Visual Assessment of Industrial Storm Water Discharges
Housekeeping

• All lines will be muted
• Questions can be sent to us via the question/chat box
• We will use polls during the webinar
• We will record webinar and post online
Visual Assessment of Industrial Storm Water Discharges

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Why is there a need to monitor storm water runoff?

• Storm water runoff has a major impact on water quality
• Storm water permits were developed so that industrial operations could be proactive
• Management of controls at the facilities effects the quality of the runoff
• Without monitoring we don’t know the quality of the runoff
Observe the discharge to assess effectiveness of the control measures
Visual Assessment components

1. Written procedures

2. Sample collection

3. Assessment
   - Discharge at time of collection
   - Sample collected at time of discharge
   - Documentation
Visual Assessment of Storm Water Discharges

• Included as a component (part) of the comprehensive inspection
• Comprehensive inspections conducted quarterly
• Or on an department approved alternative schedule
• Conducted by the Industrial Storm Water Certified Operator
Develop Procedures

• Written procedures for conducting the visual assessment
  – Developed within 6 months of Certificate of Coverage or Individual Permit issuance or reissuance
  – Incorporated into the Storm Water Pollution Prevention Plan, Comprehensive Inspection section
  – Determined to be acceptable as part of the SWPPP review.
Written Procedures Include

- Identifying those who will be conducting the visual assessment
  - Certified Operator must be a Industrial Storm Water Certified Operator
  - Staff working in conjunction with or under the supervision of the Certified Operator
Written Procedures-
Sample Collection
Discharge Points

• Identification of Discharge Points - location where storm water is discharged from the property - Two types of Discharge points

  Outfalls
  • Stream
  • County Drain
  • Lake
  • Wetland

  Points of Discharge
  • On site catch basins
  • Trench drains
  • In street catch basins
  • Conveyance to road side ditch
Discharge Points
- Outfalls

- Direct discharges to surface waters
Discharge Points-

Discharges to a separate storm sewer system

(Point of discharge)
Points of Discharge
Receiving Waters – Blue Water Drain

Point of discharge

Sampling Point

County Road Storm Sewer

Receiving Waters – Blue Water Drain
Multiple Discharge Points

• Substantially identical storm water effluent
• Conduct Visual Assessment at one of the discharge points
Substantially Identical Discharge Points

• How is this determined?
  – Look at the significant materials evaluation or inventory
    • Significant materials
    • Industrial Activities
  – Indicated on SWPPP site map
### Significant Material Inventory

#### Evaluation of Reasonable Potential for Contribution of Significant Materials to Storm Water Runoff

<table>
<thead>
<tr>
<th>Significant Material</th>
<th>Quantity of Material</th>
<th>Storage Area or Process</th>
<th>Method of Exposure</th>
<th>Potential for Exposure to Storm Water</th>
<th>Outfall Through Which Material may be Released</th>
<th>Past Spills</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

- **Industrial Activities**
- **Discharge Point**
- **Significant materials**
### TABLE 1 – SIGNIFICANT MATERIAL INVENTORY AND DESCRIPTION OF INDUSTRIAL ACTIVITY OR SIGNIFICANT MATERIAL STORAGE AREAS

Instructions - The intent of this table is to ensure that facilities comply with Part I, Section C.1.b. of their industrial storm water permit. See sample table in Section 26 for reference. Fill out the applicable areas or activities in the corresponding sections. Add more lines as needed. Once you have described the area or activity, list the significant materials that are associated with the areas or activities, the exposure methods, and evaluate the level of exposure. Once that is completed indicate the inlet(s) and outfall(s) that would be impacted if significant materials were discharged from the areas or activities described.

<table>
<thead>
<tr>
<th>Section Listed in General Permit</th>
<th>Storage Areas / Activity Areas</th>
<th>Significant Materials</th>
<th>Exposure Method</th>
<th>Reasonable Potential Evaluation (high,medium,low)</th>
<th>Inlet(s)</th>
<th>Outfalls(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Loading, unloading, and other material handling operations</td>
<td>1) Boat maintenance area</td>
<td>Oil, battery acid, diesel fuel, gasoline, and other fluids</td>
<td>Spillage during material handling activities</td>
<td>High</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2) Fueling area</td>
<td>Gasoline, diesel fuel</td>
<td>Spillage during fueling activities</td>
<td>High</td>
<td>NA</td>
<td>Direct Discharge</td>
</tr>
<tr>
<td>2) Outdoor storage including secondary containment structures</td>
<td>1) Boat storage area</td>
<td>NA</td>
<td>Outdoor storage</td>
<td>Low</td>
<td>C, D</td>
<td>2, 3</td>
</tr>
<tr>
<td></td>
<td>2) Equipment storage area</td>
<td>Grease, hydraulic oil</td>
<td>Outdoor storage</td>
<td>Medium</td>
<td>A, C</td>
<td>1, 2</td>
</tr>
<tr>
<td></td>
<td>3) Rack storage</td>
<td>Rusting of metal</td>
<td>Outdoor storage</td>
<td>Low</td>
<td>D</td>
<td>3</td>
</tr>
<tr>
<td>3) Outdoor manufacturing or processing activities</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Significant dust or particulate generating processes</td>
<td>1) Boat hull sanding</td>
<td>Paint dust, fiberglass dust</td>
<td>Outdoor maintenance activities</td>
<td>High</td>
<td>C, D</td>
<td>2, 3</td>
</tr>
<tr>
<td>5) Discharge from vents, stacks, and air emission controls</td>
<td>NA</td>
<td></td>
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</tbody>
</table>
Site Map Notes

- Storm water runoff discharges to Muskegon Lake.
- Most of the property is impervious surface except for the gravel lot and the strip of grass near the docks.
- Dumpsters onsite are fitted with covers.
- Drip pans are used at the sewage pump out station.
- Catch basin C has a valve to discharge wash water to the Waste Water Treatment Plant.
- The black line represents the property boundary.
- White arrows represent storm sewer lines.
- Black arrows represent storm water drainage areas.
- Green boxes represent storm water outfalls.
- Red circles represent storm water inlets.

Boat Fueling & Sewage Pump Out

Boat & Vehicle Maintenance

Dumpsters

Boat Washing

Equipment Storage

Boat Storage, Hull Sanding

Rack, Wash, & Grind

Lake Express Ferry
# Evaluation of Reasonable Potential for Contribution of Significant Materials to Storm Water Runoff

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</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>3,000 gallon</td>
<td>Fueling area and in saddle tanks of trucks parked at the facility</td>
<td>Spillage during fueling of trucks, filling of bulk fuel tank, fuel line damage, ruptured saddle tank</td>
<td>Medium to high for truck fueling, low for others</td>
<td>001, 002, 003</td>
<td>Vendor overfill tank in 2012 and spilled 200 gallons near tank</td>
</tr>
<tr>
<td>Oils (crankcase)</td>
<td>Used oil tank 500 gallons</td>
<td>Individual trucks, used oil tank for oil burner</td>
<td>Leakage from trucks</td>
<td>Medium</td>
<td>001, 002, 003</td>
<td></td>
</tr>
<tr>
<td>Hydraulic oils</td>
<td>250 gallon tote</td>
<td>Tote in shop, in trucks parked at the facility, and in shop forklift</td>
<td>Leakage from hoists under dump boxes</td>
<td>High for trucks parked in yard, low for tote in shop</td>
<td>001, 002, 003</td>
<td></td>
</tr>
<tr>
<td>Trash from maintenance shop</td>
<td>dumpster</td>
<td>Dumpster next to Maintenance building</td>
<td>Dumpster left open allowing storm water to contact trash, Material left on ground around dumpster</td>
<td>Medium</td>
<td>001</td>
<td></td>
</tr>
</tbody>
</table>
Unregulated areas

• Areas without industrial activity
  – Customer or Employing Parking Areas
  – Lawn

Unregulated discharges

• Areas that do not discharge directly or indirectly to surface waters
  – Combined sewer discharges
  – Ground water discharges
  – Sanitary sewer
Written Procedures

• Part of the Storm Water Pollution Prevention Plan

• Reviewed to determine if they meet requirements of permit

• Changes may be required
Sample Collection and Discharge Observations:
Sample Collection From Discharge Points
Have your collection equipment ready
Frequency

• As often as the comprehensive inspection

  – Once in each quarter
    • January-March
    • Apr-June
    • July-September
    • October-December

  – According to Approved Alternative Schedule
Sample Collection and Observations

• Timing
  – Within 1 month of the control measure observations
Timing

- Within 1 month of the control measure observations
Sample Collection and Observations

Timing

– At least 72 hours from a previous storm event (qualifying storm event)
– Within 30 minutes of beginning of the storm water discharge (first flush)
– Within 60 minutes if not possible to do in 30 minutes (document why)
Discharge structure with valve
Sample Collection and Observations

- Collect storm water discharge sample in a clean clear container
- Collect a sample that is representative of the discharge
• Adverse Weather Conditions

  – If unable to conduct assessment

  – Conduct Assessment during next qualifying storm event
Adverse weather conditions

• Defined
  – Dangerous conditions or conditions that create inaccessibility for personnel
    • Flooding
    • Electrical Storms
    • High winds
    • Icy conditions

  – Situations that make sampling impossible (no discharge)
    • Drought
    • Extended frozen conditions
• Documentation for not conducting visual assessment
Sample collection from Structural Controls
Cold Weather Visual Assessments

- For snowmelt - during a period with a measurable discharge
Collecting the Sample

Determine how you will collect the sample

- street sampler
- driveway sampler
- roof sampler
- lawn sampler
Specialized Equipment
Sample Collection and Observation
Alternatives?

• Automated samplers
  – The visual assessment of the sample must be conducted by the Certified Operator within 48 hours of sample collection
    • Mix prior to visual examination
  – Include in written procedures
Alternatives

• Certified Operator is not available?
  – Use staff that have received appropriate training for taking the storm water sample
  – Use a device to visually record the discharge (optional)
Staff Training

• View webinar
• Provide documentation that staff assisting in the visual assessment have received the appropriate training
• Included in Written Procedures
Sample storage

- Assessed after collection or

- Ensure that the sample is properly stored

- Storage procedures
  Included in written procedures
Visual Assessment

• Storm water discharging

• Sample collected at time of discharge
• Observations of the discharge
  – Color
  – Turbidity (cloudiness)
  – Oil Film (sheen)
  – Floating Solids
  – Foams
  – Settleable solids
  – Suspended solids
  – Odor
Color
Turbidity

Plume
Petroleum Sheens or Films
Floating Solids

- Ground rubber
- Wood solids
- Plastic resins
Foams
Settleable Solids

Sediment delta
Suspended Solids
Suspended Liquids

Water with soluble oils
Odors
Combinations
Combinations
Naturally Occurring Variations
Documentation
Documentation of Visual Assessment

• Discharge points
• Storm event information
  (get a rain gauge)
  – Length (Hours)
  – Amount of precipitation (inches)
  – Duration of time since previous event or snow melt discharge
  – Date and time discharge began
• Weather Underground:  
  www.wunderground.com  
  www.wunderground.com/history

• National Weather Service:  
  www.weather.gov
Description of the discharge

*In accordance with permit requirements, samples are to be collected within the first 30 minutes of the start of a discharge. If it is not possible to collect the sample within the first 30 minutes, the sample shall be collected as soon thereafter as practical but not exceeding 60 minutes. For snowmelt, samples shall be collected during a period with measurable discharge from the site.*
Observing the sample (Assessment)

- By Certified Operator
  - After collection
  - Within 48 hours of a collection
- Appropriately mixed/shaken
Documentation

- Sample collection
  - Discharge Point
  - Date of discharge
  - Time
    - Collection
    - Beginning of discharge
  - Collector
Slide Label

Date: ___________________________  Time: ___________________________

Discharge Pt.: ___________________  Date/Time of Start of Discharge:

Facility: _________________________  _____________________________

Personnel: ______________________
Documentation

• Collector

• Assessment
  – Certified Operator
  – Name
  – Title
  – Operator Certification Number
Documentation

• Nature of Discharge
  (Rain or snowmelt)
Documentation

- Probable source of contamination
Documentation

• Any unnatural characteristics of the discharge shall be reported
Documentation

• Photographic evidence
  – Photo taken of the sample against a white background
  – Colored photo or
  – Electronic file
Documentation

• Explanation why sample was not taken during the first 30 minutes of the storm event
Summary

• Be Prepared
• Provide appropriate training and supervise the collection of the sample
Summary

- Document the characteristics of the discharge at the time of the discharge
- Certified Operator must visually assess the sample collected
- Document the visual assessment
  - Photograph
  - Written report
- Make corrective actions in a timely manner
Assistance

• www.michigan.gov/deqstormwater

• Contact Industrial Storm Water Staff

• Compliance assistance

• FAQ sheet
Staff Contacts
Goal Clean Discharges
Questions?