Welcome!

2017 Petroleum Remediation Program Consultants’ Day

Base Camp
Fort Snelling, MN
May 24, 2017
Have a question?

Ask us a question from your smartphone!

http://www.pigeonhole.at
Password: CONSULTANT
MPCA’s Strategic Plan: Land/Waste (2013)

Goal: Contaminated sites are managed to reduce risks to human health and the environment and allow continued use or reuse

- Manage risks at remediation sites
- Prepare sites for continued use or reuse
- Address sites in a timely and efficient manner
Strategic Measure: Manage risk

Objective L3a
Risk reduction demonstrated by site closures per PRP Risk Based Corrective Action Guidance

Program Goal
80% of PRP sites closed within 3 years

<table>
<thead>
<tr>
<th>Sites closed within 3 years</th>
<th>Goal</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 82.7 %</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>2015 82.9 %</td>
<td>80%</td>
<td></td>
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<tr>
<td>2014 83.0 %</td>
<td>80%</td>
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</table>
Objective L3c
Address sites in a timely and efficiently manner

- **2013**
  - 198 Petroleum Remediation Sites > 10 Years Old

- **2017**
  - 17 sites added to 2013 list
  - 133 sites closed from 2013 list
  - Present Day – **82 sites** > 10 years old
### Objective L3b
Number of acres made ready for continued use or reuse

<table>
<thead>
<tr>
<th>Year</th>
<th>PRP Acres</th>
<th>PBP Acres</th>
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<tr>
<td>2016</td>
<td>987</td>
<td>1,375</td>
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<td>2015</td>
<td>1,389</td>
<td>1,057</td>
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<td>2014</td>
<td>1,856</td>
<td>1,391</td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>SF &amp; RCRA Acres</th>
<th>VIC</th>
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<tbody>
<tr>
<td>2016</td>
<td>228</td>
<td>1,331</td>
</tr>
<tr>
<td>2015</td>
<td>233</td>
<td>1,044</td>
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<tr>
<td>2014</td>
<td>72</td>
<td>1,586</td>
</tr>
<tr>
<td>2013</td>
<td>290</td>
<td>2,570</td>
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</tbody>
</table>

**Cumulative Acres (CLP)**

89.32
Leak Sites 1987 to 2016

Reported, Closed, and Active Leak Sites

- **Reported**
- **Closed**
- **Active**

Graph showing the number of PRP sites reported, closed, and active from 1987 to 2016.
Questions?

Michael Kanner
michael.kanner@state.mn.us
651-757-2483
Guidance Document Changes

2017 Petroleum Remediation Program Consultants’ Day

Sarah Larsen | PRP Program Administrator
May 24, 2017
q Updated guidance available online
  ß https://www.pca.state.mn.us/waste/cleanup-guidance

q Effective date: June 1, 2017

q General overview of changes
1-01 General Policy

- Rewritten for a more general audience
- Not intended as consultant guidance

1-03 Spatial Data (Jim Pennino)

- Monitoring well locational data

2-04 Recent Releases

- Rewritten with new guidance at leak sites with a recent release
Updated Policy Documents

3-01 Soil Excavation & Tank Sampling (Mark Toso)

- Grossly and petroleum-saturated soil removal up to 200 yds (pre-LSI)
- Sheen test required for field screening
- Soil sampling requirements when replacing only lines and dispensers

4-01 Soil & Groundwater Investigations (Adam Sekely)

- Aquifer determination and characterization, travel time, plume stability
Updated Policy Documents

q 4-02 Risk Evaluation & Site Management Decisions and 4-18 Sensitive Groundwater Conditions (Adam Sekely)
   ⬇ Sensitive groundwater conditions, site management decision, and high-risk conditions
   ⬇ Complete restructuring of these documents

q 4-06 Investigation Report and 4-08 Monitoring Report (Adam Sekely)
   ⬇ Table changes identical in both
4-04 Soil Sampling and 4-05 Groundwater Sampling

- PVOCs instead of BTEX/MTBE
- QA/QC has been updated
- Lab cleanup prior to DRO analysis

4-04 Soil Sampling
- All potential analytical samples in coolers/bags ASAP
- Sheen test has updated language

4-05 Groundwater Sampling
- Water supply well and water line permeation sampling
- Low-level EDB guidance
Updated Policy Documents

q 5-01 Public Works (Amy Miller)
   ▶ Updated field screening and soil treatment info
   ▶ Water line permeation
   ▶ Stockpiling guidance

q 7-01 Corrective Action
   ▶ Eliminated corrective action reasons (4-02)
   ▶ Added Corrective Action goals for each pathway and LNAPL Recovery

q Still coming – Petroleum Release Reporting and Response Guide

q Sign up for GovDelivery emails!

5/24/2017
Questions?

Sarah Larsen
sarah.larsen@state.mn.us
651-757-2517
Groundwater Policy Updates

2017 Petroleum Remediation Program Consultants’ Day

Adam Sekely | Hydrologist
May 24, 2017
q Guidance restructuring
q High-risk condition updates (groundwater)
  q Water supply well impacts
  q Impacts to aquifers associated with a sensitive groundwater condition
  q Expanding plume within a five-year travel time of a receptor
    q Travel time
    q Plume stability
q Aquifer determination
  q Grain-size analysis
  q Hydraulic conductivity
  q Transmissivity
q Removed guidance from PRP General Policy (1-01)

q Risk Evaluation and Site Management Decision (4-02)
  q Defines all high-risk conditions (formerly corrective action reasons)
  q Site management decision guidance in one place
Sensitive Groundwater Conditions (4-18)
- Expanded from current PWS risk assessment
- Defines conditions, instructs how to determine if a condition exists, and describes what additional work is required
- Provides options for further assessment
Guidance restructuring

High-risk condition updates (groundwater)
  - Water supply well impacts
  - Impacts to aquifers associated with a sensitive groundwater condition
  - Expanding plume within a five-year travel time of a receptor
    - Travel time
    - Plume stability

Aquifer determination
  - Grain-size analysis
  - Hydraulic conductivity
  - Transmissivity
High risk when a drinking water standard is exceeded
- Interim corrective action required
- Proceed with site investigation and final corrective action
When a standard is not exceeded

- No interim corrective action required
- Continue site investigation and water supply well sampling
- Plume stability is critical
  - Long-term monitoring with quantitative trend analysis
- Cost of additional monitoring versus corrective action
Sensitive Groundwater Conditions

- High-risk condition when the aquifer associated with the sensitive condition is impacted above a drinking water standard

- Remediation focused on targeting the LNAPL body
  - Must be technically feasible

- Corrective action goal
  - Hasten natural attenuation and shorten plume lifetime
Sensitive Groundwater Conditions

- Inherently greater risk of well impacts due to geology and usage
- What are they?
  - Former hydrogeologically sensitive areas with some modifications
- Wellhead protection areas
- Shallow bedrock
- Sole-source aquifers
- Shallow sand and gravel aquifers
Sensitive Groundwater Conditions

Wellhead protection areas
Sites with contamination located within a wellhead protection area that has 1) an aquifer sensitivity rating of high for Source Water Assessment Areas and Inner Wellhead Management Zones or 2) a vulnerability rating of high or very high for Drinking Water Supply Management Areas (DWSMA)

q No changes in the assessment procedures
q Obtain VOC sampling results when available from MDH (see guidance)
Sensitive Groundwater Conditions

**Shallow bedrock**
Sites located over bedrock with a soil overburden thickness of 50 feet or less

- Based on site data, local well records, MGS data
- Support soil boring refusal with other data sources
Sole-source aquifer
Sites located over an aquifer that provides the only available or practicable source of drinking water to a drinking water user

- Identify all practicable sources to the site (examples in guidance)
- Consider water usage requirements and source-water quality
Sensitive Groundwater Conditions

**Shallow sand and gravel aquifers**
Sites located in areas where water supply wells are generally less than 75 feet deep and soils consist predominantly of sand or gravel

- No apparent confining layer
- Active wells using the impacted hydrogeologic unit
- Little vertical separation distance
Sensitive Groundwater Conditions

q How do they change the investigation?
   q Identified during the initial phase of the site investigation (screening)
   q May require sampling water supply wells right away within a defined radius
      Ø 500 or 1000 feet depending on presence on recalcitrant compounds
      Ø More than 10 wells within the radius, call us
How do they change the site management decision?

- Additional monitoring to evaluate plume stability
- Additional investigation to evaluate three-dimensional plume boundary
- High-risk condition when aquifer impacted above standard
Outline

- Guidance restructuring
- High-risk condition updates (groundwater)
  - Water supply well impacts
  - Impacts to aquifers associated with a sensitive groundwater condition
  - Expanding plume within a five-year travel time of a receptor
    - Travel time
    - Plume stability
- Aquifer determination
  - Grain-size analysis
  - Hydraulic conductivity
  - Transmissivity
q Step 1: Estimated travel time
  ß Screening-level evaluation during initial phase of RI
  ß Hydraulic conductivity based on grain-size analysis
  ß Plume stability not established after two sampling events

q Step 2: Continue monitoring to assess plume stability

q Step 3: Measured travel time
  ß More robust estimate if monitoring data indicates expanding plume
  ß Hydraulic conductivity based on pump test analysis
  ß Other options may be proposed
Plume Stability

- Six quarters minimum (First Monitoring Report submittal)
  - Qualitative trend analysis using time series plots (concentrations versus time)
  - Suitable for low-risk sites (no groundwater receptors, low concentrations, limited plume extent)
Long-term monitoring (10 or more sampling events)

- Sensitive groundwater conditions, nearby receptors, expanding plume, impacts to wells below standards
- Quantitative trend analysis using a statistical test (e.g., Mann-Kendall)
q Guidance restructuring
q High-risk condition updates (groundwater)
  q Water supply well impacts
  q Impacts to aquifers associated with a sensitive groundwater condition
  q Expanding plume within a five-year travel time of a receptor
    q Travel time
    q Plume stability
q Aquifer determination
  q Grain-size analysis
  q Hydraulic conductivity
  q Transmissivity
Grain-Size Analysis

- Two-fold purpose
  - Verify field classification
  - Estimate hydraulic conductivity
    - Saturated conditions
    - Highest apparent flow rate

- Other considerations
  - Confining layer
  - Deep wells/deeper aquifer
Hydraulic Conductivity

- Estimated value based on grain-size analysis results
  - Empirical formula
    - Use one that is applicable to the sample results

- Referenced value (now listed in guidance)
  - Use when no formulas are applicable
  - Use the value for the soil type determined by grain-size analysis results
q $T = K_b$
q Hydraulic conductivity from grain-size analysis results
q Unit thickness is based on what the grain-size sample represents
  ♦ Not limited to maximum soil boring depth
q Calculate $T$ for every sample
q Aquifer if $T > 50 \text{ ft}^2/\text{day}$ for any sample
q Also an aquifer if the impacted hydrogeologic unit produces water to a well or spring regardless of $T$
Questions?

Adam Sekely
adam.sekely@state.mn.us
218-316-3880
Updates to Site Investigation Reports

2017 Petroleum Remediation Program Consultants’ Day

Adam Sekely | Hydrologist
May 24, 2017
Due to guidance updates

- Aquifer determination (K and T updated, new question)
- Aquifer characterization (time of travel)
- Sensitive groundwater conditions (identification and recommendations)
- Contaminated surface soil
- Water line permeation
Site management decision

- Added recommendation for additional soil and groundwater investigation
  - Not meant for basic delineation of soil and groundwater impacts
  - Meant for sensitive groundwater conditions (further assessment), vertical groundwater characterization (below the water table), contaminated surface soil delineation
Table updates

- PVOCs in soil and groundwater
- Surface soil assessment (screening and analytical results)
- Water levels (measurement duration)
- Monitoring well construction and locations (EQuIS)
- Field parameters (include with natural biodegradation parameters)
- Vapor intrusion
q Other changes

- Bedrock depth and information
- Long-term water-level trends near the site (DNR, USGS)
- Recalcitrant compounds (MTBE, DCA, EDB)
- Vapor intrusion action levels
- Site photographs
Investigation Report Changes

Cooperative Groundwater Monitoring (CGM)

Location Search

Well Search

LEGEND
Aquifer Type
- Bedrock
- Buried Artesian
- Other
- Water Table

Map View Table View Help Feedback

Filters

5/24/2017
Cooperative Groundwater Monitoring (CGM)
Investigation Report Changes
Other changes

- Bedrock depth and information
- Long-term water-level trends near the site (DNR, USGS)
- Recalcitrant compounds (MTBE, DCA, EDB)
- Vapor intrusion action levels
- Site photographs
- Site management decision and tables (Same as Investigation Report)
- Updated cross sections when applicable
Questions?

Adam Sekely
adam.sekely@state.mn.us
218-316-3880
Soil Excavation and Surface Soil Policy Updates

2017 Petroleum Remediation Program Consultants’ Day

Mark Toso | Hydrologist
May 24, 2017
General Excavation Soil Definitions (3-01)

- Petroleum-Contaminated Soil (PCS)
  - **Gasoline, ethanol blends, Aviation Gas:** 40 ppm PID and greater
  - **Diesel, fuel oil, Jet A, etc.:** 10 ppm PID and greater
  - Visual evidence of petroleum staining

- Grossly Contaminated Soil (NEW) – 200 ppm PID and greater

- Petroleum Saturated Soil – positive sheen test
q Excavation limit increased from 150 to 200 yd³ if you can dig out of it

q Excavate up to 200 yd³ petroleum-saturated and grossly contaminated soils regardless if you can dig out of it

β Contact MPCA to exceed 200 yd³ and be prepared to discuss risks (receptors)

*Petroleum saturated and grossly contaminated soils should never be returned to the excavation*

q Sheen test is now required for field screening at excavations

q Does not apply for UST installations, recent releases, or emergency conditions
q New land use categories
   ⬇ Residential 0-4’
   ⬇ Commercial or Industrial 0-2’

q New surface soil high-risk conditions
   q 100 mg/kg GRO or DRO
      ⬇ Replaces 10 ppm PID and visual
      ⬇ Based on Remediation Division individual compound SRVs

q Positive sheen test

q Vapor risks from contaminated surface soils may still need evaluation
Screen soil borings to applicable depths (2 or 4 feet) with PID, sheen, and visual

- Soil sampling should be at a minimum of 2’ intervals

Collect soil analytical samples where screening levels are exceeded

- 40 ppm: Gasoline, ethanol blends, AvGas
- 10 ppm: Diesel, fuel oil, jet A, etc
- Visibly stained

Analytical samples not required where sheen test is positive

Provide recommendations for further delineation in investigation report (leading to CCAD)
Excavation of impacted surface soils follows CCAD approval

Excavation Field Screening
- Headspace PID is no longer required
- Generally limited to sheen test (if found during assessment)

Post-excavation analytical soil sampling is not required
Questions?

Mark Toso
mark.toso@state.mn.us
651-757-2158
Completing the MPCA Chain-of-Custody (COC) for EQuIS Bound Data
Why use the MPCA COC?

q Electronic Data Deliverables (EDDs) are the preferred method for submitting EQuIS bound monitoring data to the MPCA
   ß EDDs are zipped text files or Excel spreadsheets

q Labs submit EDDs to the MPCA using our custom data format called Lab_MN

q The Lab_MN format requires that EQuIS™ reference values and standardized location identifiers be used in order for the data to be loaded
   ß Data submitted that does not use standard values or identifiers delays the data loading process

q The COC has been designed to capture keys fields and includes standard reference values needed to load data into EQuIS™
The MPCA COC is divided into six sections

**Header**

- **Work Order Number**: Only if provided by the MPCA
- **COC Type**: “Standard” for routine sample collection
- **Turnaround Time**: “Standard”, “Rush”, or “24 Hour”
- **COC ID**: Populated if using EDGE
Completing the MPCA COC: Project/Client Info Section

<table>
<thead>
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<th>Facility Code:*</th>
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<tbody>
<tr>
<td>Project Name:*</td>
<td>Alexandria Welding Shop</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Jim Pennino</td>
</tr>
<tr>
<td>Potential Hazard?</td>
<td>No</td>
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Program Code (MDH Lab Only):

| Project Task Code:* | PRJ07884 |

If yes, add information to Sampler Comments field
Completing the MPCA COC: Laboratory Section

q Laboratory

<table>
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<th>LABORATORY</th>
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<td>EPA Lab ID:* MNL00008</td>
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<td>MN Location Identifier*</td>
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### Completing the MPCA COC: Sample Details Section

#### Sample Details

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<tr>
<th>Depth</th>
<th>Sampling Method*</th>
<th>End Date (mm/dd/yyyy)</th>
<th>End Time 24 hr (hh:mm)</th>
<th>Lab Matrix*</th>
<th>Field Matrix*</th>
<th>AIS</th>
<th>Sampler Comments (filter volume, special handling, etc.)</th>
<th># of Cont</th>
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<td>End</td>
<td>Units (m or ft.)</td>
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<tr>
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<td>NW</td>
<td>Wtr-Ground</td>
<td>Leachate=Leachate Sample</td>
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<tr>
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<td>Wtr-Ground</td>
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<td>Wtr-Ground</td>
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q Analysis Requested
Completing the MPCA COC: Footer

### Footer

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<tr>
<td>Sampler's Organization:</td>
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</tbody>
</table>
Where can I find the MPCA COC?


q Navigate to the **Chain of Custody (COC) Files for Standalone Use** section

q Download the zip file which contains the MPCA COC template and instructions
Questions?

David Vaaler
david.vaaler@state.mn.us
651-757-2400
Changes to Table 9 for EQuIS

2017 Petroleum Remediation Program Consultants’ Day

Jim Pennino | Hydrologist
May 24, 2017
Table 9

Monitoring well completion and location information\(^1\)

<table>
<thead>
<tr>
<th>Well number</th>
<th>MDH unique well number</th>
<th>Well location(^2)</th>
<th>Date installed</th>
<th>Surface elevation (ft amsl)(^4)</th>
<th>Top of riser elevation (ft amsl)(^4)</th>
<th>Bottom of well elevation (ft amsl)(^4)</th>
<th>Depth to top of screen from surface (ft)</th>
<th>Depth to bottom of screen from surface (ft)</th>
<th>Screen slot size (inches)</th>
<th>Well stickup (ft)(^5)</th>
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</tbody>
</table>

Notes: (location and elevation of benchmark, coordinate collection method, elevation collection method)
Please include the following tables when submitting Excel spreadsheets:

- Table 9, Monitoring Well Completion and Location Information
- Table 10, Water Level Measurements in Wells
- Table 11, Analytical Results of Water Samples Collected from Wells
- Table 12, Other Contaminants Detected in Water Samples Collected from Wells (petroleum or non-petroleum derived)
- Table 13, Field Parameters and Natural Biodegradation Parameters
Please name all spreadsheets using this format:

- LS00XXXXX_LeakSiteName_MonitoringReportTables.xlsx

Example: LS0018707_FreedomValuCenter48_MonitoringReportTables.xlsx

Email file to: wqdata.m pca@state.mn.us
Questions?

Jim Pennino
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651-757-2648
Petroleum Remediation Program
Vapor Policy Updates

2017 Petroleum Remediation Program Consultants’ Day

Rose Tusa | Hydrologist
May 24, 2017
Petroleum Vapor Updates

q Update in screening levels
   β Intrusion screening values (ISVs) update
   β Change from 10x to 33x

q *Best Management Practice for Vapor Investigation and Building Mitigation Decisions*
Interim ISV Short Guidance released February 2017

- 1,2,4-Trimethylbenzene and 1,3,5-trimethylbenzene residential ISVs are 63 µg/m³ and industrial ISVs are now 210 µg/m³
- Ethylbenzene residential ISV is 4.1 µg/m³ and industrial ISV is 39 µg/m³

[https://www.pca.state.mn.us/sites/default/files/c-rem3-12.pdf](https://www.pca.state.mn.us/sites/default/files/c-rem3-12.pdf)
q Now using 33x ISVs instead of 10x ISVs for decision making

q Decisions include moving to a sub-slab sample and mitigation decisions

q Additionally there are Expedited Intrusion Screening Values (EISVs) which indicate a higher risk situation
Best Management Practice for Vapor Investigation and Building Mitigation Decisions released January 2017

The documents are on the Cleanup Guidance Page under Vapor Intrusion Best Management Practices

https://www.pca.state.mn.us/waste/cleanup-guidance
Vapor Intrusion BMP

- **Purpose**
- **When is vapor investigation necessary?**
- **What are the main goals of investigation?**
- **What are the vapor investigation steps?**
  - Evaluate vapor sources and identify nearby buildings and their use
  - **Conduct soil gas and/or sub-slab investigation**
  - Determine VI area of concern
  - **Make vapor mitigation decisions**
  - Establish vapor mitigation area
- **Brownfield redevelopment**
- **Appendix A – MN Soil Gas List, Appendix B – Sampling Methodology (coming soon), Appendix C – Recommend Number of Sample per Building Foundation Size, Appendix D – Vapor Intrusion Building Survey Form**
Conduct Soil Gas and/or Sub-slab Investigation

q BMP requires multiple sampling events due to temporal and seasonal variability. The samples need to be collected at least 30 days apart and under differing seasonal conditions:

⅃ One sampling event in the heating season (November 1 thru March 31)
⅃ One sampling event in the non-heating season (April 1 thru October 31)

q PRP process for conducting a preliminary soil gas assessment will remain unchanged
Why the difference?

q Current understanding of PVI From EPA & ITRC guidance

q Relatively few occurrences of PVI at petroleum sites

q The most likely scenarios for PVI are shallow sources directly beneath buildings and mobile LNAPL or groundwater plumes with high concentrations that are in direct contact with buildings

q Petroleum compound are typically more aerobically biodegradable than chlorinated compounds
Conduct Soil Gas and/or Sub-slab Investigation

q In accordance with the BMPs; **sub-slab samples** will require two sample at least 30 days apart; in differing seasonal conditions
Make Vapor Mitigation Decisions

- Two building use categories
  - Residential
  - Commercial/industrial

- Decision is based on sub-slab sampling levels
Make Vapor Mitigation Decisions

**Residential**

- All sub-slab samples <33x ISV: No mitigation/further investigation needed
- One or more sub-slab sample >33x ISV: Mitigation necessary
- One or more sub-slab sample >33x EISV: Contact MPCA about expedited action
Make Vapor Mitigation Decisions

Commercial/Industrial

q All sub-slab samples <33x ISV: No mitigation/further investigation needed

q One or more sub-slab sample >33x ISV but <33x EISV:  
   Completed pathway investigation or mitigation

q One or more sub-slab sample >33x EISV: Mitigation necessary
Appendix C: Suggested number of samples per building foundation size

<table>
<thead>
<tr>
<th>Building foundation area sub-surface and/or slab on grade (ft²)</th>
<th>Suggested minimum number of sub-slab samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 500</td>
<td>1</td>
</tr>
<tr>
<td>501 to 1,000</td>
<td>2</td>
</tr>
<tr>
<td>1,001 – 2,500</td>
<td>3</td>
</tr>
<tr>
<td>2,501 – 5,000</td>
<td>4</td>
</tr>
<tr>
<td>5,001 – 10,000</td>
<td>5</td>
</tr>
</tbody>
</table>

Appendix D: Vapor Intrusion Building Survey Form
Theoretical Investigation

Benzene Levels

SG-Source: 1900 µg/m³
SG-Station: 500 µg/m³
SG-A: 50 µg/m³
SG-B: 400 µg/m³
SG-C: 600 µg/m³
Res. 33x ISV: 150 µg/m³
Ind. 33x ISV: 1500 µg/m³
**Theoretical Investigation**

**Sub-Slab Benzene**

February SS-B1: 55 µg/m³  
February SS-B2: 48 µg/m³  
May SS-B1: 12 µg/m³  
May SS-B2: 8 µg/m³  
*No Mitigation Necessary*

February SS-C1: 220 µg/m³  
February SS-C2: 140 µg/m³  
May SS-C1: NA  
May SS-C2: NA  
*Mitigation Necessary*

Residence 33x ISV: 150 µg/m³  
Residence 33x EISV: 1500 µg/m³
Questions?

Rose Tusa
rose.tusa@state.mn.us
651-757-2490
Petroleum Remediation Program
Vapor Project

2017 Petroleum Remediation Program Consultants’ Day

Kathryn Serier | Project Leader
May 24, 2017
What is the PRP Vapor Project?

- Evaluating sites closed prior to implementing PRP vapor guidance

- Focus on sites with high vapor intrusion risk
How we started

- 14,400 sites closed before 2006
- Selected 750 sites for the vapor project
Process for Evaluating Sites

- Gather files
- Review data
- Conduct field work
- Review field work data
- Reopen site?
Challenges

- Number of sites
- Files
- Outdated addresses
- Unknown locations
- Old maps
- Property access
What have we found so far?

- In Progress: 258 Sites
- Completed: 255 Sites
- Reopened: 7 sites
- Not Yet Assessed: 242 Sites
Questions?

Kathryn Serier
kathryn.serier@state.mn.us
651-231-6043
Brownfields Update
Vapor Intrusion and Assurance Letters
Petroleum Brownfield Sites Vapor Policy

- Petroleum Brownfield sites with proposed development
  - Specific to petroleum contamination only

- Guidance Documents
  - Best Management Practice for Vapor Investigation and Building Mitigation (VI-BMP)
  - Petroleum Remediation Program guidance
Petroleum Brownfield Assessment and Investigation

- Assessment
  - Identify Petroleum Recognized Environmental Concerns (RECs)

- Documented Petroleum Contamination
  - Identified by soil, groundwater, and soil vapor investigation
Complete Soil Gas Investigation

- Former Tank Basin
- Historic Contaminated Fill/Dumping Area
- Existing Commercial Building
- Proposed Residential
- Proposed Residential
- Soil Gas Sample
- Source
- Receptor

5/24/2017
Soil Gas Sampling Guidance

q Soil gas samples at existing buildings
   ß PRP 4-01a *Vapor Intrusion Assessments Performed during Site Investigations*

q Proposed building footprint soil gas samples
   ß Appendix C of the Vapor Intrusion – BMP
Vapor Intrusion Risk Scenarios

- No potential risk
- Potential risk
- Verified risk
No Potential Risk – Active mitigation not required

- **Existing** receptors – Soil gas sample <33x ISV

- **Proposed** building receptors – Soil gas sample(s) < ISV

- **Vapor mitigation** = Proactive
Potential Risk – Active mitigation necessary

q **Existing** receptors* – Soil gas sample(s) >33x ISV, sub-slab <33x, and only one round of seasonal-sub slab sample(s), or

q **Proposed** building receptors* – Footprint >ISV, <33x ISV, and only one round of seasonal sample(s)

  * Can complete a second round of seasonal sub-slab or footprint samples to verify results are still <33x ISV

q **Vapor mitigation = Preemptive**
Verified Risk – Active mitigation required

- **Existing** receptors* – Sub-slab > 33x ISV, or

- **Proposed** building receptors* – Footprint > 33x ISV

- **Vapor mitigation = Required**

* If >33x ISV in first sample (sub-slab or footprint), second seasonal sample is not required
Active Mitigation Requirements

q Post Verification Testing*

q Verify the system is operating as intended

βDiagnostic and analytical confirmation sampling

βNumber of sampling points should be tailored to site

βBuilding Mitigation BMP and Attachments C & D

* If proactive mitigation, post verification testing is NOT required
Active Mitigation Requirements

q Post Verification Plan
   △ Submit for review and approval prior to construction

q Institutional Control required*
   △ Affidavit for Petroleum Brownfields Program

*If Proactive Mitigation, Affidavit is NOT required
Response Action Plan and Vapor Intrusion

**Include:**

- Existing response action requirements
- Summary of soil gas investigation
- Vapor Mitigation Category
  - Pro-Active
  - Pre-Emptive
  - Required
- Post Verification Plan – If not available when RAP submitted must be submitted prior to construction
Updated Petroleum Brownfield Letter: Petroleum No Action

**Petroleum No Action Letter**

- Replaces the *Non-Tank Petroleum Site File Closure*
- Will be combined with the *Completion of Voluntary Response Actions* letter
  - After an approved response action plan is implemented
- Does NOT replace the *Petroleum Tank Release Site FileClosure* letter
  (Leak Site closure letter)
- Brownfield Application
  - Check “Request Review of a Petroleum Non-Tank Release Site”
Questions?

Stacey Van Patten
stacey.vanpatten@state.mn.us
651-757-2425
Public Works Program

2017 Petroleum Remediation Program Consultants’ Day

Amy Miller | Public Works Coordinator
May 24, 2017
Request to Take Corrective Action

Petroleum-contaminated soil originating from a leak site

REQUST TO TAKE CORRECTIVE ACTIONS PURSUANT TO MINN. STAT. § 115C

WHEREAS, the public works project sponsor (Project Sponsor) of the city of Hogwarts is in the process of installing utilities;

WHEREAS, this public works project requires the Project Sponsor to excavate soil as part of the Diagon Alley Improvements Project BF3 public works project located along Diagon Alley from Leaky Cauldron Lane to Goblin Avenue, Hogwarts, Minnesota;

WHEREAS, under Minn. Rules ch. 7037 a Project Sponsor is a generator who is responsible or assumes responsibility for the removal and proper management of petroleum contaminated soil;

WHEREAS, a portion of the soil may be contaminated by a petroleum release from one or more tanks; and

WHEREAS, Minn. Stat. § 115C (2017) creates the Petroleum Tank Release Cleanup Fund (Petrofund), which reimburses eligible applicants for a portion of their cleanup costs;

NOW THEREFORE, pursuant to Minn. Stat. § 115C, the Commissioner of the MPCA hereby requests the Project Sponsor to take the corrective actions outlined in Section 1 below. In doing so, the Project Sponsor is also eligible for Petrofund reimbursement pursuant to Minn. Stat. § 115C.09, subd. 3a. A final determination regarding reimbursement will be made by the Petrofund and based on the rules and statutes that govern this program (Chapter 115C and Chapter 2890). Please note that pursuant to Minn. Stat. §115C.09, subd. 3, all costs for which reimbursement is requested must be determined to be reasonable.

5/24/2017
Public Works Project

A project that involves the new construction or maintenance of an existing public utility infrastructure that is staged

- Within a utility easement, or
- Right-of-way owned and/or managed by the state, an agency of the state, or a political subdivision
Does not include:

- Development projects
  (i.e., service main to private business, public facility construction)

- Road work independent of public utility infrastructure
Under Minn. R. ch. 7037, a project sponsor is a generator who is responsible or assumes responsibility for the removal and proper management of petroleum-contaminated soil.

**Project Sponsor:** A public works owner, the state, an agency of the state, or a political subdivision that holds the access permit for a utility or other public works project, or has a principal stake in scoping and completing such a project.
Applying for a Request to Take Corrective Action

- Project sponsor contact information
- Project description and location
- Estimated volume of petroleum-contaminated soil that may be excavated
  - Trench dimensions (per utility)
  - Estimated cubic yardage (cy) include calculations (per utility)
  - Estimated volume (cy) of contaminated soil for off-site disposal
Applying for a Request to Take Corrective Action

q Site map/plan sheets identify:
   ß Potential sources of contamination (i.e., tank sites, leak sites)
   ß Estimated area of petroleum-contaminated soil
q Discuss potential reuse options of excavated soil
q Water line material type
q Hire an environmental consultant
Applying for a Request to Take Corrective Action

Dewatering is not a corrective action

q Treatment of petroleum-contaminated groundwater prior to disposal
   Ø Petroleum-contaminated groundwater is from a leak site

q Upgrading utility piping material to petroleum-resistant material
   Ø Sidewall and bottom samples of the waterline trench in the area of the pipe are petroleum saturated and/or >200 ppm on PID
Oversight Expectations

- Environmental consultant overseeing work in the area of contamination
- Report contamination
- Assess vapor risks
- Separate soil during excavation (PID, sheen test)
  - $< 10$ ppm
  - $10$ ppm – $200$ ppm
  - $> 200$ ppm or yes to sheen test
Oversight Expectations

q Re-use soil on the project
   √ 10-200 ppm (PID) as road base or embankments
   √ As backfill, if it can be mixed with clean to <10 ppm (PID)

q Sample and dispose of petroleum-contaminated soil that cannot be re-used on the project

q Obtain all necessary permits and comply with permit conditions if dewatering is required
q Field work summary

q Site map/plan sheet
   a Identify source areas (leak site or other)
   a PID sample locations
   a Extent of petroleum-contaminated soil

q Table of PID readings – location, results, depth
q Volume of soil removed – cubic yards

β Per leak site and project total

β Volume of soil reused on project

β Stockpile data

β Soil removed for off-site disposal, treatment method, location, and manifests
q Request to Take Corrective Action
q Completion of Request to Take Corrective Action
q Apply for Petrofund Reimbursement

Guidance Document
Managing petroleum-contaminated soil at public works projects
https://www.pca.state.mn.us/sites/default/files/c-prp5-01.pdf
Questions?

Amy Miller
amy.miller@state.mn.us
651-757-2569
e-Services and Data Driven Webpages

2017 Petroleum Remediation Program Consultants’ Day

Stephen Frye | Project Manager
May 24, 2017
Overview

- MPCA’s database upgrade project
- e-Services
- Data driven webpages
- Available data downloads
MPCA’s Database Upgrade Project

q **2011** – MPCA’s Executive Vision
   - Locate all agency programs in a single database on modernized platform
   - Provide more online services (customer self-service)
   - Increase efficiency through standardized business processes

q **October 2015 and April 2016** – Software replacement
   - MPCA launched Tempo
Agency Standardization: Site IDs

- MPCA standardized IDs – All unique 9 characters
  - Leak Site – LS0018707
  - Brownfield Site – BF0000256
  - Tank Site – TS0007979
  - Soil Treatment Sites – PRE000459 and CS0011700

- Brownfields IDs still in use on open projects
  - VIC Sites – VP28130
  - Petroleum Brownfields – PB4836
q New agency program: Integrated Remediation

- Created to track Large Facility Remediation and Pipeline Releases
- Old database previously stored as leak sites
- Site IDs:
  - Before new database: LS00#####
  - After new database: IR00#####
Access MPCA’s services at http://www.pca.state.mn.us/
New users must create account
Voluntary Remediation Program Enrollment Application

q Applicants request services online

q Applications are e-signed, and can be shared with applicant prior to signature

q All supporting documentation uploaded through portal and processed in new database

q Applicants notified of receipt by email
Field Work Notification Service

q Notification system rebuilt on new platform

q New Feature: Modify and cancel previously submitted field work notifications

q All Remediation programs can use service
PRP Maps Online

Map of leak sites in proximity to non-public drinking water wells and wellhead protection areas

Data refreshed nightly

http://pca-gis02.pca.state.mn.us/prp/index.html
MPCA’s What’s in My Neighborhood

- [http://www.pca.state.mn.us/wimn](http://www.pca.state.mn.us/wimn)

- Provides a high level overview of site (Agency Interest)

- Map and text searches available

- Data refreshed nightly
What’s In My Neighborhood Site Page

Freedom Valu Center #48

- Location: 1100 Highway 15 S
  Hutchinson, MN 55350
  McLeod County
- Watershed: South Fork Crow River (07010205)
- Latitude: 44.37486
- Longitude: -96.37628
- Coordinate collection method: Digitized - MPCA internal mapping application
- Currently active?: Yes
- Institutional controls: No

Investigation and Cleanup

- Petroleum Remediation - LS0018707 - Leak Site

Status: active

Leak sites are locations where a release of petroleum products has occurred from a tank system. Leak sites can occur from aboveground or underground tank systems as well as from spills at tank facilities.

Less Detail

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
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<tr>
<td>Monitoring Report Reviewed</td>
<td>08/21/2013</td>
<td>11/06/2013</td>
</tr>
<tr>
<td>Site Closed</td>
<td>08/21/2013</td>
<td>11/06/2013</td>
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<tr>
<td>Limited Site Investigation Reviewed</td>
<td>11/19/2012</td>
<td>01/17/2013</td>
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<tr>
<td>More Work Requested</td>
<td>11/19/2012</td>
<td>01/17/2013</td>
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<tr>
<td>Technical Review of Limited Site Investigation Report Completed</td>
<td>11/19/2012</td>
<td>01/15/2013</td>
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<td>Commissioner's Site Report Request Processed</td>
<td>09/25/2012</td>
<td>09/28/2012</td>
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<td>Site Visit Conducted</td>
<td>09/18/2012</td>
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<td>Commissioner's Site Report Review Request Completed</td>
<td>09/18/2012</td>
<td>09/25/2012</td>
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<td>More Work Requested</td>
<td>05/03/2012</td>
<td>05/10/2012</td>
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<tr>
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<td>05/03/2012</td>
<td>05/10/2012</td>
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<tr>
<td>Other Report Type Not Listed Reviewed</td>
<td>05/03/2012</td>
<td>04/02/2012</td>
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<tr>
<td>Responsible Party Determined</td>
<td>02/29/2012</td>
<td>02/29/2012</td>
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<td>Standard Letter Issued</td>
<td>02/29/2012</td>
<td>02/29/2012</td>
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<tr>
<td>Leak Discovered</td>
<td>02/23/2012</td>
<td>02/23/2012</td>
</tr>
<tr>
<td>Leak Reported</td>
<td>02/23/2012</td>
<td>02/23/2012</td>
</tr>
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</table>

New Feature

Event Log
Tanks and Leaks Pages

- Provides specific details about tank and leak sites that WIMN does not
  - **Tanks** – Registered tank size, contents, installation date, and status
  - **Leaks** – Release Information, Cleanup Actions, Groundwater, and Site Contacts

- Application will be rebuilt over next 6 months, and links in What’s in My Neighborhood will be provided
Freedom Valu Center #48

<table>
<thead>
<tr>
<th>Site ID</th>
<th>7979</th>
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</table>
| Location | 1100 Highway 15 S  
Hutchinson, Minnesota 55350  
McLeod County |
| Tank Count | 3 tanks are (or were) located at this site. |

<table>
<thead>
<tr>
<th>Tank number</th>
<th>Install date</th>
<th>Registration date</th>
<th>Tank capacity</th>
<th>Tank status</th>
<th>Stored product</th>
<th>Above or underground</th>
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<tbody>
<tr>
<td>010</td>
<td>01/01/1984</td>
<td>04/15/1986</td>
<td>10000</td>
<td>Temporarily Closed</td>
<td>E-10 - 10% ethanol &amp; 90% gas</td>
<td>Underground</td>
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<td>Temporarily Closed</td>
<td>E-10 - 10% ethanol &amp; 90% gas</td>
<td>Underground</td>
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Freedom Valu Center #48

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<tr>
<td>Site type</td>
<td>Leak Site</td>
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<tr>
<td>Location</td>
<td>1100 Highway 15 S Hutchinson, Minnesota 55350 McLeod County</td>
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<td>Release Discovered</td>
<td>02/23/2012</td>
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<tr>
<td>Release Reported</td>
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<tr>
<td>Site Closure Date</td>
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<tr>
<td>Contaminated Soils Remaining</td>
<td>Yes</td>
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<tr>
<td>Offsite Contamination</td>
<td>No</td>
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<tr>
<td>Product Released</td>
<td>Gasoline, Unleaded</td>
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<table>
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<tr>
<th>Groundwater</th>
<th>Cleanup Actions</th>
<th>Site Contacts</th>
<th>Treatments</th>
<th>Reporting</th>
<th>Field Work</th>
<th>Release Detail</th>
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<tbody>
<tr>
<td>Drinking Water Contamination:</td>
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<td>Free Product Observed:</td>
<td>Unknown</td>
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<td>Free Product Thickness:</td>
<td>Unknown</td>
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<tr>
<td>Groundwater Contamination:</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

05/24/2017
Data Downloads Available

q Tank Information
   ftp://files.pca.state.mn.us/pub/file_requests/datasets/tanks/
   Data refreshed bi-weekly

q Remediation Site and Incidents Information
   ftp://files.pca.state.mn.us/pub/file_requests/datasets/remediation/
   Data refreshed bi-weekly

q What’s in My Neighborhood
   https://gisdata.mn.gov/dataset/env-my-neighborhood
   Includes shape files
Questions?

Stephen Frye
stephen.frye@state.mn.us
651-757-2463
Field Audit Updates

2017 Petroleum Remediation Program Consultants’ Day

Andy Eddy | Project Leader
May 24, 2017
Auditors: Andy Eddy, Stephen Frye

Program Coordinator: Chris McLain
Findings Since 2013

- 3446 notifications received
- 94 audits completed
- Errors/No Errors
  - 29 with errors
  - 65 completed according to MPCA guidance
Map of Notifications Received Since 2013
Map of Audits Completed Since 2013
Good News

q Audits are showing mostly good work

q Things done well

- Soil gas and sub-slab sampling
- Groundwater sampling
- Soil sampling – not sampling from headspace screening bags
q Errors from 2013-17: 29/94 – 69% error free
  Ń 2009-11:  65% error free
  Ń 2011-13:  70% error free

q Common Errors
  Ń Soil screening and sampling – Please refer to the updated guidance
  Ń Keeping samples cold – 5 audits found no ice on the samples
  Ń No shows – 6 times
Notifications are required for any work completed at a site with a Leak Site ID. Includes open and closed sites.

Notifications can now be modified and cancelled online.

Follow-up letter is sent to Responsible Party and Office/Field Staff with results.

All field audit data is available to the public.

Please call with any last minute changes (especially same day changes).
Questions?

Andy Eddy
andrew.eddy@state.mn.us
651-757-2331
Petrofund Program
Updates and Information

Minnesota Pollution Control Agency
Consultants Day – May 24, 2017
MPCA Guidance Documents

- Identify costs related to changes that result in exceeding maximums
- Costs for source boring(s) after tank removal on Excavation and Soil Disposal Oversight form
Petrofund Rules

- Beginning revision process
- Informal comments welcome now
  - Colleen Schiltz – colleen.schiltz@state.mn.us
- Sign up for email subscription service
Email Subscription Service

1. Go to the Minnesota Department of Commerce website at http://mn.gov/commerce/.

2. Click on the GovDelivery sign up link in the upper right-hand corner of the webpage.

3. On the Email Updates page, enter your email address and click Submit.

4. On the New Subscriber page, confirm your email address, select your email preferences, and click Submit.

5. On the Success page, click Subscriber Preferences.

6. On the Subscriber Preferences page, click Add Subscriptions.

7. On the Quick Subscribe for [your email address] page, check the Petrofund box under Subscription Topics and click Submit.
Legislation

- Petrofund extended to June 30, 2022
- Costs must be requested within seven years of work being performed
- Tank removal costs eligible when approved by MPCA as part of necessary corrective action
Identify Eligible Applicant

1. Confirm eligible applicant with MPCA
2. Invoice eligible applicant
3. Have eligible applicant complete IRS Form W-9 and submit with application
Active Remediation Proposals

- Include detailed description of work proposed
- Unit cost breakdowns of lump sums
- Invoice in same format as proposed
New Consultant Workshop

• Overview of bidding, cost allocation and application preparation processes
• Half-day session(s)?
• Interest from consultant community?

  Ginger Commodore – ginger.commodore@state.mn.us
Petrofund Staff Contact Info

Ginger Commodore
651-539-1508  ginger.commodore@state.mn.us

- Consultant and contractor registration
- IRS Form W-9 Request for Taxpayer Identification Number and Certification
Petrofund Staff Contact Info

Kathi Roelke
651-539-1512  katherine.roelke@state.mn.us

- Reimbursement application review
- Investigation proposal pre-review
Petrofund Staff Contact Info

Colleen Schiltz
651-539-1513 colleen.schiltz@state.mn.us

• Cost recovery
• Reimbursement application review
Petrofund Staff Contact Info

John Houck
651-539-1509  john.houck@state.mn.us

• Active remediation proposal review
• Abandoned Underground Storage Tank Removal Program
Petrofund Staff Contact Info

Greg Wiese
651-539-1514 greg.wiese@state.mn.us

- Failure of client to pay consultant/contractor
- Report violations of Petrofund laws
Petrofund Staff Contact Info

Joel Fischer
651-539-1507  joel.fischer@state.mn.us

• Petrofund Board
• Legislation
• General policy
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ginger Commodore</td>
<td>Support</td>
<td>651-539-1508</td>
<td>ginger.commodore.mn.us</td>
</tr>
<tr>
<td>Kathi Roelke</td>
<td>Analyst</td>
<td>651-539-1512</td>
<td><a href="mailto:katherine.roelke@state.mn.us">katherine.roelke@state.mn.us</a></td>
</tr>
<tr>
<td>Colleen Schiltz</td>
<td>Analyst</td>
<td>651-539-1513</td>
<td><a href="mailto:colleen.schiltz@state.mn.us">colleen.schiltz@state.mn.us</a></td>
</tr>
<tr>
<td>John Houck</td>
<td>Engineer</td>
<td>651-539-1509</td>
<td><a href="mailto:john.houck@state.mn.us">john.houck@state.mn.us</a></td>
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<tr>
<td>Greg Wiese</td>
<td>Investigator</td>
<td>651-539-1514</td>
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</tr>
<tr>
<td>Joel Fischer</td>
<td>Director</td>
<td>651-539-1507</td>
<td><a href="mailto:joel.fischer@state.mn.us">joel.fischer@state.mn.us</a></td>
</tr>
</tbody>
</table>
# Petrofund General Contact Info

<table>
<thead>
<tr>
<th>Contact</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Phone Number (Twin Cities)</td>
<td>651-539-1515</td>
</tr>
<tr>
<td>General Phone Number (Greater MN)</td>
<td>800-638-0418</td>
</tr>
<tr>
<td>Fax</td>
<td>651-539-0103</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:petrofund.commerce@state.mn.us">petrofund.commerce@state.mn.us</a></td>
</tr>
<tr>
<td>Website</td>
<td><a href="https://mn.gov/commerce/industries/fuel/petrofund/">https://mn.gov/commerce/industries/fuel/petrofund/</a></td>
</tr>
</tbody>
</table>
Questions?

Joel Fischer
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