Storm Water Inspections using Collector and Survey123 for ArcGIS

Kevin Bingham, GISP
GIS Manager
Town of Collierville
Goals for today:

- Former Solution
- Define the need
- Understand the Business Process
- PRISM
- Final Solution
Ricky, David, Gregg, and Sidney
Sandy
<table>
<thead>
<tr>
<th>Site or Project Name:</th>
<th>NPSID Permit Number: TNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Permittee Name:</td>
<td>Date of Inspection:</td>
</tr>
<tr>
<td>Current approximate number of disturbed acres:</td>
<td>Name of inspector:</td>
</tr>
<tr>
<td>Current weather conditions:</td>
<td>Inspector’s TNDPSC</td>
</tr>
<tr>
<td>Please check the box of the following item; are applicable:</td>
<td>Certification Number:</td>
</tr>
</tbody>
</table>

- Notice of Coverage (DOC)
- Stormwater Pollution Prevention Plan (SWPPP)
- Semi-weekly inspected documentation.

Best Management Practices (BMPs):

1. Are all applicable BMPs installed and maintained per the SWPPP? ☐ Yes ☐ No
2. Are BMPs functioning correctly at all disturbed areas? ☐ Yes ☐ No
3. Are BMPs functioning correctly at all discharge points such that it is an acceptable color contrast in the receiving stream, and in no other worse quality impacts per section 3.2.2? ☐ Yes ☐ No
4. Are BMPs functioning correctly at all discharge points such that it is an absence of trash? ☐ Yes ☐ No
5. If applicable, how discharge from existing activities have been managed by appropriate controls per section 4.1.5? ☐ Yes ☐ No
6. If construction occurs at any location on this temporary facility, the area shall be filled within 14 days of section 3.2.3? ☐ Yes ☐ No
7. If construction occurs at any location on this temporary facility, the area shall be filled within 14 days of section 3.2.3? ☐ Yes ☐ No
8. If construction occurs at any location on this temporary facility, the area shall be filled within 14 days of section 3.2.3? ☐ Yes ☐ No
9. If construction occurs at any location on this temporary facility, the area shall be filled within 14 days of section 3.2.3? ☐ Yes ☐ No
10. If applicable, how discharge from existing activities have been managed by appropriate controls per section 4.1.5? ☐ Yes ☐ No

Certification and Signature (must be signed by the certified inspector and the permittee per Section 3.5.2.3(g) and 7.2.2 of this CDP):

I certify under penalty of law that the report and all statements are true to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for furnishing false information, including the possibility of fine and imprisonment for the knowing violation:

Inspector Name and Title: □
Signature: □
Permittee Name and Title: □
Signature: □
Date: □
Date: □

(Instructions on reverse)
Form Name: General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)

**Construction Stormwater Inspection Certification (Twice-Weekly Inspections)**

<table>
<thead>
<tr>
<th>Site or Project Name:</th>
<th>NPDES Tracking Number: TNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Permittee Name:</td>
<td>Date of Inspection:</td>
</tr>
<tr>
<td>Current approximate disturbed acreage:</td>
<td>Has rainfall been checked/documented daily? Yes No</td>
</tr>
<tr>
<td>Name of Inspector:</td>
<td></td>
</tr>
<tr>
<td>Current weather conditions:</td>
<td>Inspector’s TNEPSC Certification Number:</td>
</tr>
</tbody>
</table>

**Please check the box if the following items are on-site:**

- [ ] Notice of Coverage (NOC)
- [ ] Stormwater Pollution Prevention Plan (SWPPP)
- [ ] Twice-weekly inspection documentation
- [ ] Site contact information
- [ ] Rain Gage
- [ ] Off-site Reference Rain Gage Location

**Best Management Practices (BMPs):**

1. Are all applicable EPSCs installed and maintained per the SWPPP? Yes No
2. Are EPSCs functioning correctly at all disturbed areas/material storage areas per section 4.1.5? Yes No
3. Are EPSCs functioning correctly at outfall/discharge points such that there is no objectionable color contrast in the receiving stream, and no other water quality impacts per section 5.3.2? Yes No
4. Are EPSCs functioning correctly at ingress/egress points such that there is no evidence of track out? Yes No
5. If applicable, have discharges from dewatering activities been managed by appropriate controls per section 4.1.4? If “No”, describe below the measures to be implemented to address deficiencies. Yes No
6. If construction activity at any location on-site has temporarily/permanently ceased, was the area stabilized within 14 days per section 3.5.3? If “No”, describe below each location and measures taken to stabilize the area(s). Yes No
7. Have pollution prevention measures been installed, implemented, and maintained to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters per section 4.1.5? If “No”, describe below the measures to be implemented to address deficiencies. Yes No
8. If a concrete washout facility is located on site, is it clearly identified on the project and maintained? If “No”, describe below the measures to be implemented to address deficiencies. Yes No
9. Have all previous deficiencies been addressed? If not, describe the remaining deficiencies in the Comments section. Yes No

**Comment Section:** If the answer is “No” for any of the above, please describe the problem and corrective actions to be taken. Otherwise, describe any pertinent observations.
General NPDES Permit for Stormwater Discharges from Construction Activities (CSP)
Monthly Construction Stormwater Pollution Prevention Compliance Inspection Report

Project [NPDES Permit #Lot]
Type of Inspection
Stage of Construction

Are the following items on-site:
- Notice Of Coverage
- Gauges
- Site Contact Information
- Stormwater Pollution Prevention Plan (SWPPP)

Best Management Practices (BMPs)
Are the Erosion Prevention and Sediment Control (EPS) devices functioning properly?

1. Are all applicable EPS devices installed and maintained (e.g., fence, litter protection, check dams, etc.)?
2. Are EPS devices functioning correctly at all disturbed areas/material storage areas?
3. Are EPS devices functioning correctly at outlet/discharge points such that there is no objectionable color contrast in the receiving stream and no other water quality impacts?
4. Are EPS devices functioning correctly at ingress/egress points such that there is no evidence of blockage?
5. Are temporary sediment basins installed, maintained, and functioning with sufficient capacity?
6. Have discharges from dewatering activities been managed by appropriate controls?
7. Have active areas been stabilized within 14 days?
8. Are vegetated areas being maintained, mowed, watered, and fertilized, etc.?
9. Are erosion control, water protection zones, or other buffer zones in place and being observed?
10. Have pollution prevention measures been installed, implemented, and maintained to minimize the discharge of pollutants from excavation and vehicle washing, wheeled, washed, and other washwater?
11. If a concrete washout facility is located on-site, is it clearly identified on the project and maintained?
This is what the summary table looks like showing the status of projects.
Storm Water Inspections
Town of Collierville, TN

- **Background**
  - The Town is required to perform monthly inspections on active storm water permits which are granted by the State of TN.
  - Currently inspections are being performed using paper forms in the field, and then, once back in the office, updates are manually entered into the master database.
  - Previously, Town staff used Cellica to manage this process.
    - The database and associated forms were built in Microsoft Access and the database was stored on a Town server (In the DMZ, I think).
    - The forms were shared with the Engineering Inspectors (ones who perform inspections) to fill in the information while out in the field using Android tablets.
    - Information from tablets was transmitted from tablets to server/containing master database (Not sure if this was a direct transmission from the tablet to the master database or if there is an intermediate step/service in between).

- **Goals**
  - Use tablets to enter all information for monthly storm water inspections.
  - Capture precise (within parcel boundary) location of storm water permit (This will be handled by other staff in the office and NOT field staff).
  - Maintain history of inspections. (Don’t overwrite any records)
  - Generate inspection reports.

- **Storm Water Inspection Business Process**
  - Storm Water permit application is submitted to the State of TN
  - State of TN grants storm water permit
    - Permit # is assigned and any additional information (project name, permittee, etc.) is recorded.
    - State of TN contacts Collierville to communicate that new permit is issued and provides all of the relevant information.
  - Collierville staff enters new permit information in our system.
    - Permit records (assigned by the state) often contain many lots.
When permit records contain more than one lot, Collierville adds lot numbers to the end of the assigned permit #. These revised permit #s (permit # from state with lot # added onto the end) are then created in the Collierville database for the respective lots. 

Collierville staff needs to be able to assign the proper locations (on a map) for these newly created permit records.

- Permit inspections are performed on a monthly basis
  - See inspection form for information that is collected each month
  - See attached document showing the database schema (This is from a rest endpoint that was developed by Shelby County storm water staff and is based on the form mentioned in previous bullet point).
  - When violations occur, more frequent than monthly inspections may be required

- Querying, Reporting, Analyzing
  - Monthly inspection information needs to maintained and “related” to the appropriate permit #
  - All information needs to be searchable
  - It is necessary to be able to generate a “report” of any given inspection (similar to the attached inspection form)
  - Staff would like to be able to query the database based on any of the attributes captured in the inspection reports (i.e. sites with recent violations, sites with multiple violations, permits assigned to a specific inspector, etc.)
  - Being able to query the database may lead specific analyses that will help decision makers
- How would one do lot based inspections instead of CGP# based inspections? (How do you track inspections for each lot?)

- In looking at the schema, will there be a comment field?

- What will the inspection form look like? (Was there any consideration given to using Survey123 in conjunction with Collector?)

- What does reporting look like?

- Can queries be made of the inspections?

- Is there a way to verify that all required inspections for each lot have been completed? (There are multiple inspectors conducting inspections. How do I make sure they each are completing their required inspections?)

- How are monthly inspections managed? (Keep up with previous inspections for reviewing and querying?)
10/21/17
6IS - Stormwater Meeting
- Pictures - 5 if possible
- Need Collector App on tablets
- Need Survey123 App on tablets
- Robbie - look in permit to see if phone # and email, etc...
- talk to Kevin B. - Permits Info.
- Kevin - will work on Fix Time stamp

How do They know what is status? How do they act?
- How do we know if inspection has been done?
- What we track vs what we see?
- How do we verify all inspections are done?

Reminders for follow up inspections?
- how do they know
- Monthly resets - not automatic like inspections
- my carryover
- Reporting?
- Query data?
**Problem** – What is it? Who says it is a problem? Is it ours?

**Root** – What caused it? What do you know about it?

**Innovate** – What is our goal? Possible solutions? Cost? Lifespan?

**Solution** – Measure it? Sustainable? Best/Worst case scenario?

**Measure** – Who will monitor it? Track costs? Results?
Final Solution

- Storm Water Permits
  - fgdb Feature Class
  - 1:Many Relationship
  - Monthly Storm Water Inspections

fgdb Table
- Collector for ArcGIS
- Survey123
- Dashboard
Calling Survey123 from Collector

arCGIS

surVEY123://?itemID=b172de7b229046d29025eeea275dc66a&field:PROJECT={NPDESPermit}&field:LOT={LotNo}&field:SITEMANE={SiteName}&field:PERMITTEENAME={PermitteeName}&field:PROJECTSTATUS={ProjectStatus}&center={Latitude},{Longitude}
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www.collierville.com
http://collierville.maps.arcgis.com/home/index.html