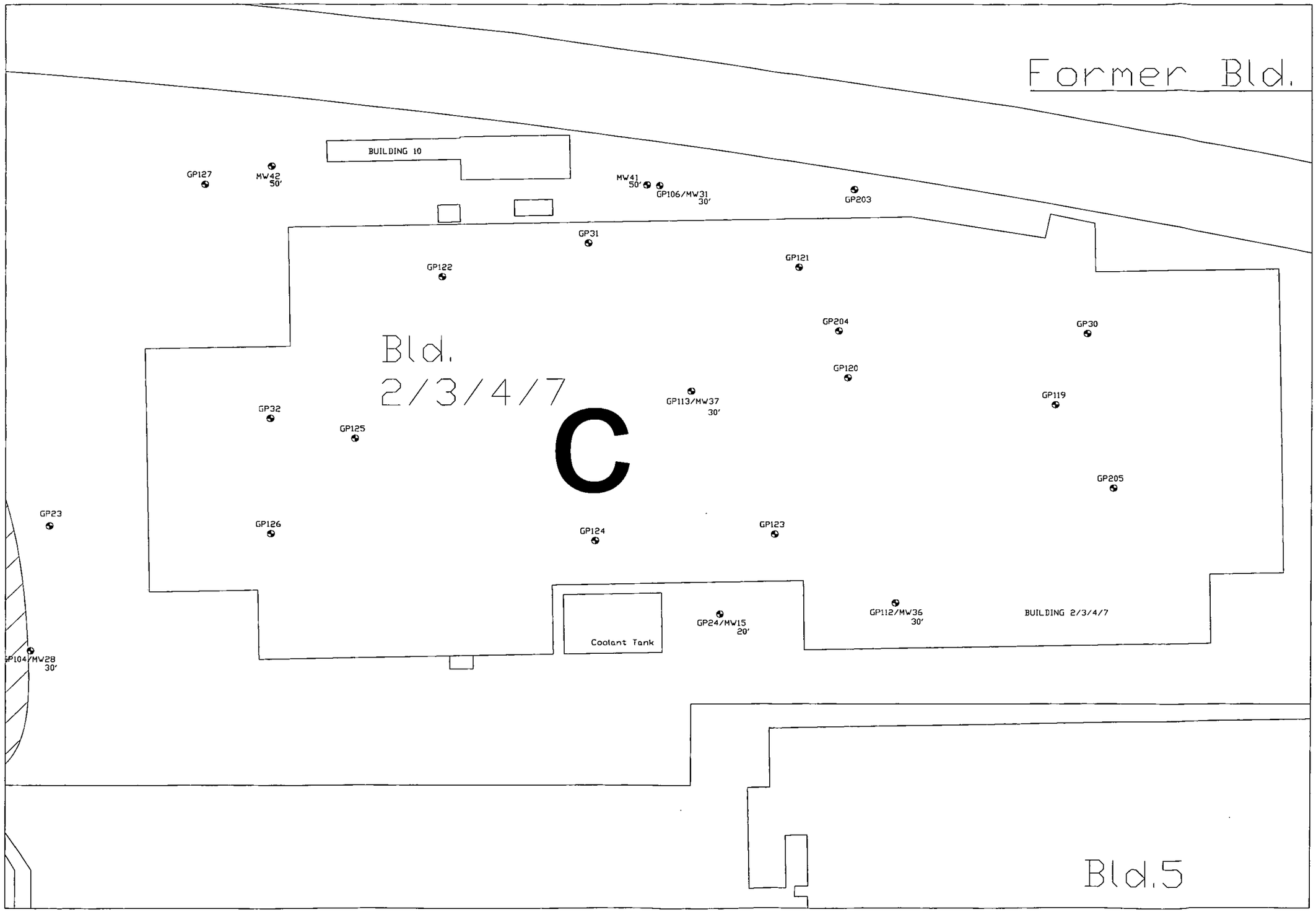
Graphic Scale

0 50

1" = 50'

N

R 000325



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 13c
Water - Bromodichloromethane Plume

Subject Property

Contaminant Plume

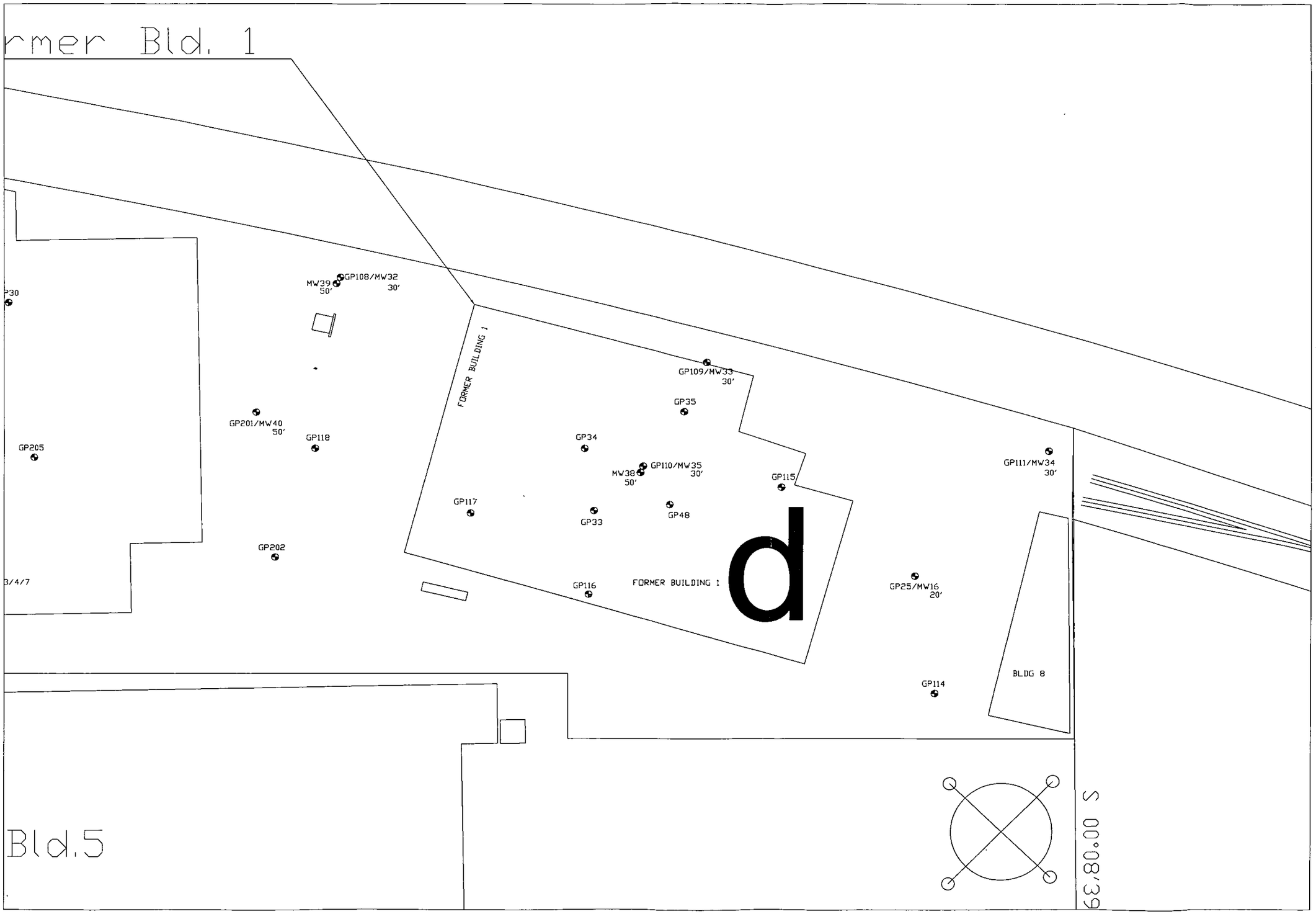
Graphic Scale

0 50

1" = 50'

N

R 000326



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 13d
Water - Bromodichloromethane Plume

Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000327

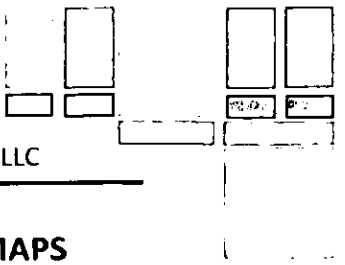
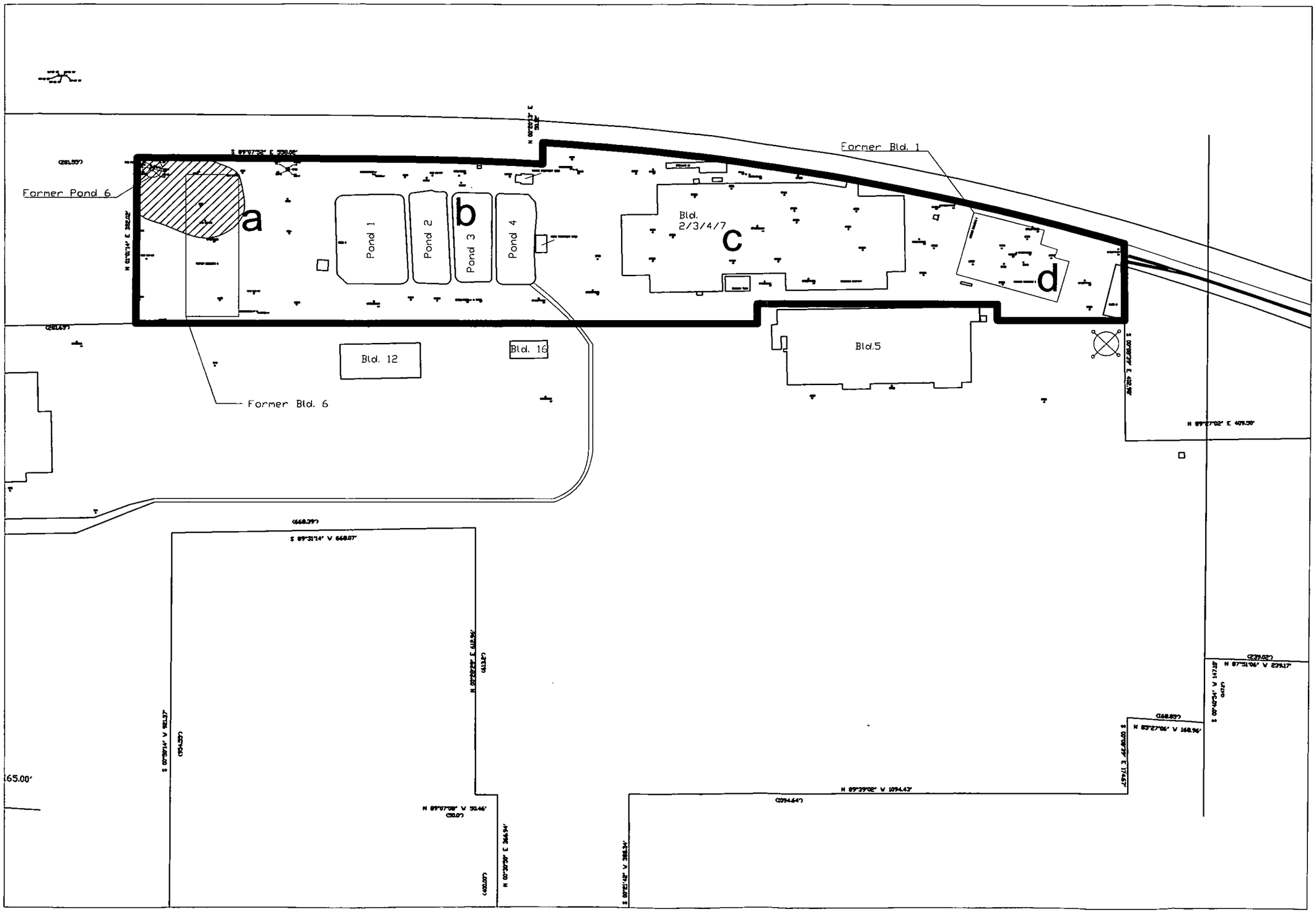


FIGURE 14 A-D – GROUNDWATER BROMOMETHANE COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 14
Water - Bromomethane Plume

Subject Property

Contaminant Plume

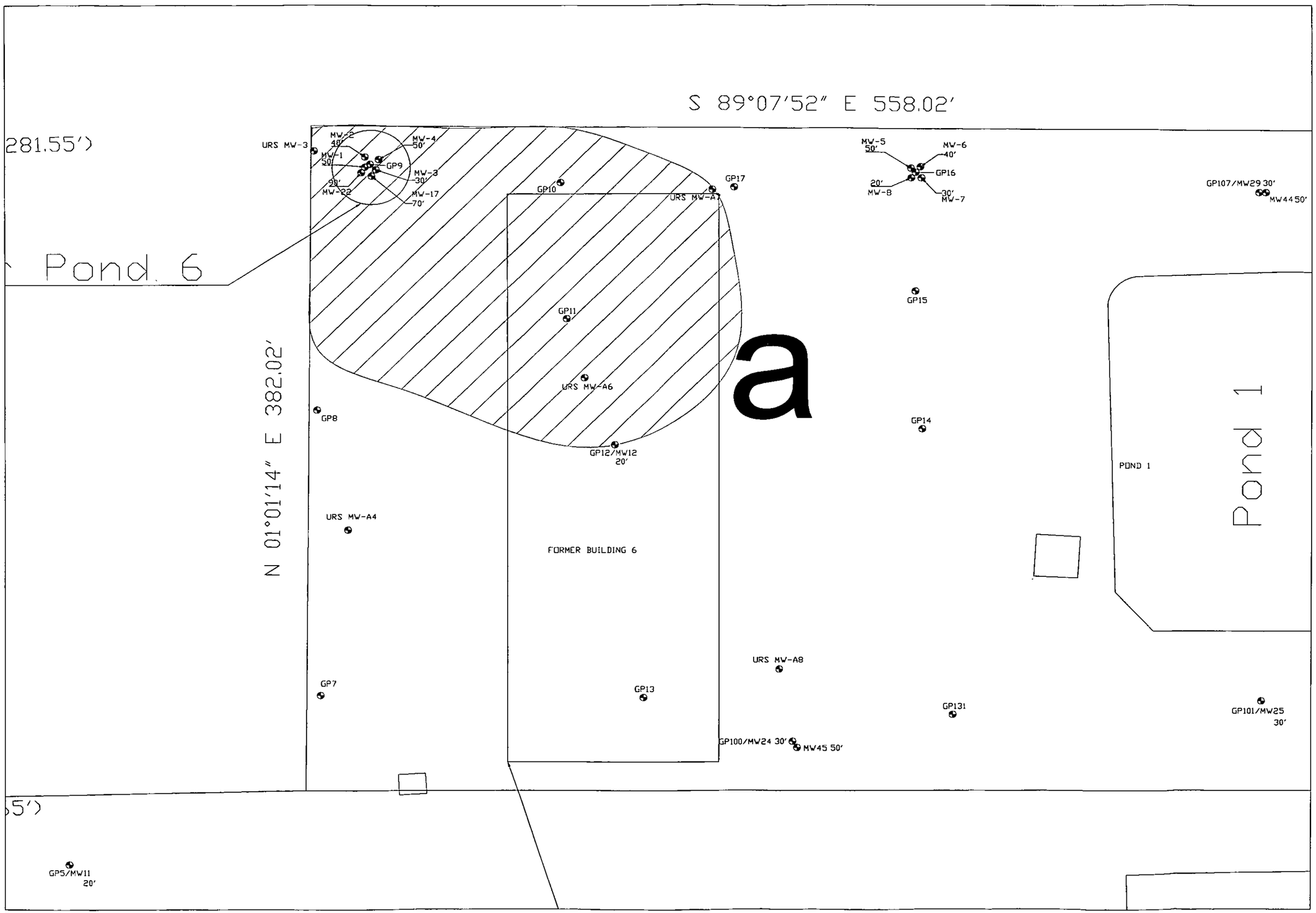
Graphic Scale

0 200

1" = 200'

N

R 000329



egsl ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 14a
Water - Bromomethane Plume

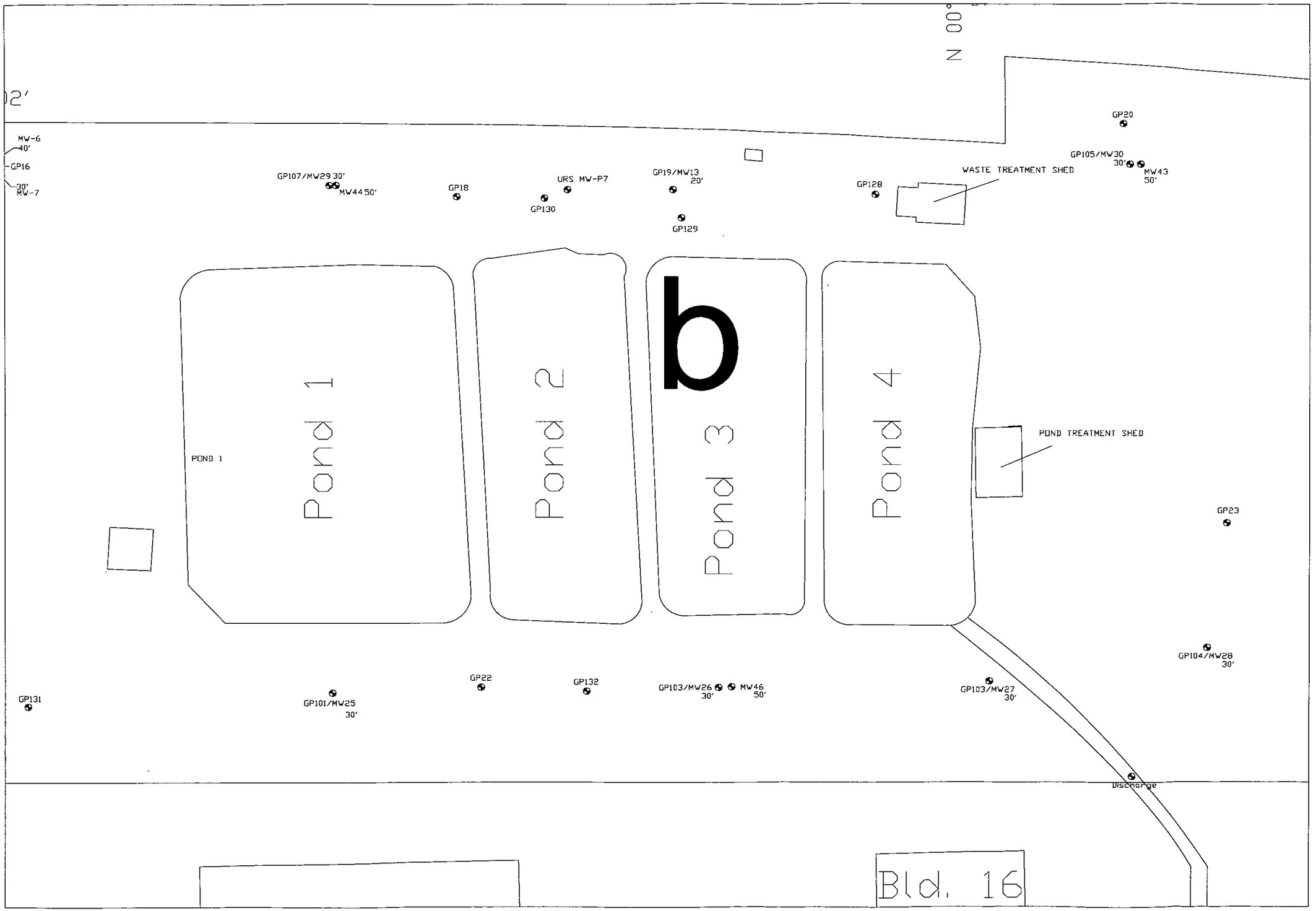
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000330



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 14b
Water - Bromomethane Plume

Subject Property

Contaminant Plume

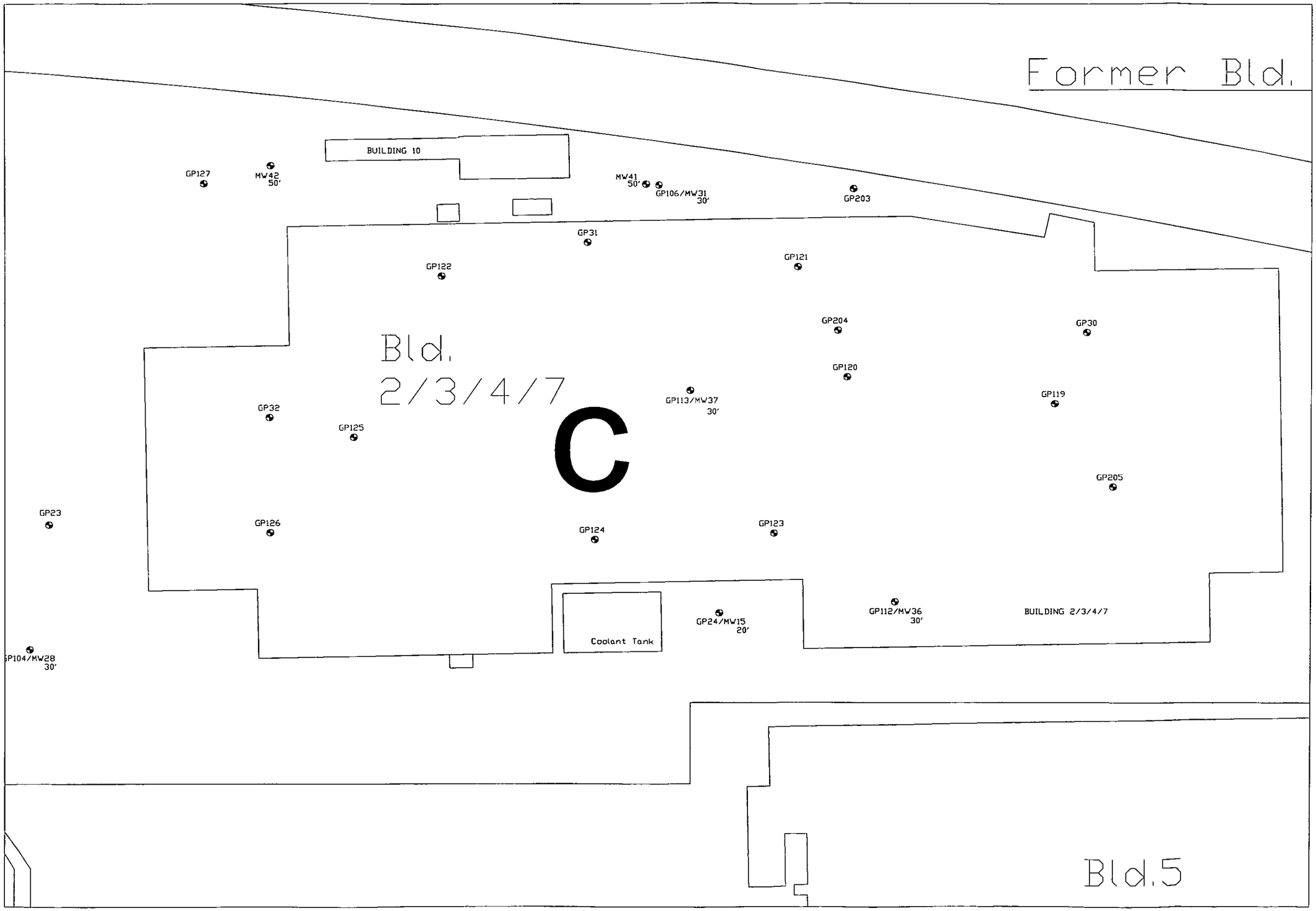
Graphic Scale

0 50

1" = 50'

N

R 000331



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 14c
Water - Bromomethane Plume

Subject Property

Contaminant Plume

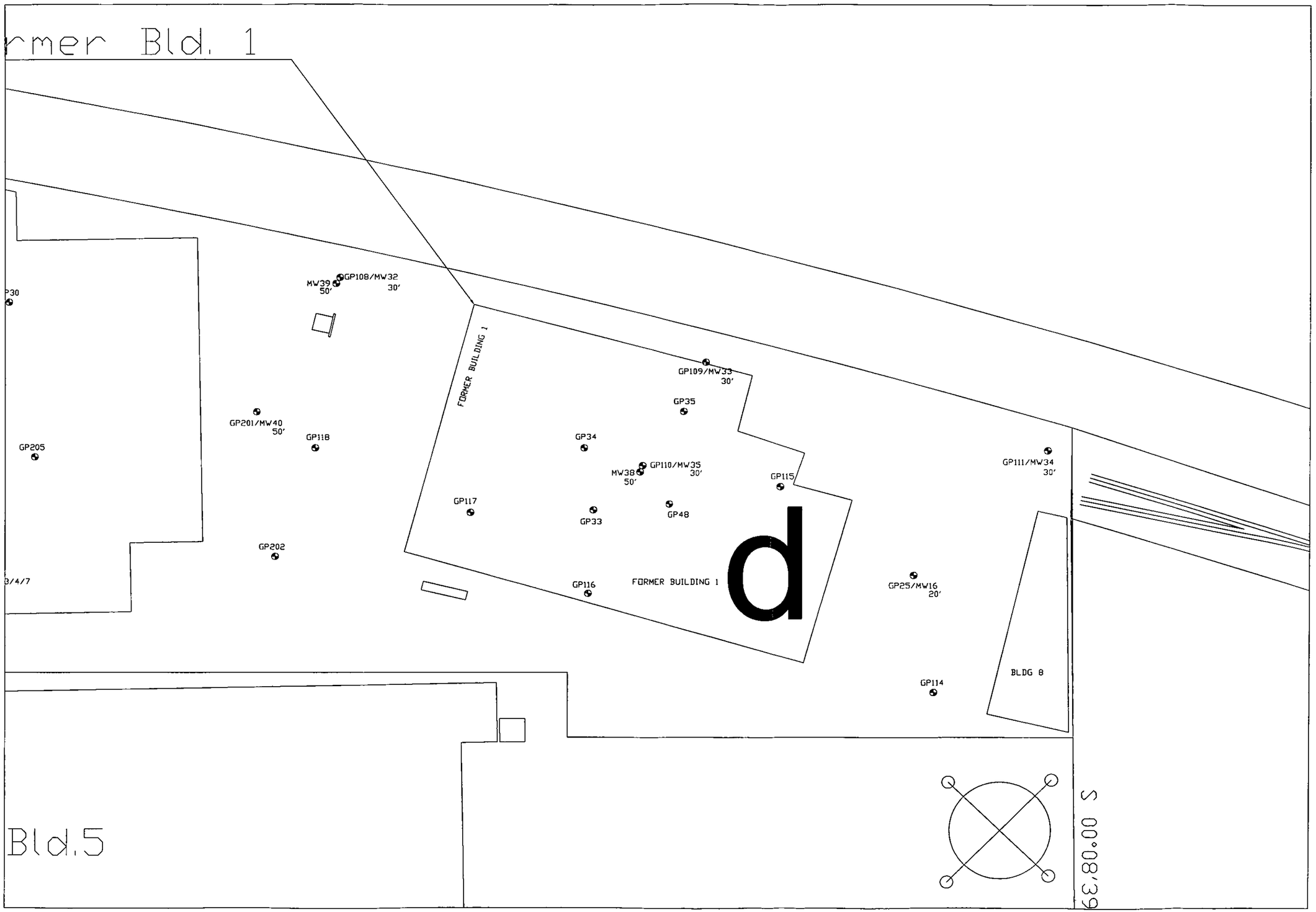
Graphic Scale

0 50

1" = 50'

N

R 000332



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 14d
Water - Bromomethane Plume

Subject Property

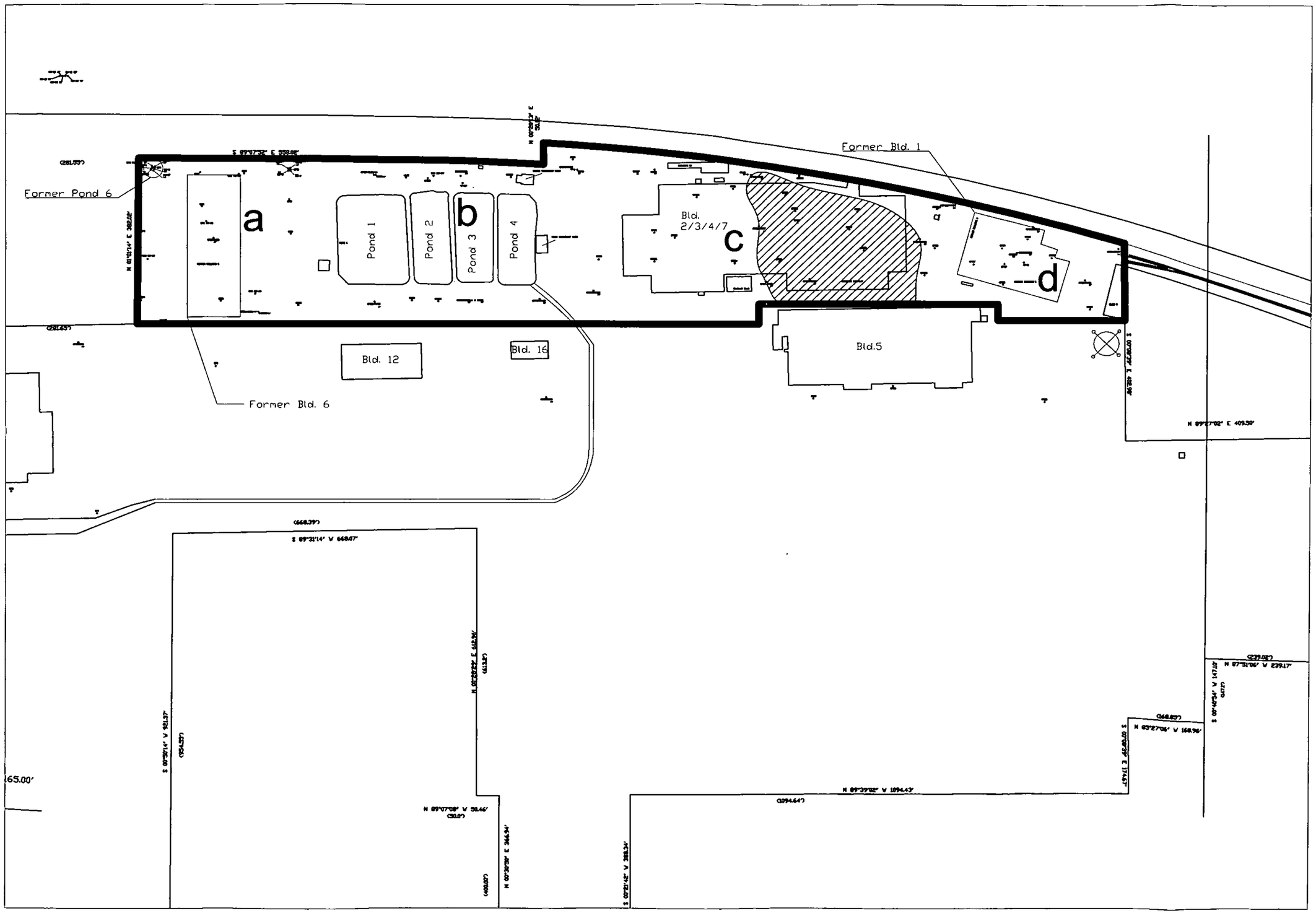
Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000333

FIGURE 15 A-D – GROUNDWATER CARBON TETRACHLORIDE COMPONENT MAPS



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 15
Water - Carbon Tetrachloride Plume

Subject Property

Contaminant Plume

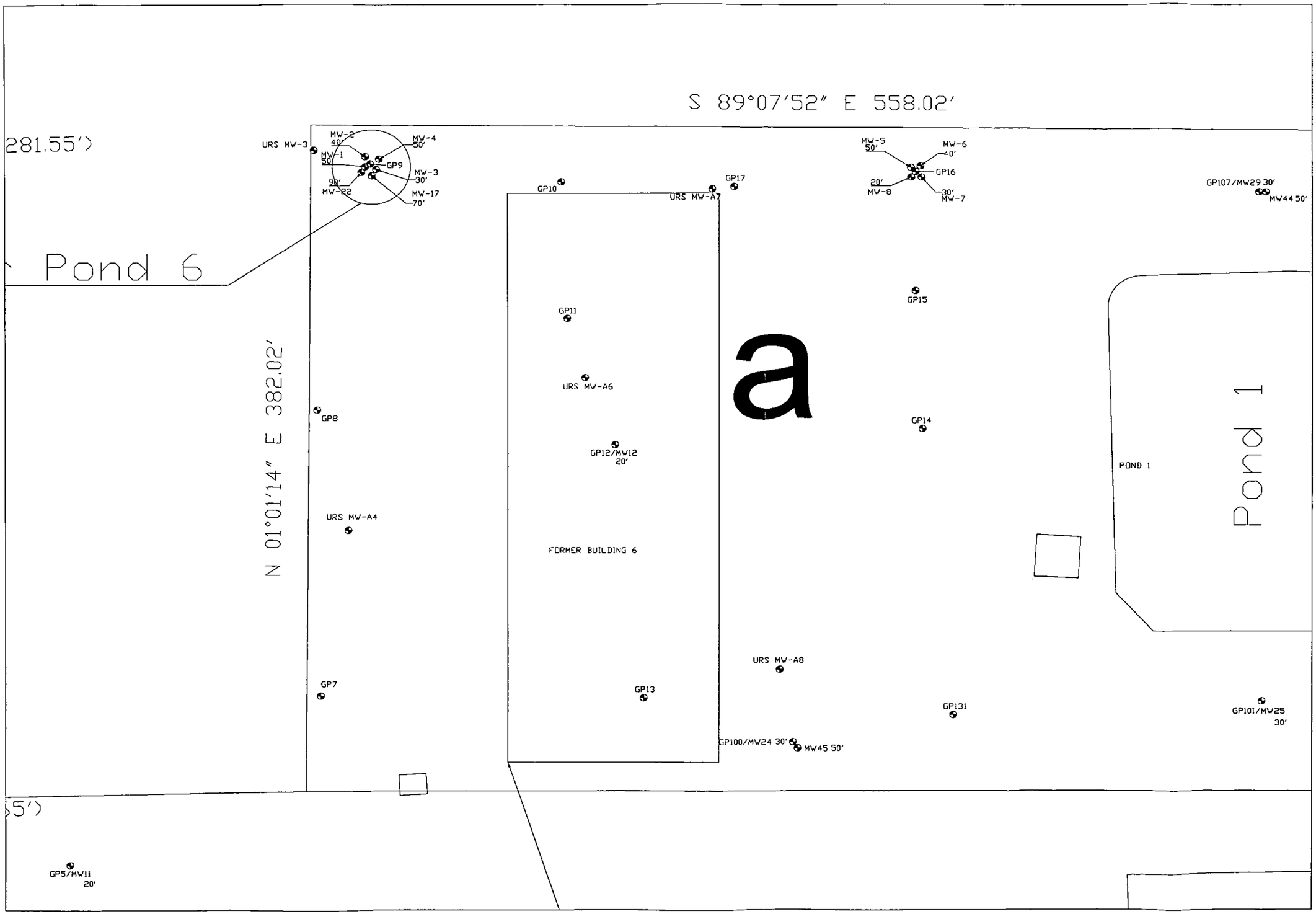
Graphic Scale

0 200

1" = 200'

N

R 000335



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 15a
Water - Carbon Tetrachloride Plume

Subject Property

Contaminant Plume

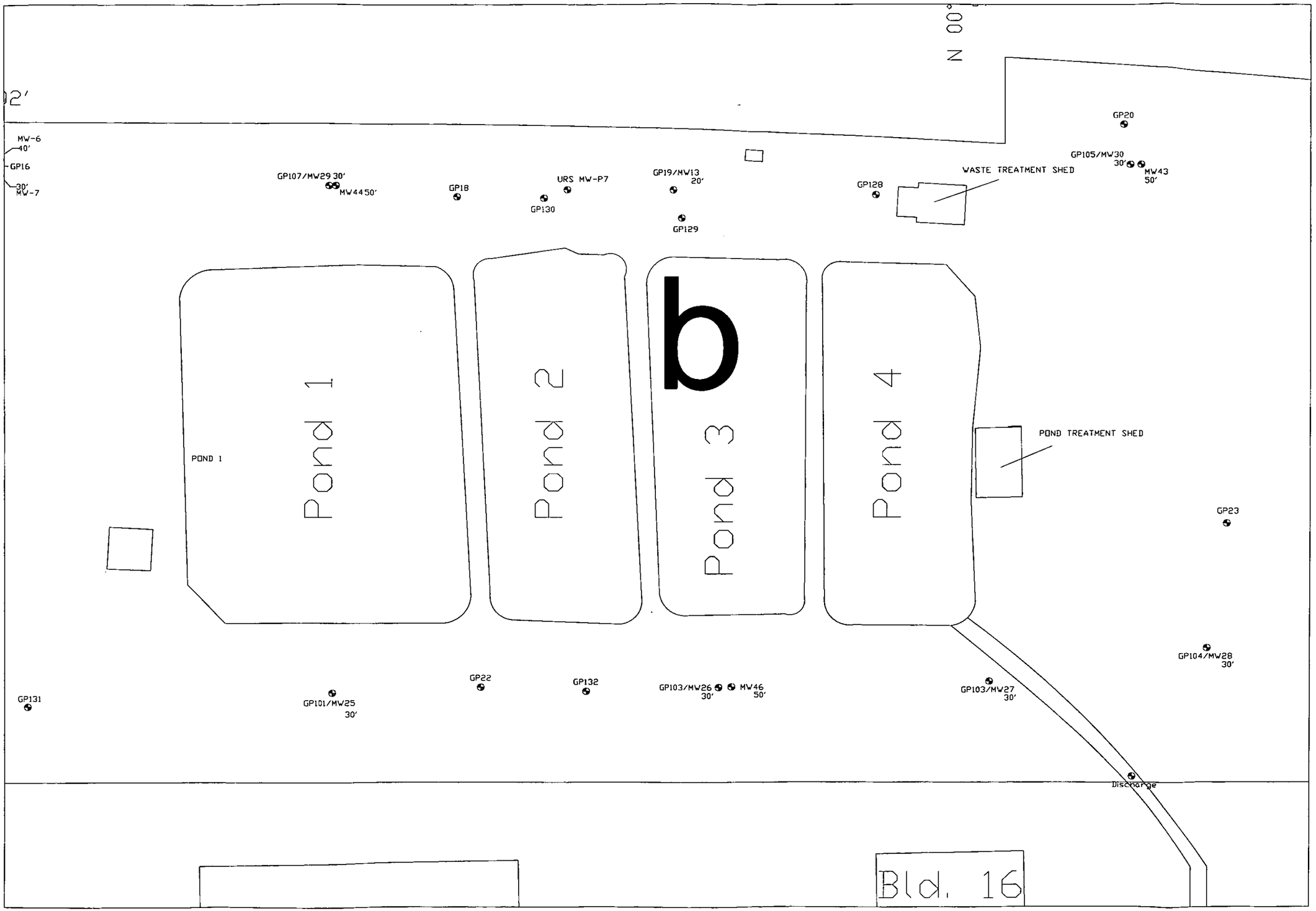
Graphic Scale

0 50

1" = 50'

N

R 000336



egsl
ENVIRONMENTAL GROUP SERVICES LIMITED
557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 15b
Water -Carbon Tetrachloride Plume

Subject Property

Contaminant Plume

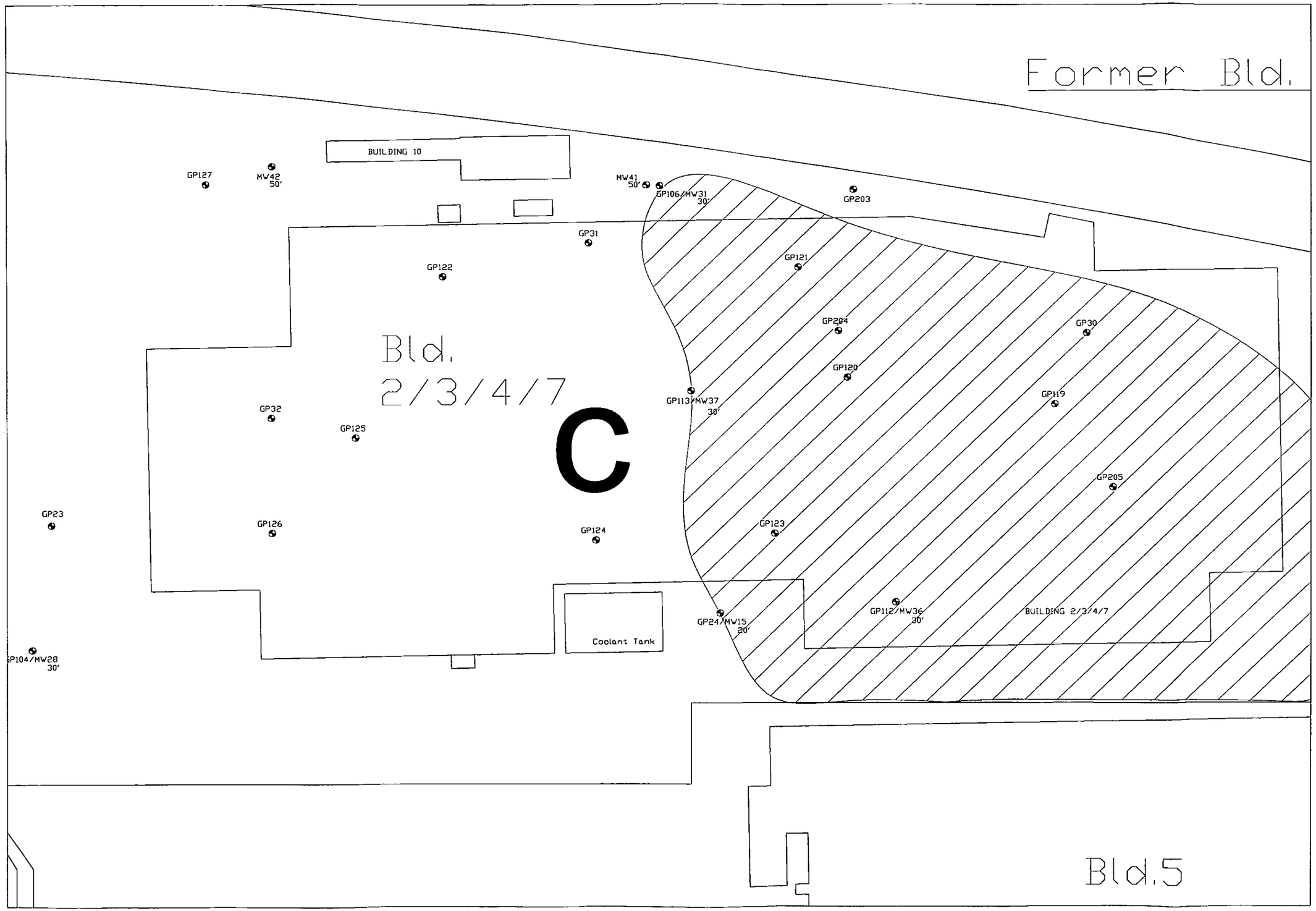
Graphic Scale

0 50

1" = 50'

N

R 000337



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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 15c
Water - Carbon Tetrachloride Plume

Subject Property

Contaminant Plume

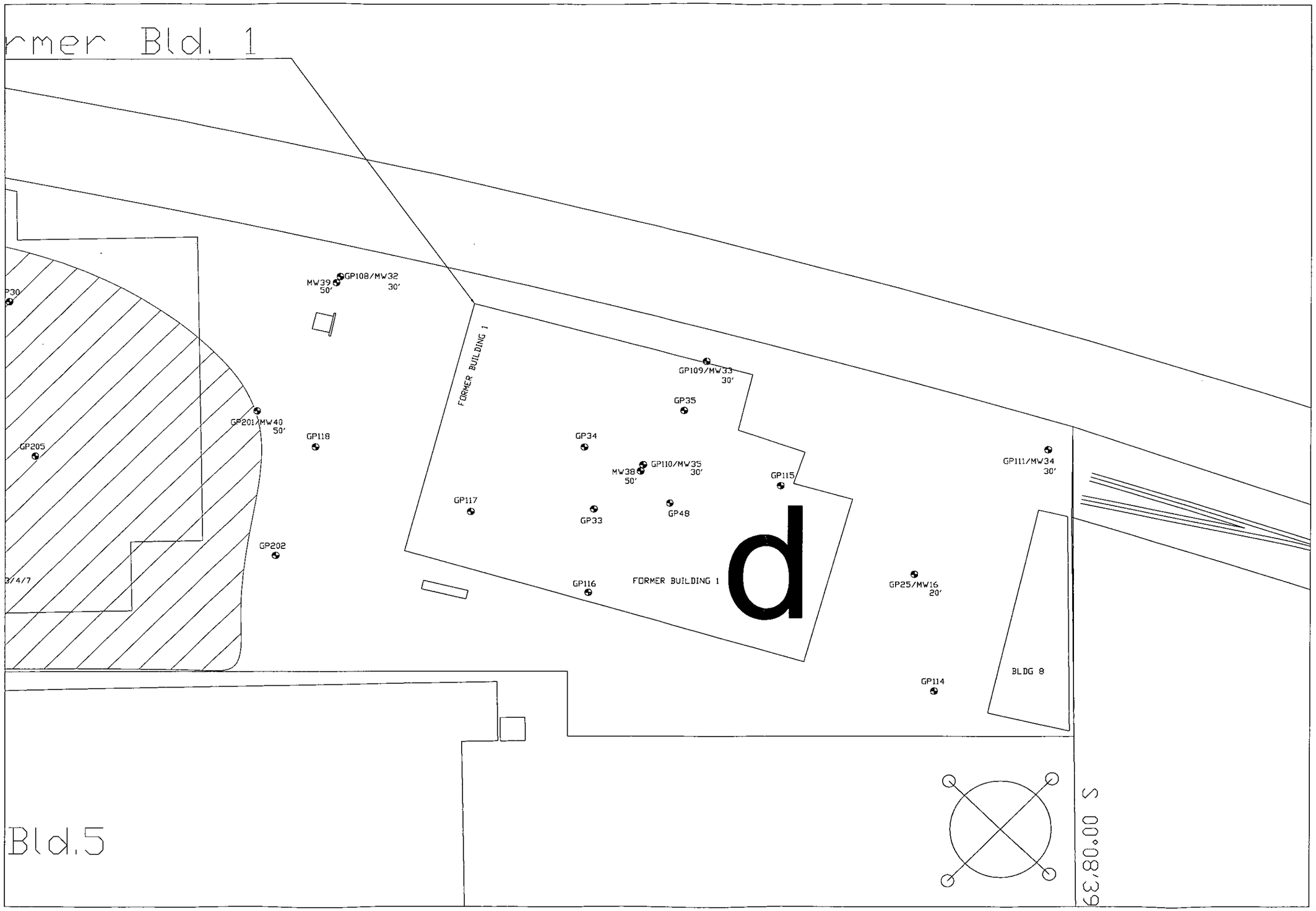
Graphic Scale

0 50

1" = 50'

N

R 000338



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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 15d
Water - Carbon Tetrachloride Plume

Subject Property

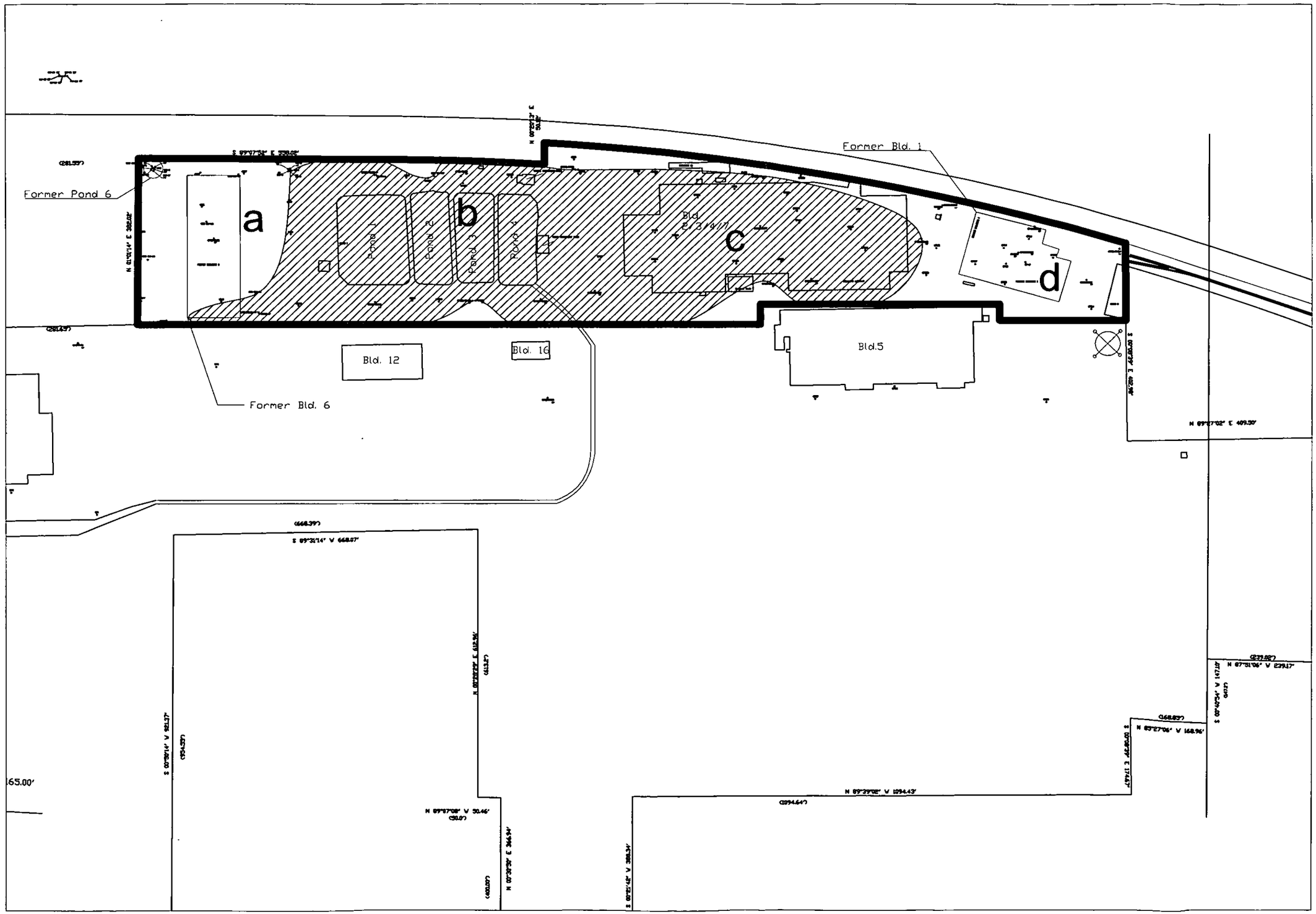
Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000339

FIGURE 16 A-D – GROUNDWATER CHLOROFORM COMPONENT MAPS



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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 16
Water - Chloroform Plume

Subject Property

Contaminant Plume

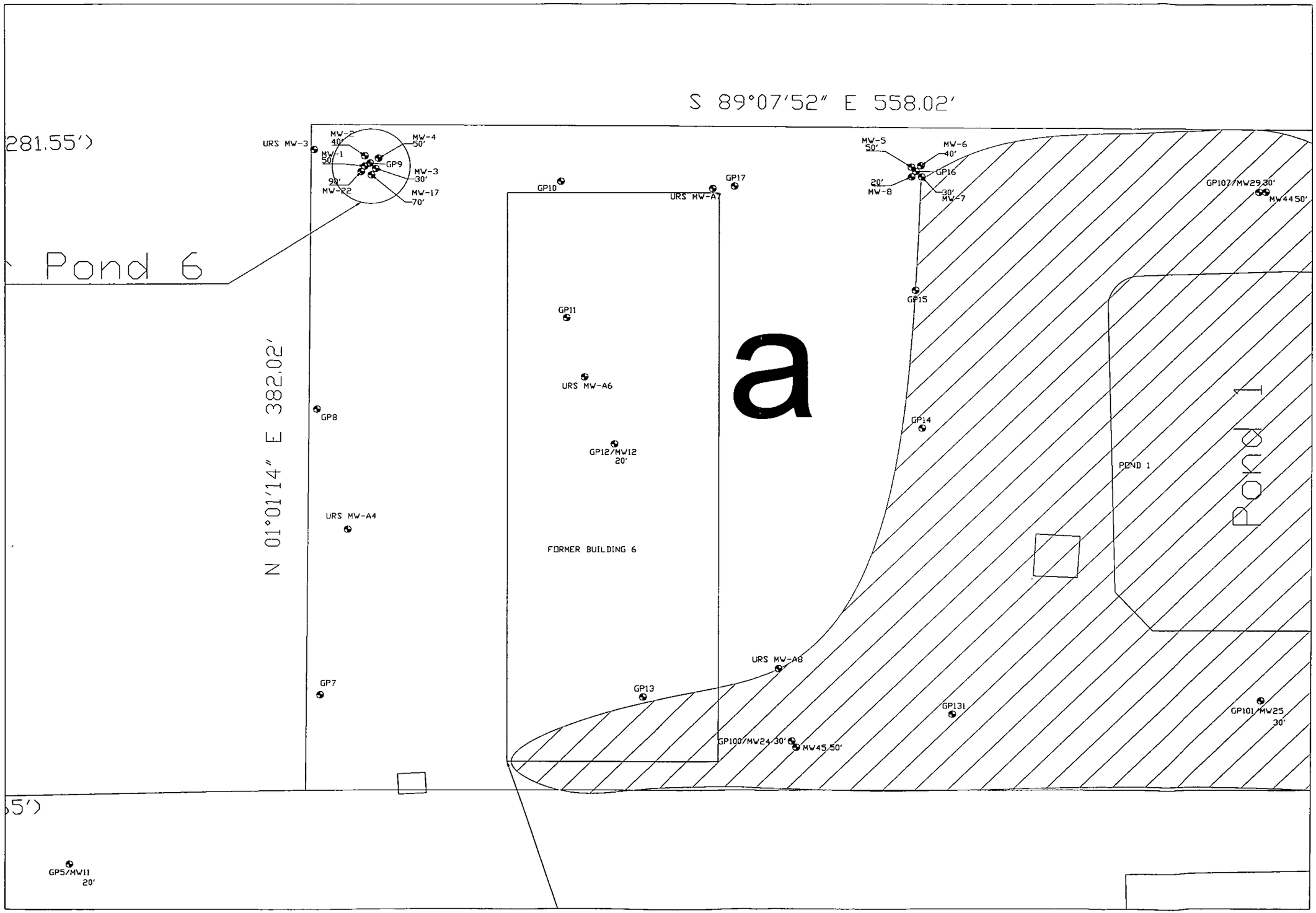
Graphic Scale

0 200

1" = 200'

N

R 000341



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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 16a
Water - Chloroform
Plume

Subject Property

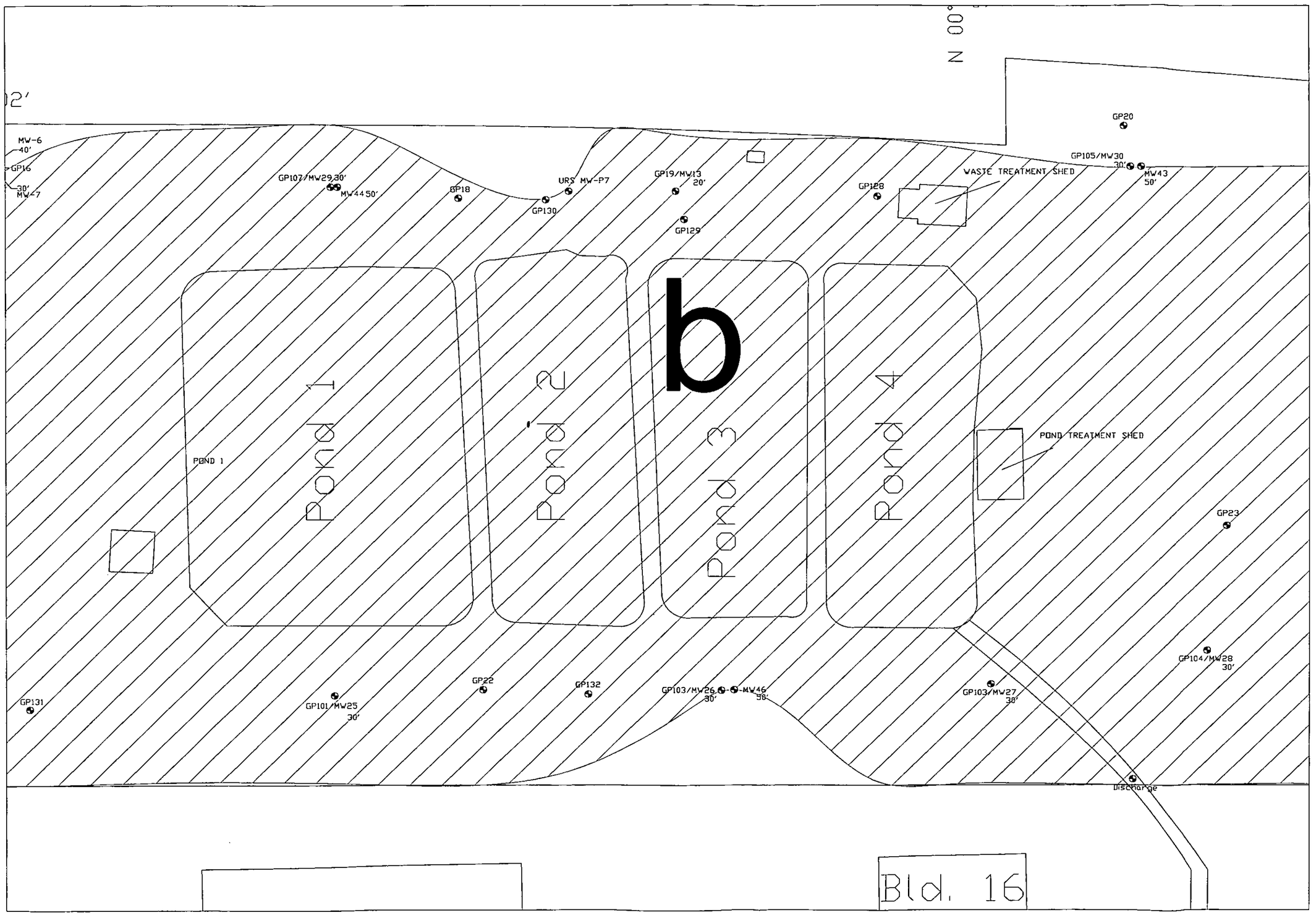
Contaminant Plume

Graphic Scale

0 50

1" = 50'

N



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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 16b
Water -Chloroform Plume

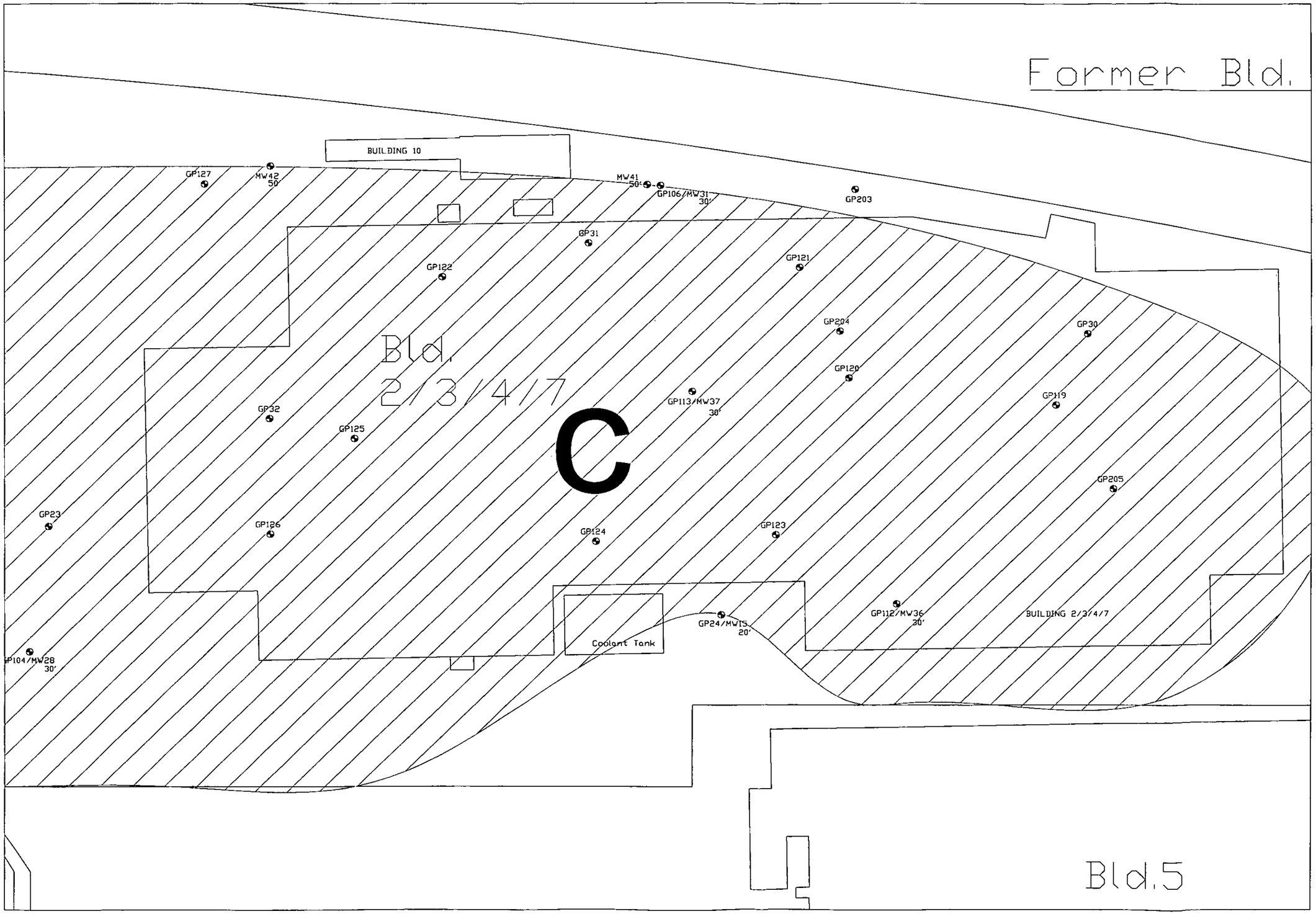
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000343



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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 16c
Water - Chloroform Plume

Subject Property

Contaminant Plume

Graphic Scale

0 50

1" = 50'

N

R 000344

rmer Bld. 1

MW39 50′
GP108/MW32 30′
FORMER BUILDING 1
GP109/MW33 30′
GP35
GP201/MW40 50′
GP118
GP205
GP34
GP110/MW35 30′
MW38 50′
GP115
GP111/MW34 30′
GP117
GP33
GP48
GP202
3/4/7
GP116
FORMER BUILDING 1
GP25/MW16 20′
BLDG 8
GP114
Bld.5
S 00°08'39

d

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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 16d
Water - Chloroform Plume

Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000345

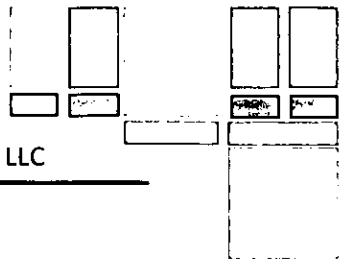
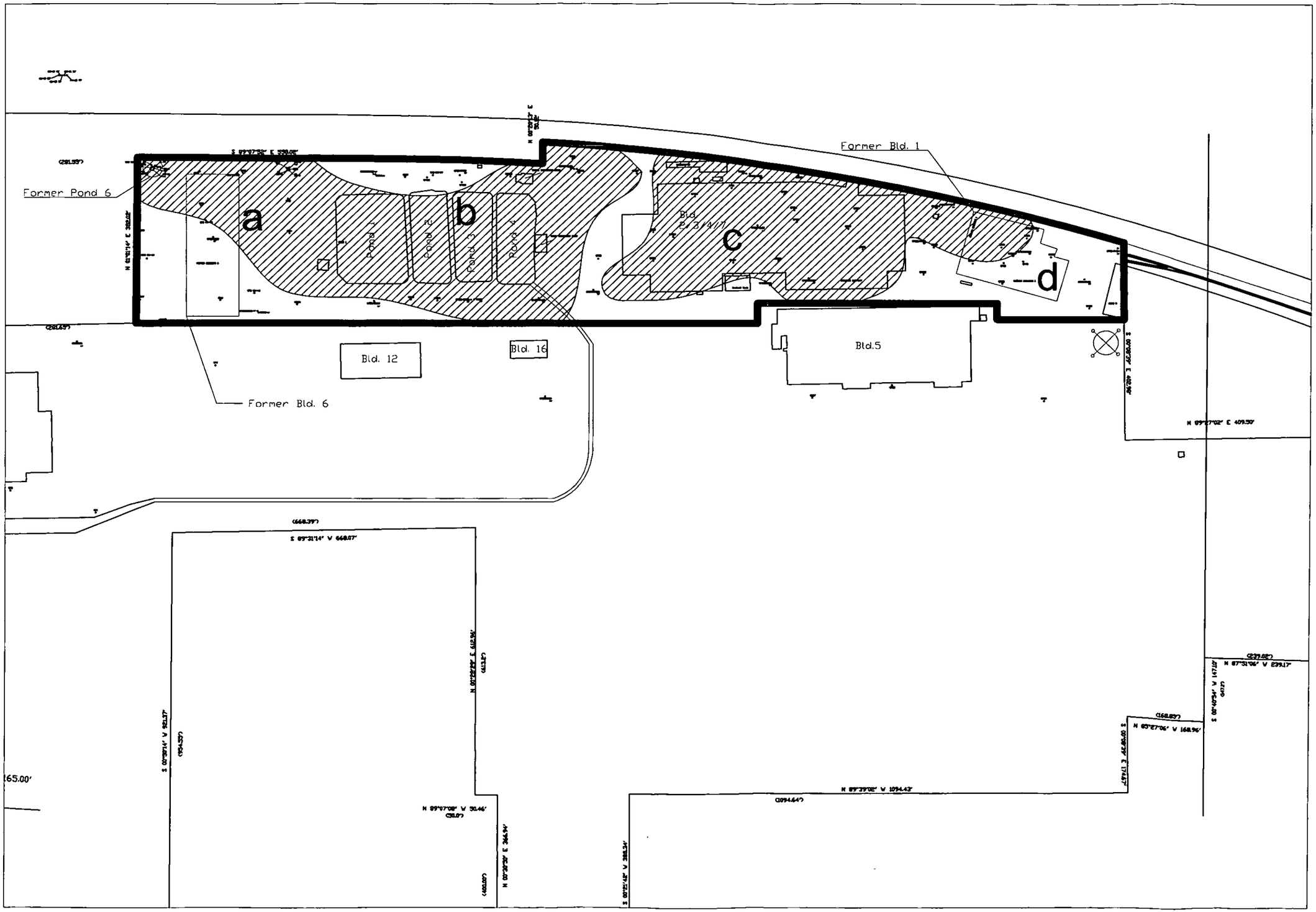


FIGURE 17 A-D – GROUNDWATER PCE COMPONENT MAPS



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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 17
Water - PCE
Plume

Subject Property

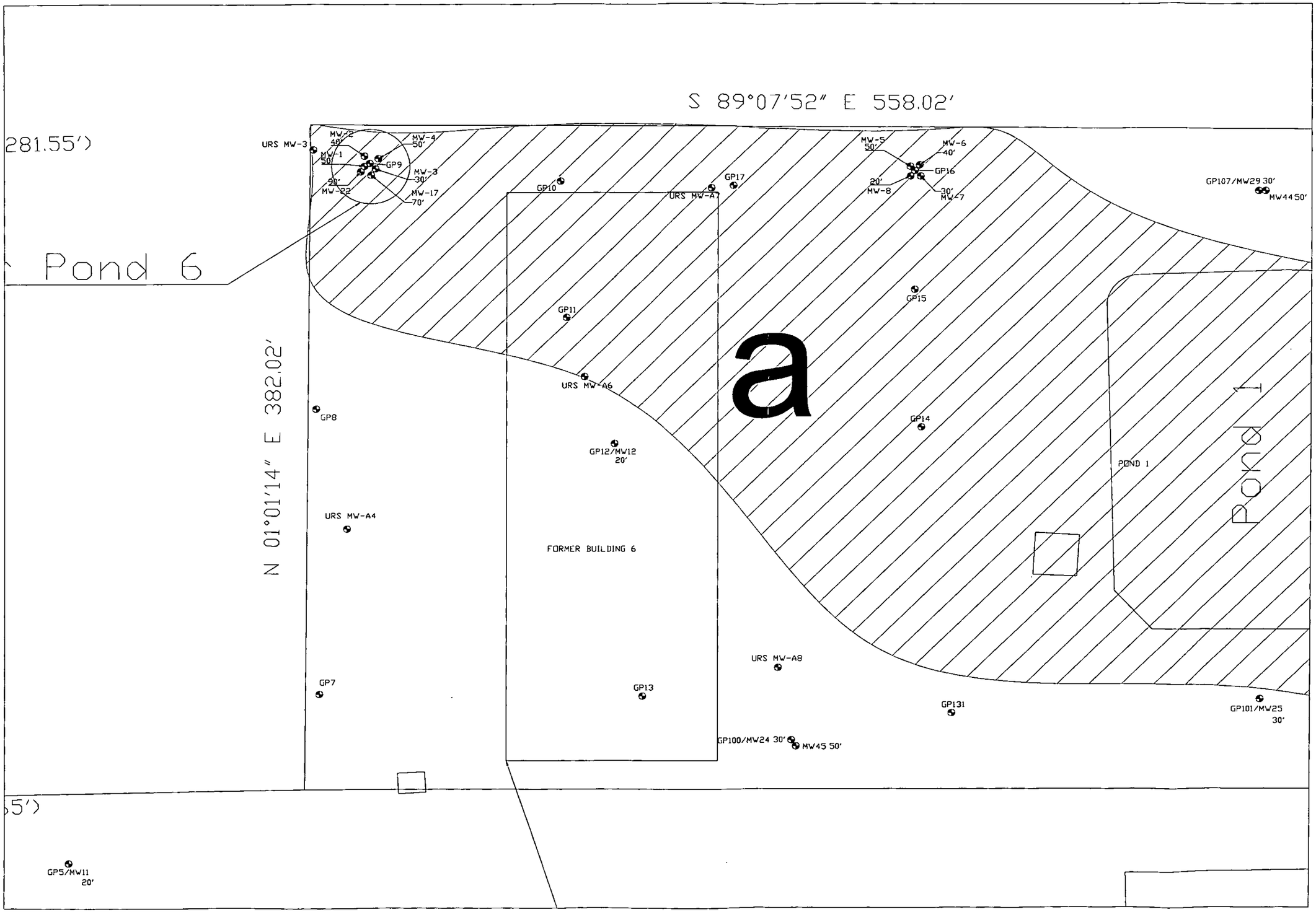
Contaminant Plume

Graphic Scale

0 200

1" = 200'

N



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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 17a
Water - PCE
Plume

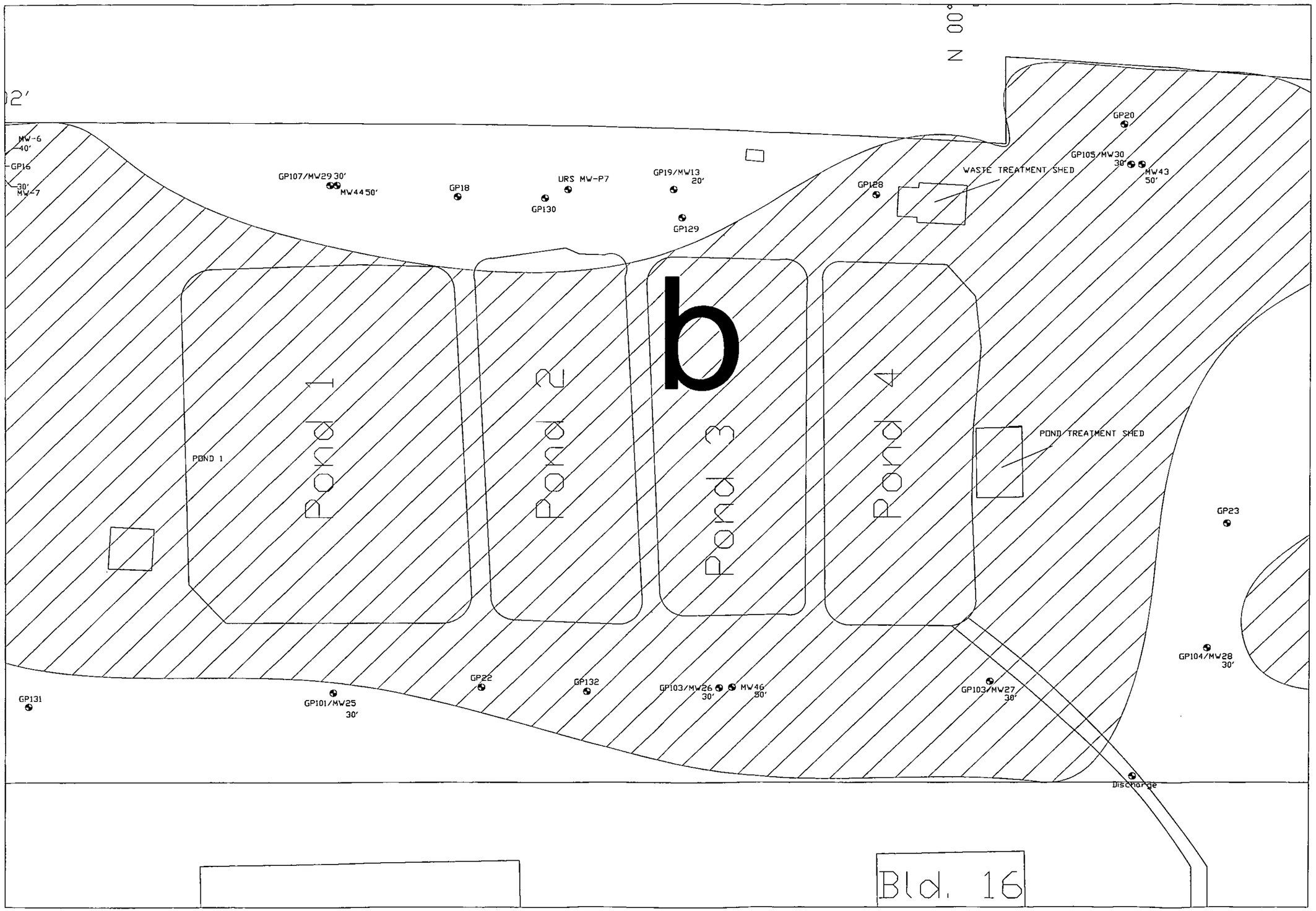
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000348



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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 17b
Water -PCE Plume

Subject Property

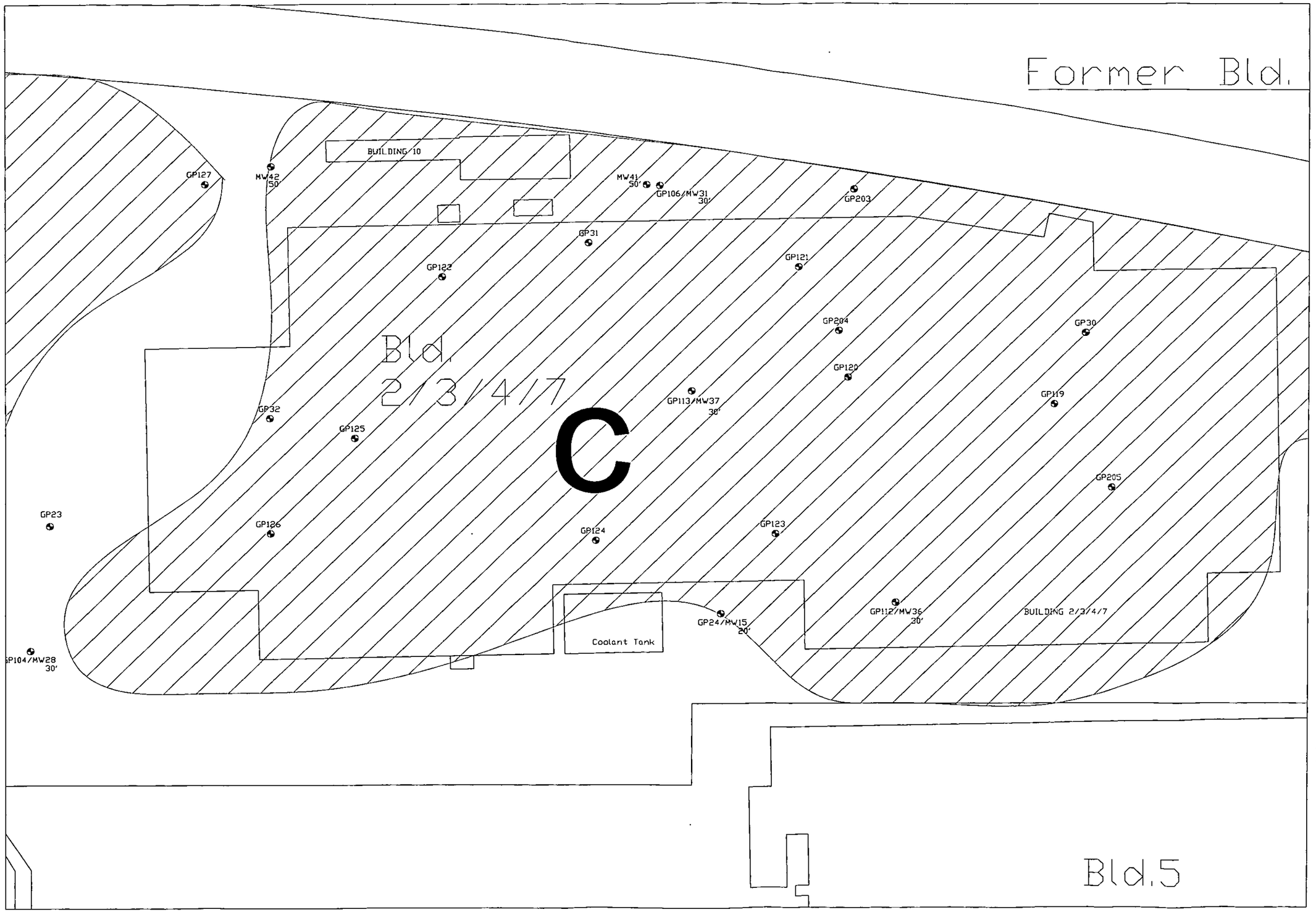
Contaminant Plume

Graphic Scale

0 50

1" = 50'

N



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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 17c
Water - PCE Plume

Subject Property

Contaminant Plume

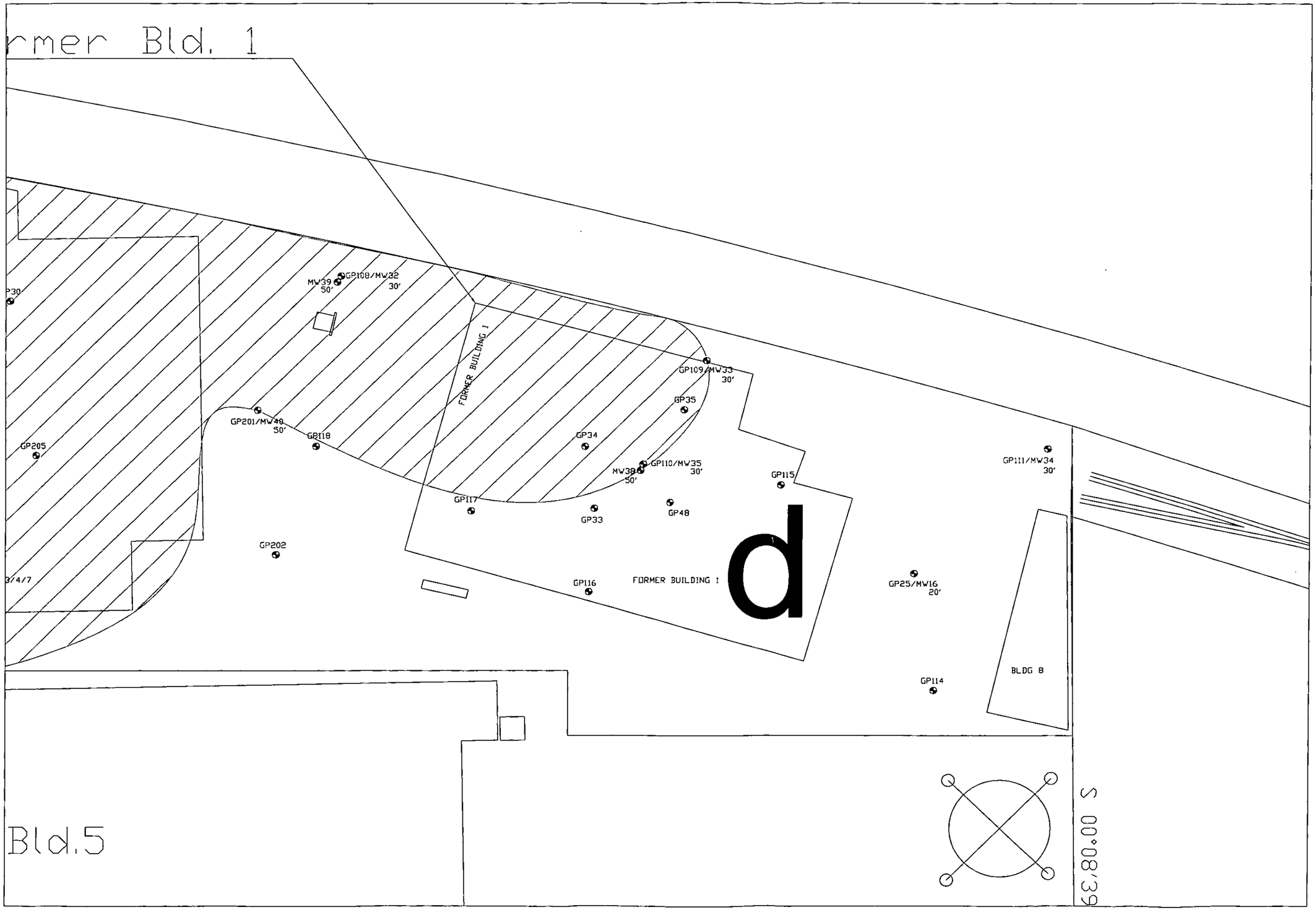
Graphic Scale

0 50

1" = 50'

N

R 000350



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Suite 201
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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 17d
Water - PCE Plume

Subject Property

Contaminant Plume

Graphic Scale

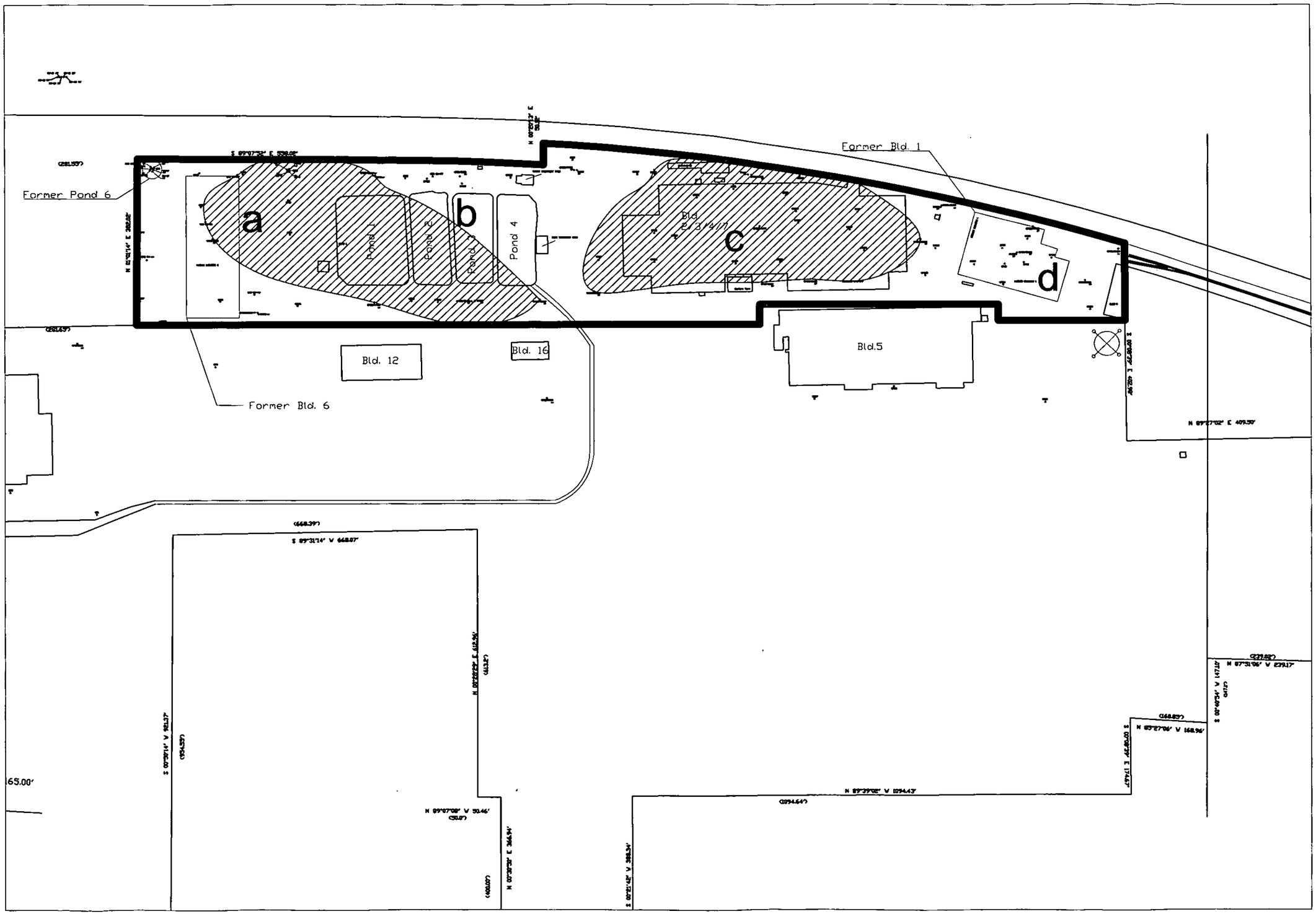
0 50

1" = 50'

N

R 000351

FIGURE 18 A-D – GROUNDWATER TCE COMPONENT MAPS



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Suite 201
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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 18
Water - TCE
Plume

Subject Property

Contaminant Plume

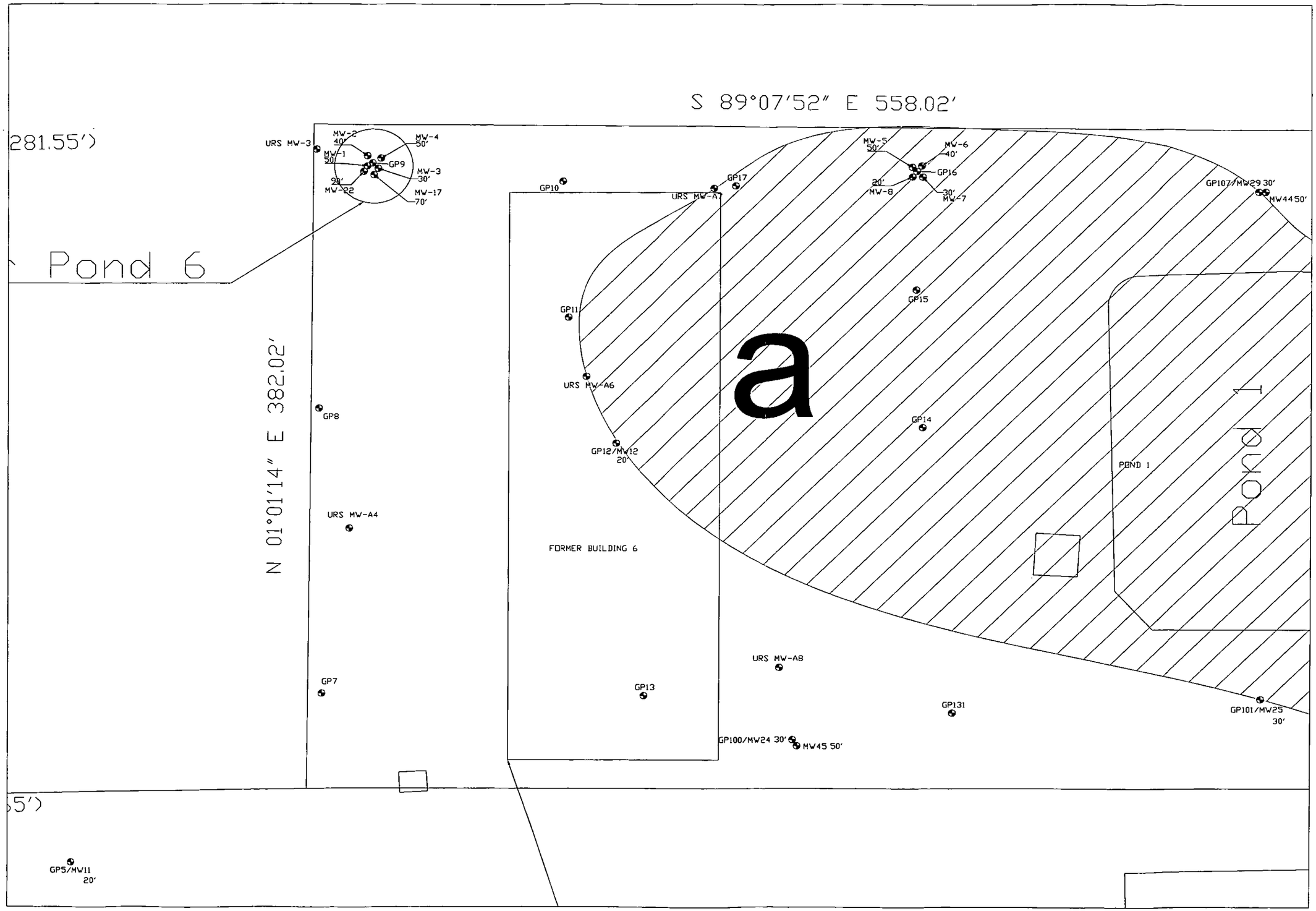
Graphic Scale

0 200

1" = 200'

N

R 000353



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Suite 201
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Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 18a
Water - TCE
Plume

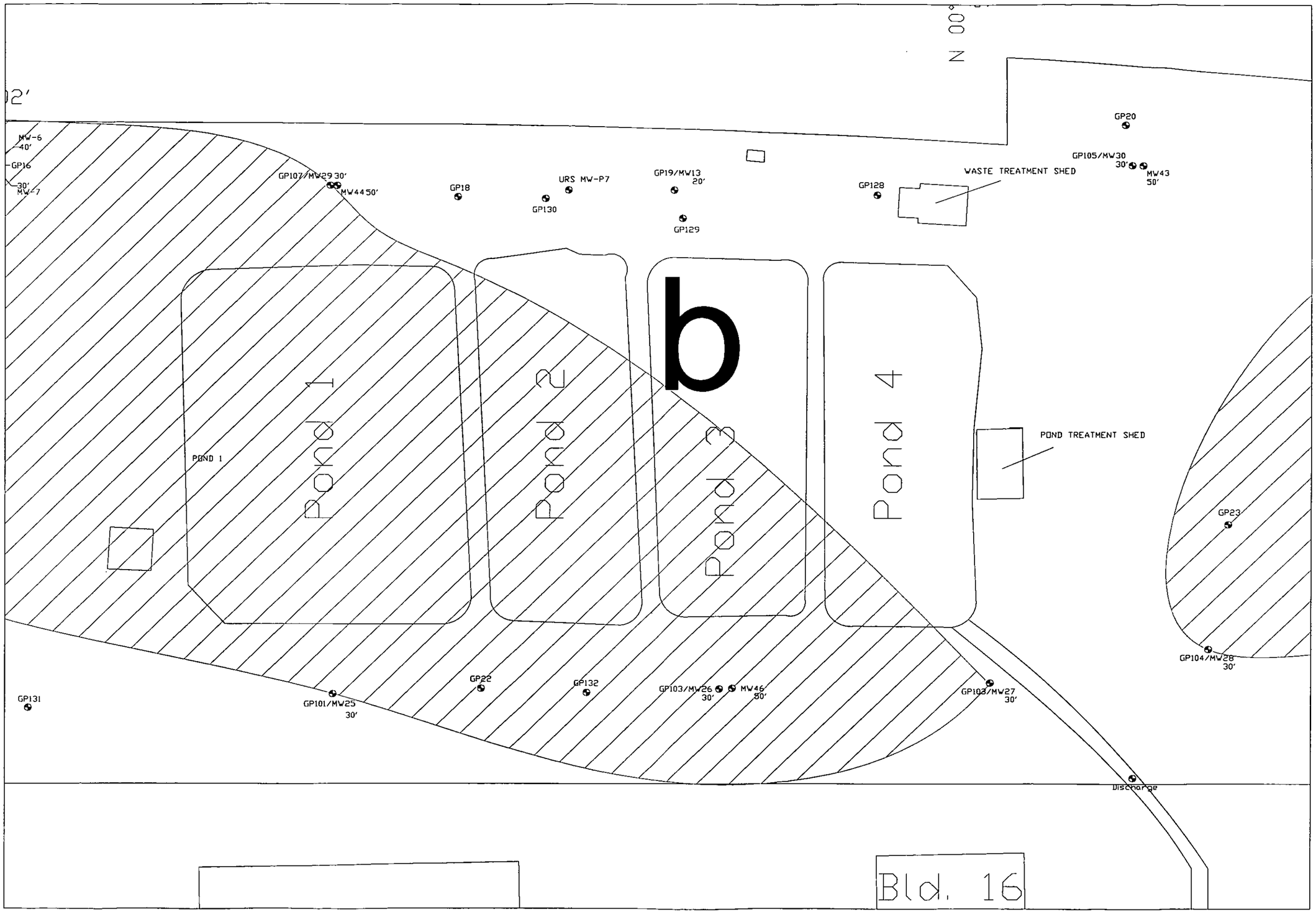
Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000354



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 18b
Water -TCE Plume

Subject Property

Contaminant Plume

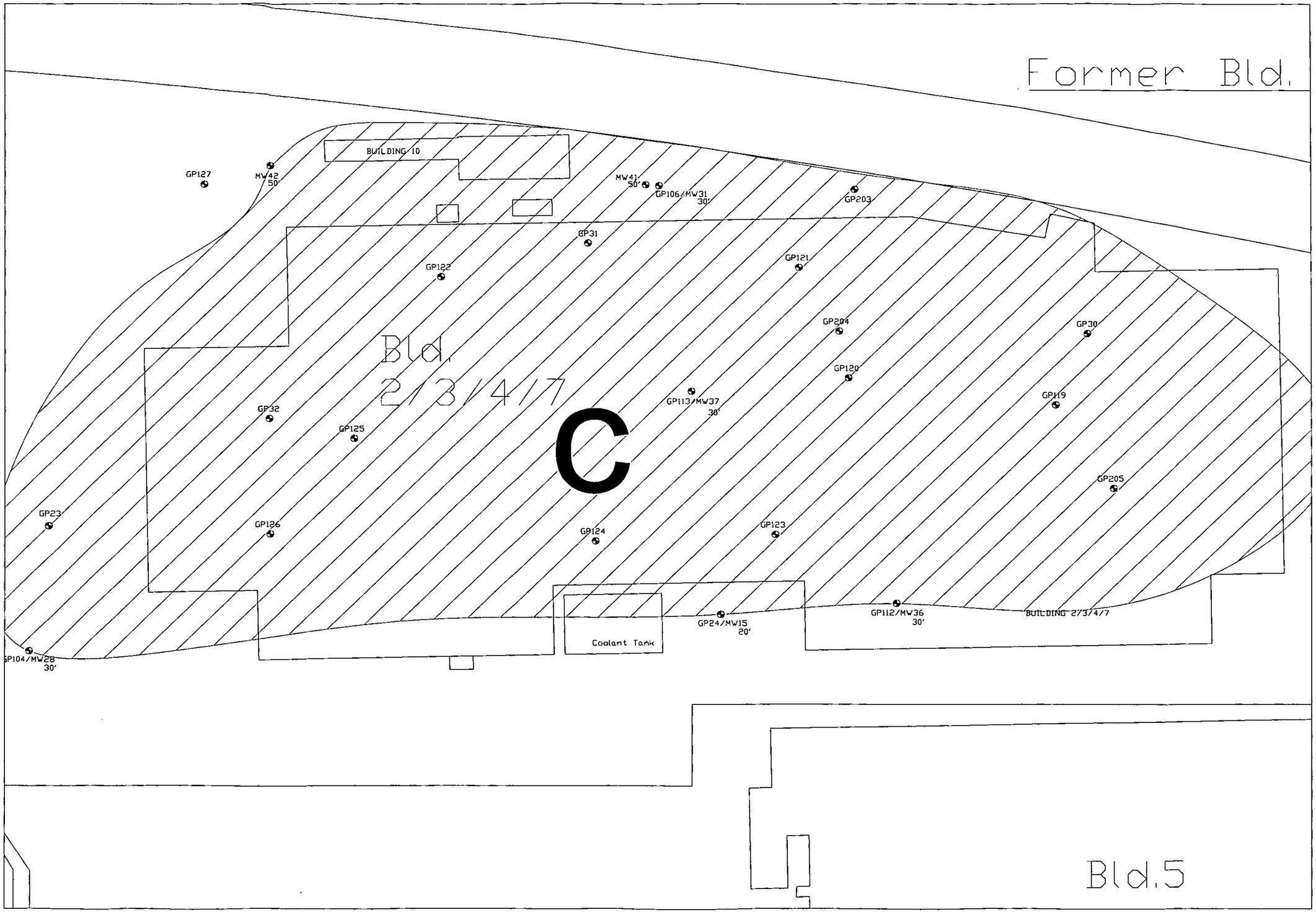
Graphic Scale

0 50

1" = 50'

N

R 000355



egsl ENVIRONMENTAL GROUP SERVICES LIMITED

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Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 18c
Water - TCE Plume

Subject Property

Contaminant Plume

Graphic Scale

0 50

1" = 50'

N

R 000356

rmer Bld. 1

MW39 50'
GP108/MW32 30'
GP109/MW33 30'
GP35
FORMER BUILDING 1
GP201/MW40 50'
GP118
GP205
GP34
GP110/MW35 30'
MW38 50'
GP115
GP111/MW34 30'
GP117
GP33
GP48
GP202
GP116
FORMER BUILDING 1
GP25/MW16 20'
BLDG 8
GP114
Bld.5
S 00°08'39

d

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557 W. Plok Street
Suite 201
Chicago, IL 60607

Subject Property:
300 N. West Street
Marengo, Illinois

EGSL Project Number:
805247

Drawing Title:
Figure 18d
Water - TCE Plume

Subject Property

Contaminant Plume

Graphic Scale
0 50
1" = 50'

N

R 000357