Restoration Advisory Board Meeting Minutes
Ramsey County Public Works Complex
Tuesday, 17 May 2015 – 7:00 p.m.

Members Present: Amy Hadiaris, Tom Barounis, Mike Fix, and Lyle Salmela
Members Absent: Jon Bode, Jan Heaberlin, Paul Bloom, Keith Maile, Robert Ramgren, and Kay Welsch (note that Kay called Mike Fix ahead of the meeting to indicate she could not attend, but received a summary of the information to be presented from Mike)

The meeting was called to order by Co-Chair Lyle Salmela at 7:00 p.m.

Restoration Program Update

1) TCAAP Restoration Program Recent Activity Summary

2) Impacts of 1,4-dioxane on TCAAP Restoration Program

3) Round Lake Update

The Army presented the attached slideshow covering the above three topics. Other than minor discussion and clarifications regarding how to read and interpret the two plume contour maps, there was no significant additional discussion or questions & answers.

TCAAPRAB.ORG
The Army continues to update the webpage with dates of future RAB meetings and with meeting minutes, as well as any newsletters published. No other changes.

Election of Community Co-Chair
Election of the RAB Community Co-Chair was not considered at this meeting.

Date and Agenda for the Next Meeting
There was no need to schedule the next RAB meeting at this time. Future meetings will be scheduled as needed.

Adjournment
There being no further business, Mike Fix adjourned the meeting at 8:00 p.m.

Twin Cities Army Ammunition Plant

RESTORATION PROGRAM UPDATE

November 17, 2015

Wenck Associates, Inc.

Agenda

1) TCAAP Restoration Program: Recent Activity Summary

2) Impacts of 1,4-Dioxane on TCAAP Restoration Program

3) Round Lake Update

TCAAP
Restoration Program

Recent Activity Summary

Soil Areas of Concern

- Site A, 135 Primer/Tracer Area, EBS Areas
- Initially completed as Removal Actions
- At 2012 RAB Meeting, soil sampling just started
- Army selected dig & haul to landfill as the remedy (public noticed in November 2012)
- Combined total: 1846 tons of soil removed (2013)
- Closeout Report approved by MPCA/EPA in 2013
- Documented as the final remedy for these sites in OU2 Record of Decision Amendment #5 (2014)

Site A Soil Vapor Investigation

- Due to newer vapor intrusion guidance, MPCA/EPA requested this soil vapor investigation work
- Field work conducted in July 2013 (ten soil vapor push-probes along the north side of County Rd I)
- Concluded no significant risk for vapor intrusion
- Documentation Report approved by the MPCA/EPA in 2014

Building 102 Groundwater: Additional Investigation

- Due to spikes in plume concentrations, MPCA/EPA requested additional groundwater investigation
- Field work conducted in July 2013 (line of nine push-probes across plume to sample groundwater at a point the plume was halfway to Rice Creek)
- Results verified that the Monitored Natural Attenuation (MNA) remedy remains adequate (plume degrades prior to reaching the creek)
- Documentation Report approved by the MPCA/EPA in 2014
- Concentration spikes have since reversed (spikes were likely due to an unusually high groundwater table)

TCAAP Five-Year Review

- Required by Superfund Law, this was TCAAP's 4th
- U.S. Army Corps of Engineers conducted this review in 2013/2014
- Notification that the review was being conducted was public noticed in November 2013
- Final report was signed by Army/MPCA/EPA in August 2014
- Significant conclusions:
  - Operable Unit 1, 2, & 3 remedies remain protective
  - Noted the concurrent work at Site A & Building 102
  - Noted the continued evaluation of MNA at Site A

Operable Unit 2 Land Use Control Remedial Design (OU2 LUCRD): Revision 3 Completed

- This document describes the land use controls that are required within OU2, who is responsible for implementing them, and how they get implemented and potentially modified
- Revision 3 approved by the MPCA/EPA in March 2015
- Primary changes:
  - The soil land use control in the balance of the National Guard's (AHATS) cantonment area was changed from "site-specific industrial use" to "restricted commercial"
  - Updated to reflect 2013 land transfer to Ramsey County

Impacts of 1,4-Dioxane on TCAAP Restoration Program

1,4-Dioxane Background Information

- 1,4-Dioxane is a relatively recent, emerging contaminant of concern for regulators
- It is a man-made chemical that is used as a stabilizer (at < 5%) in chlorinated solvents, such as: trichloroethene (TCE) & 1,1,1-trichloroethane (TCA)
- It can also be found in various consumer products including soaps/shampoos/detergents, adhesives, paints, antifreeze, & certain food additives/packaging
- It is a Semi-Volatile Organic Compound (SVOC)
- It is miscible with water (limitless solubility)
- Once in groundwater, it is likely to stay there, does not generally degrade, and is relatively difficult to remove

Health Risks

- EPA classifies 1,4-dioxane as a likely carcinogen
- However, EPA has not established a Federal Maximum Contaminant Level (MCL), which would apply to public drinking water supplies
- The current Minnesota Department of Health - Health Risk Limit is 1 microgram per liter (1 ppb)
- The 1 ppb value is derived assuming a person drinks two liters of water per day over an entire lifetime (70 years) and represents a potential risk of one additional cancer case in 100,000 people

Summary of Key Events related to 1,4-Dioxane

- 2002: Minnesota Department of Health established a Health Based Value of 30 ppb
- 2004: MPCA/EPA asked Army to sample a small list of select wells on TCAAP for 1,4-dioxane
  - Maximum concentration detected: 15 ppb
  - No further sampling was deemed necessary
- 2013: Minnesota Department of Health's - Health Risk Limit of 1 ppb is promulgated

Summary of Key Events related to 1,4-Dioxane

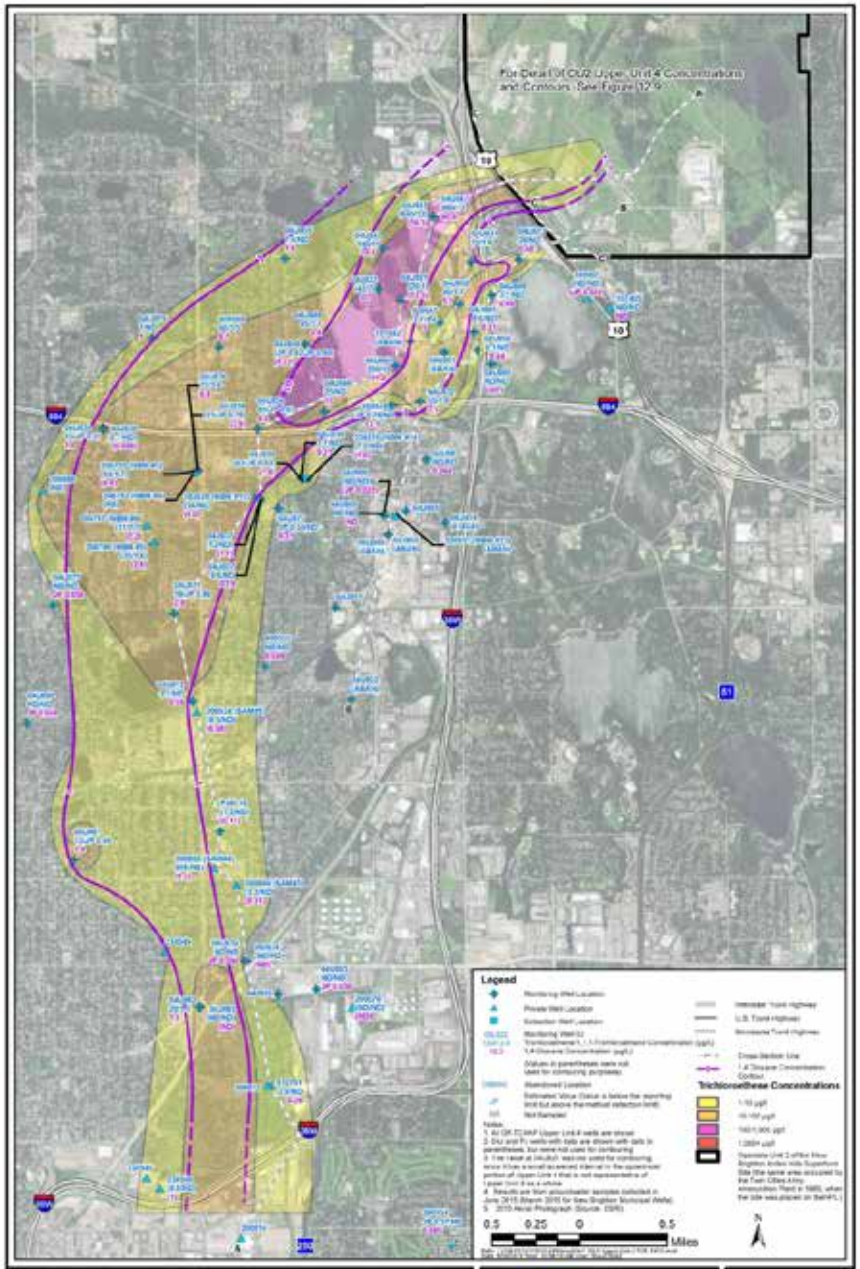
- April 10, 2015: Based on sampling of the New Brighton water supply showing 1,4-dioxane detections of 2.9 to 5.5 ppb, the Minnesota Department of Health issued a “Notice of Heath Risk Advisory” and recommended that the City take action to meet the 1 ppb Health Risk Limit (carbon was not removing it)
- April 15, 2015: New Brighton shut off the Prairie du Chien and Jordan Aquifer wells and switched to pumping deep wells (Mt. Simon Aquifer) which contained no detectable 1,4-dioxane
- June 2015: Army conducted the first comprehensive sampling event for 1,4-dioxane

Operable Unit 1: Remedy Impacts

- Primary impact is no extraction of contaminated groundwater from Prairie du Chien or Jordan
- MPCA/EPA have acknowledged a remedy "time-out" to allow New Brighton to evaluate, design and construct 1,4-dioxane treatment system (approx. 4 years from well shut off)
- Primary concern is protecting people consuming municipal water
- Other remedy components remain in place (e.g., Special Well Construction Area & Alternate Water Supply Program for any impacted private wells)

1,4-Dioxane Sampling Results

- Generally, the edge of the solvent plume coincides with the edge of the 1,4-dioxane plume
- Source areas for OU1 plume on TCAAP:
  - Highest concentration near Site D was 14 ppb
  - Highest concentration near Site G was 281 ppb (this was highest result among all wells sampled)
- Highest result in the OU1 plume was 60 ppb (this was a Prairie du Chien well just off TCAAP)
- Results near New Brighton wells: 0.3 to 6.8 ppb
- Results near Saint Anthony wells: 0.1 to 0.6 ppb
- Shallow GW & Rice Creek: generally not detected



ANNUAL PERFORMANCE REPORT

OU1 & OU3, Upper Unit 4, Trichloroethene and 1,4-Dioxane Isoconcentration Map, Summer 2015

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responsive partner. Exceptional outcomes.

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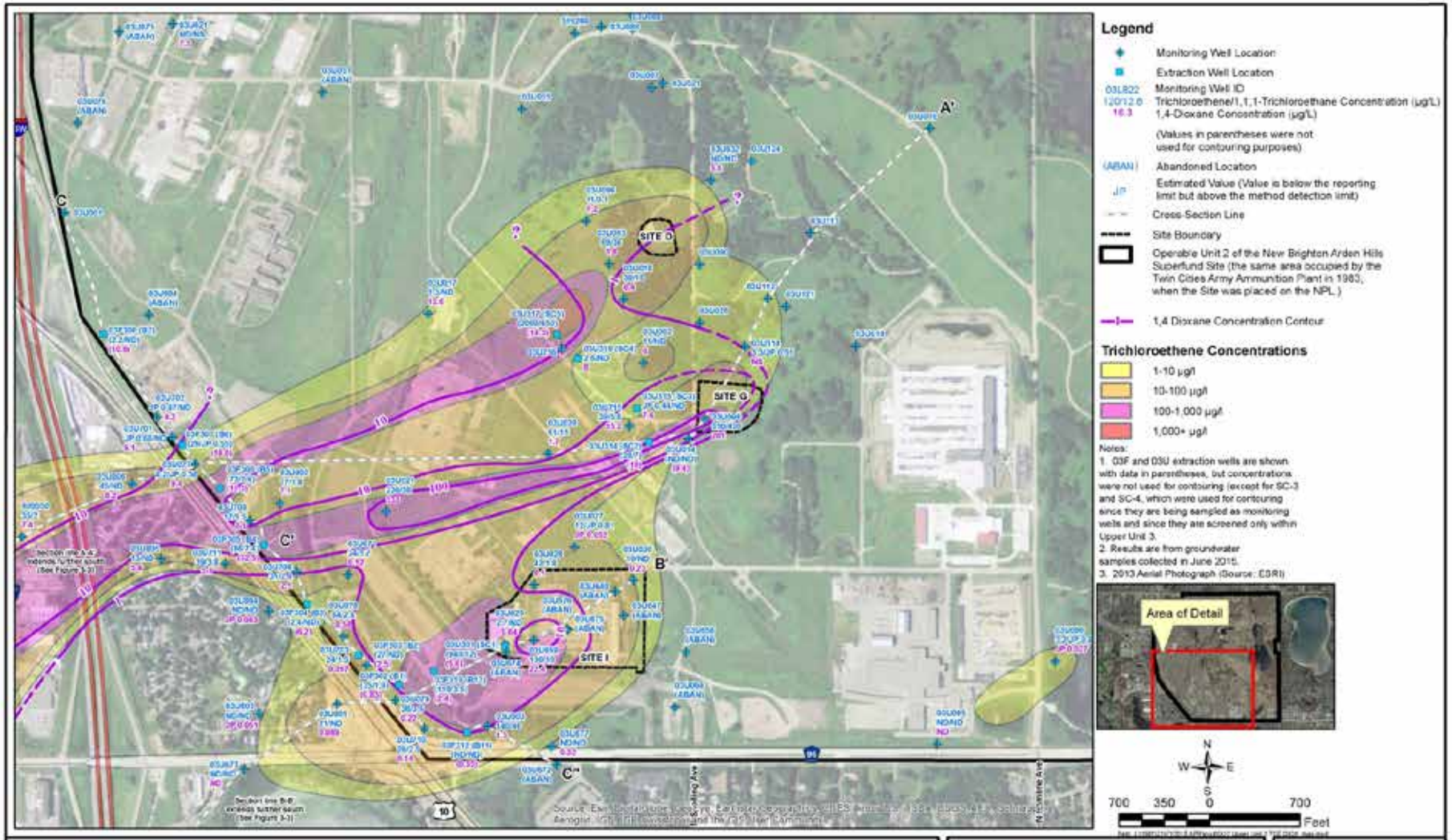
Figure 3-5



ANNUAL PERFORMANCE REPORT

OU2, Upper Unit 3, Trichloroethene and 1,4-Dioxane Isoconcentration Map, Summer 2015

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Figure 12-7

Next Steps for 1,4-Dioxane

- New Brighton and Saint Anthony will continue working towards design and construction of treatment systems that remove both 1,4-dioxane and the chlorinated solvents
- Short-term: Army doing more well sampling:
  - Onsite to better delineate 1,4-dioxane on north side
  - Offsite in OU1 plume to monitor for any plume shift resulting from shutting off New Brighton wells
- Short-term: Barr Engineering (New Brighton) is developing a groundwater model which may help predict changes to the plume that might result from shutting off New Brighton wells

Next Steps for 1,4-Dioxane

- Longer-term: Army/MPCA/EPA will evaluate the additional sampling results and groundwater model results to determine:
  - Whether any OU1 plume shifting creates any new concerns
  - Whether any of the additional on-TCAAP sampling results creates any new concerns for the OU2 deep groundwater remedy

Round Lake Update

Summary of Key Events

- After the last RAB meeting on 5/21/12, Army and MPCA/EPA agreed to revise the Round Lake Feasibility Study in steps, with intent to obtain agreement “along the way”
- Army submitted the first step, Sections 1 to 5 (remedial investigation sections) in August 2012
- At the end of these sections, a clear description of ecological risk and an area of concern must be defined in order to proceed with evaluation of alternatives in the feasibility sections

Summary of Key Events

- Significant differences in view of ecological risk:
  - MPCA/EPA believes there is higher risk/larger area
  - Army believes there is lower risk/smaller area
- Army sought an independent review by ecological risk specialists at Oak Ridge National Laboratory, and their analysis aligned more closely with the Army's beliefs
- In November 2013, Army submitted a revised "Supplemental Remedial Investigation and Feasibility Study for Round Lake" which incorporated the additional Oak Ridge analysis

Summary of Key Events

- MPCA/EPA did not approve the revised document
- In April 2014, Army initiated a dispute process under the TCAAP Federal Facility Agreement
- Since then, the Army, Oak Ridge, MPCA, and EPA have had several meetings to try to resolve the technical differences regarding ecological risk and delineation of the area of concern, and for the time being, will be continuing to try to resolve these technical differences