

Grove Road Landfill
Rye, NH

Water Quality Monitoring
April through July, 2023

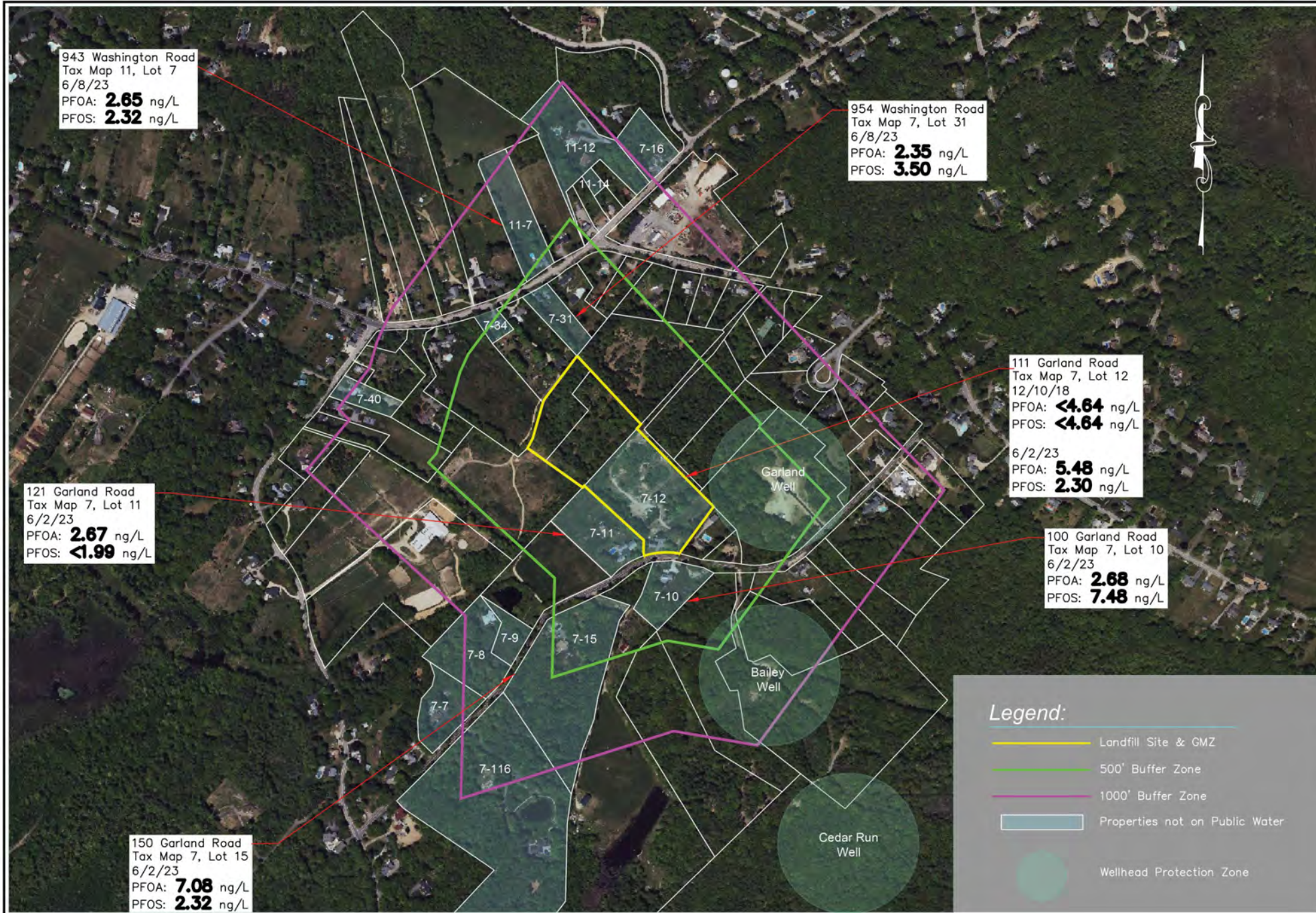
CMA Engineers, Inc.

Scope of Investigations

- NHDES Directive – March, 2023 Letter
 - Sample Private Water Supplies within 500 Feet of Landfill and GMZ
 - Prepare Updated Site Hydrogeologic Model
 - Graph Pertinent Landfill Water Quality Results
 - Present, including in Graph Form, all Rye Water District water supply source PFAS data since 2017
 - Include items 3 and 4 above in future NHDES permit reports
- Board of Selectmen Request
 - July 17 Simultaneous Sampling with Rye Water District
 - Address, in conceptual fashion, on-site alternatives at the Grove Road Landfill that would reduce or eliminate source of PFAS contamination

An aerial photograph of a large body of water, possibly a reservoir or a wide river, with a small splash or wake in the foreground. The water is a deep blue-green color. A dark blue banner is overlaid on the bottom of the image, containing the text.

Sample Private Water Supplies within 500 Feet of Landfill and GMZ



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date: 7/14/23 project no: 527 conceived by: CNM	designed by: MHH drawn by: MHH approved by: CNM	scale: 1" = 250' 2" = 500' 3" = 750'
Grove Road Landfill Private Water Supplies within 500/1,000' Town of Rye New Hampshire		drawing no. Fig-1
sheet 1 of 1		

Prepare Updated Site Hydrogeologic Model



Notes:

1. Base topography by Eastern Topographics, Inc. and provided by Roy F. Weston, Inc.
2. Property line survey based on survey performed by Richard P. Millette and Assoc. Imported onto plan using cannon monitoring points.
3. Groundwater Management Zone (GMZ) From Rye Tax map.

Legend:

- 10' Contour
- Edge of Pavement
- Treeline
- MW-5 (W) Groundwater Monitoring Well
- - - Groundwater Monitoring Zone - 2019

79-44 (W)

1-1 OBS 74 (W)

MW-102 (W)

TW 15-74 (W)

GARLAND ROAD WELL

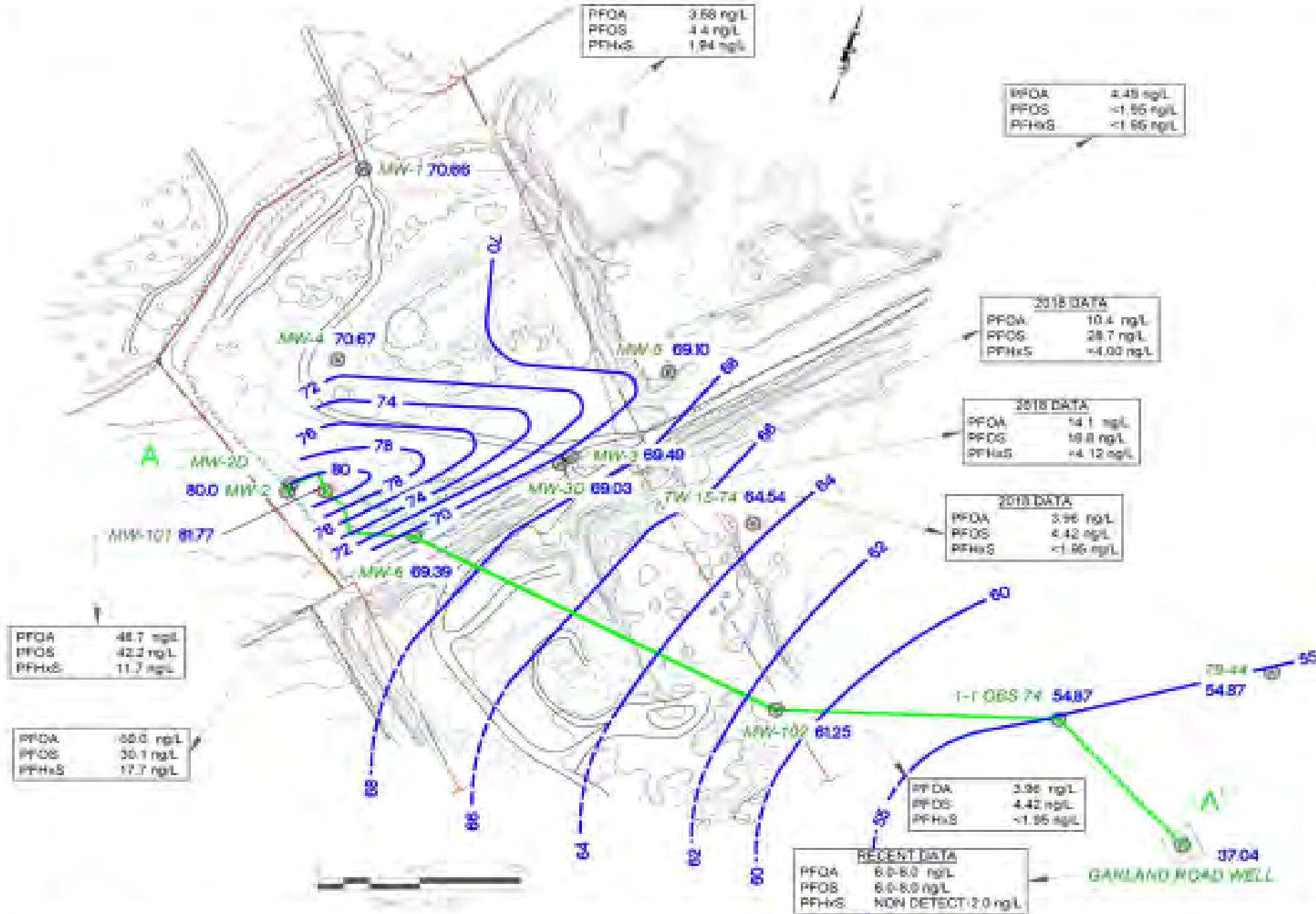


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 Grove Road Municipal Landfill
 Rye, New Hampshire

Site Plan

Figure 2 June 2023



- Notes**
1. Data comparable to Eastern Massachusetts, Inc. and provided by the T. Leonard, Inc.
 2. Plotting the survey based on curves provided by Leonard T. Leonard and Inc. Exported with their own custom mapping system.
 3. Groundwater levels measured on date of 2018 (see laboratory report).
 4. Assessment completed June 2018 from Aug. 1st to 1st.
 5. Data taken with groundwater at 10:00 and 11:00.

- Legend**
- Well Center
 - Well at Present
 - Well
 - ⊗ Groundwater Monitoring Well
 - Well Boundary
 - New Well (June 2017)
 - Well (also listed from 2017 Laboratory Data)
- PFOA**
PFOS
PFHxS
- 2018 Laboratory Data (Aug 2018)

PFOA 48.7 ng/L
PFOS 42.2 ng/L
PFHxS 11.7 ng/L

PFOA 60.0 ng/L
PFOS 30.1 ng/L
PFHxS 17.7 ng/L

PFOA 3.68 ng/L
PFOS 4.4 ng/L
PFHxS 1.94 ng/L

PFOA 4.48 ng/L
PFOS <1.55 ng/L
PFHxS <1.55 ng/L

2018 DATA
PFOA 10.4 ng/L
PFOS 28.7 ng/L
PFHxS <4.00 ng/L

2018 DATA
PFOA 14.1 ng/L
PFOS 19.8 ng/L
PFHxS <4.12 ng/L

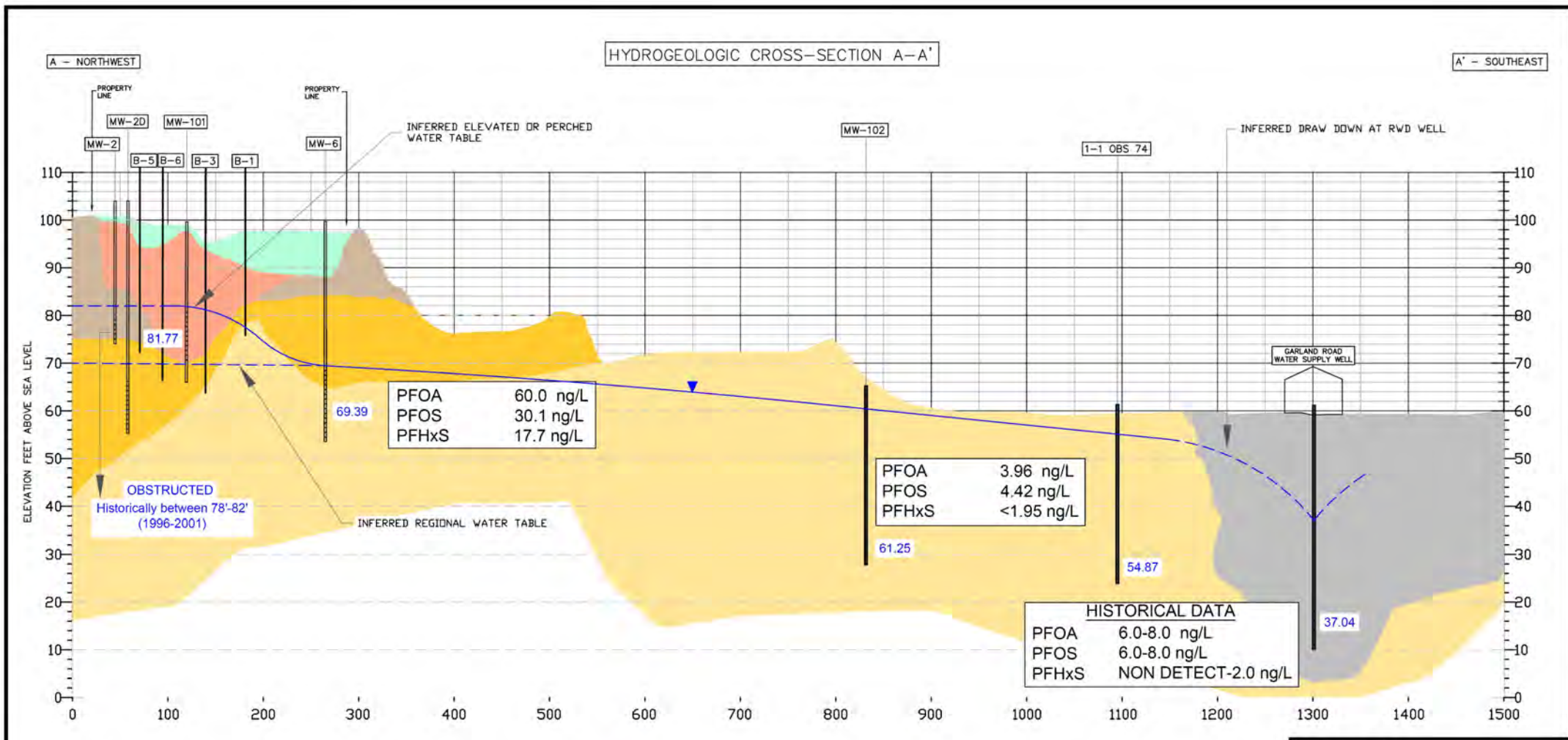
2018 DATA
PFOA 3.96 ng/L
PFOS 4.42 ng/L
PFHxS <1.55 ng/L

RECENT DATA
PFOA 6.0-8.0 ng/L
PFOS 6.0-8.0 ng/L
PFHxS NON DETECT (2.0 ng/L)

PFOA 3.96 ng/L
PFOS 4.42 ng/L
PFHxS <1.55 ng/L

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Civil, Environmental/Structural
Professional PE: MARCHAND/PAH - Registered PE
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Town of Rye, NH
Grove Road Municipal Landfill
Rye, New Hampshire
Updated Conceptual Site Model
Figure A - June 2023 Scale: 1" = 125'

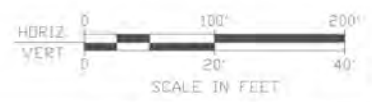


Legend:

- | | | | |
|--------------------------|---------------------------------------|----------------------------------|--------------------------------------|
| Monitoring Well Location | Cover | Sandy Clay (ice-contact deposit) | Water Table |
| Screened Interval | Waste | Sand (outwash deposit) | 37.04 Water Elevation (June 2, 2023) |
| | Brown Sand & Gravel (outwash deposit) | Brown Gravel & Boulders | PFOA, PFOS, PFHxS |
- PFAS concentrations (April 2023 or as noted).

Notes:

- Geologic cross-section taken from report on Rye Grove Road Landfill Geologic Cross-Section A-A' by Caswell, Eichler & Hill, Inc. Dated December 1997.
- Groundwater levels measured on June 2, 2023, unless otherwise noted.



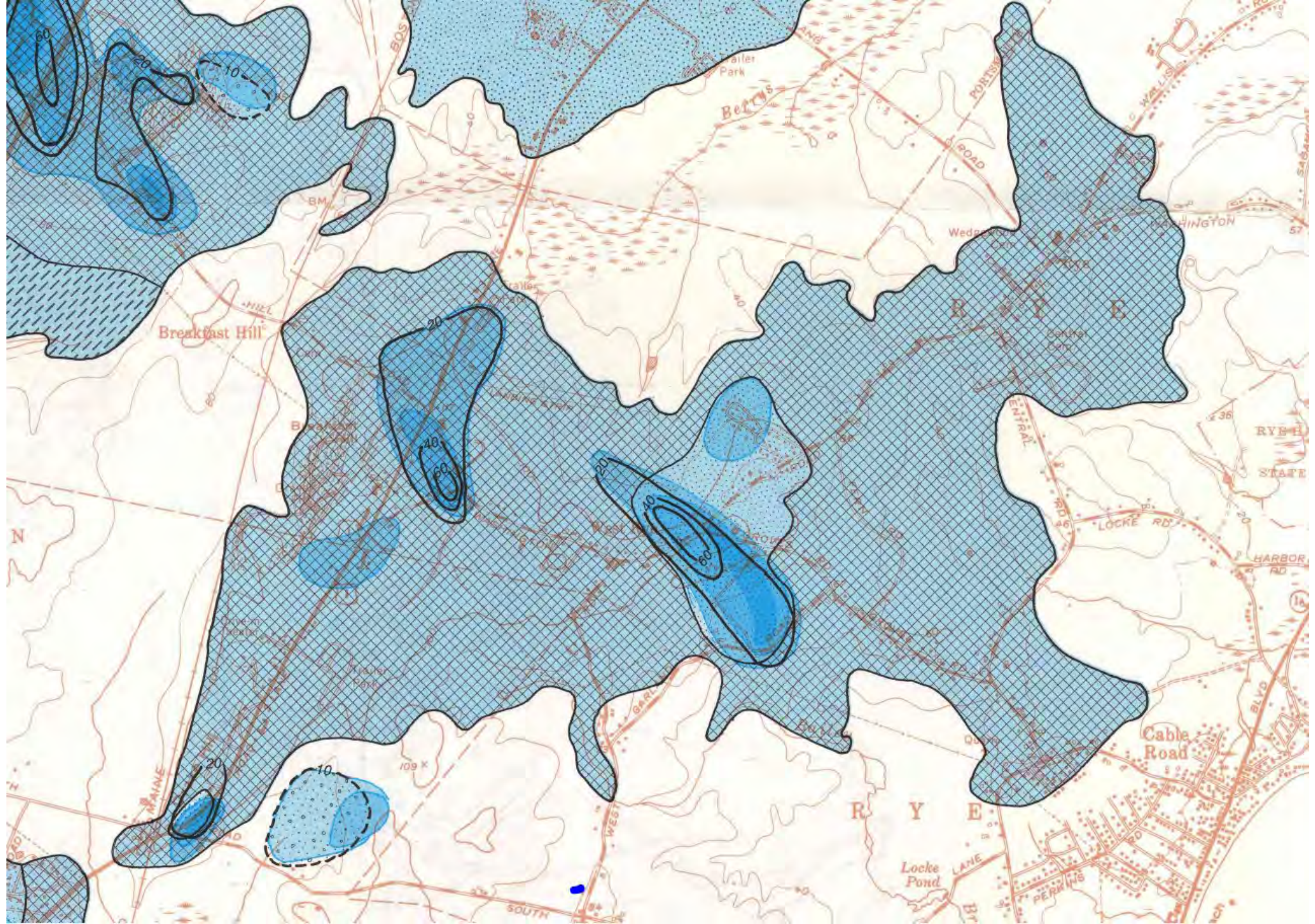
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Figure B (X-Section) Scale: 1" = 100'

USGS Report 91-4025
Stekl and Flanagan

- “Geohydrology and Water Quality of Stratified-drift Aquifers in the Lower Merrimack River and Coastal River Basins, Southeastern, New Hampshire”



EXPLANATION



FINE-GRAINED STRATIFIED DRIFT--Sorted sediments deposited by or in glacial meltwaters. Materials range principally from clay to fine sand



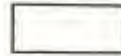
COARSE-GRAINED STRATIFIED DRIFT--Sorted sediments deposited by or in glacial meltwaters. Materials range principally from medium sand to cobble gravel



COARSE-GRAINED STRATIFIED DRIFT OVERLYING FINE-GRAINED STRATIFIED DRIFT--Materials consist principally of medium to coarse sand overlying significant thicknesses of clay, silt, and fine sand



BURIED COARSE-GRAINED STRATIFIED DRIFT--Materials consist principally of medium sand to gravel overlain by significant thicknesses of clay, silt, and fine sand



TILL-COVERED BEDROCK

TRANSMISSIVITY OF STRATIFIED-DRIFT AQUIFER (in feet squared per day)



Less than 1,000



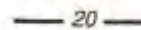
1,001-2,000



2,001-4,000



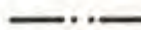
Greater than 4,000



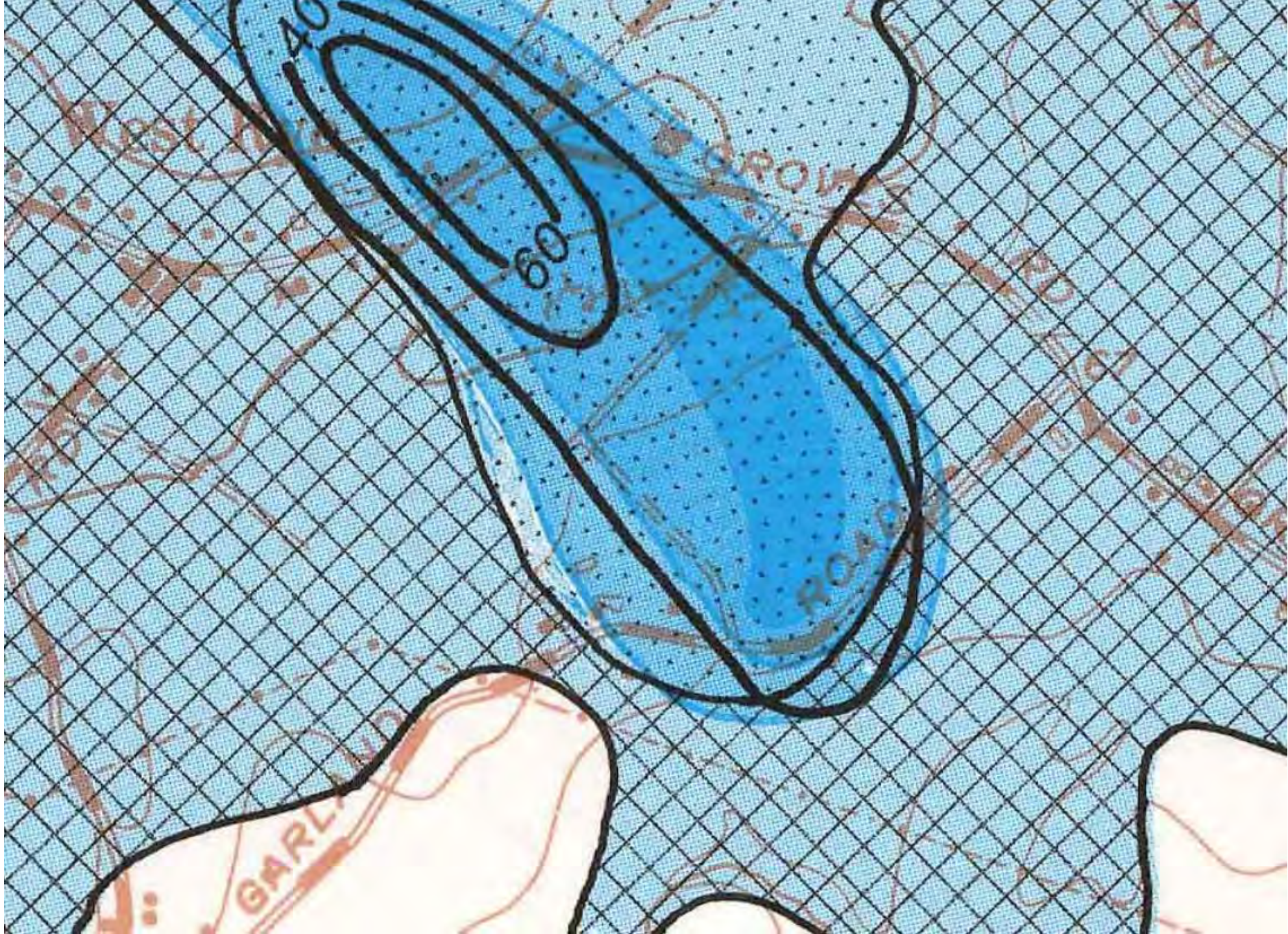
SATURATED THICKNESS CONTOUR--Line of equal saturated thickness of stratified drift. Dashed for saturated thickness of buried coarse-grained stratified drift. Contour interval is 20 feet

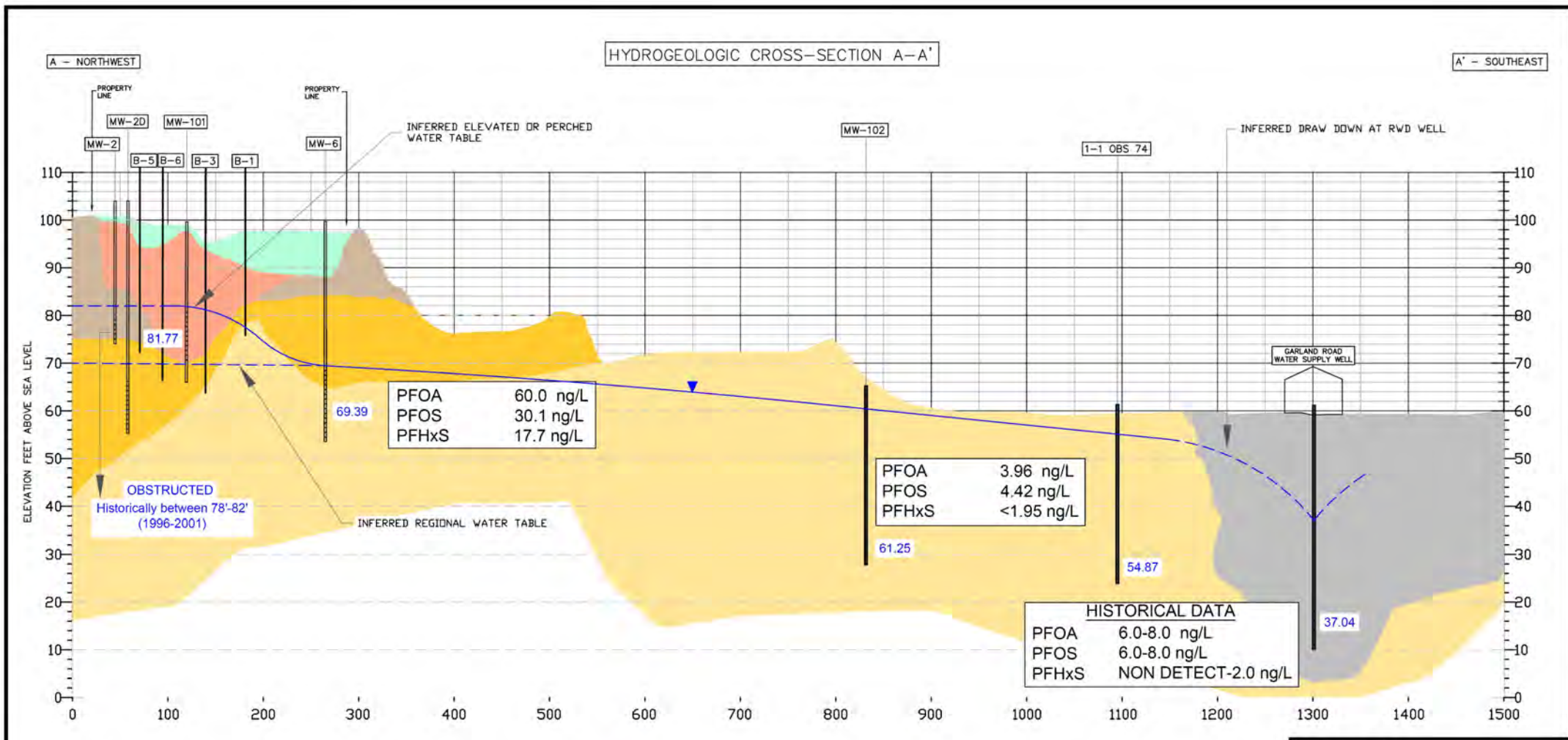


AQUIFER BOUNDARY AND (OR) GEOLOGIC CONTACT--
Approximately located; dashed where inferred;
dotted where concealed



DRAINAGE-BASIN DIVIDE



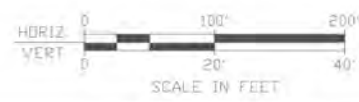


Legend:

- | | | | |
|--------------------------|---------------------------------------|----------------------------------|--------------------------------------|
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- PFAS concentrations (April 2023 or as noted).

Notes:

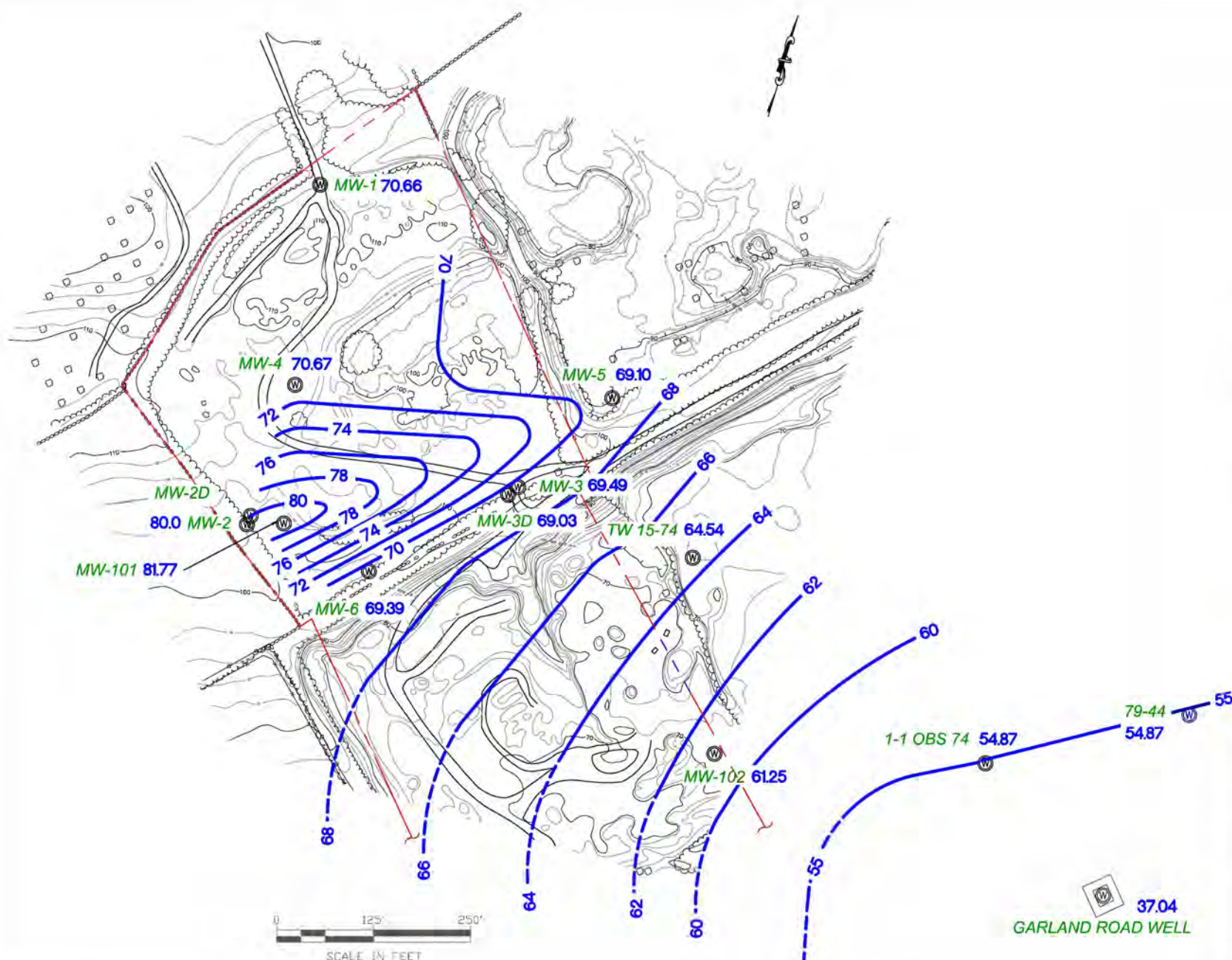
- Geologic cross-section taken from report on Rye Grove Road Landfill Geologic Cross-Section A-A' by Caswell, Eichler & Hill, Inc. Dated December 1997.
- Groundwater levels measured on June 2, 2023, unless otherwise noted.



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Town of Rye, NH
 Grove Road Municipal Landfill
 Rye, New Hampshire
 Updated Conceptual Site Model

Figure B (X-Section) Scale: 1" = 100'



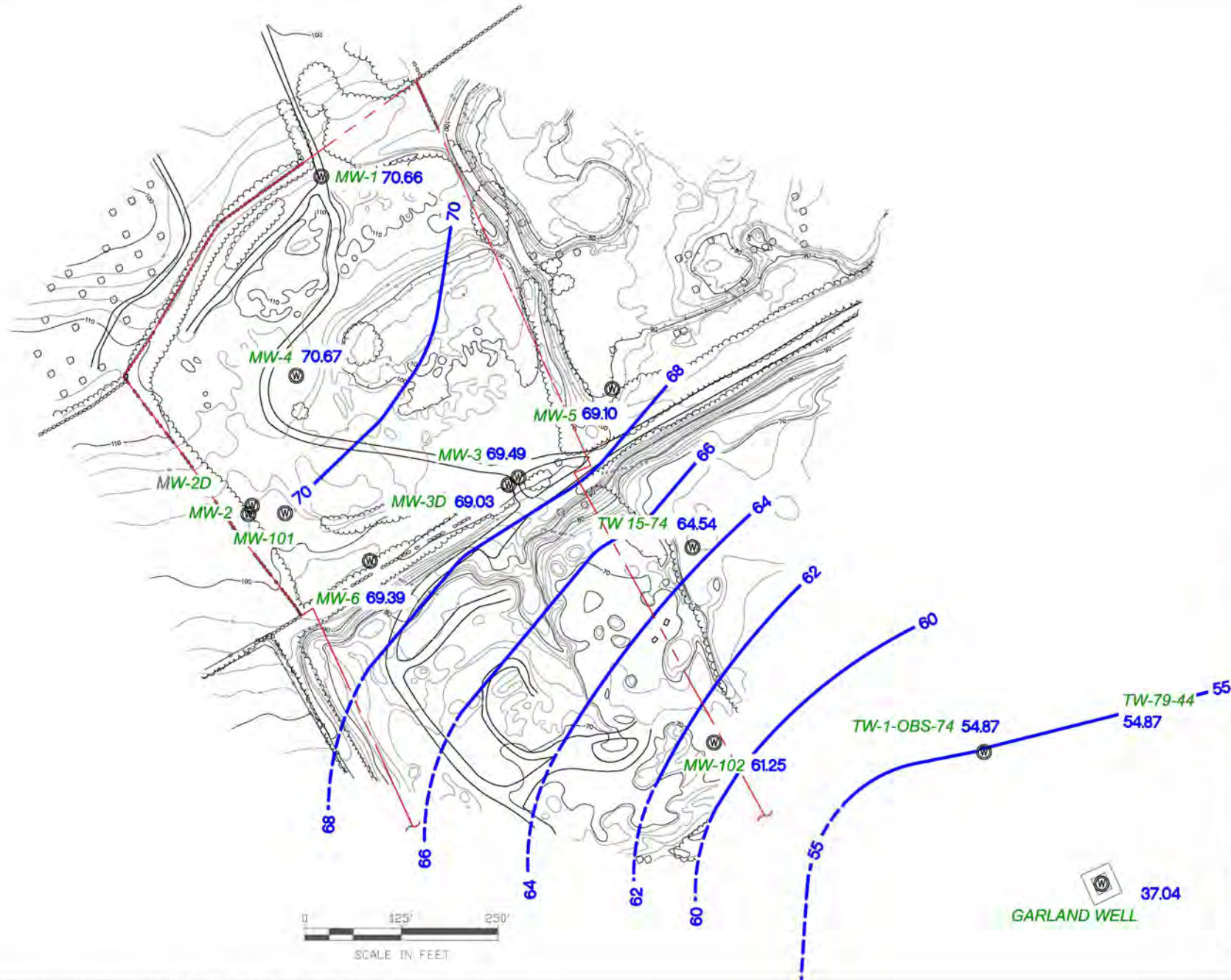
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 2. Property line survey based on survey performed by Richard P. Millette and Assoc. Imported onto plan using cannon monitoring points.
 3. Groundwater levels measured on June 2, 2023, unless otherwise noted.
 4. Groundwater Management Zone (GMZ) from Rye Tax Map.
 5. Water table with elevations at MW-101 and MW-2.

- Legend:**
- 10' Contour
 - Edge of Pavement
 - Treeline
 - MW-5 Groundwater Monitoring Well
 - GMZ Boundary
 - Water Table (June 2023)
 - Water Table Inferred from CEI measurements (1996)
 - PFAS concentrations (April 2023 or as noted)

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Figure A June 2023 Scale: 1" = 125'



Notes:

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5. Water table with elevations at MW-101 and MW-2.

Legend:

- 10' Contour
- Edge of Pavement
- Treatise
- MW-5 (W) Groundwater Monitoring Well
- - - GMZ Boundary
- Water Table (June 2023)
- - - Water table inferred from CDH measurements (1998)
- PFAS concentrations (April 2023 or as noted)

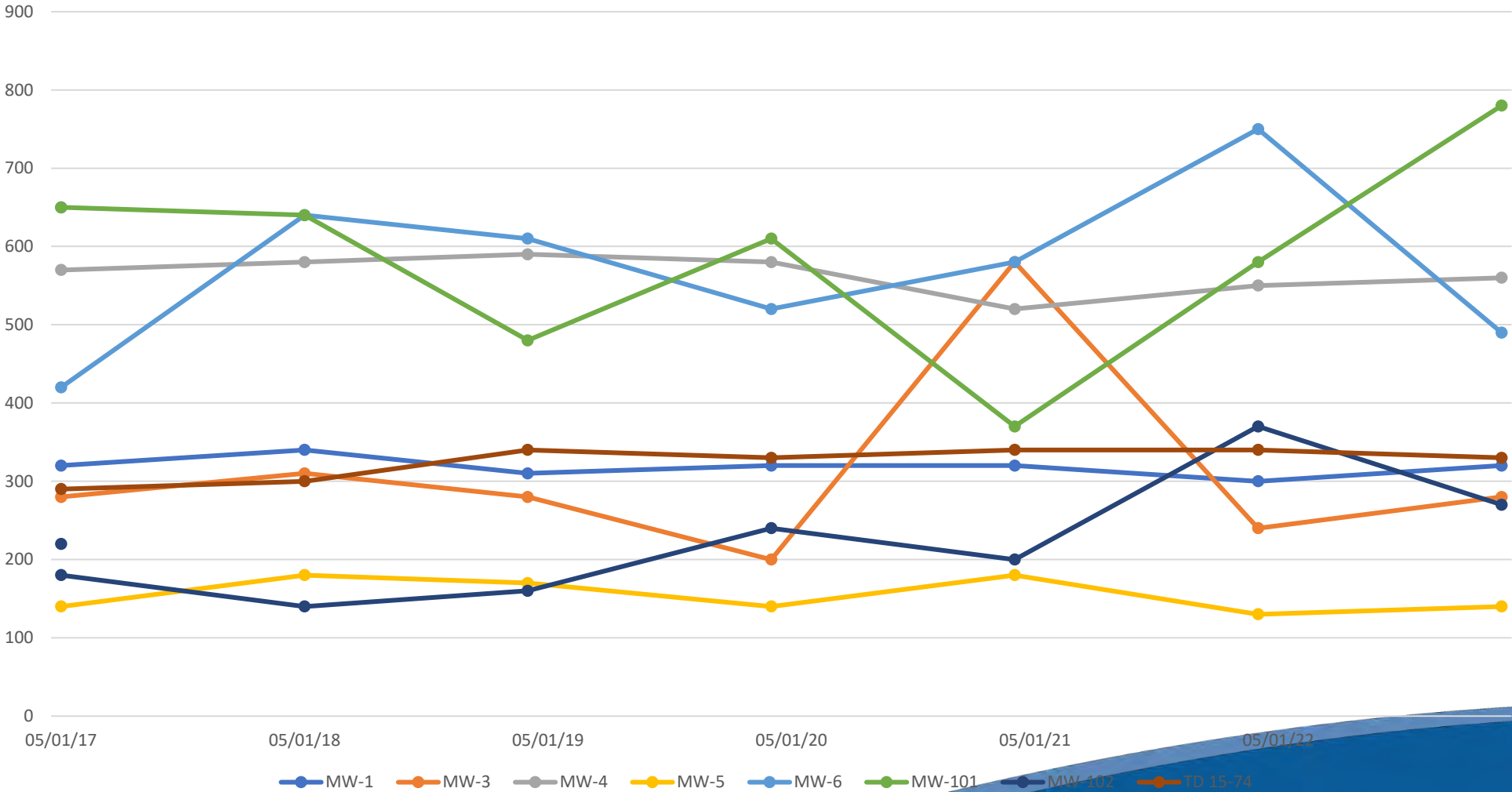
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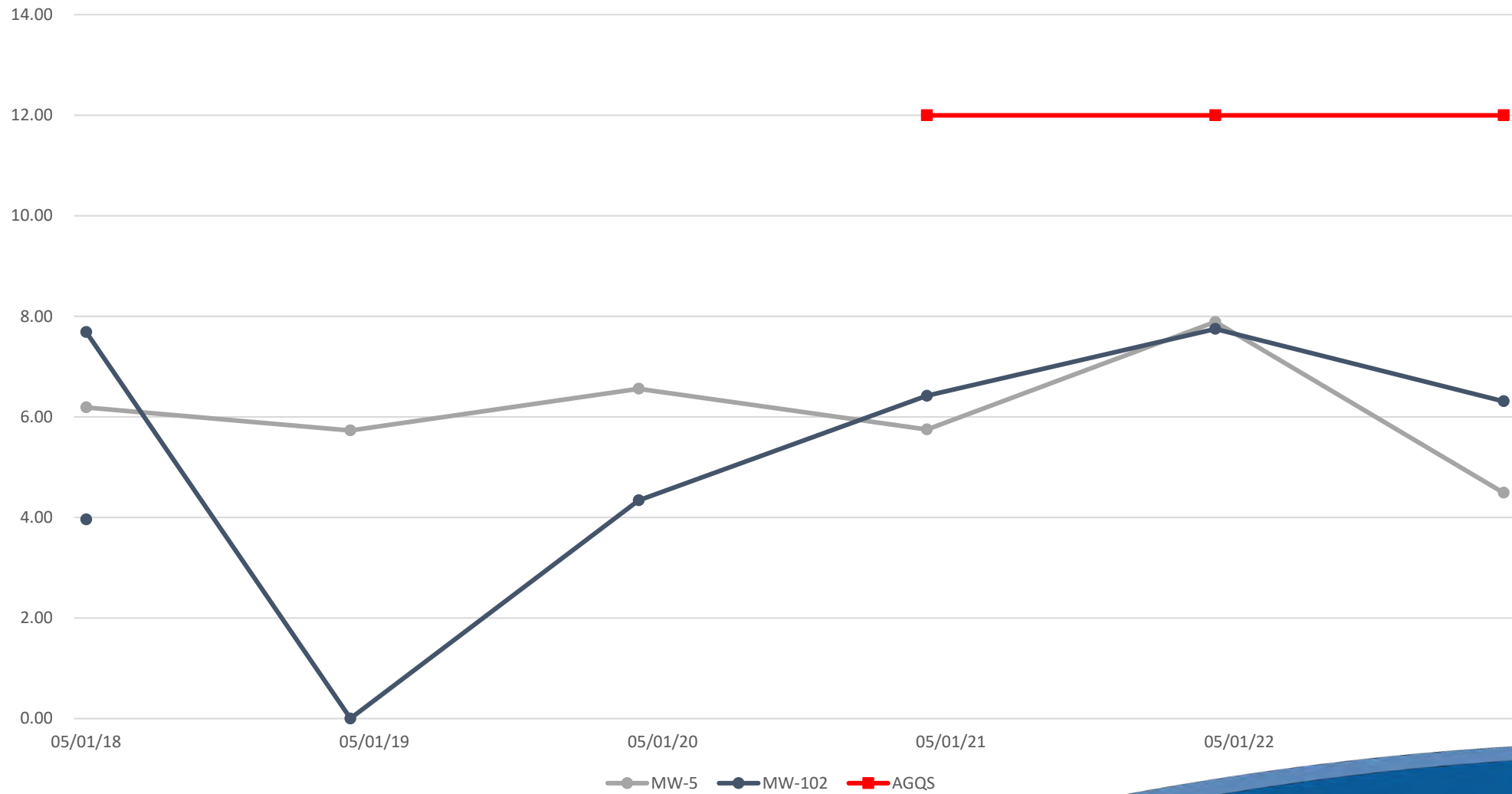
Figure A1 July 2023 Scale: 1" = 125'

Graph On-Site Monitoring Wells

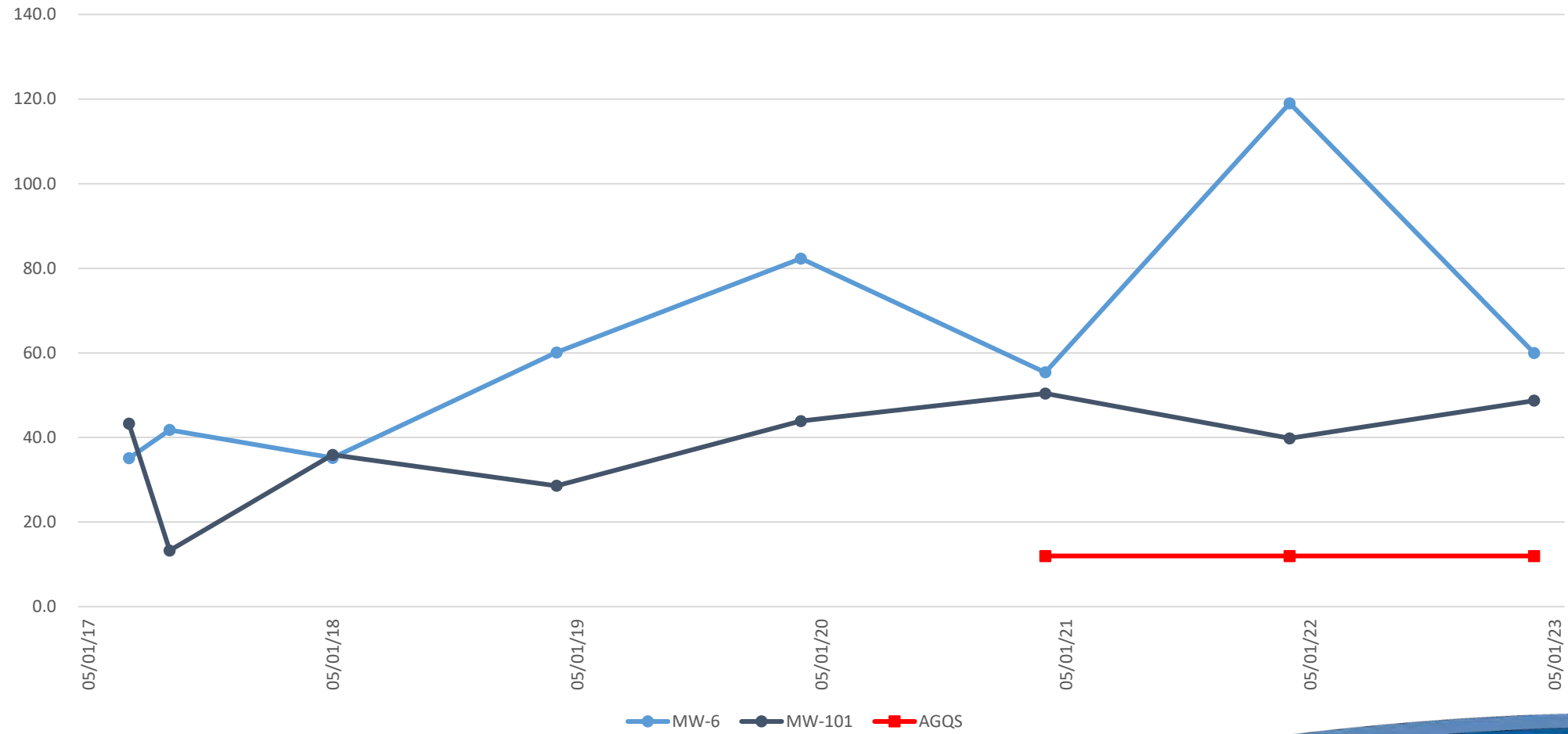
Specific conductance (umhos/cm)



PFOA at MW-5 & MW-102 (ng/L)

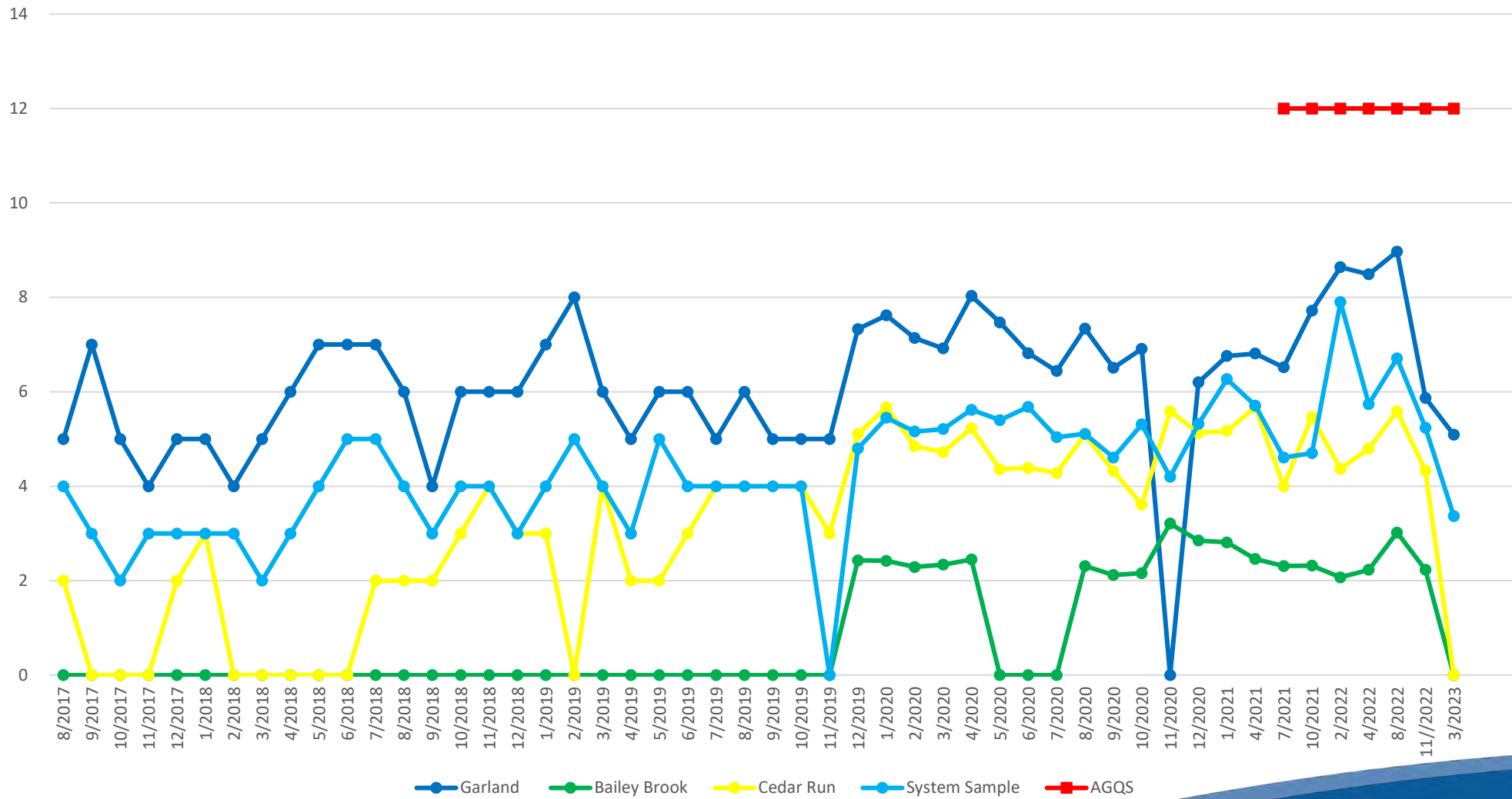


PFOA at MW-6 and MW-101 (ng/L)

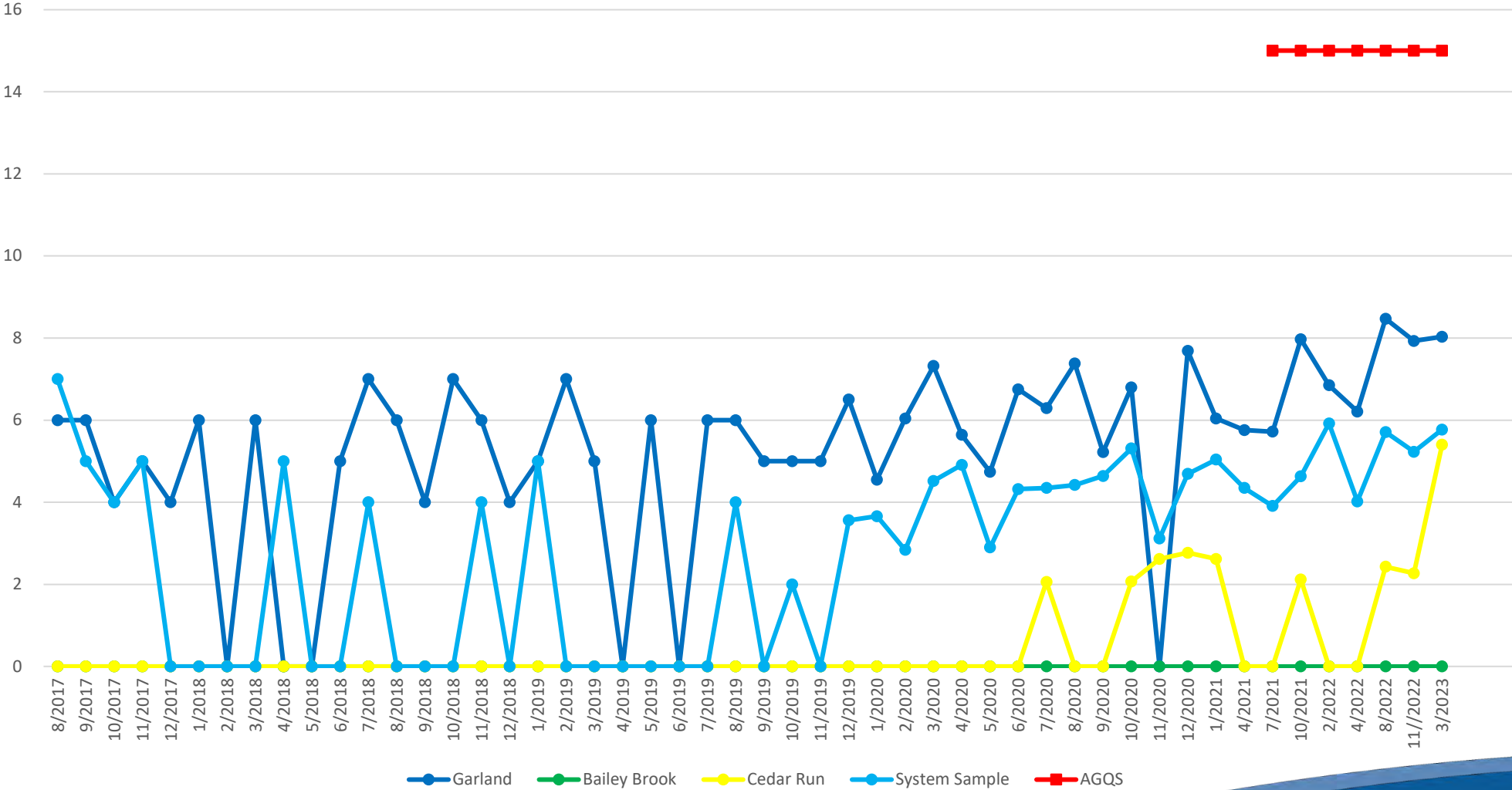


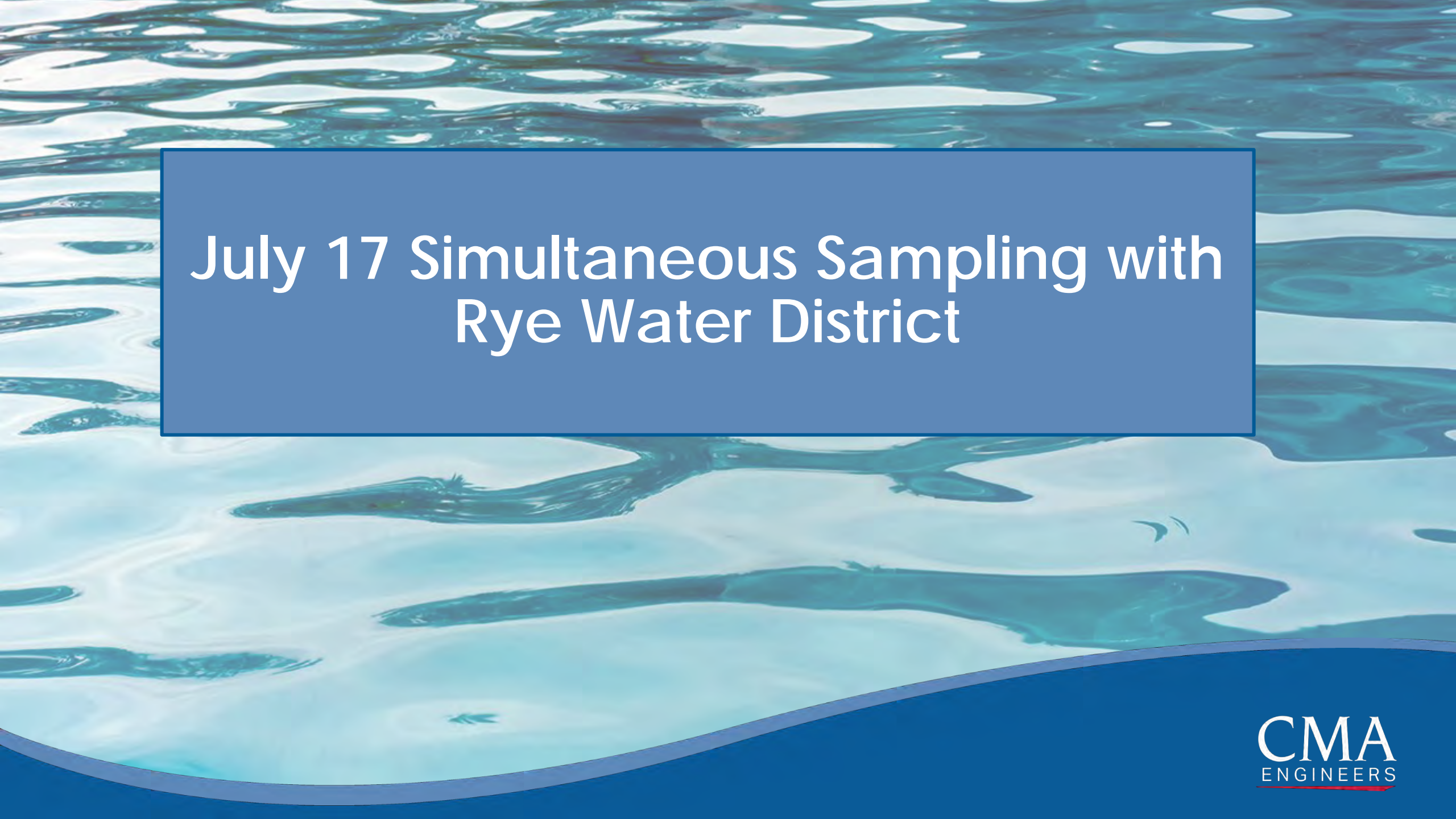
Present, including in Graph Form, all
Rye Water District water supply
source PFAS data since 2017

PFOA in RWD Wells and Blended System Water (ng/L)

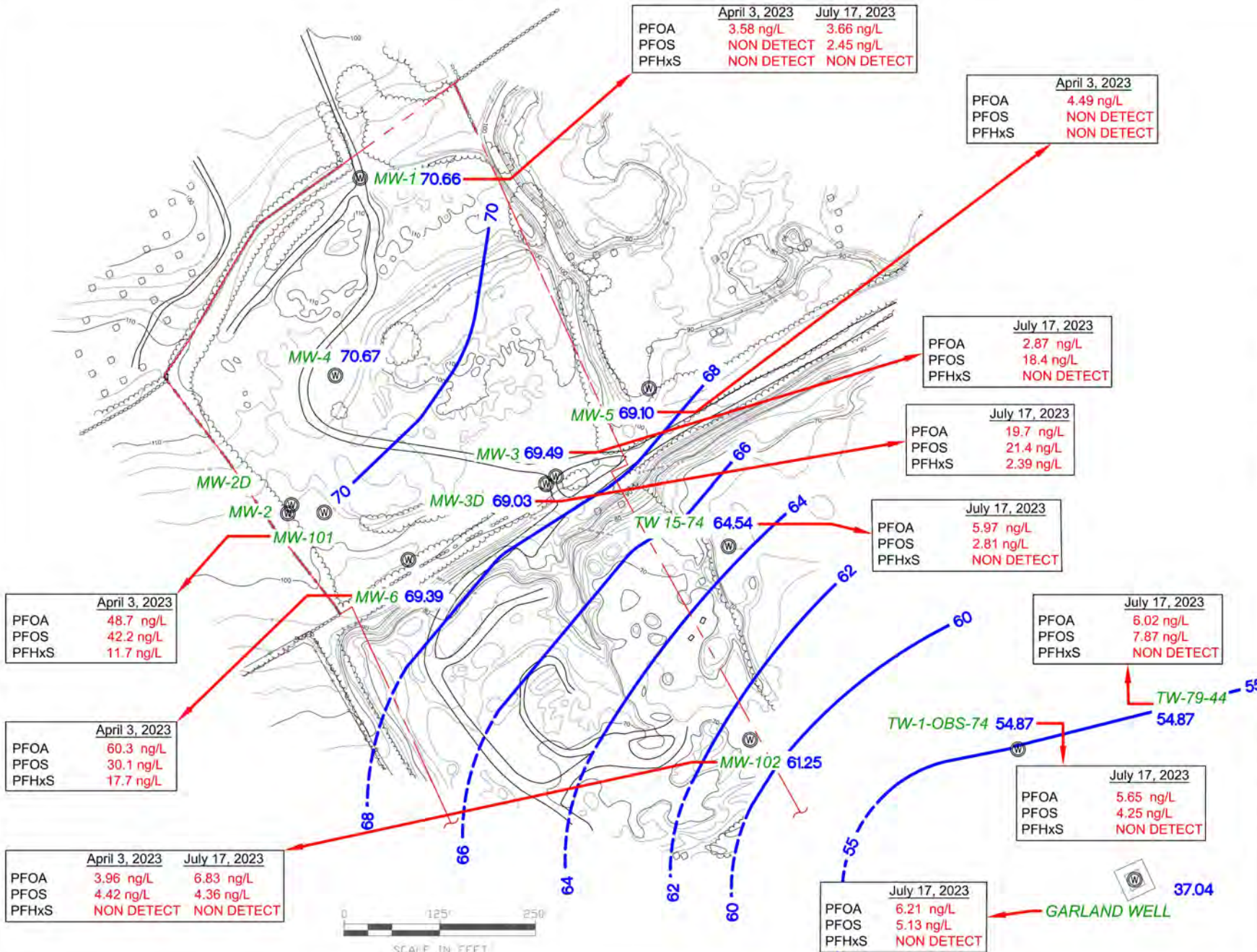


PFOS in RWD Wells and Blended System Water (ng/L)



The background of the slide is a close-up photograph of water with numerous ripples, creating a complex pattern of light and dark blue-green tones. The ripples are most prominent in the upper half of the image, where they are smaller and more frequent, and become larger and more spaced out towards the bottom. A dark blue curved shape at the bottom of the slide frames the CMA Engineers logo.

July 17 Simultaneous Sampling with Rye Water District



- Notes:**
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 4. Groundwater Management Zone (GMZ) from Rye Tax map.
 5. Water table with elevations at MW-101 and MW-2.

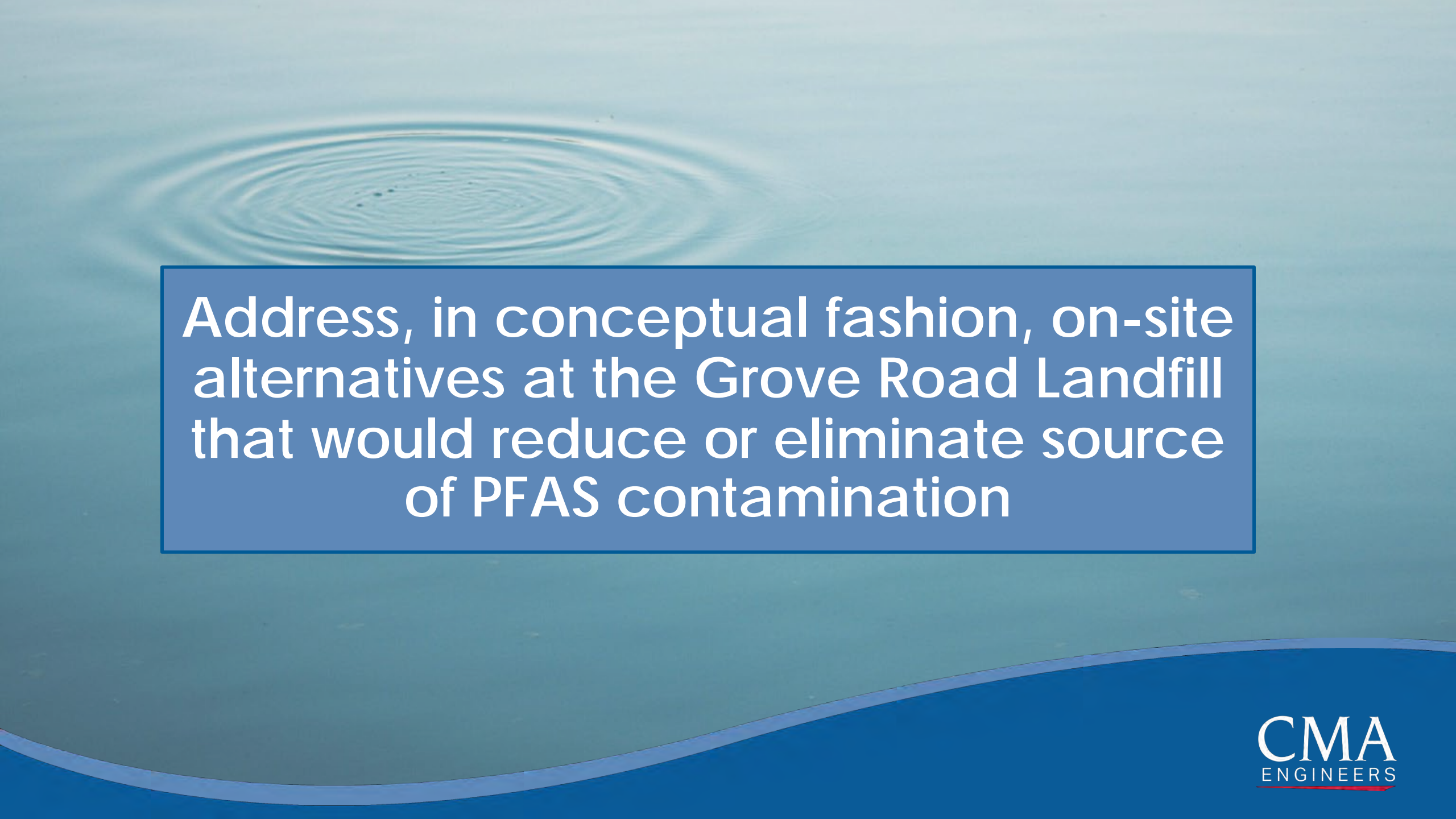
- Legend:**
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 - Edge of Pavement
 - Treeline
 - MW-5 Groundwater Monitoring Well
 - GMZ Boundary
 - Water Table (June 2023)
 - Water table inferred from CEH measurements (1998)
 - PFOA, PFOS, PFHxS concentrations (April 2023 or as noted)

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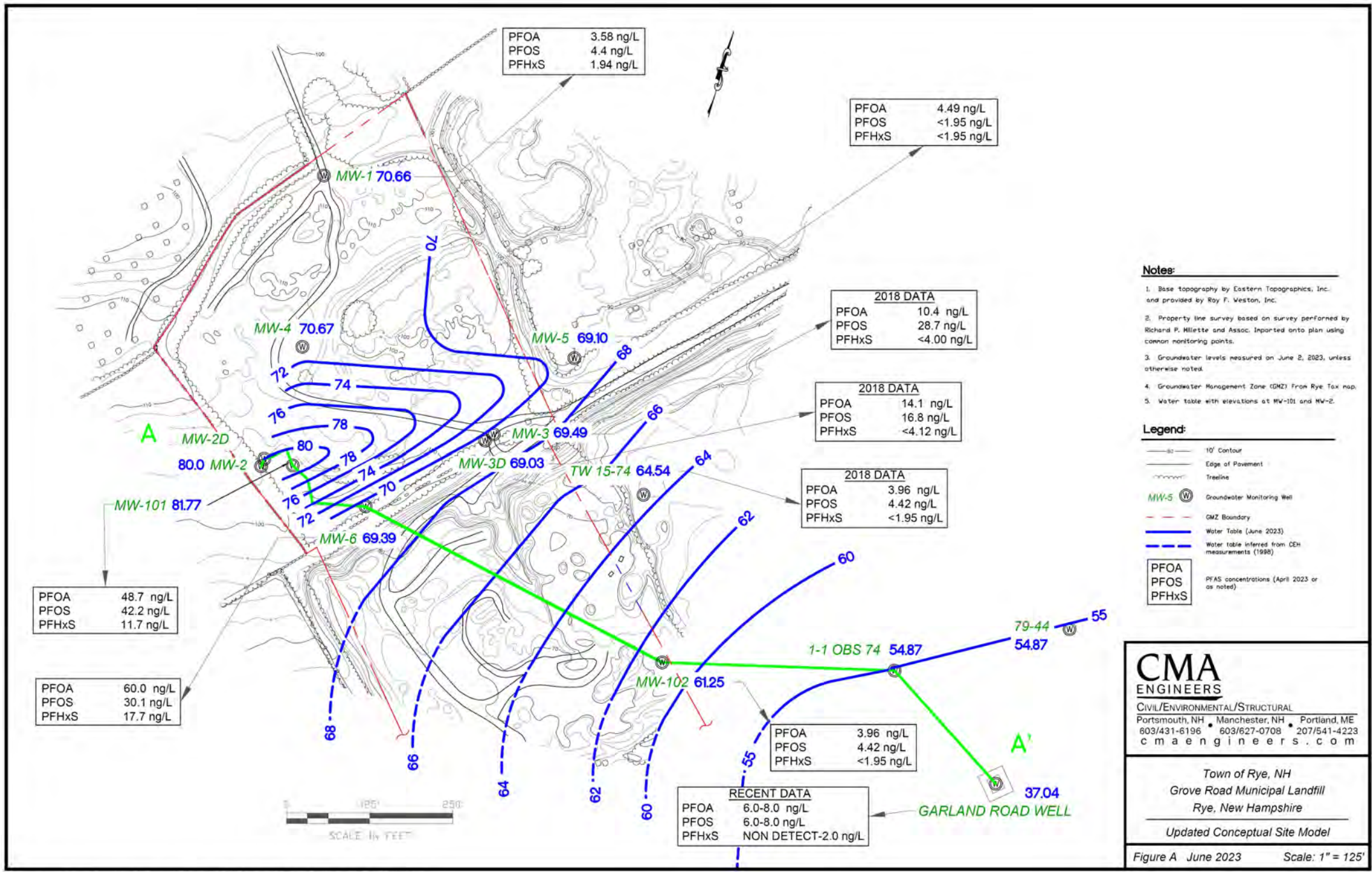
Town of Rye, NH
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Figure A1 July 2023 Scale: 1" = 125'





Address, in conceptual fashion, on-site alternatives at the Grove Road Landfill that would reduce or eliminate source of PFAS contamination



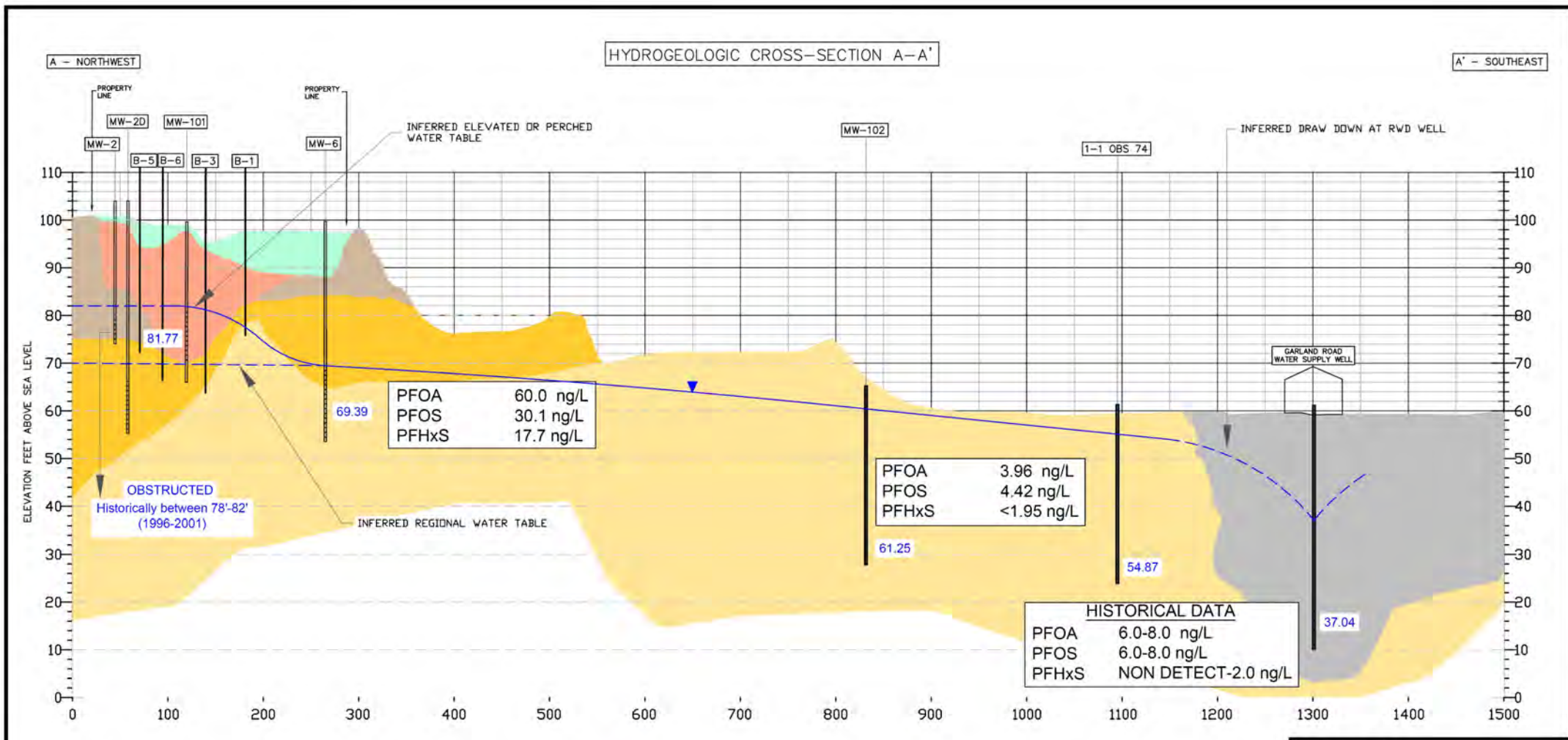
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 5. Water table with elevations at MW-101 and MW-2.

- Legend:**
- 10' Contour
 - Edge of Pavement
 - Treeline
 - MW-5 (Symbol) Groundwater Monitoring Well
 - GMZ Boundary
 - Water Table (June 2023)
 - Water table inferred from CDH measurements (1998)
 - PFOA, PFOS, PFHxS (Symbol) PFAS concentrations (April 2023 or as noted)

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Figure A June 2023 Scale: 1" = 125'

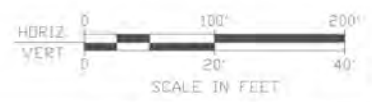


Legend:

- | | | |
|---|---|---|
| <p> Monitoring Well Location</p> <p> Screened Interval</p> | <p> Cover</p> <p> Waste</p> <p> Brown Sand & Gravel (outwash deposit)</p> | <p> Sandy Clay (ice-contact deposit)</p> <p> Sand (outwash deposit)</p> <p> Brown Gravel & Boulders</p> |
| <p> Water Table</p> <p> 37.04 Water Elevation (June 2, 2023)</p> <p>PFOA
PFOS
PFHxS</p> <p>PFAS concentrations (April 2023 or as noted).</p> | | |

Notes:

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Figure B (X-Section) Scale: 1" = 100'

Questions?