

Survey and Data Request of Municipal Catch Basin Maintenance Programs

Submittal Deadline: February 6, 2017

Western Washington Catch Basin Inspection and Maintenance Effectiveness Study

PROJECT GOALS

The western Washington catch basin inspection and maintenance project (the Project) is an effectiveness study of the Regional Stormwater Monitoring Program (RSMP). The Project is intended to gather and evaluate existing records for catch basin (CB) inspection and maintenance. The goals of the Project are to identify factors that could be used to predict CB maintenance needs (informing permit language about schedule) and to examine inspection and maintenance (I&M) programs among western Washington municipal NPDES permittees to identify cost efficiencies in program implementation. A report will be prepared from the results and shared among participants that identifies ways to increase efficiency and reduce costs.

The effectiveness question the Project seeks to address is:

How can CB program data be used to inform individual inspection frequency needs for permit compliance?

The Project objectives are:

1. Identify trends and/or correlations in CB I&M data that support proposals of alternative inspection schedules to Ecology;
2. Develop an electronic database of available CB I&M data for Western Washington;
3. Identify transferable cost-efficiencies in the design and implementation of the CB I&M programs; and
4. Recommend a list of standard data that should be collected to inform future assessments of sediment accumulation rates.

For reference, project documents and deliverables can be found on the RSMP website:

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/rsmp/effective.html>. A link to the project scope can be found under the O&M tab and deliverables will be posted under each task as completed.

WHAT WE NEED FROM YOU

1. Complete a short 11-question online survey – submit by January 30

A short online survey is provided to inform us on what type of information is available about your jurisdiction's CB program. Please submit your survey by January 30. Click on this link to take the survey: [Online survey link](#)

Please note that every time you click on the link it will take you to a new version of the survey and you will need to start over. Survey data are not saved until you hit the 'submit' button on the last page. Submit the survey before leaving the webpage (even if you have not finished). You can click the 'edit your response' link at the end to return to the survey that you started and edit or complete your responses. Once you are in 'edit' mode, you can save the link in your browser to return to your survey without having to start over.

2. CB inspection and maintenance data records, including program costs – submit by February 6.

After receiving your jurisdiction's completed survey, the project team will send you a link to upload your data records of catch basin inspection and maintenance. This project relies on available CB inspection and maintenance program information from across the region. We are only requesting that you provide existing records. No new data collection or analysis efforts are needed. The specific data fields being requested and their definitions are listed below. You may not have everything we request, but any information in this list will be helpful. If you don't have data exactly as described, please include similar data. If in doubt, including more data than what we request is better than including less.

Follow-up calls and interviews will be conducted with some permittees to fill in data gaps and to better understand their CB programs. The goal is to obtain datasets that can be analyzed across jurisdictions, so completeness of the dataset, the time period, and covering a variety of jurisdiction sizes and diversity in CB maintenance programs are key elements. Success of the study relies on your and others' participation. The most useful product will be derived from data contributed by many permittees.

DATA TRANSFER INSTRUCTIONS

The project team is asking all western Washington municipal NPDES stormwater permittees to please send us your CB inspection and maintenance data after completing the survey. We will send a drop location to the contact listed in your survey and would like to receive your data by February 6, 2016.

Your records are requested for the categories listed in the table below, as available. Please include GIS metadata, data dictionaries, and descriptions of each data layer if available. If providing a GIS contact for your agency is easier, we are happy to receive this and follow up.

The survey asks for e-mail addresses for anyone you would like to have access to the upload site. We will send instructions and a link to the upload site to the provided e-mail addresses. Each entity will be provided a unique upload login so that your data will remain secure. Please do not email files to us due to size limits for file attachments.

QUICK REFERENCE

What is needed:

- Survey (11 questions)
- Information
 - CB inspection and maintenance records since 2007 (see attached table)
 - Limited GIS layers

When:

- Survey: by Jan. 30
 - Data Records: by February 6
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DATA FIELDS & DEFINITIONS

CATEGORY	FIELD NAME	DATA TYPE	FIELD DEFINITION
CATCH BASIN INFORMATION	Type of CB	text	Type I, Type II, inlet, other
	Sump in CB?	Y/N	Is there a sump in the catch basin that collects settleable solids?
	Sump size	number	How large is the sump (volume)?
	CB identification	text/number	Unique ID for structure
	Invert elevation	ft	ft above mean sea level of lowest outflowing pipe from structure
	Rim elevation	ft	ft above mean sea level of rim of structure (typically ground elevation)
	Bottom of sump elevation	ft	ft above mean sea level of bottom of CB sump
	CB location coordinates	latitude/longitude	lat/long of structure, in decimal degrees
	CB location, street	address	closest address to structure
CB installation date	date	date of original installation of structure	
INSPECTION INFORMATION	Inspection dates	date	Date of inspection and associated CB identification
	CB Inspection measurements collected	number	Sediment depth to sump or % full
	CB status from inspection	text	Record of inspection outcome (e.g., Pass/fail, >50%, >60%, however recorded)
MAINTENANCE INFORMATION	Maintenance dates	date	dates of maintenance activities by CB, starting 2007
	Maintenance Activity	text	briefly describe maintenance activity by CB for associated date
	Maintenance cost	\$\$	dollar cost of maintenance
DRAINAGE BASIN	Contributing area	ha	hectares of contributing surface runoff area to structure
	Groundwater contribution	text	if known, briefly describe groundwater contribution to drainage area
	Pipe diameter_inflow	ft	diameter of influent pipe to CBs
	Pipe slope_inflow	%	slope of influent pipe of CBs
	Pipe diameter_outflow	ft	diameter of effluent pipe from CB
	Pipe slope_outflow	%	slope of effluent pipe of CBs
	Land Use percentage 1	%	primary land use of drainage area, percent of drainage area (approximate estimate ok)
Land Use percentage 2	%	secondary land use of drainage area, percent of drainage area (approximate estimate ok)	

CATEGORY	FIELD NAME	DATA TYPE	FIELD DEFINITION
	Land Use percentage 3	%	tertiary land use of drainage area, percent of drainage area (approximate estimate ok)
GIS DATA	Digital elevation model (DEM)	raster	GIS layer with DEM for jurisdiction (e.g., LIDAR)
	Roads	lines, vector	GIS layer with lines for roads
	Catch basins	points, vector	GIS layer with points for catch basins
	Flow routing	lines, vector	GIS layer with lines for flow routing
	Drainage basins layer	polygon, vector	GIS layer with polygons for surface drainage basins
	Inspection circuit	lines, vector	GIS layer with lines for inspection routes

SURVEY of MUNICIPAL CATCH BASIN INSPECTION and MAINTENANCE PROGRAMS

This survey asks questions to assist us in data interpretation and analysis. We do not expect jurisdictions to have all the information or data types provided as options. Nevertheless, your data are still helpful. If you are unsure if you should check a box because the answer is “maybe” or “sometimes”, please opt to check the box. If this information becomes important or needs clarification, we can follow up with your contact during the data transfer step. Questions about GIS data are referring to any data that have been linked to or imported into a GIS layer for mapping purposes. You may not have had any need to create these GIS files. We do not necessarily need you to provide us the GIS data listed in this survey. At this point, we only want to know if you have it. See the Data Request instructions for the specific GIS data we are requesting now. For questions about the survey, please contact Jon Ambrose (jon.ambrose@cardno.com).

Jurisdiction/Organization:	
Contact Name:	
Email:	
Zip Code:	Phone:

1. Which permit schedule for routine CB inspection and maintenance is used by your jurisdiction?
Check all that apply.

Phase I Permittees

- Standard approach for Phase Is: inspect all CBs and inlets annually (permit section S5.C.9.d.i).
- Alternative 1: inspect all CBs more or less frequently than annually to meet maintenance standards based on at least two years of CB inspection records (S5.C.9.d.i(1)).
- Alternative 2: inspect all CBs annually on a “circuit basis” whereby 25 percent of CBs and inlets within each circuit are inspected to identify maintenance needs (S5.C.9.d.i(2)).
- Alternative 3: clean all pipes, ditches, CBs, and inlets within a circuit once during the permit term (S5.C.9.d.i(3)).
- Other/Notes: _____

Phase II Permittees

- Standard approach for Phase IIs: inspect all CBs and inlets once by 8/1/17 and subsequently every two years thereafter (permit section S5.C.5.d).
- Alternative 1: inspect all CBs more or less frequently than every two years to meet maintenance standards based on at least four years of CB inspection records (S5.C.5.d.i).
- Alternative 2: inspect all CBs once by 8/1/17 and every two years thereafter on a “circuit basis” whereby 25 percent of CBs and inlets within each circuit are inspected to identify maintenance needs (S5.C.5.d.ii).

- Alternative 3: clean all pipes, ditches, CBs, and inlets within a circuit once during the permit term (S5.C.5.d.iii).
- Other/Notes: _____

2. What is your jurisdiction’s working definition of a CB? King County has adopted Washington State DOT’s definition for a catch basin of a 12” minimum sump depth. What differentiates a catch basin from an inlet in your jurisdiction?

- 12” or greater sump depth is a catch basin**
- Other:** _____

3. What types of catch basins are in your jurisdiction? There are multiple types of CBs and varying definitions in the industry. We have included definitions below based on King County road standards (<http://kingcounty.gov/depts/transportation/roads/road-standards.aspx>). However, if these don’t apply in your jurisdiction, please check “Other” and describe CB types that are included in your jurisdiction’s CB inspection and maintenance program.

- Type I:** inline or feeder structure for surface drainage with a grated lid that is typically square or rectangular. Underground concrete structure is typically square or rectangular. May include a sump or may contain a riser outflow pipe in lieu of or in addition to a sump. Intended to collect runoff both directly from surface flow and via inflow pipe(s) to the CB.
- Type II:** inline structure for surface drainage with round lid. Sometimes referred to as a manhole or maintenance hole and may have a lockable lid. Underground concrete structure is typically round and may include a sump. Deeper than a Type 1 CB and typically includes a ladder for access. Intended to collect runoff via inflow pipe(s) to the CB only but not via direct surface runoff.
- Inlet:** feeder structure for surface drainage. Underground concrete structure is rectangular and typically includes a shallow sump. Intended to collect runoff directly from surface flow without inflowing pipes to the CB and then send runoff to another CB, a manhole, or ditch.

- Other:** _____

4. Which activities may be included in a catch basin inspection your jurisdiction? Check any that apply.

- Visual/photo inspection
- Field notes of CB status
- Map/GIS updates
- Depth measurement of accumulated solids: units_____ precision_____

- Other: _____

5. What types of roads and CB maintenance does your jurisdiction perform? Check any that apply.

- Pipe cleaning
- Culvert cleaning
- CB cleanout
- Ditch maintenance
- Street cleaning
- Road repair and resurfacing
- Sanding/de-icing
- Other snow and ice control
- Roadside landscape maintenance, including vegetation and application of herbicide/pesticide
- Dust control
- Sediment and erosion control
- Trash and pet waste management
- Repair or replacement of CB grate
- Sealing cracks in below-ground structure and/or pipes
- Other: _____

6. How does your jurisdiction determine if a catch basin needs to be cleaned out? Check any that apply.

- Based on inspection data
- Based on a schedule
- Based on traffic volume or other road use factors
- Based on occurrence of an emergency, flooding, or CSO event
- Based on citizen reports/complaints
- Transfer of ownership
- Other: _____

7. What type of records do you keep for CB inspection and maintenance? Check all that apply in the available format.

	Inspections	Maintenance	Costs
Microsoft Excel spreadsheet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Non-Excel database	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GIS database	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paper files	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other format (type in)			

8. What GIS data do you have for your jurisdiction? Check any that apply.

- CB type (per definitions in Question 1 above)
- CB dimensions
- CB location
- CB age
- Pipe sizes into and out of CB
- CB elevation (rim and pipe invert)
- System conveyance (e.g., CB connections)
- Stormwater drainage basins delineations
- Flow routing through the system
- Land use
- Presence/absence of curbs vs. ditches
- Average annual daily traffic (AADT)
- Snow removal routes
- Snow days (avg. number of snow removal days per year)
- Street surface material (e.g. paved, gravel, etc.)
- Construction activities in drainage area
- Local precipitation data

9. What GIS data do you have about CB inspection and maintenance? Check all that apply.

- Maintenance routes and schedules
- Inspection dates
- Maintenance or repair dates
- Maintenance activities performed
- Cleaning frequency and dates
- Cleaning routes
- Inspection and maintenance records (pre-2007)

- Circuits with CBs grouped to meet permit option for inspecting on a “circuit basis”
- Street sweeping routes and schedule
- Inspection, maintenance, or cleaning costs

10. Please provide the cost of your program for CB inspections and maintenance (not including disposal) on an annual basis or by average cost by catch basin. If this has changed over time since 2007, please indicate how and when cost changed.

Inspections (program cost per year and/or average cost per CB):

2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	

Maintenance (program cost per year and/or average cost per CB):

2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	

11. If available, please send an example field inspection form(s) used by your jurisdiction for catch basin inspection and maintenance.

- Yes, example field inspection form sent with data transmittal.
- No, no field inspection form available.

12. If available, please send your jurisdiction’s Standard Operating Procedures (SOP) document(s) for catch basin inspection and maintenance.

- Yes, SOP sent with data transmittal.
- No, SOP not available.

13. Do you have any questions, comments or feedback about this survey?

Thank you for completing the survey! We appreciate your participation.