Meeting Objectives

1. Present recent work completed
2. Solicit Public Comments and Concerns
3. Chart Future Course
Draft Scope of Work

Work Elements

1. Soil Vapor Investigation and Remedial Measures

2. Groundwater Investigation and Remedial Measures

3. Soil Investigation and Remedial Measures
Soil Vapor Work Element

Current Tasks:

1. Complete testing of the existing five in home vapor mitigation systems.

2. Conduct proposed soil and subslab/indoor air sampling

3. Install and operate the interim soil vapor extraction system
Access Coordination

• Signed Access Agreements

• Schedule Sampling Times

• Provide Contact Phone Numbers
SVE Basis of Design

- Utilize nine wells in the northeast portion of property
  - Spaced wells every 60 feet (35-foot radius of influence (ROI) with overlap between points)

- Eight new SVE wells were installed the week of February 20, 2012; total of nine wells including existing Extraction Well SVE-1.
Air Sampling

- Air sampling of the SVE discharge will be completed in accordance with NR 419
  - Samples will be collected daily for 3 days, then weekly for 3 weeks, then monthly thereafter
  - Samples will be collected in summa canisters and analyzed for VOCs
  - Results will be compared to NR 445 Table A
### Table C2: Estimate of Mass Removed during Soil Vapor Extraction Pilot Test, Madison-Kipp Corporation, Madison, Wisconsin.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Total VOC Concentration</th>
<th>System Flow Rate</th>
<th>Dilution Air Valve Position</th>
<th>Emission Rate</th>
<th>Mass Removed</th>
<th>Cumulative Mass Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ug/m³</td>
<td>cfm</td>
<td>percent open</td>
<td>lb/hr</td>
<td>lb/day</td>
<td>lb</td>
</tr>
<tr>
<td>2/5/2012</td>
<td>18:10</td>
<td>349,132</td>
<td>60</td>
<td>0</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>2/10/2012</td>
<td>13:00</td>
<td>175,433</td>
<td>60</td>
<td>0</td>
<td>0.04</td>
<td>0.28</td>
<td>0.35</td>
</tr>
</tbody>
</table>

**Average Emission Rate:** 0.08 lb/hr, 0.18 lb/day

1. Total VOC concentration was based on the sum of all detected analyte concentrations in Samples EFF-1 and EFF-2.
2. Emission rates were determined using the following equation:
   
   \[ \text{Emission Rate} = \text{Influent Conc.} \times \text{Flow Rate} \times \text{60 min/hr} \times (1 \text{ m}^3 / 35.31 \text{ ft}^3) \times (1 \text{ lb/4.54 \times 108 mg}) \]

3. Mass removed is calculated based on the average emission rate for two consecutive sample dates multiplied by the operating time between those sample data:

   \[ \text{Mass Removed} = [(\text{Emission Rate}_1 + \text{Emission Rate}_2) / 2] \times (\text{Data}_2 - \text{Data}_1) \times 24 \]

4. Emission factors were determined from detected soil gas vapor concentrations collected after completion of pilot test (Sample EFF-2).

5. When compounds are not detected above the laboratory reporting limit, emissions are calculated using 1/2 the reporting limit.

- **cfm**: Cubic feet per minute.
- **lb/day**: Pounds per day.
- **lb/hr**: Pounds per hour.
- **ug/m³**: Micrograms per cubic meter.
Air discharge requirements

Table E1. Maximum Estimated Organic Compound Emission Rate, Phase I Soil Vapor Extraction System, Madison-Kipp Corporation, Madison, Wisconsin.

<table>
<thead>
<tr>
<th>Vent System Flow Rate (cfm)</th>
<th>288</th>
<th>Wisconsin Administrative Code Threshold Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lb/hr</td>
</tr>
<tr>
<td><strong>Vapor Phase Constituent</strong></td>
<td><strong>Highest Estimated Effluent Concentration</strong></td>
<td><strong>Estimated Emission Rate</strong></td>
</tr>
<tr>
<td>Tetrachloroethene</td>
<td>325,000</td>
<td>0.350</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>4,600</td>
<td>0.005</td>
</tr>
<tr>
<td>trans-1,2-Dichloroethene</td>
<td>563</td>
<td>0.001</td>
</tr>
<tr>
<td>cis-1,2-Dichloroethene</td>
<td>14,600</td>
<td>0.016</td>
</tr>
</tbody>
</table>

| Maximum Estimated Organic Compound Emission Rate | 0.372 | 5.7 | (3) |

1. Calculations based on an air flow rate of 32 CFM per well (9 wells total).
2. Emission factors were determined from detected soil gas vapor concentrations collected during first hour of pilot test (sample EFF-1).
3. As specified in Table A of Wisconsin Administrative Code Chapter NR445.07. Values are based on a stack height of less than 25 feet.
4. Threshold value is based on total of trans-1,2-Dichlorehene and cis-1,2-Dichlorehene.
5. As specified in Wisconsin Administrative Code Chapter NR406.04(1)(m).

**cfm** Cubic feet per minute.

**µg/m³** Micrograms per cubic meter.

**lb/hr** Pounds per hour.
Soil Vapor Work Element

- The soil vapor extraction system shall be operated:
- “eliminate or intercept alleged exposure to and off site migration of soil vapors from the Madison-Kipp property to off site properties...”
Vapor Mitigation

If an SVE system proves not feasible, vapor mitigation systems will be installed at those locations deemed necessary by the Department based on existing data.
Groundwater Work Element

**Remedial Goals:** Achieve compliance to the extent feasible with enforcement standards at points of standards application for compounds of concern or show that natural attenuation will achieve compliance with standards for compounds of concern within a reasonable period of time.

1. Design, install and operate a Department approved expansion to the current ozone injection system to address shallow and deep groundwater contamination in the area of well MW2D and well nest 3.
2. Install deep groundwater monitoring wells to determine extent of deep groundwater contamination.
3. Implement an approved groundwater monitoring plan to track progress toward compliance with state groundwater standards and changes in groundwater quality on and off site.
Soils Work Element

**Remedial goal** is to eliminate the soil contamination direct contact exposure pathway to adjacent residents by removing any soils with contamination levels in excess of remedial action levels in the top one foot of soil.

**Tasks:**
1. Implement the chosen remedial action at 146, 150, 154, 162 and 166 S. Marquette Street.
   A. Remedial action: excavate all readily accessible contaminated soil to a depth of one foot from the areas designated in Figure 1. Excavated areas will be backfilled and reseeded.
Soils Work Element

2. Collect soils samples from the western portion of parcels 114, 118, 126, 130, 134, 138, 142, and 202 S. Marquette Street as shown on Figure 2

3. Based on soil analytical results determine which parcels have soil contamination levels exceeding the “Remedial Action Level” (RAL)

4. For the purposes of this scope of work the Remedial Action Levels are:
   - 1,2 DCE 15.6 ppm
   - PCE .123 ppm
   - TCE 1.43 ppm
   - VC .382 ppm
### Site-specific Resident Risk-Based Screening Levels for Soil

*ca*=Cancer, *nc*=Noncancer, *ca* (Where nc SL < 100 x ca SL), *ca* (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User’s Guide), sat=SL exceeds csat

Chicago, IL (US Climatic Zone VII) was used in calculating both the Volatilization and Particulate Emission Factors, per draft RR-890 guidance available at: http://dnr.wi.gov/org/aw/rr/wi_regs/RR-890_draft.pdf

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>Ingestion SF (mg/kg-day)</th>
<th>SFO Ref</th>
<th>Inhalation Unit Risk (ug/m³)</th>
<th>IUR Ref</th>
<th>Chronic RFD (mg/kg-day)</th>
<th>RFD Ref</th>
<th>Chronic RfC (mg/m³)</th>
<th>RfC Ref</th>
<th>GIABS</th>
<th>ABS</th>
<th>Volatilization Factor (m³/kg)</th>
<th>Soil Saturation Concentration (mg/kg)</th>
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<tbody>
<tr>
<td>Dichloroethylene, 1-cis</td>
<td>156-59-2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.00E-03</td>
<td>U</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<td>3.88E+03</td>
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<td>Tetrachloroethylene</td>
<td>127-18-4</td>
<td>2.10E-03</td>
<td>U</td>
<td>2.60E-07</td>
<td>U</td>
<td>6.00E-03</td>
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<td>1</td>
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<td>U</td>
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<td>U</td>
<td>5.00E-04</td>
<td>U</td>
<td>2.00E-03</td>
<td>U</td>
<td>1</td>
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<td>3.43E+03</td>
<td>6.92E+02</td>
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<td>Vinyl Chloride</td>
<td>75-01-4</td>
<td>7.20E-01</td>
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<td>U</td>
<td>1</td>
<td>-</td>
<td>1.48E+03</td>
<td>3.92E+03</td>
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</table>

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Particulate Emission Factor (m³/kg)</th>
<th>Ingestion SL TR=1.0E-6 (mg/kg)</th>
<th>Dermal SL TR=1.0E-6 (mg/kg)</th>
<th>Inhalation SL TR=1.0E-6 (mg/kg)</th>
<th>Carcinogenic SL TR=1.0E-6 (mg/kg)</th>
<th>Ingestion SL HQ=1 (mg/kg)</th>
<th>Dermal SL HQ=1 (mg/kg)</th>
<th>Inhalation SL HQ=1 (mg/kg)</th>
<th>Noncarcinogenic SL HI=1 (mg/kg)</th>
<th>Screening Level (mg/kg)</th>
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<tbody>
<tr>
<td>Dichloroethylene, 1-cis</td>
<td>1.43E+09</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>1.56E+02</td>
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<tr>
<td>Tetrachloroethylene</td>
<td>1.43E+09</td>
<td>3.05E+02</td>
<td>-</td>
<td>3.41E+01</td>
<td>2.07E+01</td>
<td>4.69E+02</td>
<td>-</td>
<td>1.52E+02</td>
<td>1.15E+02</td>
<td>3.07E+01 ca**</td>
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<tr>
<td>Trichloroethylene</td>
<td>1.43E+09</td>
<td>3.24E+00</td>
<td>-</td>
<td>8.04E-01</td>
<td>6.44E-01</td>
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<td>-</td>
<td>7.15E+00</td>
<td>6.05E+00</td>
<td>6.44E-01 ca**</td>
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<tr>
<td>Vinyl Chloride</td>
<td>1.43E+09</td>
<td>9.32E-02</td>
<td>-</td>
<td>2.39E-01</td>
<td>6.71E-02</td>
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<td>-</td>
<td>1.55E+02</td>
<td>9.33E+01</td>
<td>6.71E-02 ca</td>
</tr>
</tbody>
</table>
Feb. 29 - Deadline

**Goal:** Access requested from homeowners for Sub-slab samples
March 16 - Deadline

Goal: Complete sub-slab sampling

March 29 - Deadline

Goal: Complete backyard vapor probes installation and sampling
Redesigned web page: Search “Kipp” at dnr.wi.gov