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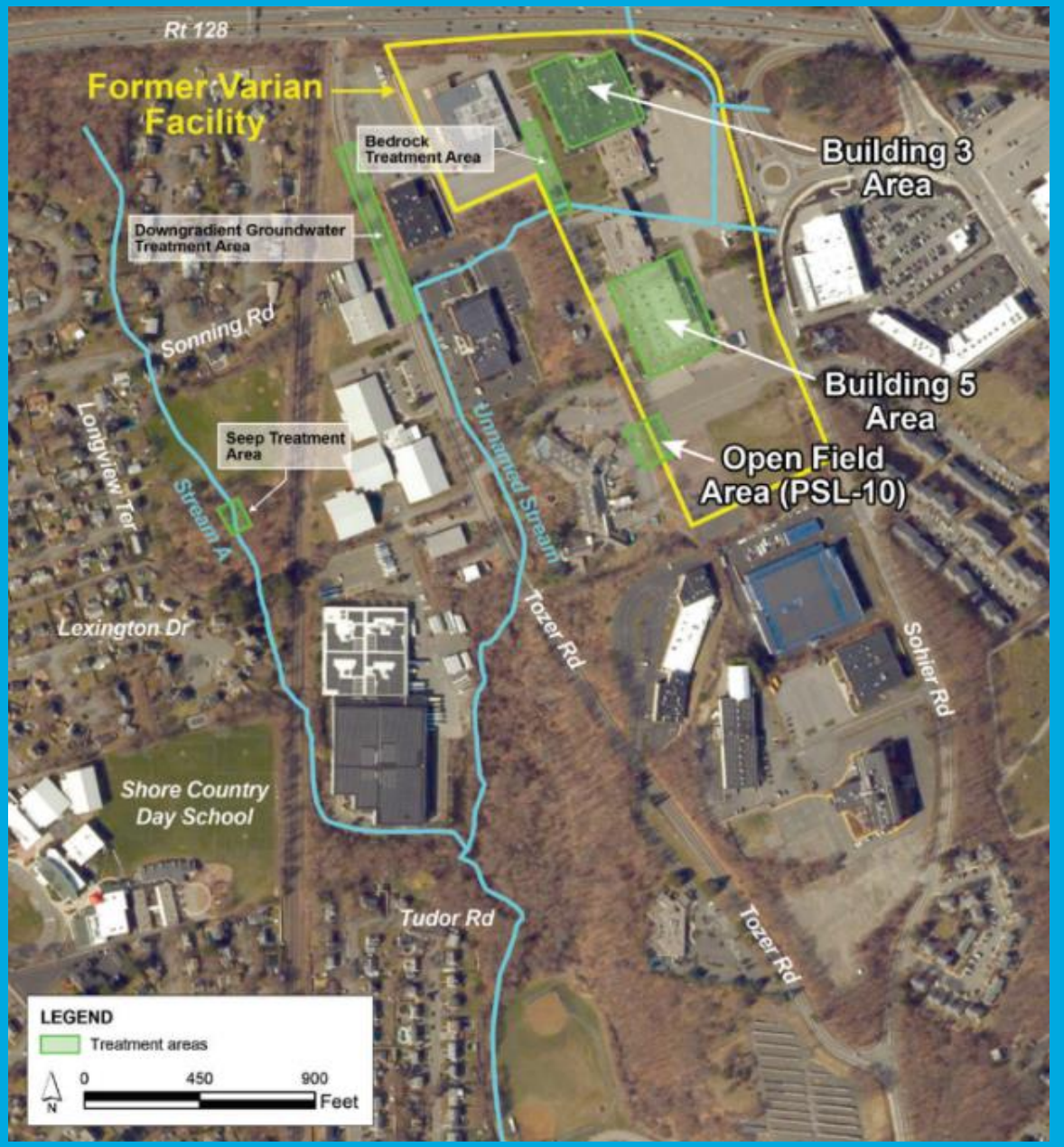
Technical Advisory Group (TAG) Meeting

Former Varian Facility (Site 3-0485)
150 Sohier Road
Beverly, Massachusetts

July 23, 2025
Virtual Meeting (Teams)

Meeting Objectives

- Introductions
- Update on treatment system operations and construction efforts since May 2025 meeting
- Review comments received on Modified Phase IV Remedy Implementation Plan
- Answer questions from the TAG



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Treatment System Operations and Construction Status

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Summary of Activities Since the May 2025 Public Meeting

- **Building 3 Thermal Treatment System**
  Additional drilling inside the building and site preparation
- **PSL-10 Subgrade Biogeochemical Reactor (SBGR)** SBGR is operational; collected initial round of post treatment samples
- **Building 5 Source Area**
  Completed basis of design
- **Stream A Reactive Core Mat**
  Inspections continue with no issues observed
- **Bedrock**
  Completed basis of design and started drilling program
- **Monitoring**
  Conducted routine site-wide groundwater sampling and indoor air monitoring; prepared updated monitoring plan

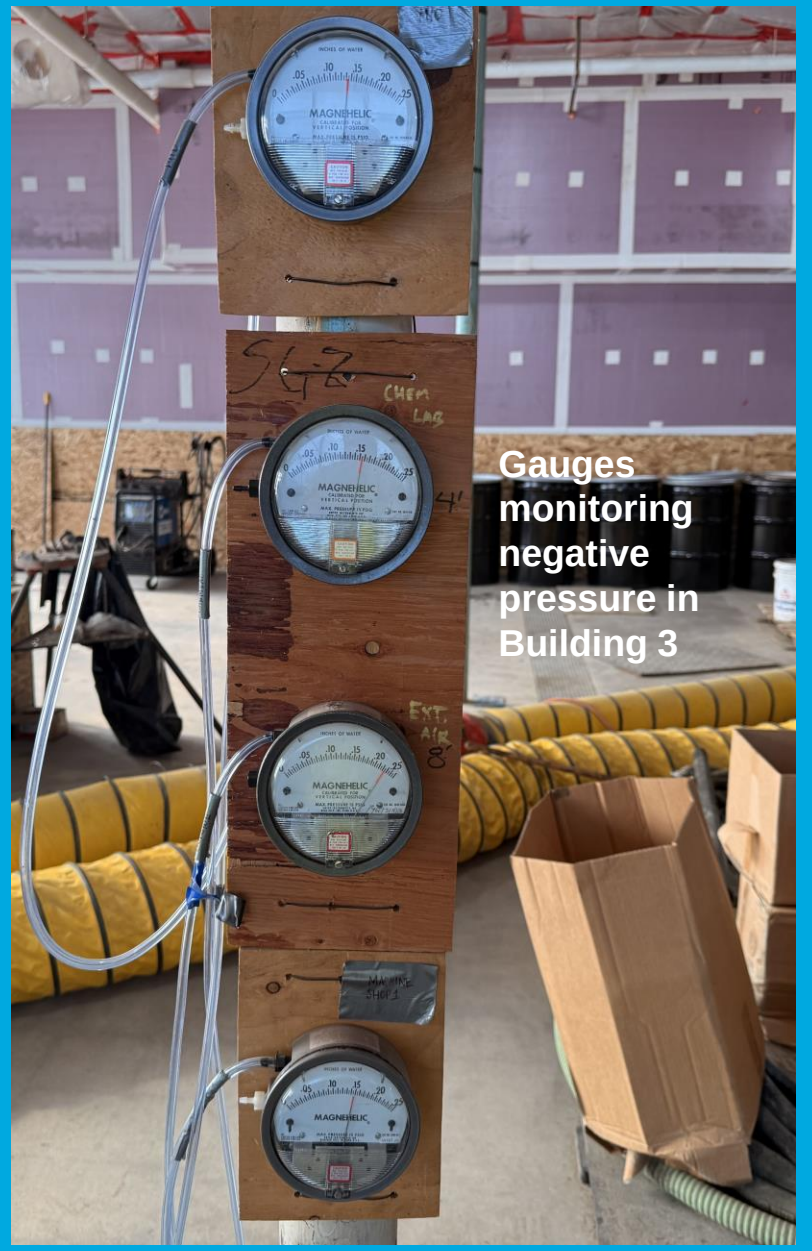
Foundation work for transformer pad installation

Fence relocation to provide room for thermal equipment

Building 3 Source Area

- **In situ thermal treatment**
- **In situ bioremediation polish**
- **Continued soil vapor extraction (SVE)**

- Thermal treatment system construction underway
  - Stockroom drilling in progress (nightshifts)
  - Relocated fence along Route 128 and added concrete barrier
  - Began installation of electric transformers to power system
  - Constructed vapor barrier wall to isolate stockroom from building
  - Vapor migration control measures continue to protect facility personnel
- Drilling observations remain consistent with conceptual model of VOC distribution underground
- Completed over 1,000 feet of drilling since May (total of 5,700 feet of the planned 10,000 feet, or 57% completion)



Gauges monitoring negative pressure in Building 3

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Indoor Angled Boring Installation

Stockroom with new vapor barrier wall

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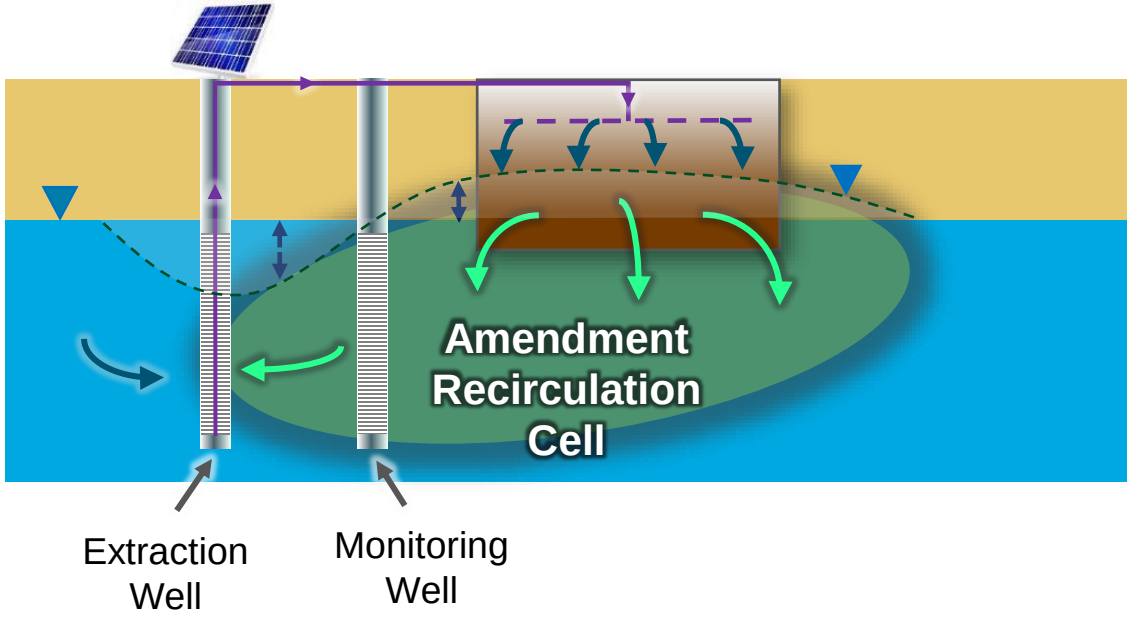
PSL 10

❖ Subgrade biogeochemical reactor (SBGR)



- SBGR is operational
  - The bulk of VOC-containing soil was removed
  - The system is treating groundwater
  - Performance monitoring has begun

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Building 5

- **In situ bioremediation**
- **Continued soil vapor extraction**

- Well installation with pneumatic injection of sand, zero-valent iron (ZVI), and emulsified vegetable oil (EVO) to enhance permeability
- Pre-design investigation combined with initial treatment
  - Includes vertical and angled wells
- After pre-design investigation and initial treatment, will complete additional treatment in shallow areas, as needed
- Enhancements made as a result of the Phase IV Plan modification

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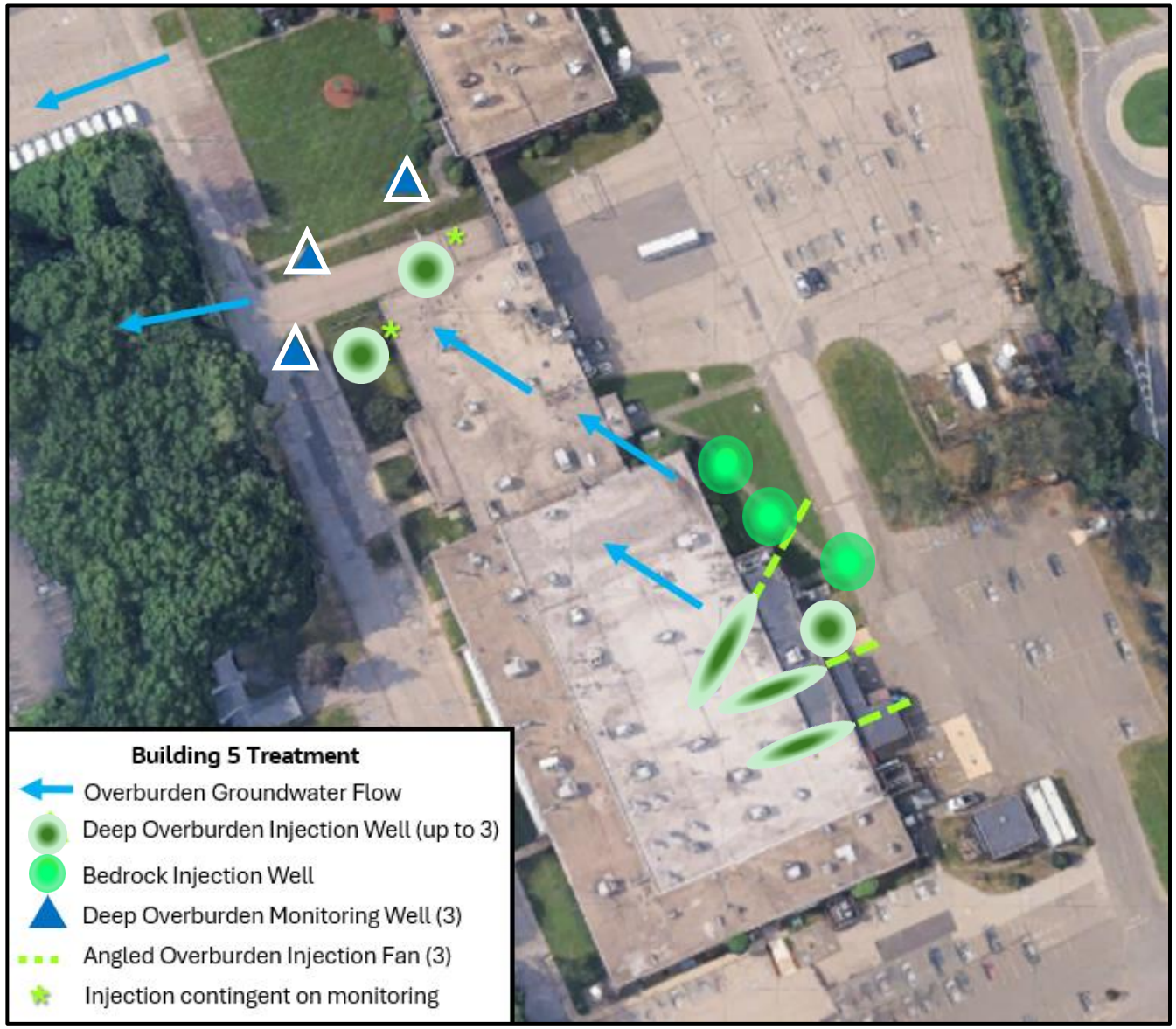
Building 5 (cont'd)



Next Steps

- Monitoring well installation (August)
- Baseline sampling
- Angled drilling and treatment (once Stage 2 bedrock treatment started)
- Post-treatment monitoring

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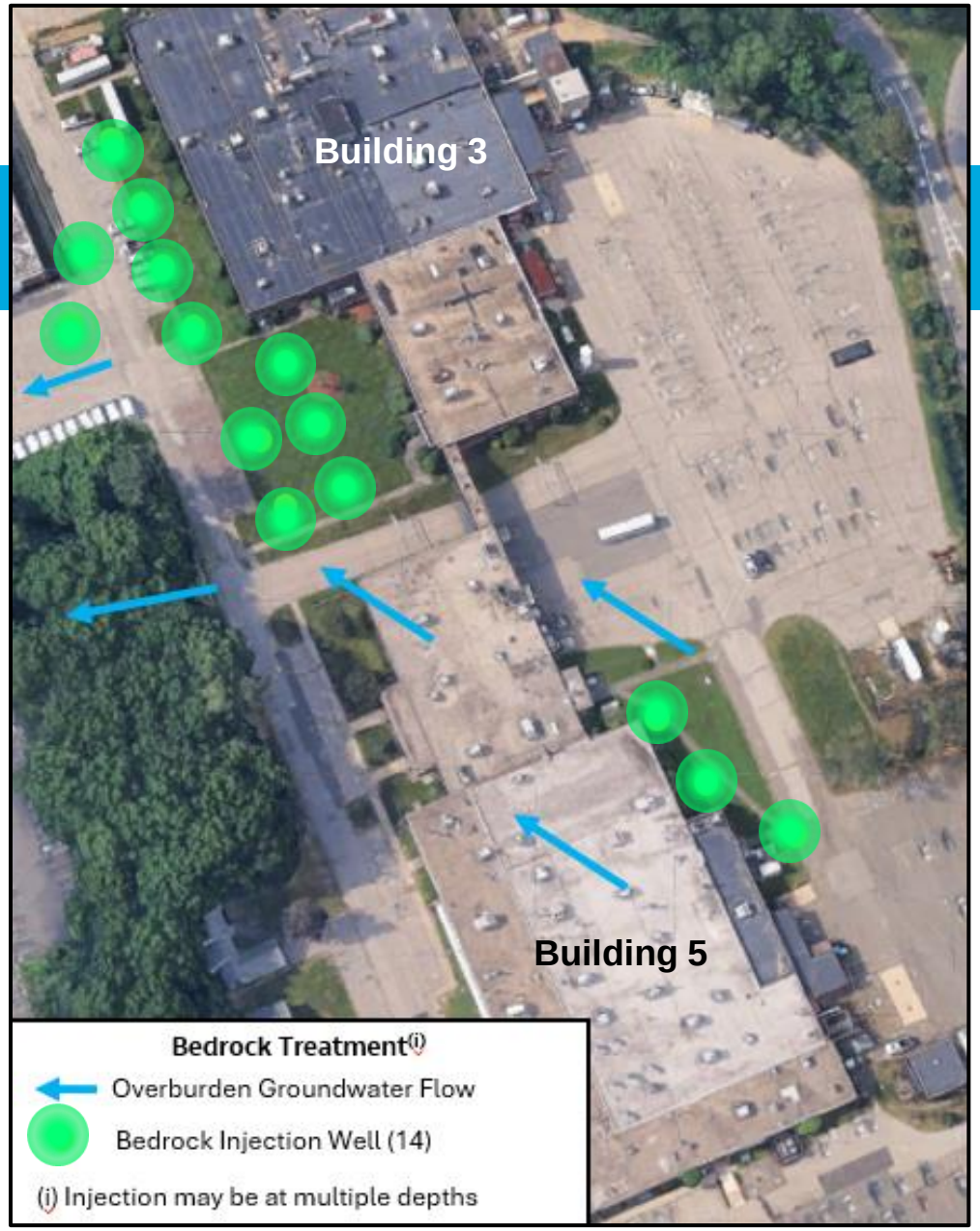
Bedrock

❖ In situ chemical reduction (ISCR)

- ISCR is an anaerobic process
- Cut off VOCs that may migrate from source areas during remedial activities
  - Extract VOC-containing groundwater before injecting remedial additives
- Reduce downgradient VOC concentrations moving back into the overburden
- Stage 1 system installation has started
  - 4 overburden monitoring wells; 3 shallow/deep bedrock monitoring well pairs; 3 bedrock injection locations



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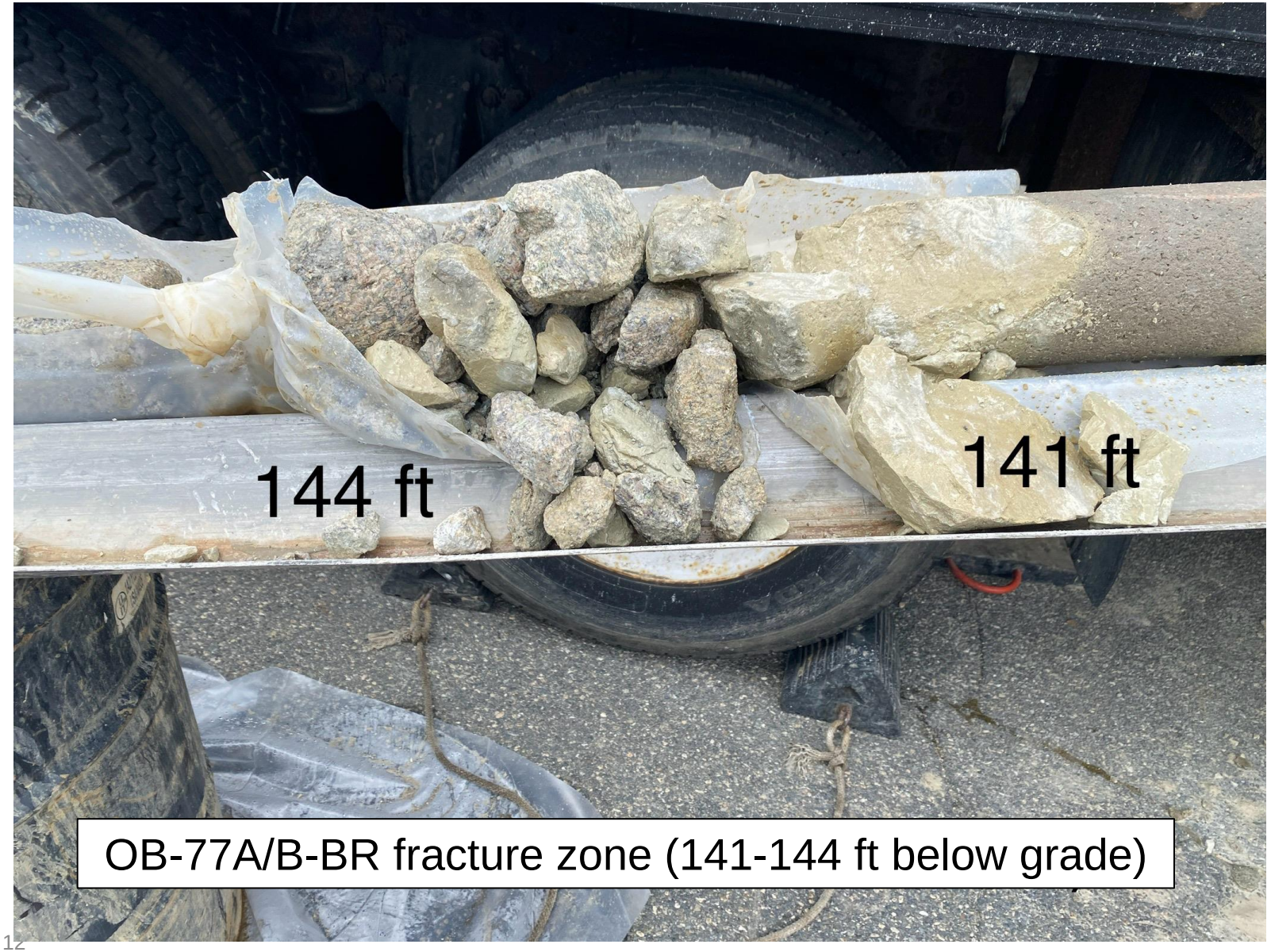
Bedrock (cont'd)

Bedrock (cont'd)



OB-77A/B-BR fracture zone (141-144 ft below grade)

Next Steps

- Complete Stage 1 bedrock injection boreholes (July); perform downhole geo-physics (early August); construct bedrock monitoring wells
- Baseline sampling (August)
- Extract water; inject additives (September)
- Construct bedrock injection wells
- Performance monitoring

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Monitoring Downgradient of Treatment Zones

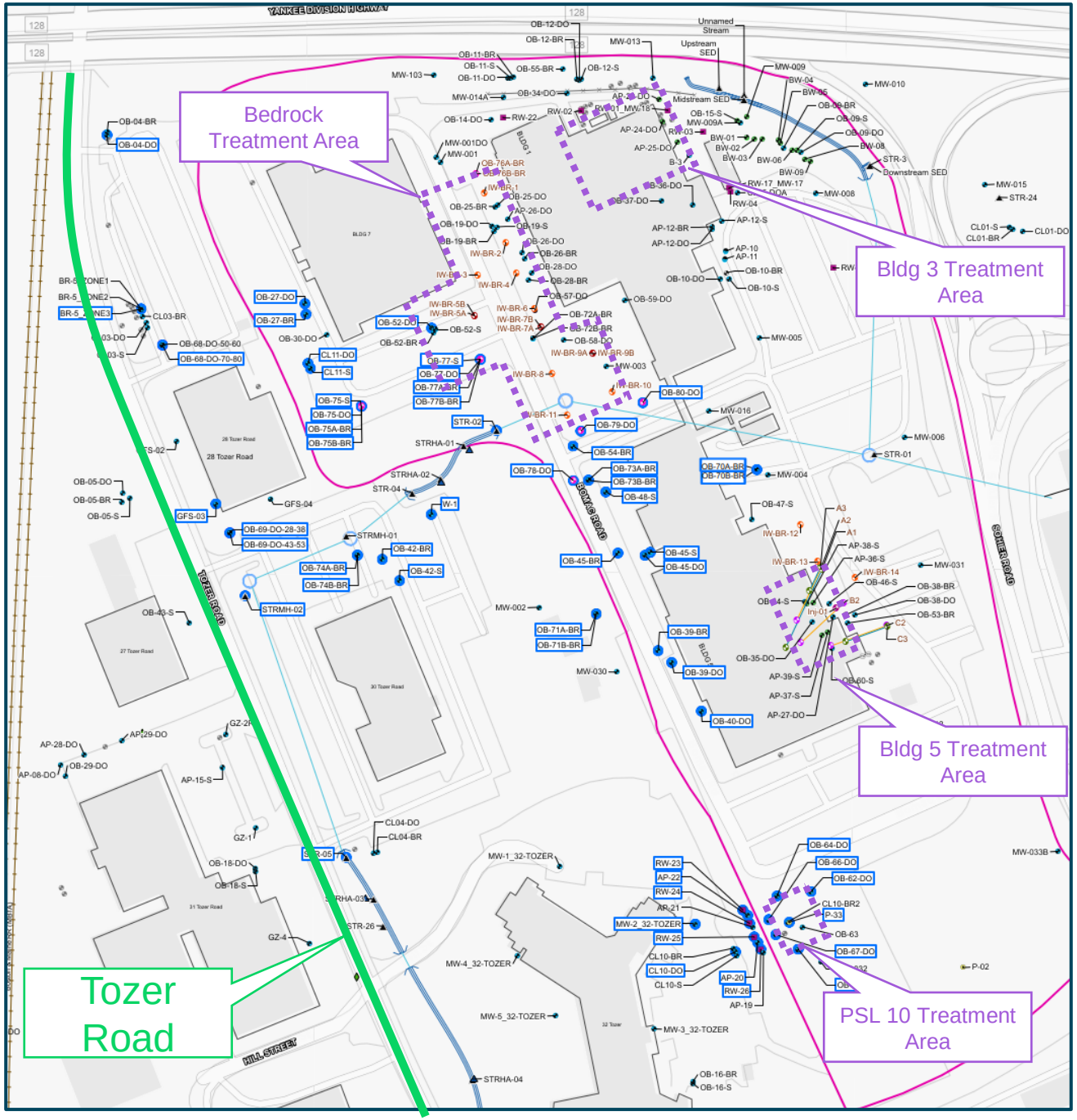
Tentative Program – Number of Locations and Frequency

Treatment Zone	Shallow Overburden (# Wells - Frequency)	Deep Overburden (# Wells - Frequency)	Bedrock (# Wells - Frequency)
Building 3/Bedrock	4 – Bimonthly 2 – Quarterly	7 – Quarterly	9 – Quarterly
Building 5	2 – Quarterly	8 – Quarterly	9 – Quarterly
PSL10	1 – Bimonthly 1 – Quarterly	12 – Quarterly	--

- 3 Stream locations will be sampled quarterly
- Bimonthly sampling to monitor vapor intrusion potential
- To be finalized in August 2025 status report

Monitoring Downgradient of Treatment Zones (cont'd)

- The wells highlighted in blue will be sampled every other month (shallow vapor intrusion) or quarterly
  - Monitor injection treatment performance
  - Verify chemical concentrations are not increasing
- Additional wells will be monitored twice a year consistent with the current groundwater monitoring program



System Installation Schedule*

Treatment Area	Design	System Installation	Start of Treatment	Monitoring
Building 3 (Thermal)	Complete	In Progress	Winter/Spring 2026	2026
PSL10 (SBGR)	Complete	Complete	Started (April 2025)	Ongoing
Building 5 (Bio)	Complete	Summer 2025	Fall 2025	2026
Bedrock (ISCR)	Complete	In Progress	Summer 2025	2025
Stream A (Mat)	Complete	Complete	Started (October 2023)	Ongoing

NOTES:
* = Estimated schedule, subject to change
Bio = Bioremediation
ISCR = In situ chemical reduction
Mat = Reactive core mats
SBGR = Subgrade Biogeochemical Reactor

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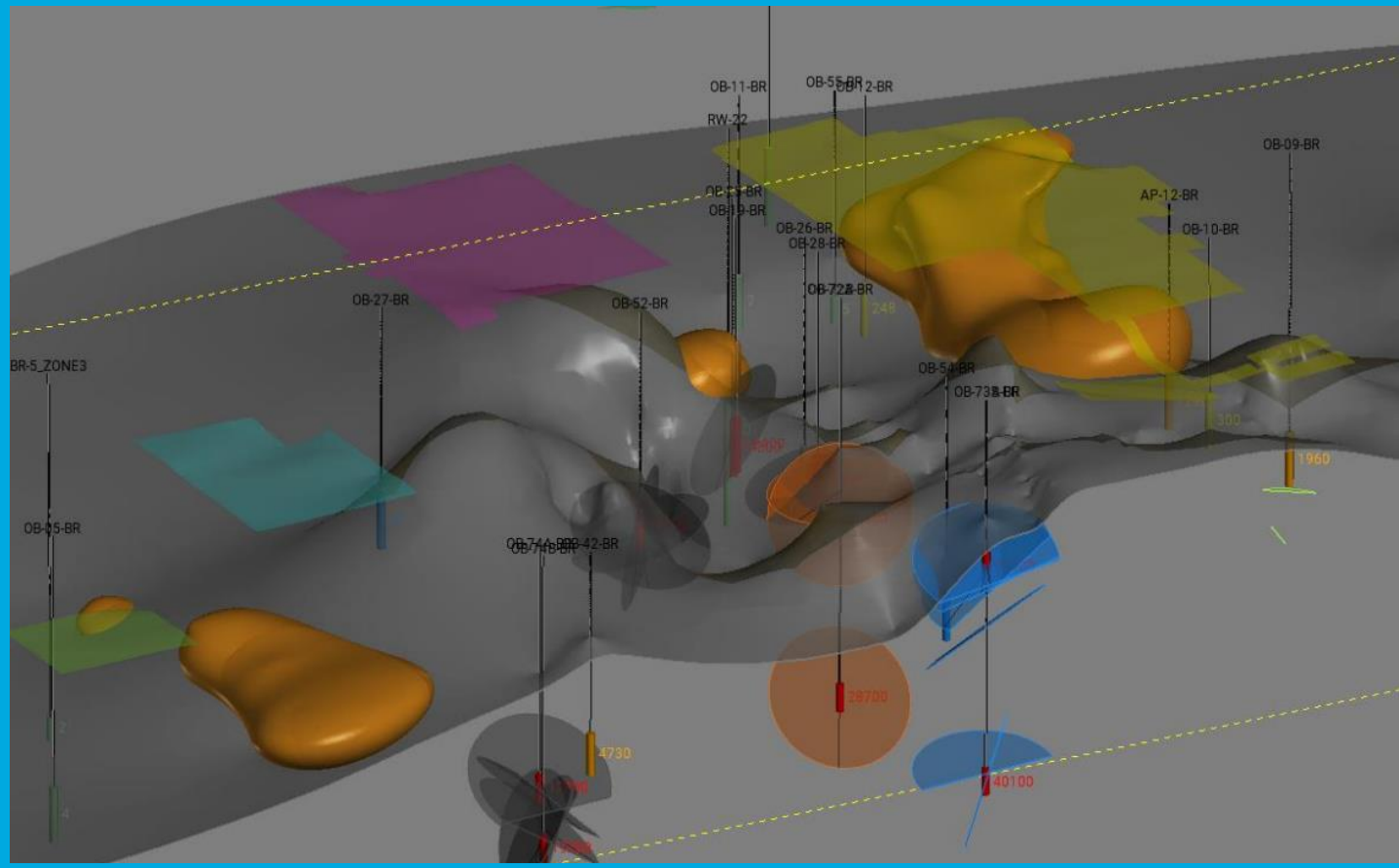
Comments on Modified Phase IV Remedy Implementation Plan



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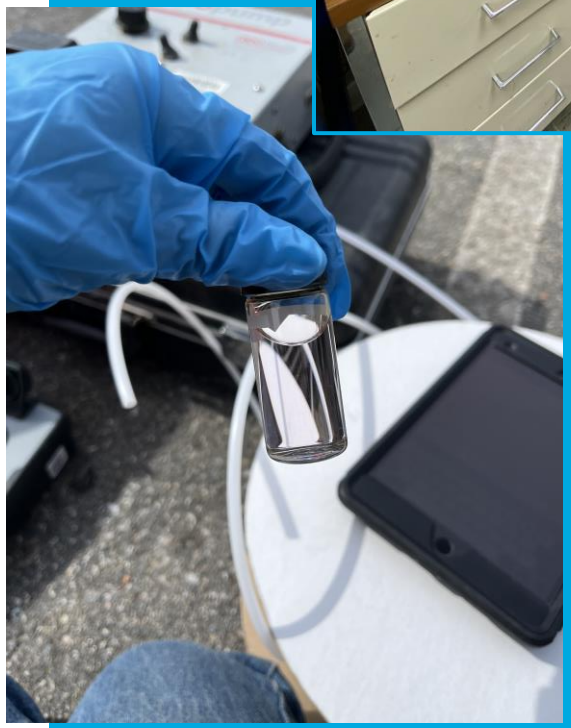
Comments on Modified Phase IV Remedy Implementation Plan

- **Timeline of public review process**
  - Modified Phase IV Plan, draft for public review (April 9)
  - Public meeting (May 8)
  - Comment period (May 9-May 28)
  - Public involvement meeting summary (June 26)
  - Responses to comments on Modified Phase IV Plan (June 26)
- **Overview of Comments**
  - Six sets of comments received from two (possibly one) community members
  - Comments expressed concerns about elimination of the Tozer Road permeable barrier



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Comments on Modified Phase IV Remedy Implementation Plan (cont'd)

- Proposed modification to the Phase IV Plan was the result of:
  - Property access issues affecting cleanup timeline
  - New bedrock data (late 2024-early 2025) showing that migration control can be implemented closer to the VOC sources at 150 Sohier Road
- Conceptual site model illustrated using 3-D model presented during the May 2025 public meeting
- Allows overall cleanup to move forward and continue to maintain a condition of No Significant Risk
- Allows destruction of VOCs before groundwater migrates further into bedrock fractures and into Tozer Road overburden
- Bedrock treatment will be implemented before the Buildings 3 and 5 source area treatments

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Upcoming Submittals and Events

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Upcoming Submittals and Public Involvement Opportunities

Deliverables

- Phase IV/Temporary Solution Status Report (August 2025)
  - Covers the six-month period January-June 2025
  - Treatment system construction updates
  - Groundwater and indoor air monitoring results
  - Basis of Design for bedrock treatment
  - Basis of Design for Building 5 source area treatment
  - Updated groundwater monitoring plan
  - Final construction report for PSL10 subgrade biogeochemical reactor
- Annual fact sheet (Fall 2025)
- Monthly updates (first Monday of the month)

Upcoming Meetings

- Quarterly – alternating PIP and TAG meetings
  - Fall PIP (October 2025 – weeks of Oct. 6 or Oct. 13)
  - Winter TAG (January 2026)

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For More Information – Document Repository

- Site reports available as:
  - Hard copies
    Beverly Public Library Reference Desk
    32 Essex St
  - Or online (MassDEP website)
    https://eeaonline.eea.state.ma.us/portal/dep/wastesite/viewer/3-0000485

For More Information – Public Participation

- Website: https://beverlysitecleanup.com/
  - Homepage updated monthly
  - Public meeting videos
  - Overview of environmental investigation and treatment to date
  - Links to MassDEP and EPA fact sheets on cleanup process and technologies
  - Form to sign up for monthly email update
- Email: beverlysitecleanup@jacobs.com

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Questions

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