Status of Cleanup at Twin Cities Army Ammunition Plant (TCAAP)

20 April 2021

US Army Environmental Command (USAEC)

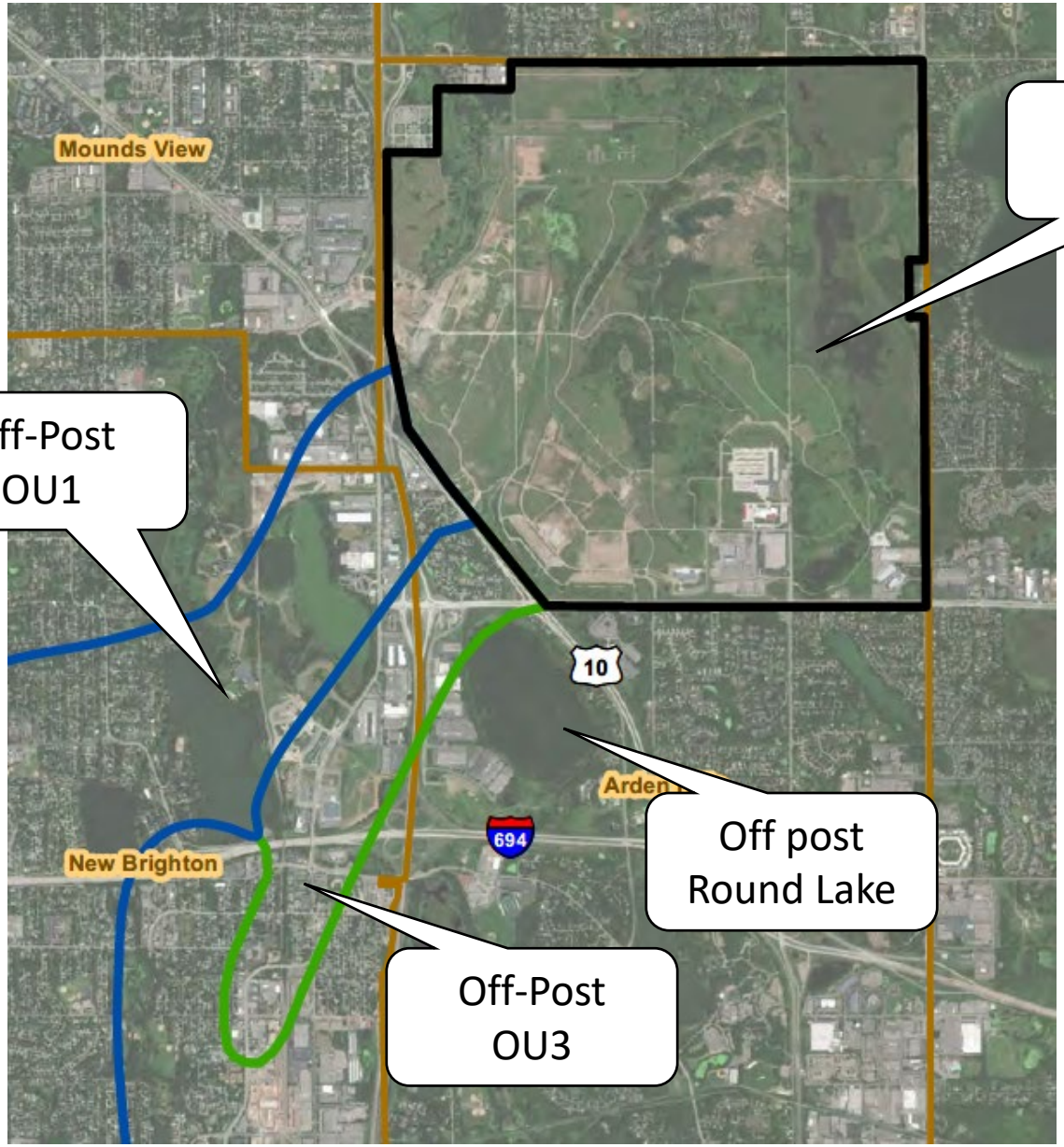
AGENDA – April 20, 2021 at 7 p.m.

- Review/Approve minutes of last meeting
- Old Business
- Cleanup Status Update
- New Business
- Next Meeting Agenda
- Public Comments

Old Business

- Vote to accept the minutes as changed
- Vote to accept changes to the Operating Procedures
- Vote to accept changes to the mission statement

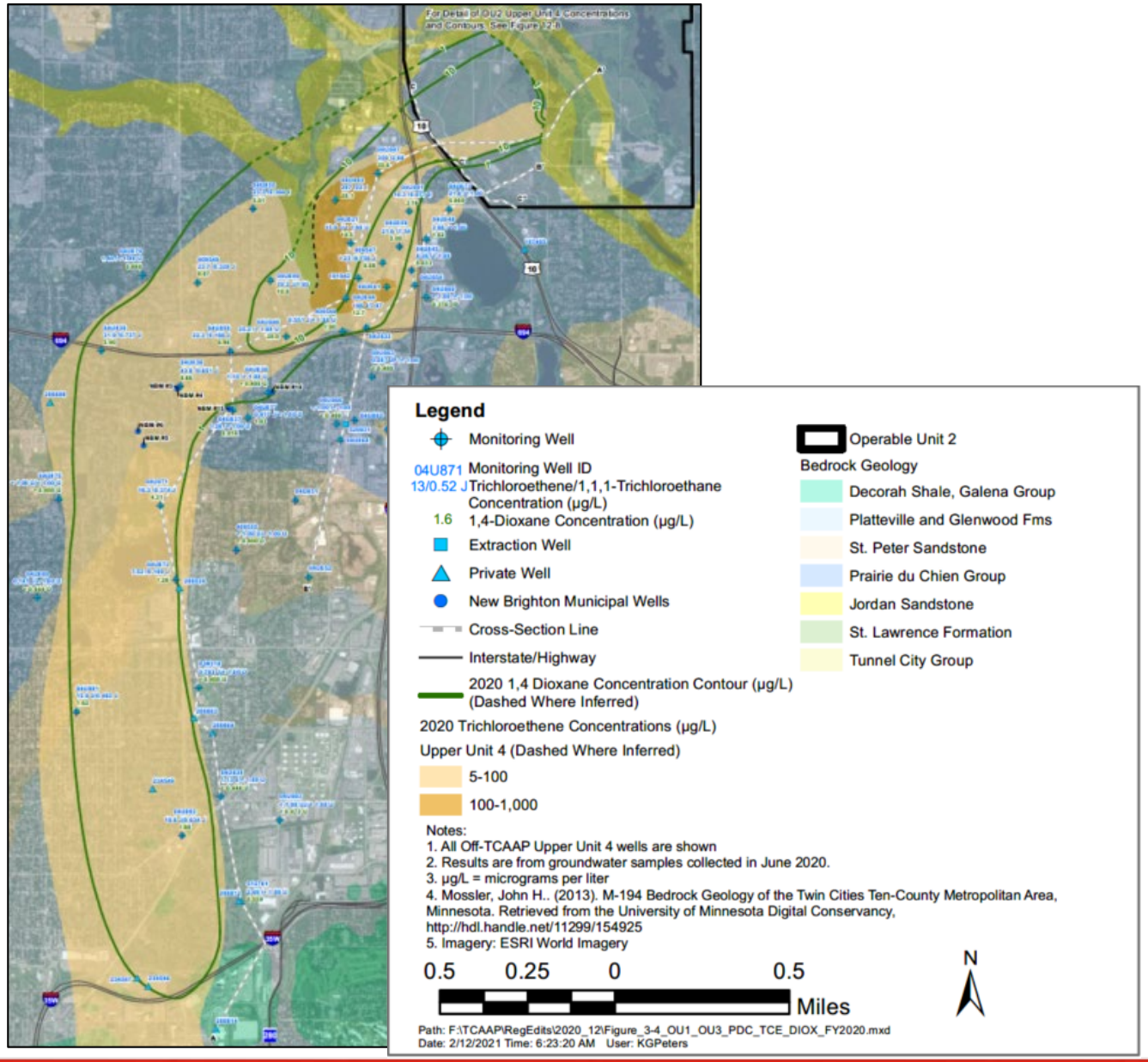
TCAAP Cleanup Status Update



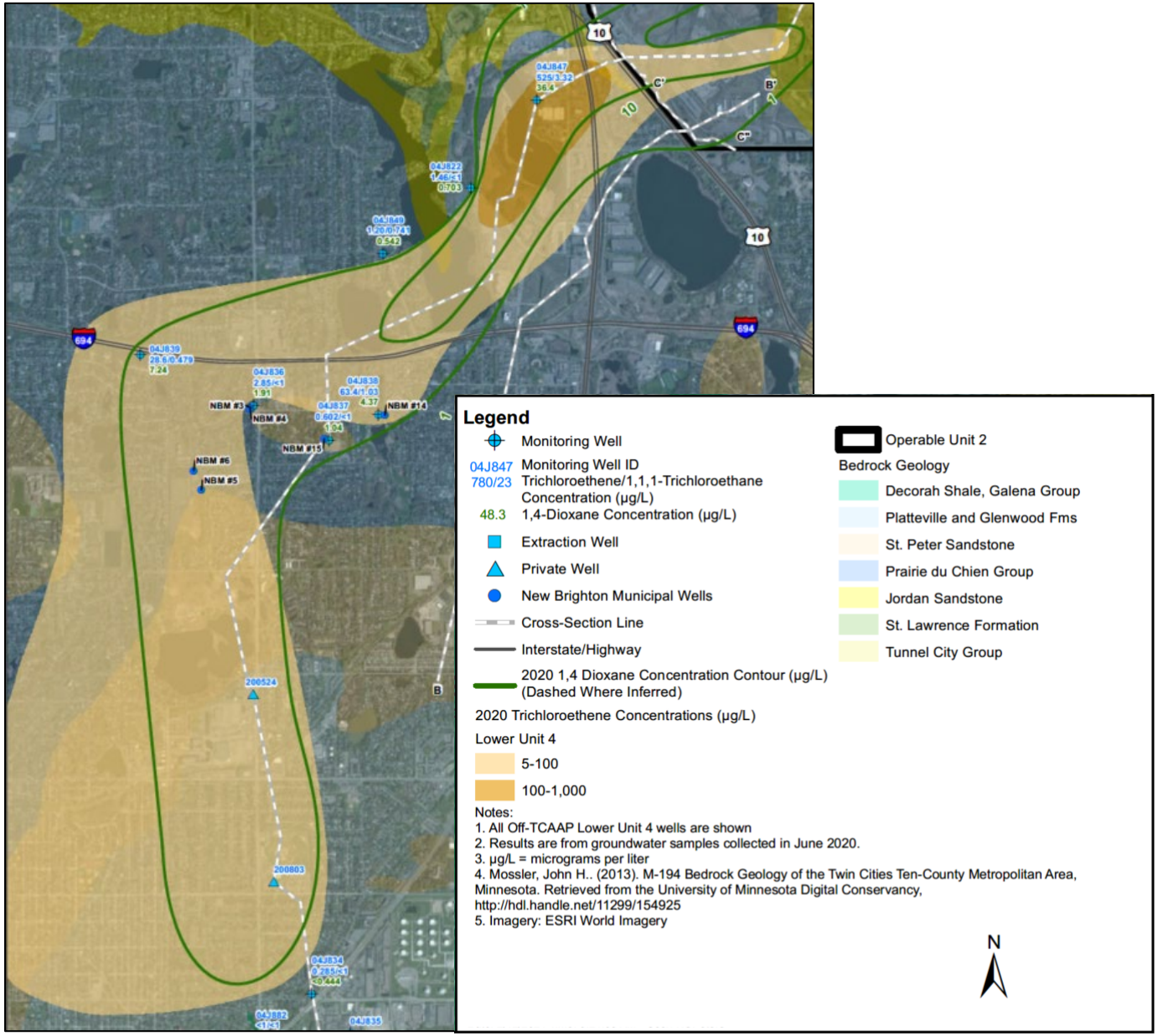
Groundwater Sampling Update

- February 2021 – submitted the Draft Final 2020 Annual Performance Report (APR) to the regulators (will be posted on website after approval).
- Completed annual groundwater sampling of 228 Army monitoring and extraction wells in June/July 2020.
- Completed groundwater sampling of 2 commercial wells.
- Groundwater sampling allows the Army to monitor the plumes and update the maps.
- Annual plume maps are available in the respective APRs.

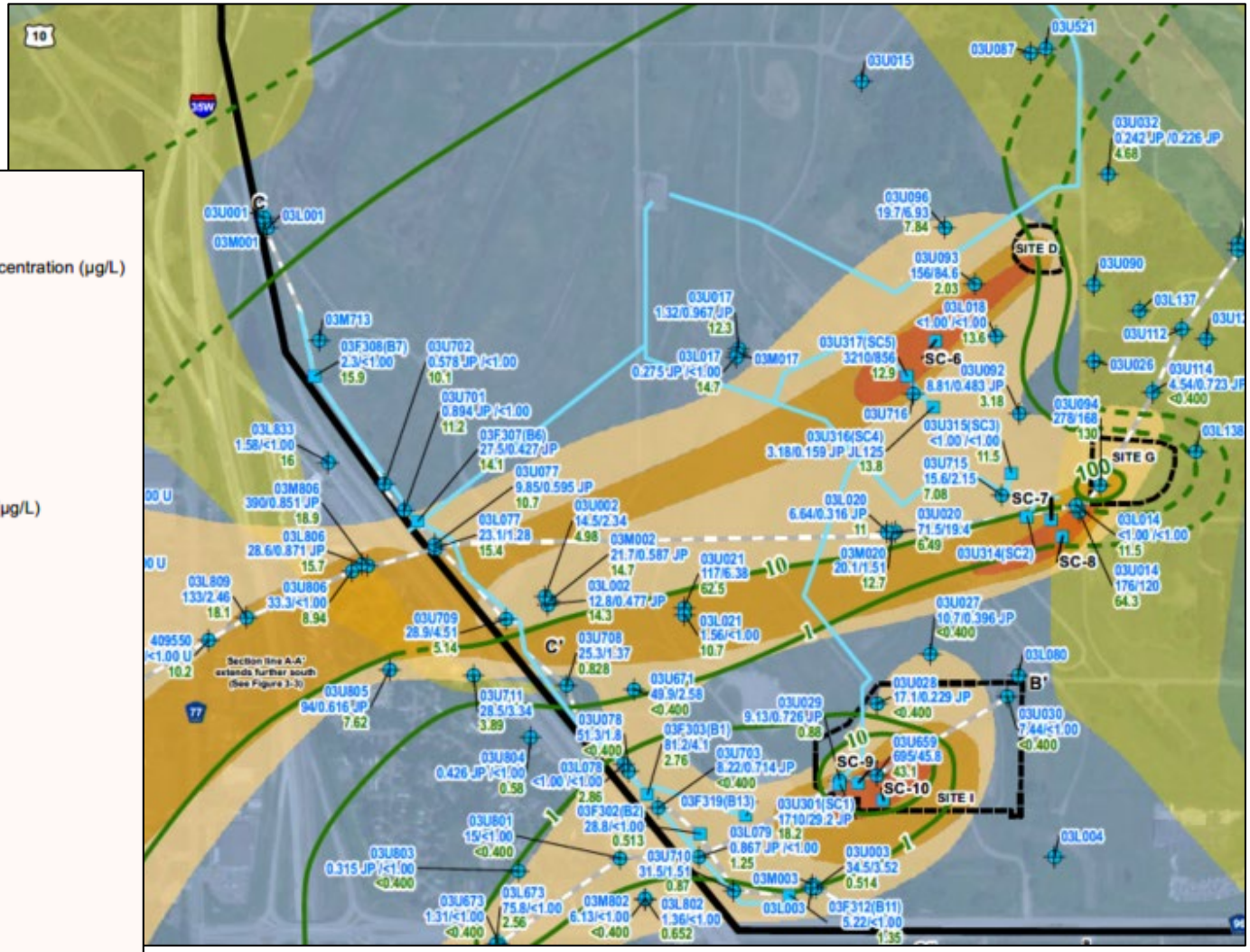
FY2020 –Prairie du Chien Plume Map



FY2020 –Jordan Plume Map

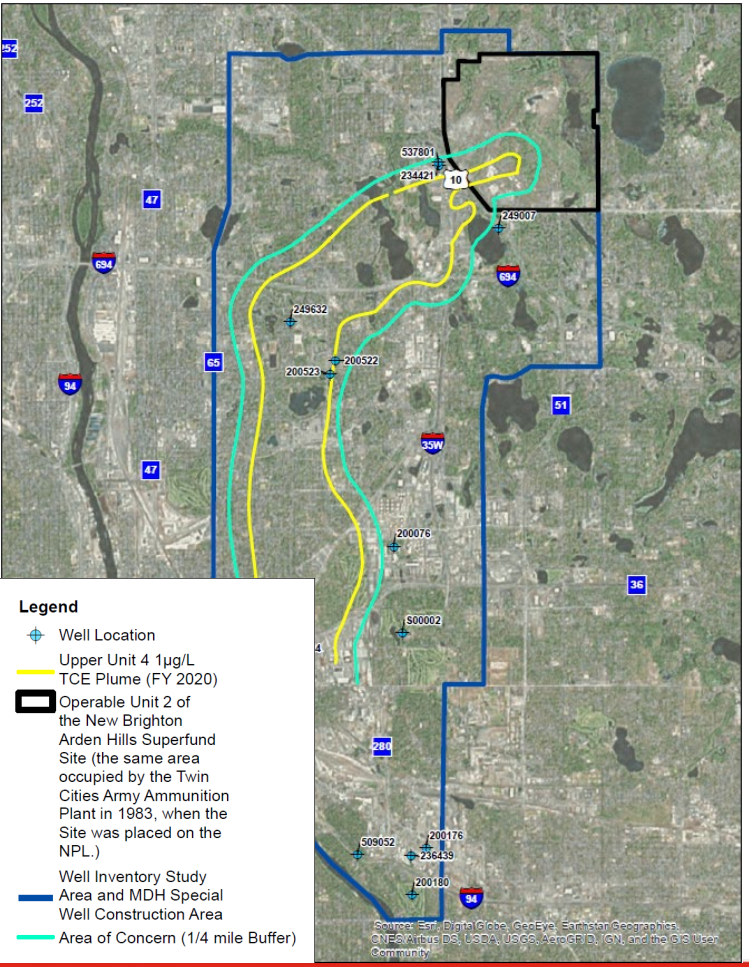


FY2020 – OU2 Unconsolidated Sediments Plume Map



Groundwater Sampling Update

- Completed sampling of 13 off-site irrigation/industrial wells in 2020.
- This is required every 4 years.

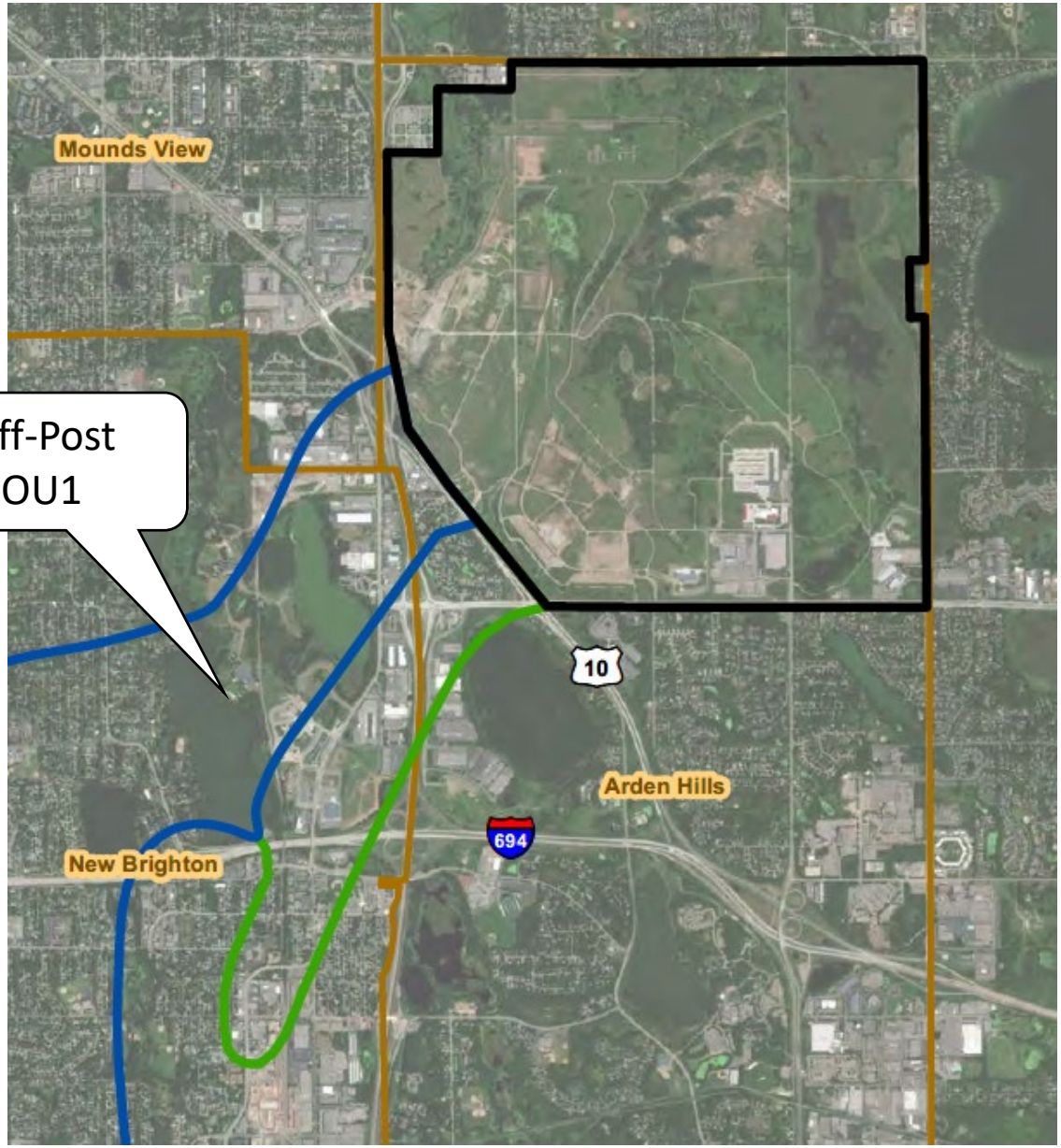


- Results showed 4 wells exceeded cleanup standards.
  - Irrigation, car washing, industrial (paper making), or out of service.
- The Army notified well owners and have requested resampling in accordance with Army Alternative Water Supply Plan.
- Resampling expected to occur in April 2021.
- None of these wells are used for drinking water.

What has the Army done since January 2021

- Prepared Well Inspection Report for TCAAP to document the comprehensive well inspection for 333 active Army wells completed in 2020.
- Purpose was to verify any maintenance requirements, ensure the wells were able to be sampled, assess the requirements for the wells, and ensure the database was up to date.
- Army recommended abandoning 40 wells that are no longer needed per the groundwater monitoring plan.
- Report was submitted to the regulators in March 2021 for concurrence.

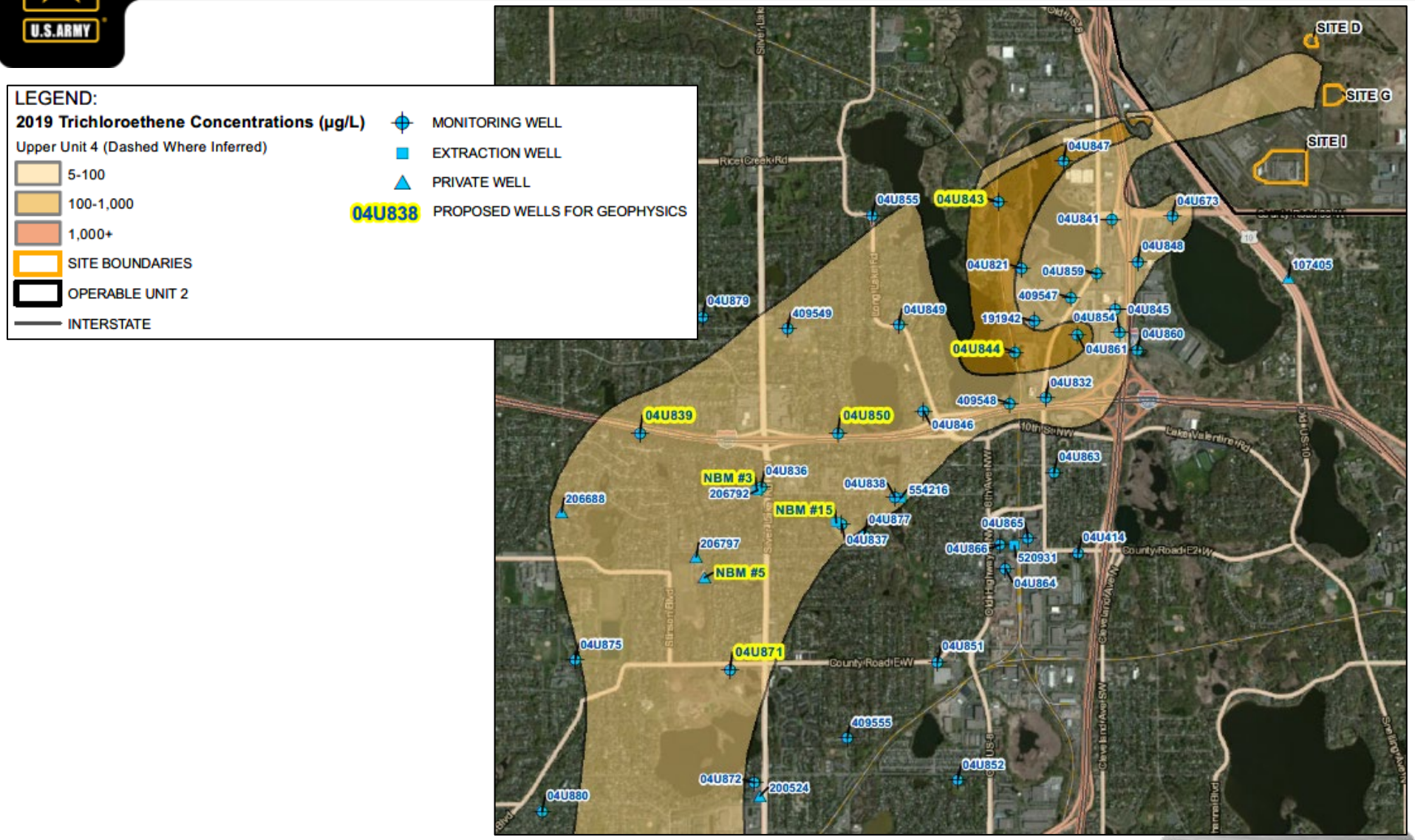
Twin Cities Army Ammunition Plant Cleanup



LEGEND:

- Operable Unit 1 (North Plume)
- Operable Unit 2 of the New Brighton/ Arden Hills Superfund Site (the same area occupied by the Twin Cities Army Ammunition Plant in 1983, when the Site was placed on the NPL.)
- Operable Unit 3 (South Plume)
- Municipal Boundaries

OU1 – Wells for Geophysics

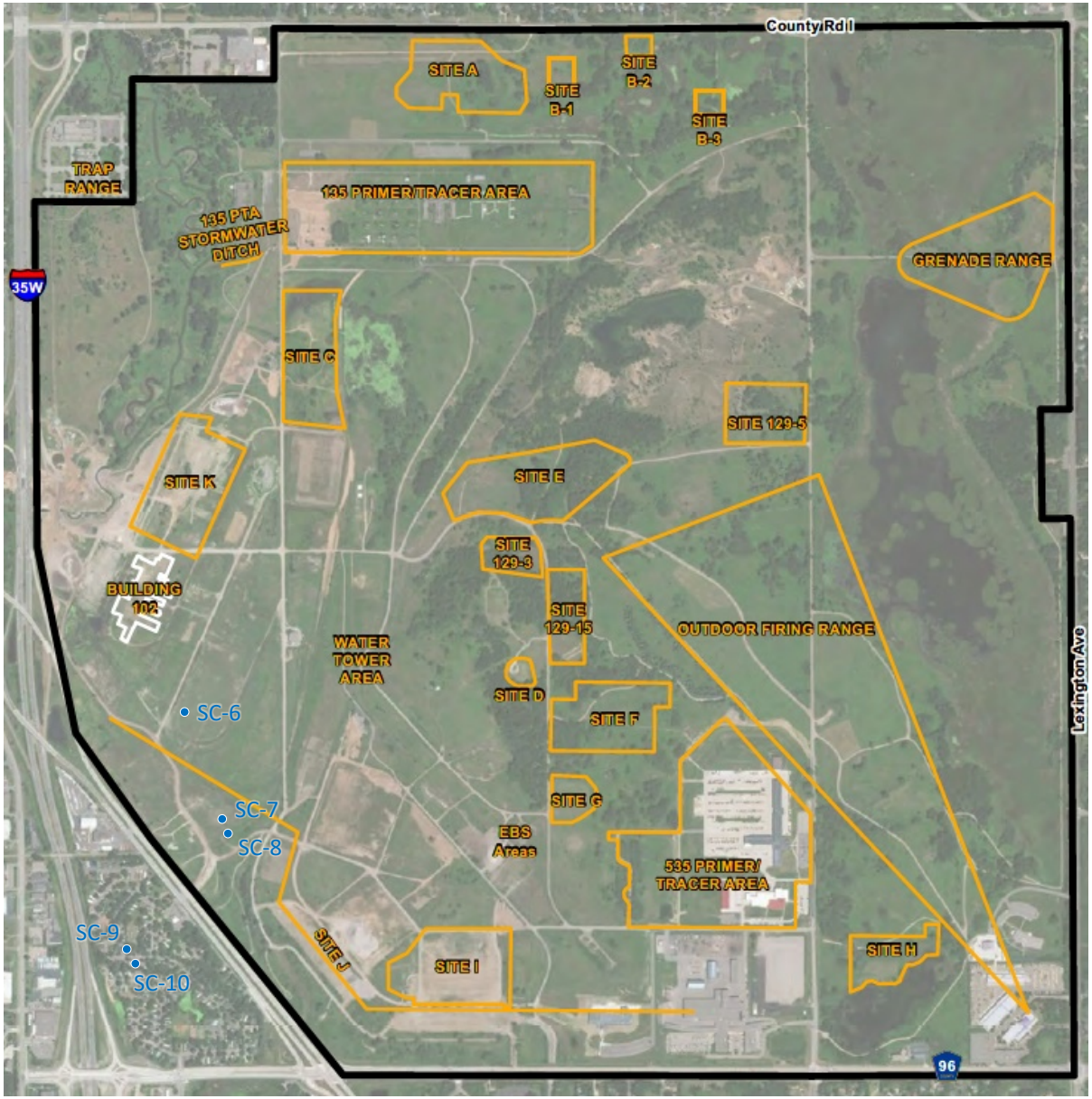


OU1 Optimization

- Purpose – to identify best locations for new extraction well to improve effectiveness of contaminant removal at the City of New Brighton
- Army presented results of optimization study to EPA, MPCA, and New Brighton Feb 2021
- Drilling to refine location is anticipated Spring 2021
- Goal: increase amount of contaminant removed by relocating well more central to plume
- Once well location is finalized (approved by stakeholders) Army will fund and New Brighton will install new well.
- Army will continue to work with New Brighton to ensure drinking water treatment operations are not affected

Twin Cities Army Ammunition Plant Cleanup

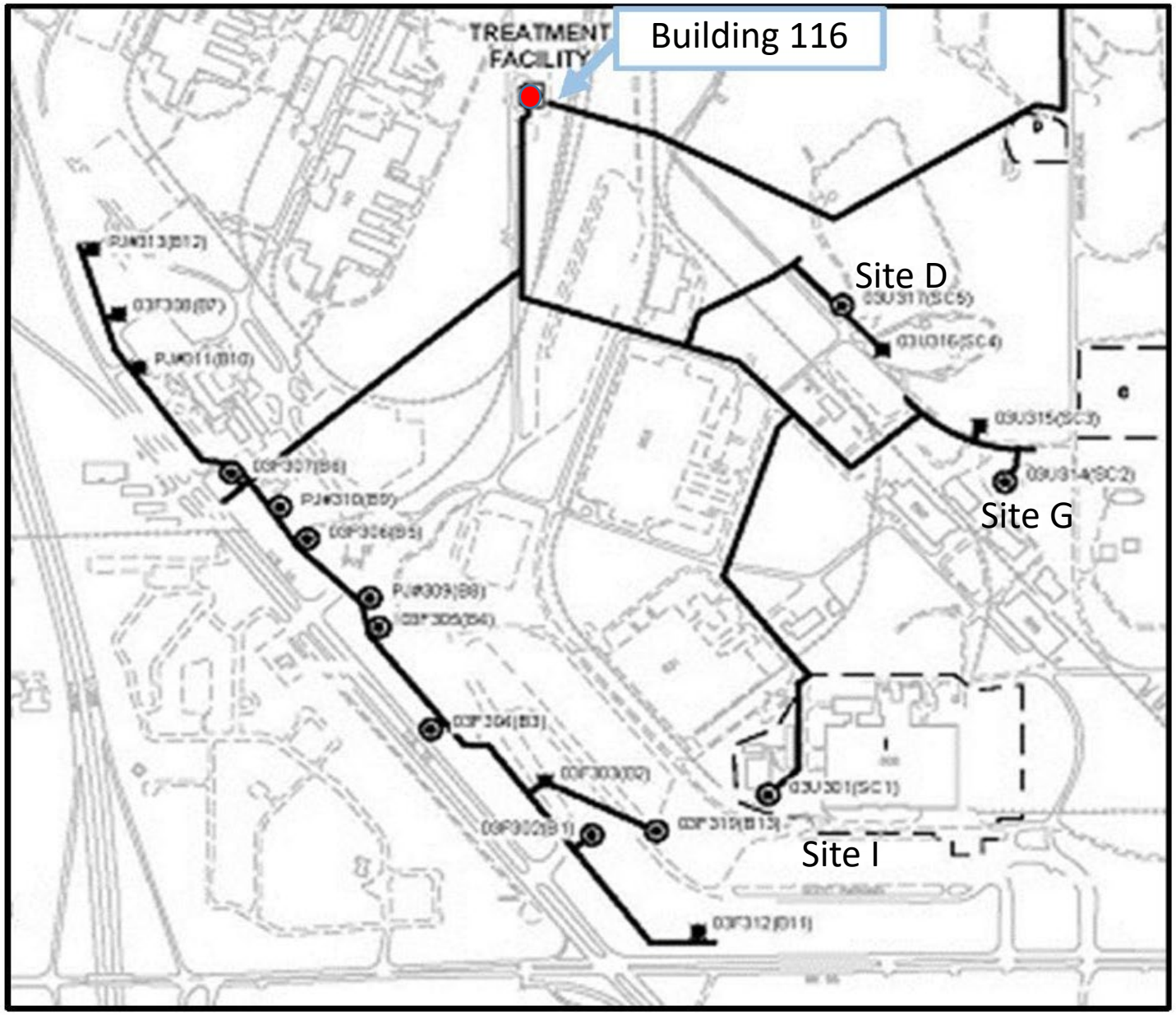
OU2


County Rd I
SITE A
SITE B-1
SITE B-2
SITE B-3
TRAP RANGE
135 PRIMER/TRACER AREA
135 PTA STORMWATER DITCH
GRENADE RANGE
35W
SITE C
SITE 129-5
SITE K
SITE E
SITE 129-3
BUILDING 102
SITE 129-15
OUTDOOR FIRING RANGE
WATER TOWER AREA
SITE D
SITE F
Lexington Ave
SC-6
SITE G
SC-7
SC-8
EBS Areas
535 PRIMER/ TRACER AREA
SC-9
SITE J
SITE I
SITE H
SC-10
96

OU2 Optimization

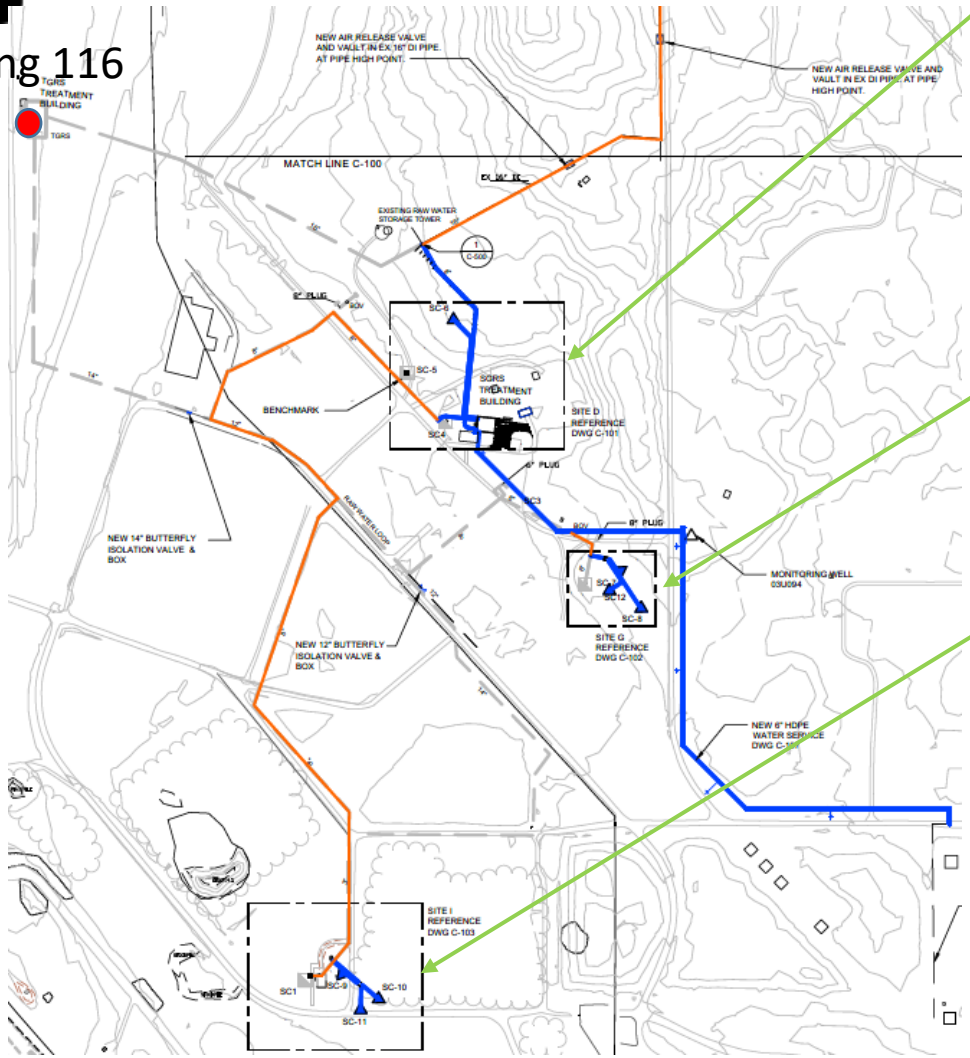
- TCAAP Groundwater Recovery System (TGRS) installed in 1987
- Install TGRS extraction wells nearer to the source areas
- Increases capture effectiveness and treatment of the plume
- Install secondary treatment called Source Groundwater Recovery System (SGRS)
- Anticipate SGRS construction 2021
- Anticipate SGRS operational 2022

Existing TGRS – Current Piping



Future SGRS – Pumping Plan

Building 116



Site D

- Location of SGRS Building for road and electrical access
- SC-5 uses existing wellhouse; SC-6 manifold inside SGR building
- Discharge to Sand and Gravel Pit

Site G

- One wellhouse serving three extraction wells (SC-7, SC-8, and SC-12)

Site I

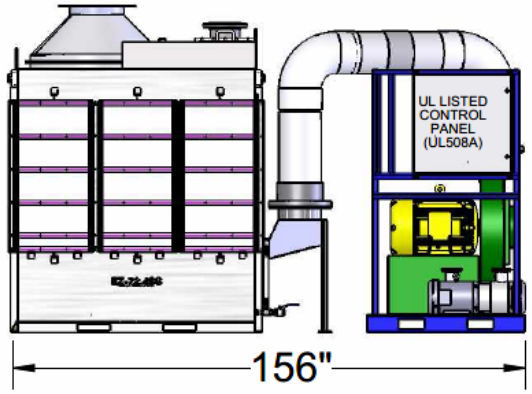
- One wellhouse serving four extraction wells (SC-1, SC-9 through SC-11)

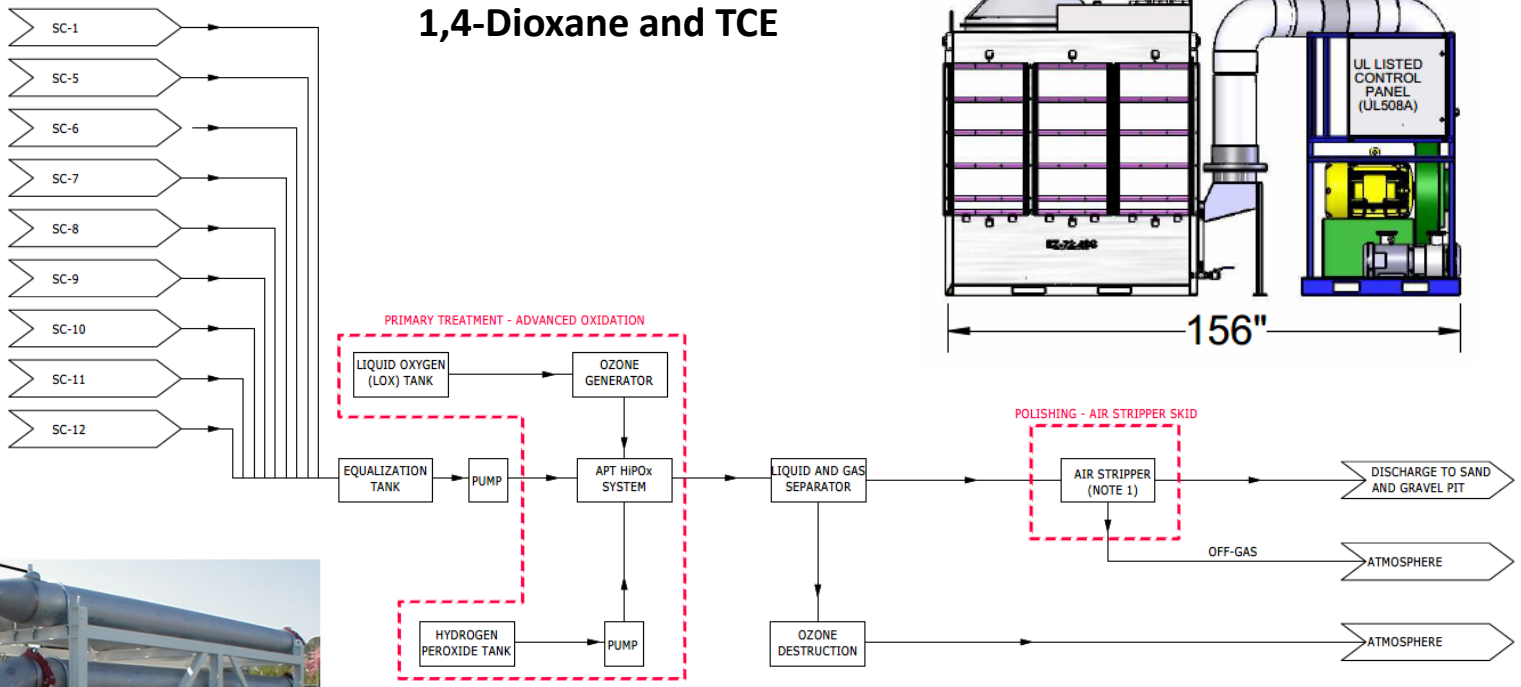
Pipe Routing

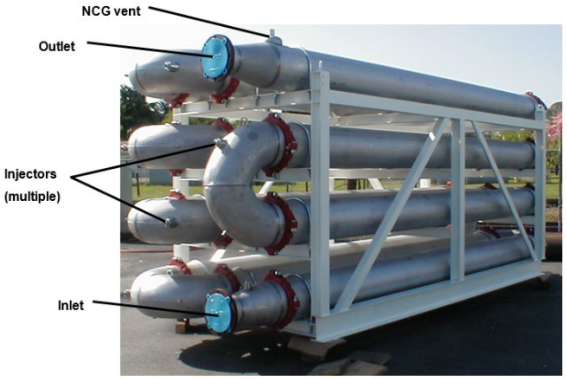
- New piping in blue
- Existing piping in orange

Future SGRS – Process Flow

SGRS will treat for both 1,4-Dioxane and TCE







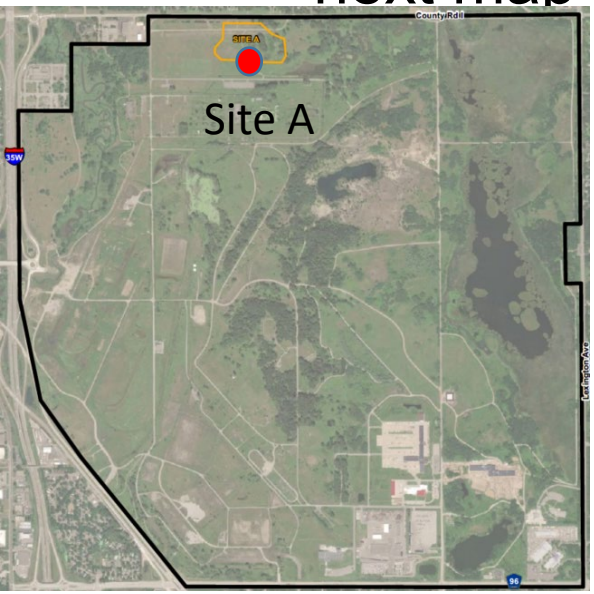
NOTE 1
Transfer pumps on Air Stripper Skid sized to discharge to Sand and Gravel Pit

Future SGRS – Work since January 2021

- January 8 and 15 – MPCA and USEPA provided comments on the 60% design drawings
- February 16 – Held call with MPCA and USEPA to discuss their comments and Army responses
- March 19/26 – Submitted the 90% design drawings to be followed by the 100% design drawings in April
- March 26 – Bid walk for building contractors
- Construction is scheduled to start in May 2021

OU2 – Site A Site Investigation

- Purpose - to address the migration of a shallow groundwater plume that exists at Site A and the potential vapor intrustion (VI) risk it poses to the residential neighborhood directly north of the TCAAP property boundary.
- VI study in March (heating month) and May (non-heating month) (on following map in purple)
- Temporary groundwater sampled collected in 2021 (on next map in red)

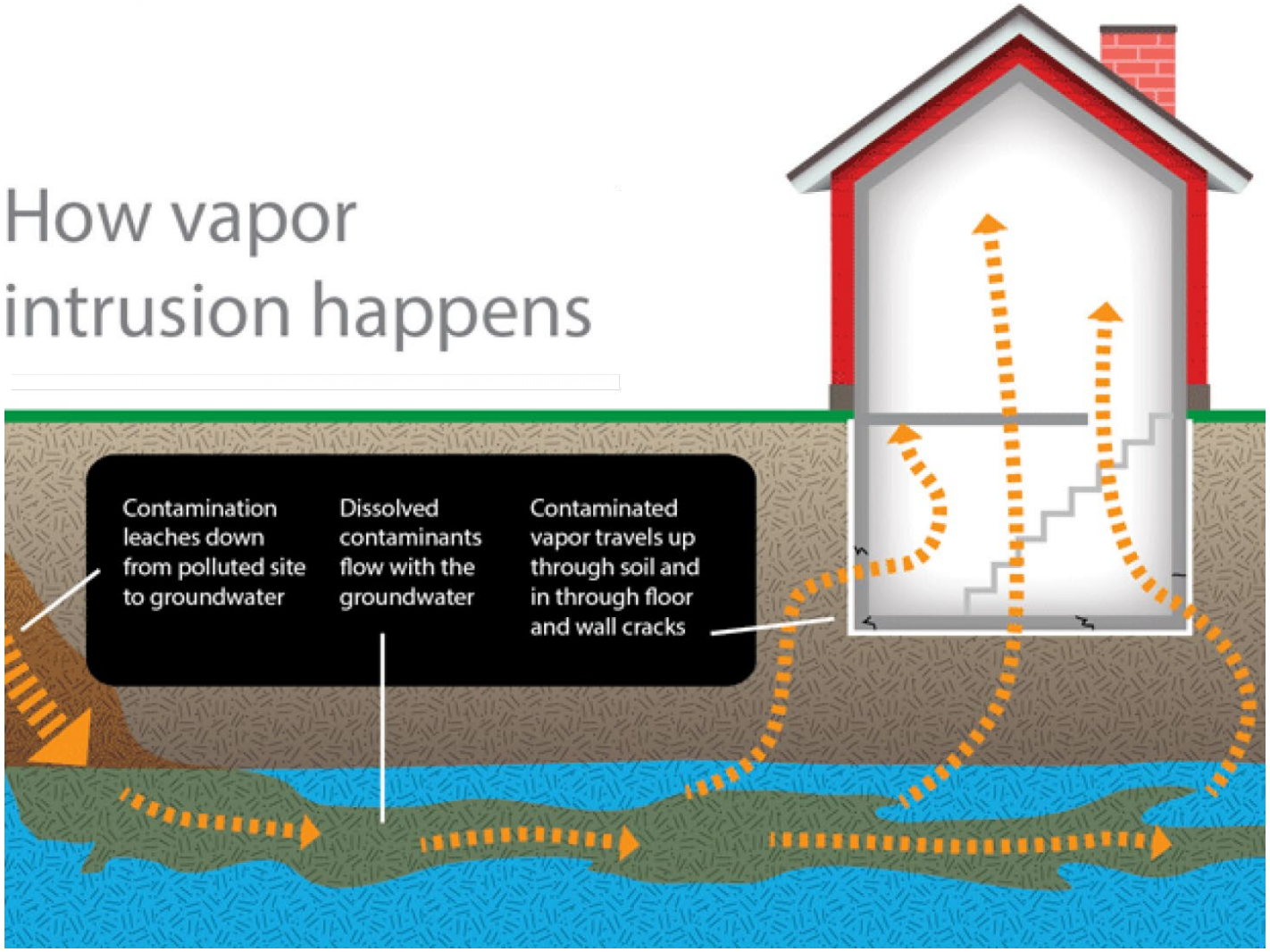


- Install additional monitoring wells at Site A after plume delineation in 2021 (on next map in orange).
- Previous VI investigation completed in 2013.
  - No risk noted from 2013 study.
  - Shift in groundwater plume required new investigation.

What is Vapor Intrusion?

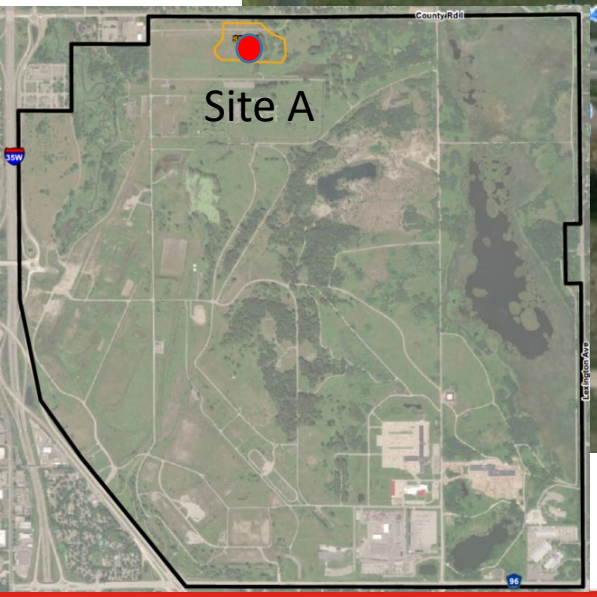
- Vapor intrusion is the migration of hazardous vapors from any subsurface contaminant source (contaminated soil or groundwater), through the vadose zone and into the indoor air
- Usually occurs in overlying buildings through openings in the building foundation
  - cracks in the slab
  - gaps around utility lines
  - elevator shafts
- Volatile organic compounds or VOCs typically pose the most common vapor intrusion concerns.
- Trichloroethylene, or TCE, is a VOC and one of the contaminant of concerns at TCAAP
- 1,2 Dichloroethane or ethylene dichloride is another VOC that is a TCAAP contaminant of concern

How vapor intrusion happens



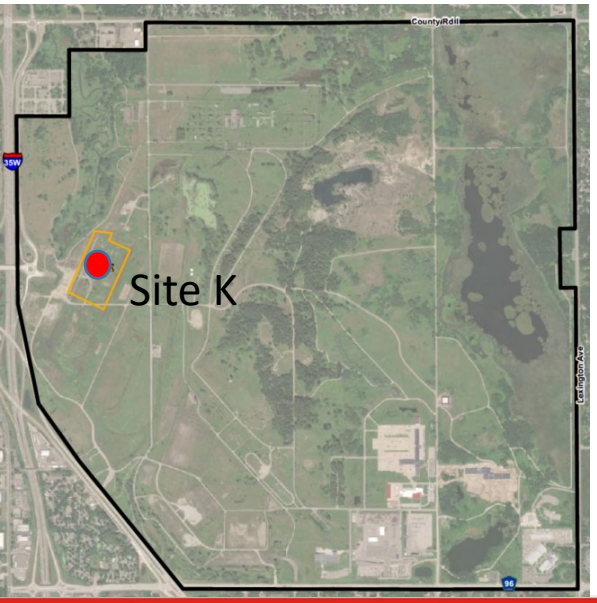
OU2 – Site A


Terrace Dr
Fairview Ave
1783 Pinewood Dr
(Sealed)
Pinewood Dr
01U902
43
01U357
(EW-7)
<1
01U356
(EW-6)
15
01U355
(EW-5)
1.8
01U140
0.6 J
01U139
180
01U157
0.44 J
01U158
55
01U354 (EW4)
01U138
<1
01U115
<1
01U116
<1
01U351 (EW1)
01U352 (EW2)
<1
01U125
01U353 (EW3)
0.81 J
01U117
36
Legend
01U353 Sealed Well Location
01U353 Extraction Well Location
01U355 Monitoring Well Location
01U153 Piezometer Location
15 cis-1,2-dichloroethene concentration (µg/L)
1945 Trench
2019 cis-1,2-Dichloroethene concentrations
(Dashed Where Inferred)
1-10 µg/L
10-100 µg/L
> 100 µg/L
Proposed Sampling
Proposed Monitoring Well Location
(Subject to change based on field data)
Direct Push Groundwater Sample
Temporary Vapor Point
Contingency Vapor Point


Site A

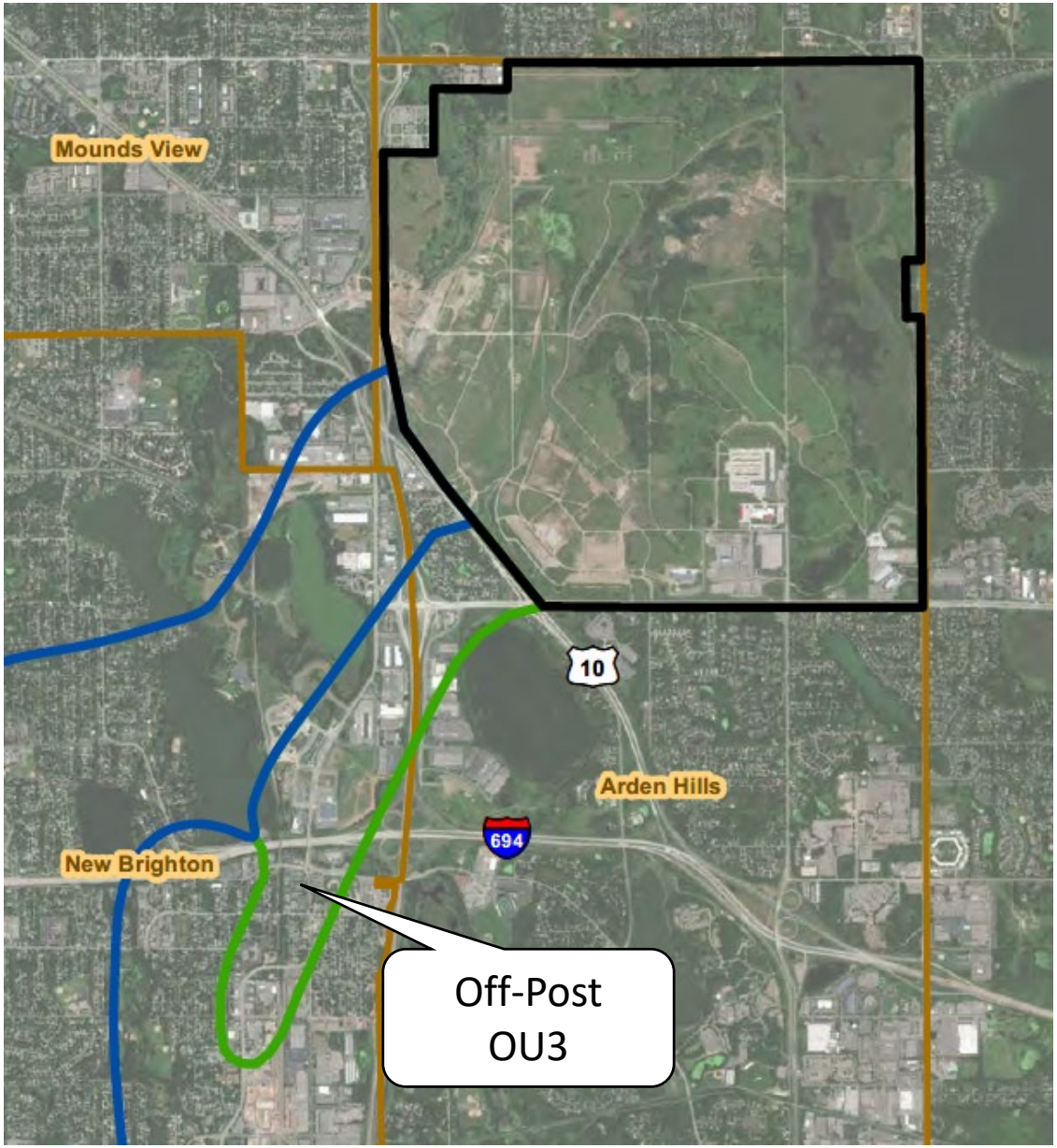
OU2 – Site K USGS Treatability Study

- Purpose: to improve shallow groundwater remediation of TCE.
- Draft workplan to be approved in 2021.
- Three-year treatability study scheduled to begin in July 2021.
  - Treatability will include bioremediation techniques.
  - Install groundwater monitoring wells.



OU2 – Site K

Twin Cities Army Ammunition Plant Cleanup



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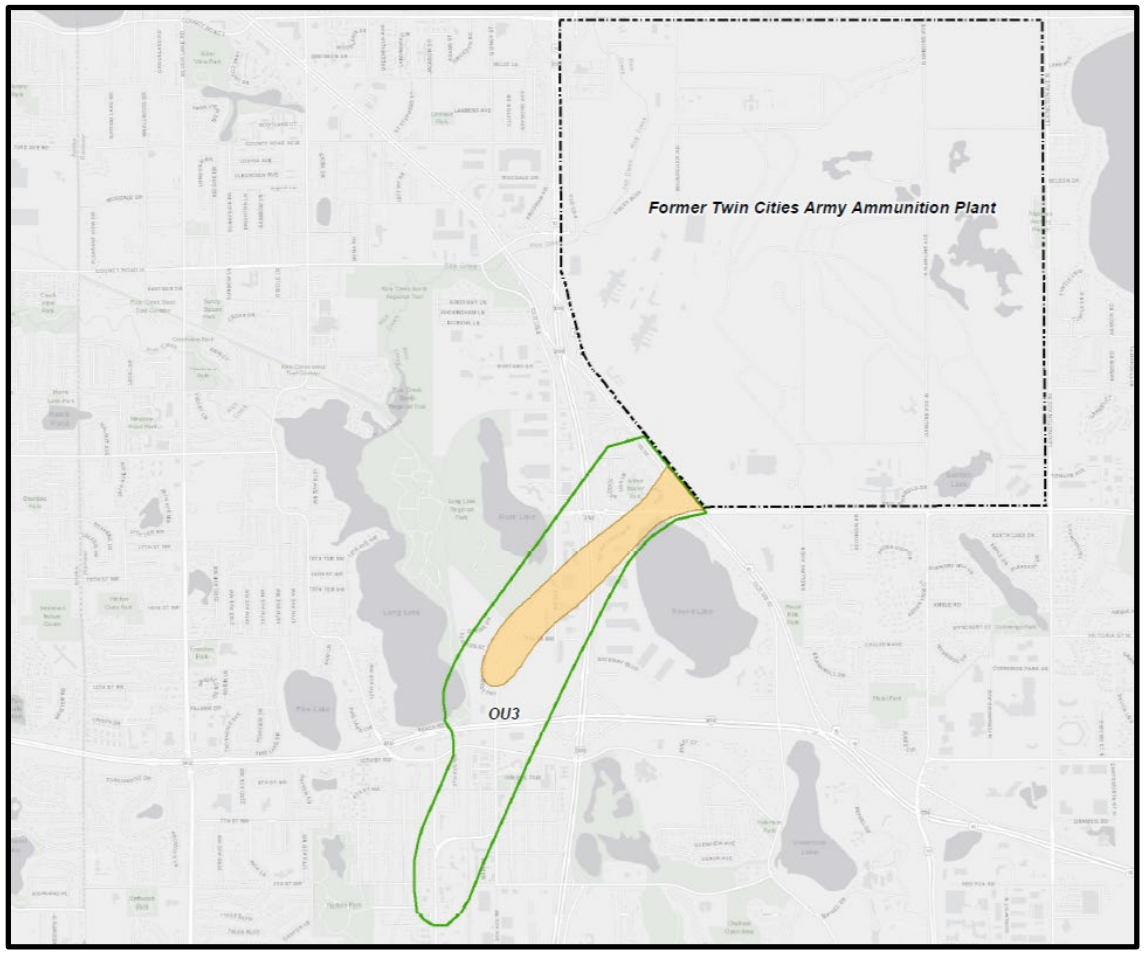
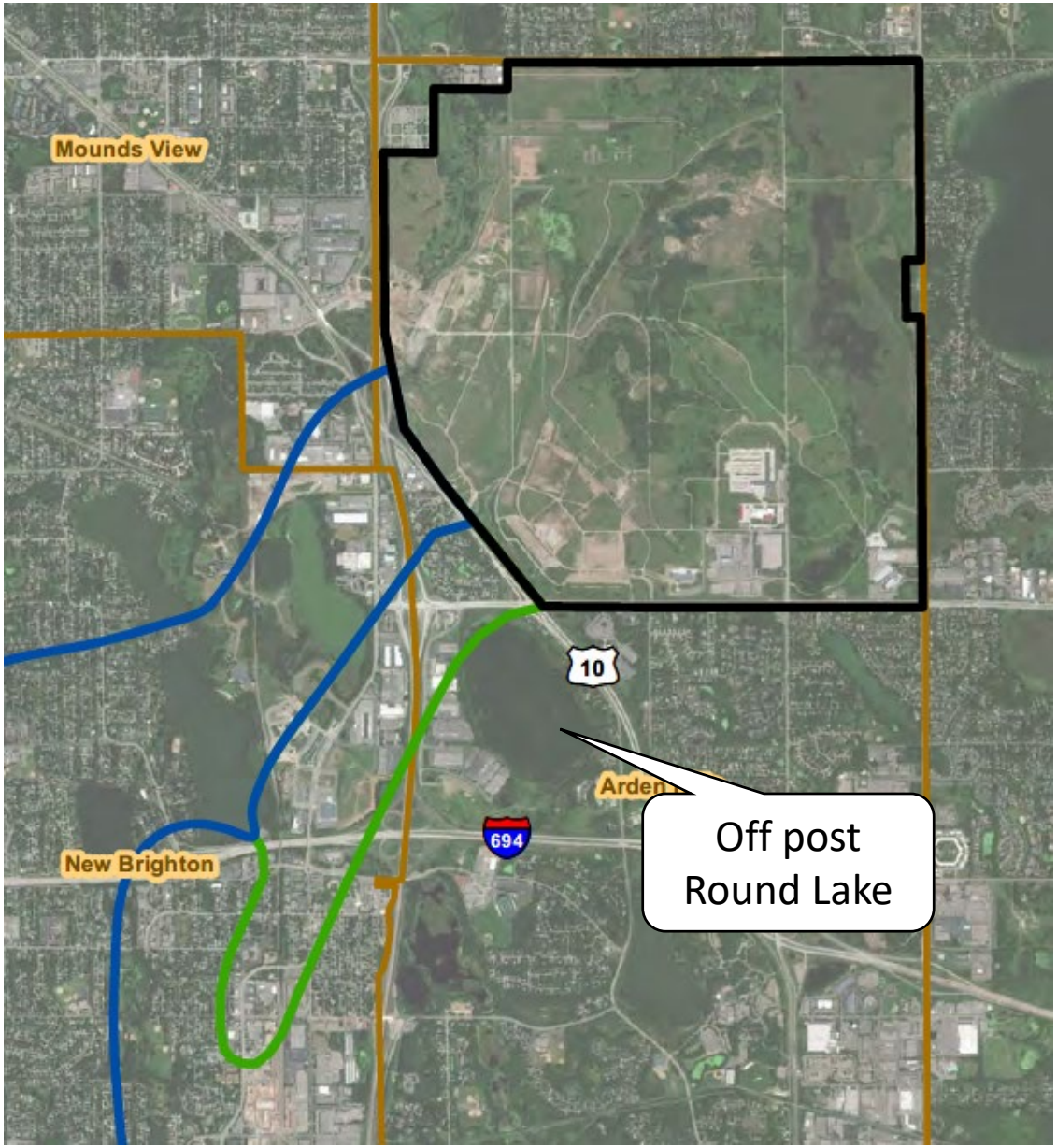
OU3 Plume



- Continued monitored natural attenuation
- Annual groundwater sampling each summer
- Results from sampling are available in the Annual Performance Report

Twin Cities Army Ammunition Plant Cleanup



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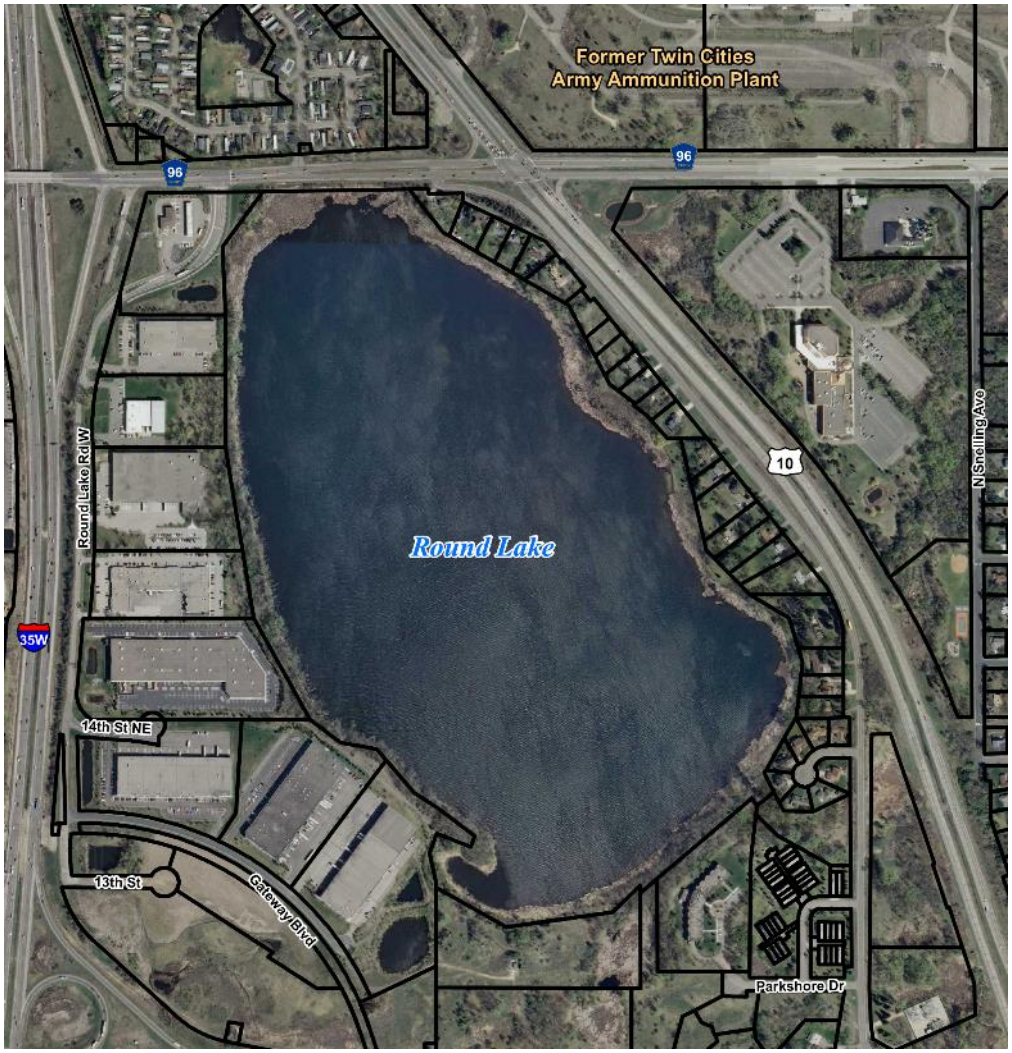
Round Lake - Background

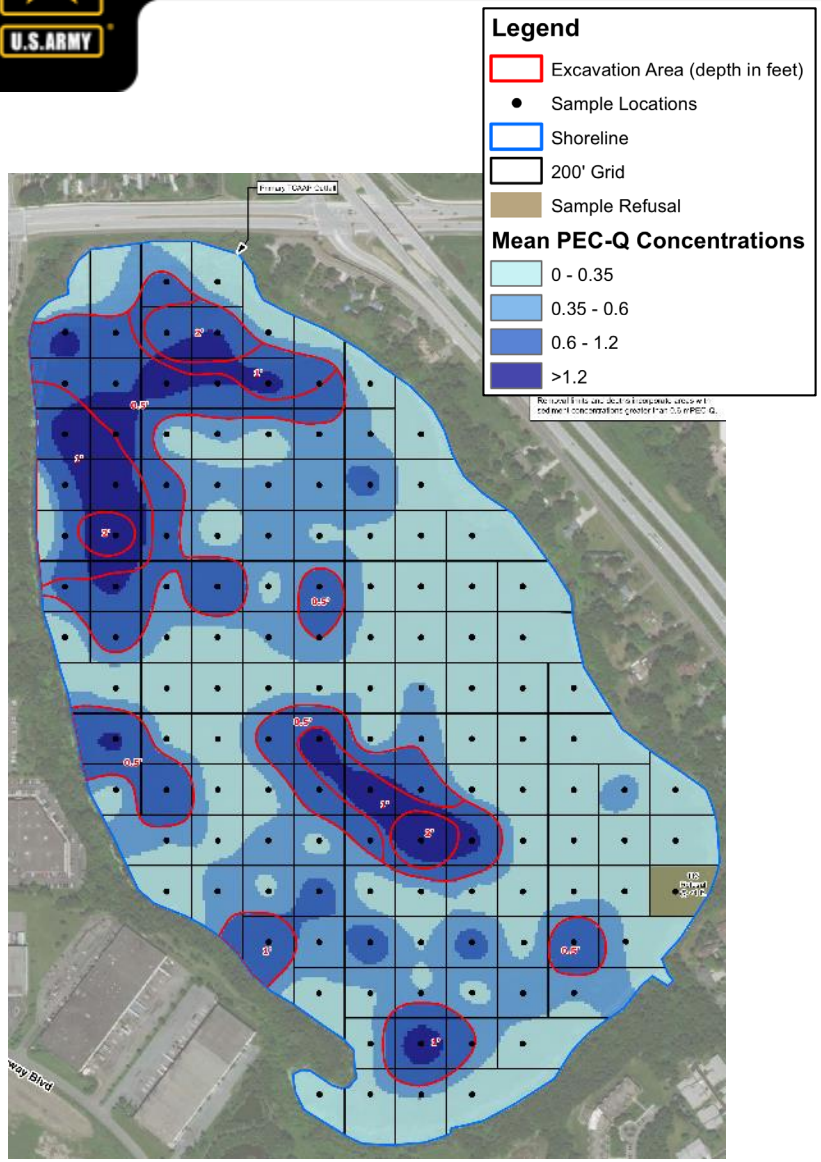
- Round Lake was part of TCAAP but was transferred to the U.S. Fish & Wildlife Service in 1974.
- Historical releases of hazardous substances from TCAAP to Round Lake were associated with the discharge of industrial processing wastewater, sanitary sewer, and storm sewer discharges.
- Contaminants of concern include seven metals (cadmium, chromium, copper, lead, silver, vanadium, and zinc) and PCBs.
- Contamination is largely confined to the upper 1 foot of sediment in the lake.



Round Lake - Background

- Because there is a mixture of contaminants, and to provide a general depiction of metals concentrations in sediments at various sediment depths, a mean probably effect concentration quotient (mPEC-Q) is used to measure success.
- The original Remedial Investigation (RI) was conducted between 1987 and 2004.
- Human Health Risk Assessment identified no risk to humans. Ecological Risk Assessment concluded ecological risks were low.
- Action was delayed due to dispute between FFA parties.
- Many revisions of the Feasibility Study (FS) have occurred including input from EPA, MPCA, MDNR and USFWS.
- Supplemental RI/FS accepted by MPCA and USEPA in March 2021. Sent to MDNR and USFWS for review.
- Available on TCAAP website.

Round Lake – Remedial Action Objective



- Preliminary Remedial Action Objective (RAO):

  To minimize the potential for adverse effects to benthic populations and the waterfowl that ingest them from exposure to the contaminated sediments from TCAAP-related discharges by achieving an mPEC-Q of 0.6.

- Final RAOs will be established in the Record of Decision (ROD)

Round Lake – Remedial Alternatives

Alternative	Remedy	Retained
1	No Action	Yes*
2	Monitored Natural Recovery	No
3	Enhanced Monitored Natural Recovery	No
4A	Removal and Disposal Offsite	Yes
4B	Removal and Disposal at TCAAP Impoundment	Yes
5	In-Situ Cover	Yes
6A	Removal, Disposal Offsite, and In-Situ Cover	Yes
6B	Removal, Disposal at TCAAP Impoundment, and In-Situ Cover	Yes
7	Near Shore Confined Aquatic Disposal	Yes
8	Deep Water Confined Aquatic Disposal	Yes
9	Deep Water Confined Aquatic Disposal and In-Situ Cover	Yes

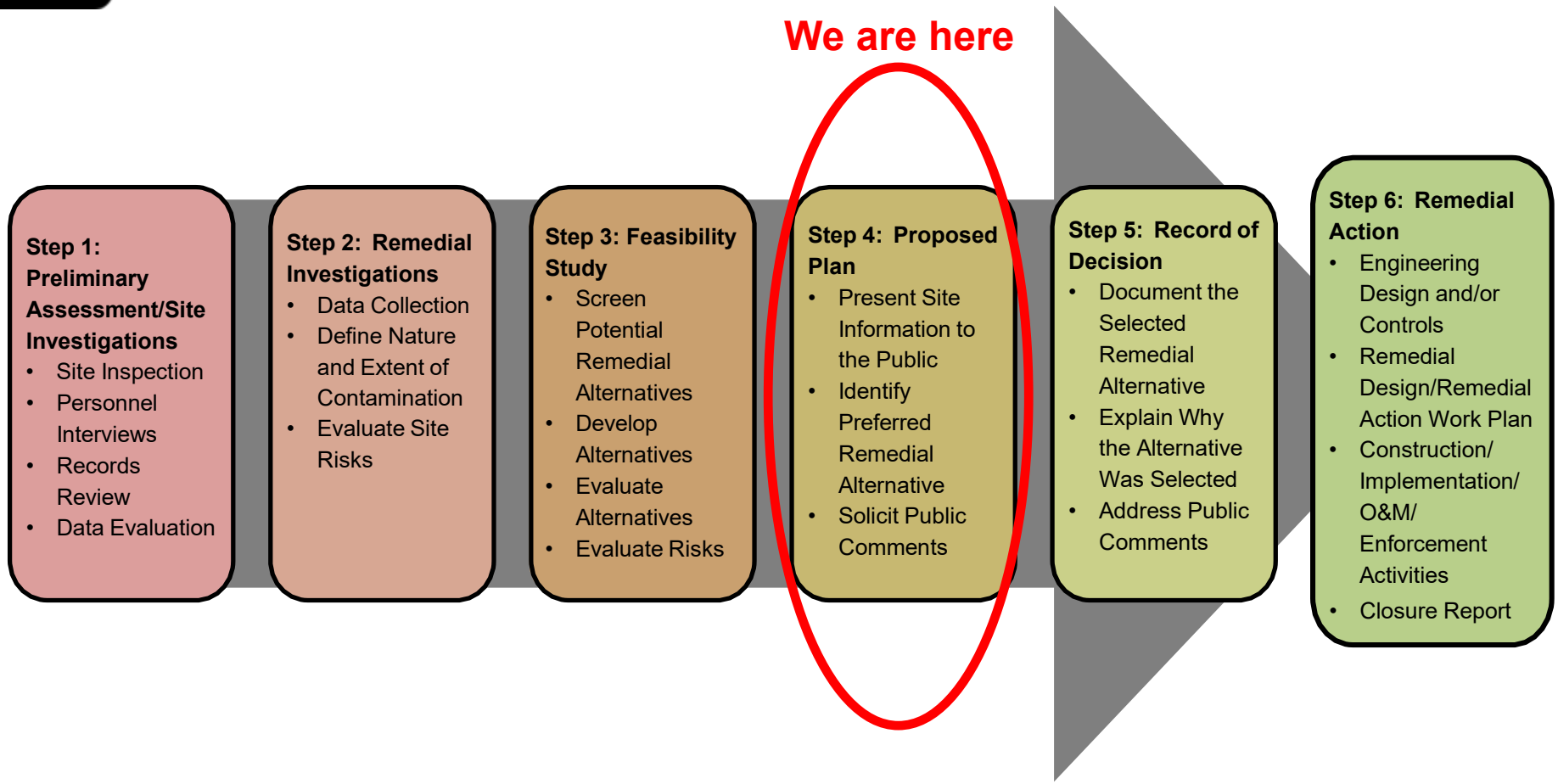
*No Action retained for comparison only

Round Lake – Alternative Comparison

Nine criteria established by CERCLA for evaluation of remedial alternatives:

Threshold Criteria	Overall protection of human health and the environment
	Compliance with applicable or relevant and appropriate requirements (ARARs)
Balancing Criteria	Long-term effectiveness and permanence
	Reduction of toxicity, mobility, and volume through treatment
	Short-term effectiveness
	Implementabilty
	Cost
Modifying Criteria	State acceptance
	Community acceptance

Round Lake – CERCLA Process



Currently preparing Proposed Plan. Will be available for public comment for 30 days, after approval by USEPA and MPCA.

Round Lake – Next Steps

- Proposed Plan will summarize alternatives and identify preferred alternative; Proposed Plan will be released for public review and comment
- Written comments will be accepted for 30 days; oral comments will be accepted at a public meeting to be scheduled approximately 2 weeks after Proposed Plan is released to the public
- Record of Decision – will document selected alternative after all input has been considered
- Remedial Action – will include remedial design, construction, and reporting

What's Next

- OU1
  - Submit field summary report to document work completed and work plan for two additional borings
  - Complete borings and propose new well location
- OU2
  - Complete vapor intrusion investigation at Site A
  - Begin USGS three-year treatability study at Site K
  - Begin construction of SGRS
- OU3
  - Continue groundwater monitoring
- Round Lake
  - Develop Proposed Plan identifying Army's preferred alternative
  - Conduct Public Comment Period and Public Meeting

New Business

- Topics for future RAB meetings?
- Additional administrative requirements for RAB?
- Suggestions for improvement of RAB?

Next Meeting Agenda – Specifically about Round Lake

- Date To Be Determined
- Review/Approve minutes of last meeting
- Old Business
- Questions on the Supplemental RI/FS
- Explanation of Round Lake Proposed Plan
- Official Public Comments for Round Lake Proposed Plan
- Agenda for July 20, 2021 meeting

Public Comments

- Does anyone have any comments, concerns or suggestions

Questions

You can ask questions now or at anytime using the email listed on the website.