



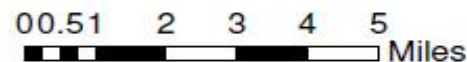
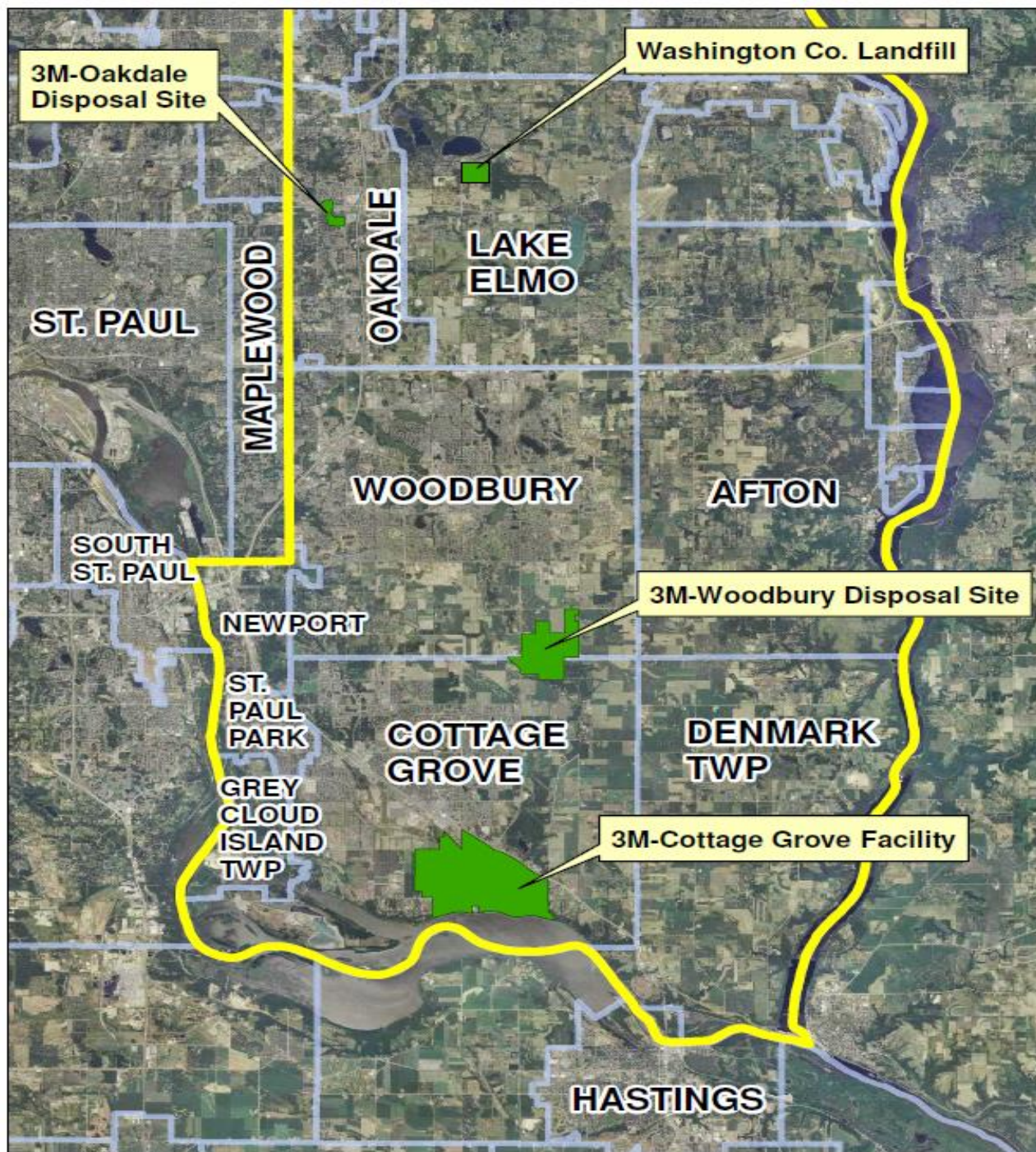
Minnesota Pollution Control Agency (MPCA)
PFAS(PFC) Response and
3M Natural Resource Damage Settlement

Gary Krueger, Supervisor
East Metro Unit
MPCA Superfund Program

Brief history of PFAS in the Twin Cities East Metro area

- **2002:** 3M informs MPCA of PFAS in production wells at Cottage Grove facility
- **2007:** MPCA and 3M agree to Consent Order outlining 3M is responsible for:
 - Providing safe drinking water to affected residents
 - Clean-up 3M PFAS waste disposal sites (Oakdale, Woodbury and Cottage Grove)
 - Excavation of PFAS contaminated soil/sediment at each 3M site (2007 – 2012)
 - Groundwater containment/treatment systems in place at each 3M site
 - Washington County Landfill – MPCA Closed Landfill Program
 - Monitoring groundwater – private/public drinking water supplies
- **2010:** Attorney General files Natural Resource Damage lawsuit on behalf of State, with MPCA and DNR as trustees

Location of 3M PFC Sites in Washington Co., Minnesota



Minnesota PFAS Disposal Sites

- 3M PFAS Disposal Sites
 - Non – PFAS cleanup actions
 - 3M Oakdale – State and Federal Superfund Listed
 - 3M Woodbury – State Superfund (Voluntary Remediation)
 - 3M Cottage Grove – State Superfund Listed
 - Washington County Landfill - Closed Landfill Program/Federal Delisted
- Disposal occurred at sites 1950's – 1970's
 - Sites addressed for non- PFAS contamination (VOCs)
 - Long Term O&M prior to discovery of PFAS releases

MPCA/3M 2007 Consent Order

Background

- MPCA staff proposed to issue a Request for Response Action (RFRA) under MERLA(State Superfund Law) to 3M (April 2007)
- 3M disputed that PFOS/PFOA are hazardous substances under MERLA.
- Before issuance of RFRA, MPCA Citizens Board gave 3M an opportunity to voluntarily enter into an enforceable agreement.

- MPCA & 3M reached agreement - the 2007 Settlement Agreement and Consent Order. (2007 SACO)
- Recognized MPCA jurisdiction under MERLA (State Superfund Law)
 - MERLA Hazardous Substance – 3M/MPCA agree to disagree
 - Reimbursement of agency costs

- Cleanup plans needed to be rigorous and robust
- 3M to follow NPL feasibility study process, with primary consideration for response actions –
 - **Excavation and destruction of PFAS; or**
 - **Excavation, engineered isolation and containment of PFAS.**
- Excavated material would not be considered to be hazardous waste based solely on PFAS.

2007 Consent Order

3M Agreed To:

- Implement response actions, including provision of alternative sources of drinking water(public and private) when above health limits.
- Provide an \$8 million **grant** to the MPCA to help remediate the Washington County Landfill.
- Provide a \$5 million **grant** to the MPCA for environmental studies for PFAS impacts not related to 3M PFAS disposal sites.
 - State-wide survey AFFF (fire-fighting foam) sites, Fish Tissue & Surface Water Monitoring, WWTP Assessment, Ambient Groundwater testing, Ecological studies, etc.
 - <https://www.pca.state.mn.us/waste/perfluorochemicals-pfcs>
 - <https://www.pca.state.mn.us/sites/default/files/c-pfc1-02.pdf>
- Home garden studies and bio-monitoring by MDH

Superfund Response Actions - Summary

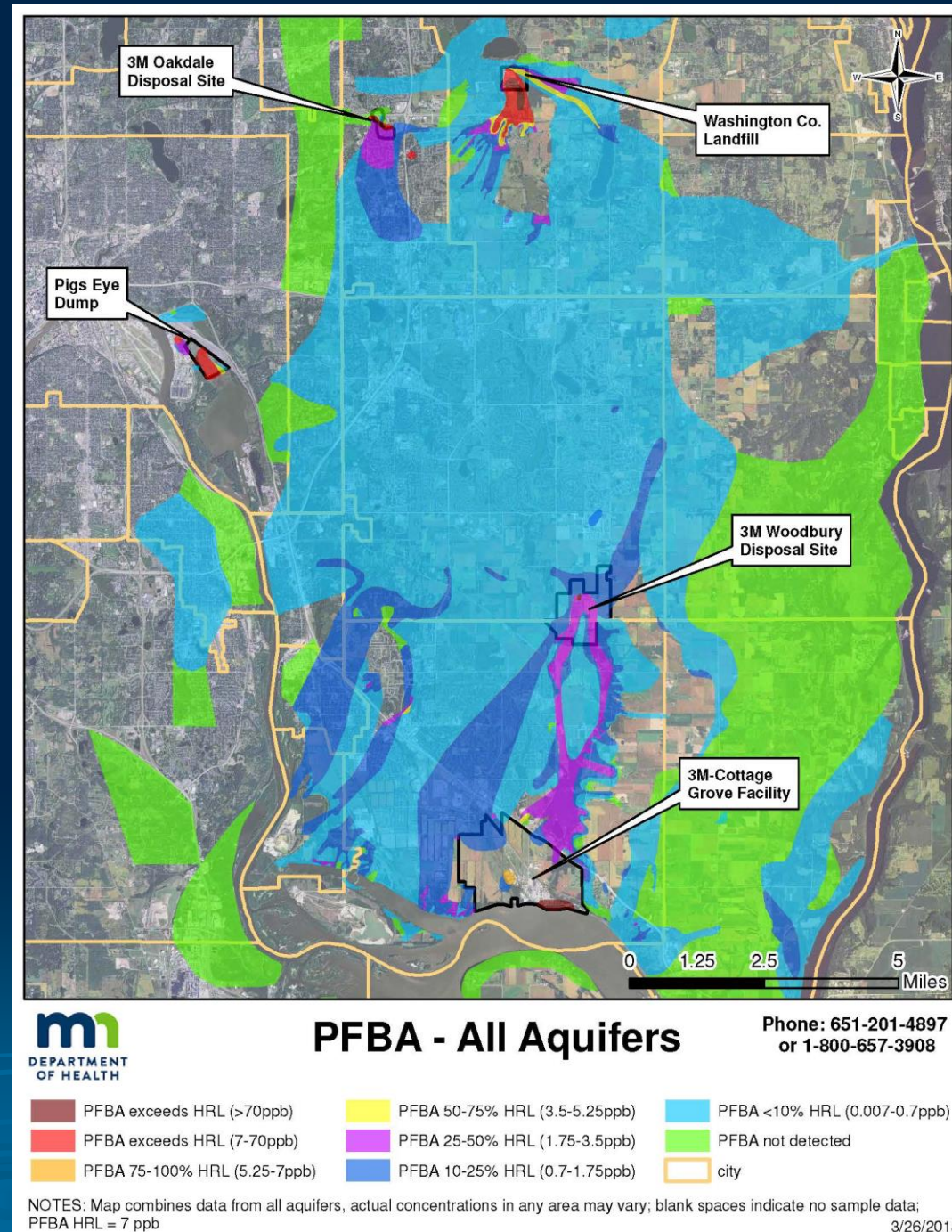
- Soil/sediment excavations completed at all 3M sites (2008 – 2012)
 - Excavated material disposed in 3M cell at SKB Industrial Landfill (> 100,000 cy) (Doubled lined cell w/doubled line facility and separate leachate collection system)
- Groundwater extraction and/or treatment systems installed or in final design at 3M sites
- Environmental Covenants to be in place for long-term O&M
- Drinking water monitoring & GAC installation and maintenance
- On-going monitoring of Municipal Wells

Washington County Landfill

- Closed Landfill Program
 - Permitted Facility
- State responsible for long term operation and maintenance
- Remedy Evaluation using Superfund Criteria
- Construction of triple liner completed Oct. 2011
 - ▶ MN Legislation requirement
 - ▶ 3M provided funds towards construction
 - ▶ ~ 1.9 million cy garbage relocated
 - ▶ Total cost - ~ \$25 million

Result: Extremely Large “Co-Mingled” Plumes

- **Over 130 sq. mi.**
 - 4 major aquifers
 - 8 municipal systems
 - Much larger than predicted by models
- **PFBA most widespread**
 - More PFBA in source areas
 - More mobile
- **Distribution controlled by:**
 - Bedrock features
 - Groundwater - Surface water interactions
 - PFAS chemical properties
 - Groundwater pumping



Municipal Well PFAS Impacts

- MDH Advisories issued to Cities of Oakdale, Cottage Grove, Lake Elmo, St. Paul Park and Woodbury
- Oakdale – Carbon Treatment funded by 3M prior to CO
 - 7 of 9 wells exceed MDH guidance
- Cottage Grove – “Temporary” Carbon Treatment for 2 wells
 - 8 of 12 wells exceed MDH guidance (water restrictions summer 2017)
- Lake Elmo – Discontinue use of Well #1(one of three wells)
 - 3M funded connection of ~200 homes to municipal supply prior to CO
- St. Paul Park – Discontinue use, one of three Wells
 - Temporary treatment planned for 2 wells
- Woodbury – Five of 19 wells impacted
- **Bemidji - Non East Metro – 2 of 3 exceed MDH guidance (AFFF)

Private well impacts

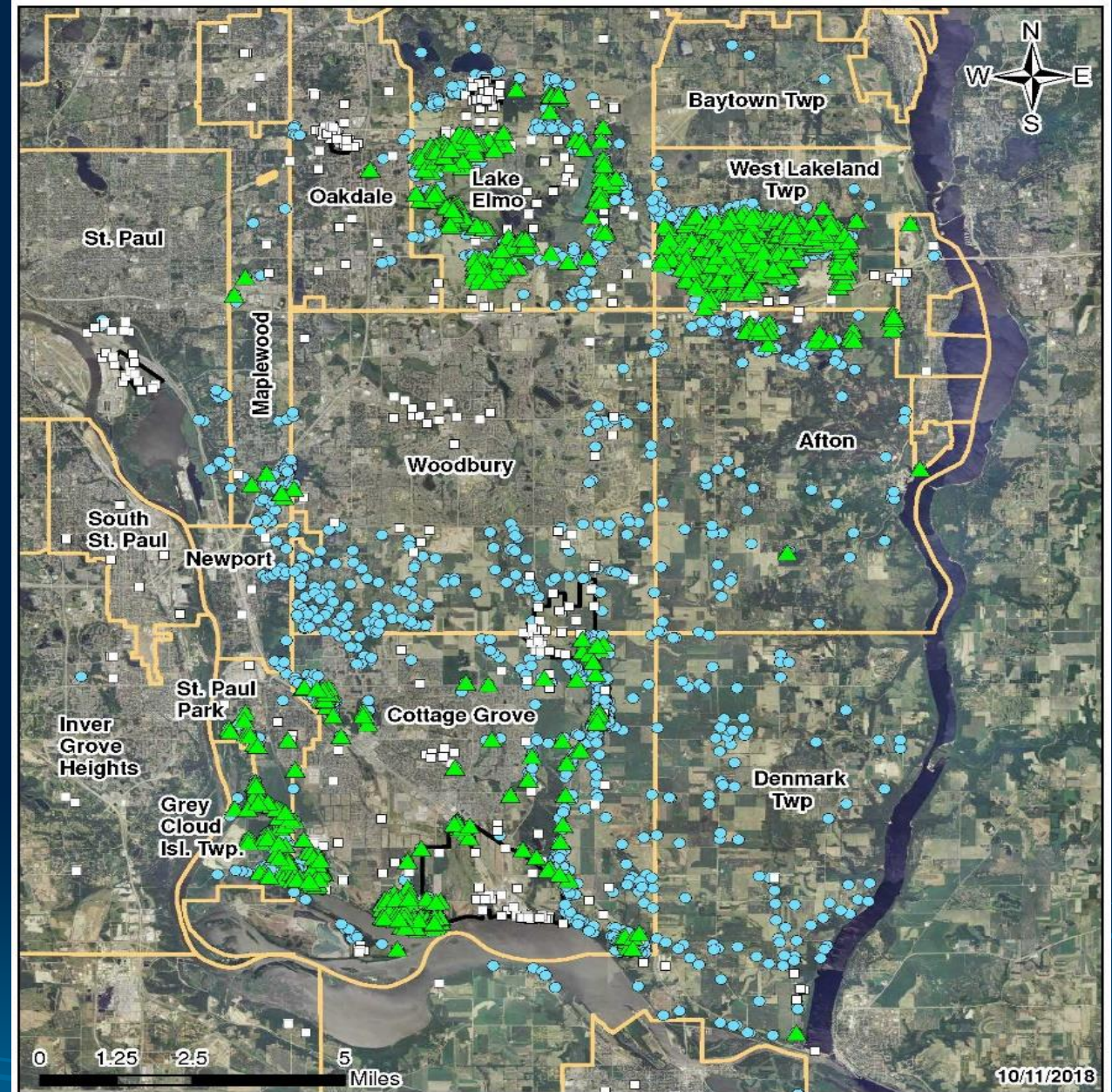
- By 2016, MPCA maintained ~100 carbon treatment systems at residences
 - Monitoring ~ 200 – 250 residential wells per year (MDH health value – 300 ppt for PFOS/PFOA)
- EPA and MDH lowered drinking water health values in 2016 and 2017:
 - EPA – 70 ppt for PFOS and PFOA (August 2016)
 - MDH – 27 ppt for PFOS, 27 for ppt for PFHxS*, 35 ppt for PFOA, 2 ppb for PFBS and 7 ppb for PFBA (May 2017)
 - **April 3, 2019 – MDH updated HBVs for PFOS (15 ppt) and PFHxS (47 ppt)**
- Almost 3,000 residential wells sampled
- To date, more 1,100 well advisories issued by MDH
 - All residents offered bottled water and GAC system

Private Well Sampling Effort & Drinking Water Advisories

~3,000 wells sampled since 2003

- Frequent, intensive monitoring of private wells:
 - Near source areas
 - Areas with high or changing PFAS concentrations
 - Areas with complex geology
- Less frequent monitoring of “sentry” private wells:
 - Distal portions of plumes
 - Areas with low and stable PFAS concentrations
 - Areas with relatively simple geology

More 1,100 drinking water advisories issued by MDH



Well Advisory and Well Sample Locations

- ▲ Well advisory issued
- All other wells sampled (municipal, business, church, school, monitoring, and other types of wells)
- Private drinking water wells sampled



What is Natural Resource Damage?

- Natural resource damage is compensation for impacts to natural resources such as:
 - Groundwater
 - Surface waters (lakes, streams, and wetlands)
 - Fisheries
 - Wildlife
 - Natural habitats
- Natural resource damage is not addressed under the 2007 consent order.
- **December 2010:** Attorney General files Natural Resource Damage lawsuit on behalf of State, with MPCA and DNR as trustees

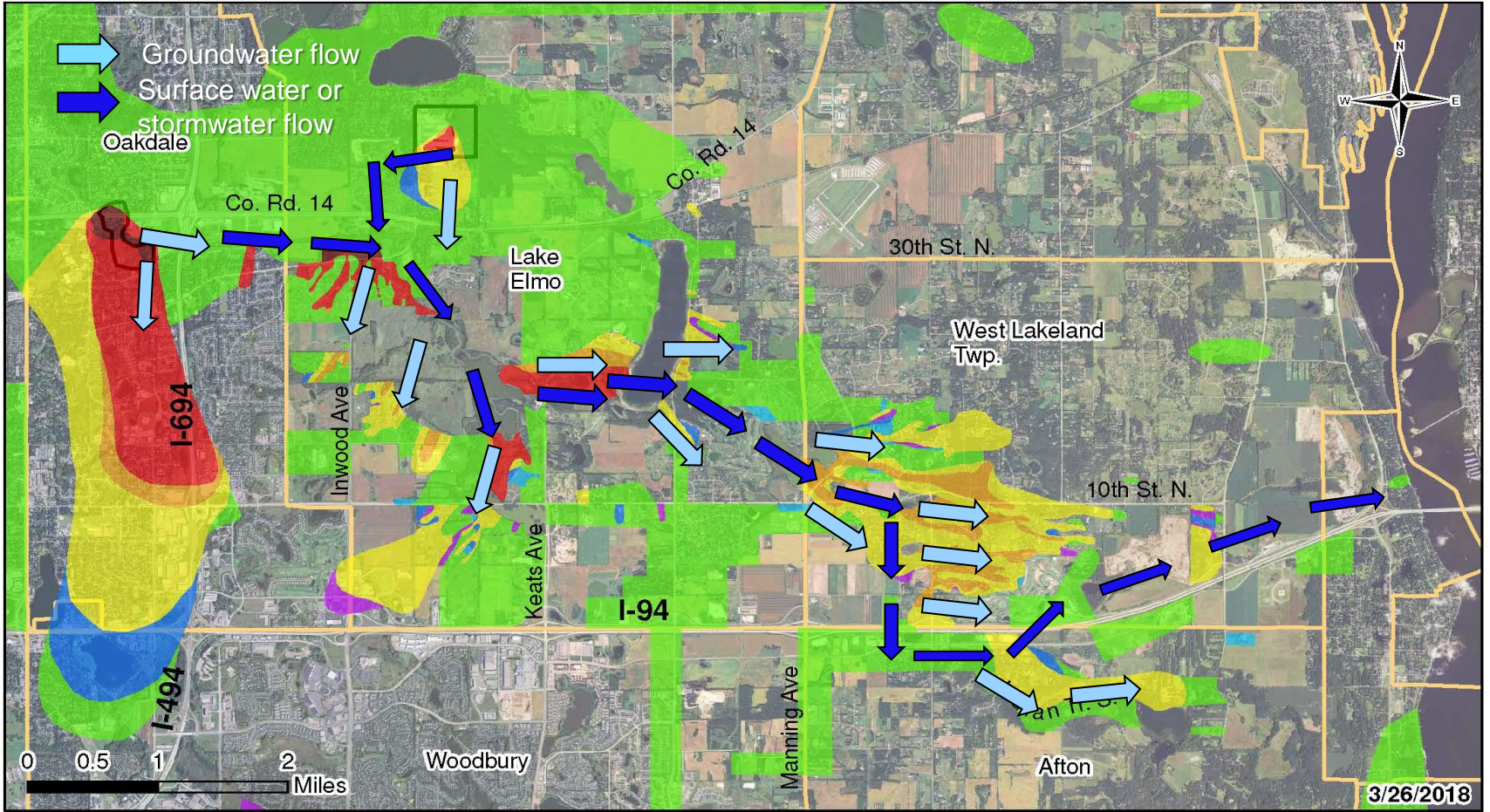
2018 Settlement: major components

- Settlement agreement reached February 20, 2018
- \$850 million **Grant** to the State
- \$720 million immediately available to provide long-term solutions in the east metro area for:
 - Clean and sustainable drinking water
 - Restoration and enhancement of natural resources
- Restrictions about how the grant can be used
- Expectations for community participation
- Preserves 3M's obligations under the 2007 consent order

2018 Settlement: major components









- \$125 million from settlement for outside counsel
- \$4.5 million reimbursement for MPCA's 2017 costs under the 2007 consent order
- 3M commitment – up to \$40 million or 5 years – serves as a “bridge” until long-term solutions (i.e. “Temporary” measures such as GACs, municipal treatment at Cottage Grove and St. Paul Park)
- Project 1007 – Valley Branch Watershed District
 - MPCA to conduct source water assessment and feasibility study
- Settlement requires grant to be deposited in Remediation Fund, Legislature established in law the Water Quality and Sustainability Account
 - Use of dollars governed by agreement and overseen by District Court

Project 1007 – MPCA Feasibility Study



PFOS - All Aquifers

Phone: 651-201-4897
or 1-800-657-3908

 PFOS greater than 1.35ppb (>50x HBV)	 PFOS 0.021-0.027ppb (75-100% HBV)
 PFOS 0.271-1.35ppb (10-50x HBV)	 PFOS 0.0136-0.02ppb (50-75% HBV)
 PFOS 0.136-0.27ppb (5-10x HBV)	 PFOS 0.004-0.0135ppb (<50% HBV)
 PFOS 0.028-0.135ppb (1-5x HBV)	 PFOS not detected

MDH Health Based Value (HBV) for PFOS is 0.027 parts per billion (ppb; or 27 parts per trillion)

NOTES: Map combines data from all aquifers, actual concentrations in any area may vary; blank spaces indicate no sample data

Priority one — safe drinking water

- Ensure clean drinking water to meet current and future needs
- Including, but not limited to Afton, Cottage Grove, Lake Elmo, Maplewood, Newport, Oakdale, St. Paul Park, Woodbury and townships of Denmark, Grey Cloud Island, West Lakeland (Lakeland and Lakeland Shores added)
 - Alternative sources of drinking water for cities and private well owners
 - Treat existing contaminated drinking water wells
 - Potentially connect homes with private wells to municipal drinking water systems
 - Promote water conservation
 - Preserve open spaces that recharge drinking water sources

Priority two — enhance natural resources

- Restore and enhance natural resources in the east metro area and downstream on the Mississippi and St. Croix Rivers
 - Restore and protect fish and wildlife habitat
 - Restore access to outdoor recreation
 - MPCA and DNR have immediate access to \$20 million in grant funds

Local participation

- MPCA and DNR will work collaboratively to develop and prioritize drinking water and natural resources projects
 - Government and 3M Working Group & Citizen-Business Group created to identify and recommend projects -- first meeting was July 13, 2018
 - Three goals:
 - Broad participation
 - Transparency
 - Balance

Work Group structure

- **Government and 3M Working Group** and **Citizen and Business Group** that will provide recommendations on projects and priorities to the MPCA and DNR.
 - Final decisions made by MPCA and DNR
- Future creation of subgroups will serve as technical resources to the groups and agencies.
 - **Drinking Water Supply** (First meeting December 19th, 2018)
 - Drinking Water Supply Conceptual Plan – End of 2019 Goal
 - **Groundwater Protection, Sustainability, Conservation and Recharge**
 - **Natural Resources Restoration and Enhancement**

Public input, communication, and reporting

- Open houses/listening sessions held in April/May 2018
- Variety of tools to communicate progress:
 - Webpage: 3MSettlement.state.mn.us
 - Email list: progress and upcoming events
- Regular fiscal and progress reports
- Regular legislative updates
- All workgroup meetings are open to the public
- Additional public meetings planned
 - April 11, 2019 – Update to city/county elected officials

More Information

Minnesota 3M PFAS Settlement Web Page

<https://3msettlement.state.mn.us/>

East Metro Well Sampling Web Page

<https://www.pca.state.mn.us/waste/well-sampling-east-metro-area>

MPCA PFAS Web Page

<https://www.pca.state.mn.us/waste/perfluorochemicals-pfcs>

MDH PFAS Web Page

<http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/index.html>

Questions/information

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Questions

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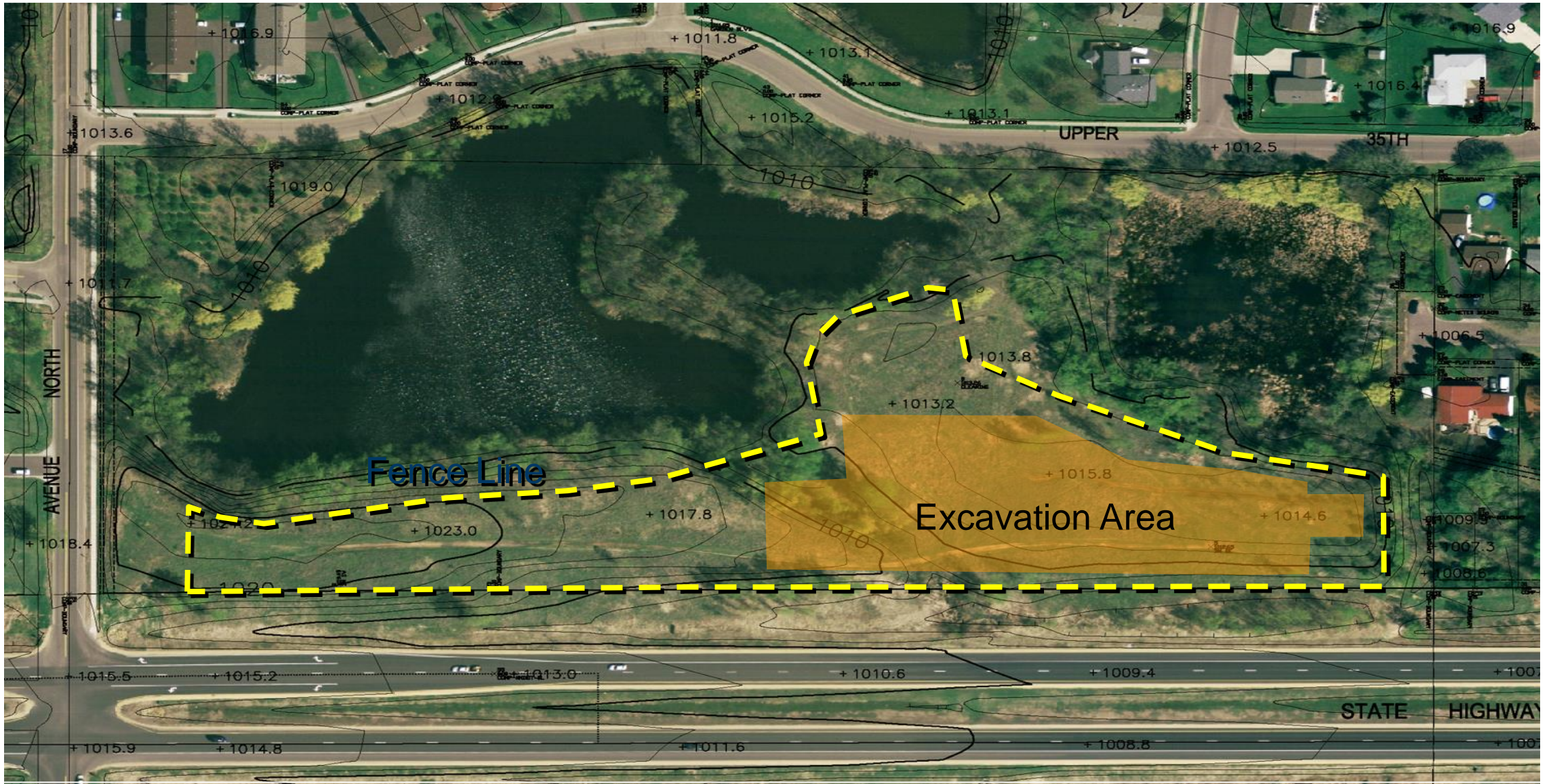
3M Oakdale Disposal Site



The 3 Dump Sites that Constitute the "Oakdale Dump"

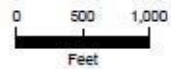
0.2 0.4 0.8 Miles ■ Location of 3M Groundwater Pump-out System Prepared 6/22/05

3M Oakdale Soil Cleanup Area



3M Woodbury Disposal Site





Map Source:
U.S. Department of Agriculture, Farm Services Agency, Aerial Photography Field Office;
National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), Minnesota, 2003

D1, D2 and D9 Areas
Cottage Grove Site

Eastern Disposal Areas



WESTEN
INCORPORATED

0 250 500
Feet

Map Source:
U.S. Department of Agriculture, Farm Services Agency,
Aerial Photography Field Office; National Agricultural
Imagery Program (NAIP) Digital Orthorectified Images (DOQ),
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**D1, D2 and D9 Areas
Cottage Grove Site**