

Street Sweeping Research & Practices Synthesis: Guiding Program Development & Implementation

Statewide Survey Questions & Results

May 29, 2024

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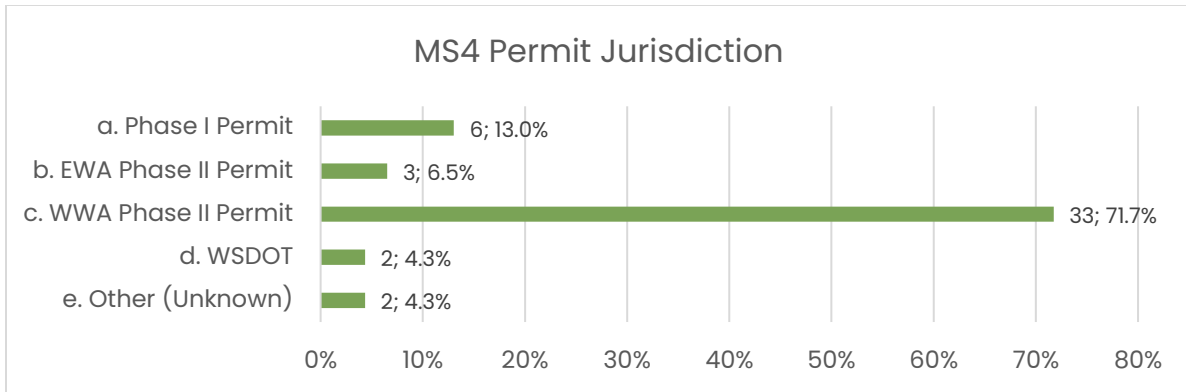
Survey Background

A statewide survey was developed to support the development of the Synthesis of Street Sweeping Research & Practices: Guiding Program Development & Implementation project. This project aims to develop a guidance manual that will provide information and tools Permittees can use to assist with developing and/or improving their street sweeping program to support compliance with the anticipated 2024–2029 Municipal Separate Storm Sewer (MS4) Permit requirements. The intention of this survey was to gain a better understanding of Permittees’ priorities to inform manual content development. Both administrative and field staff were encouraged to respond. The statewide survey consisted of 14 questions with different response options, including multiple choice, fill in the blank, and selecting prioritized options. A total of 46 respondents completed the survey. Each survey question and the corresponding results are presented below. Results are shown as (number of responses, percent of total responses). The following section is a summary of the survey questions and results.

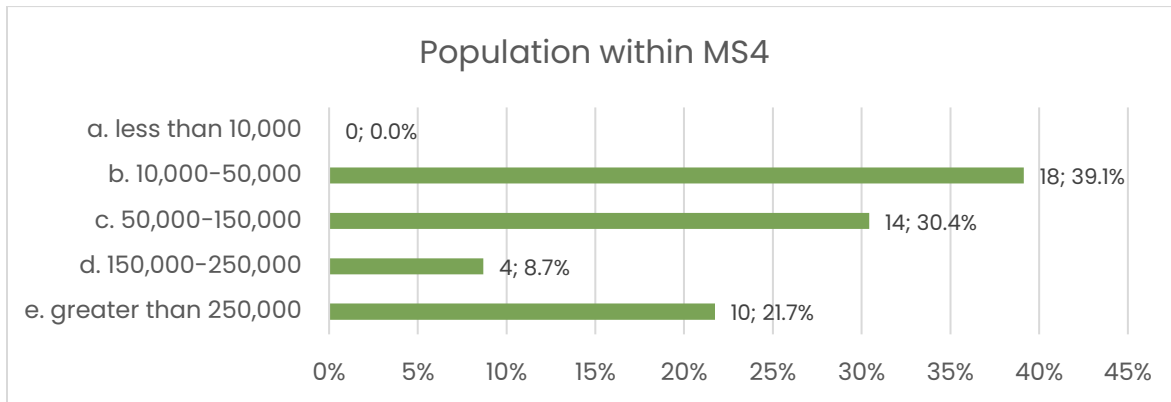


Survey Questions & Results

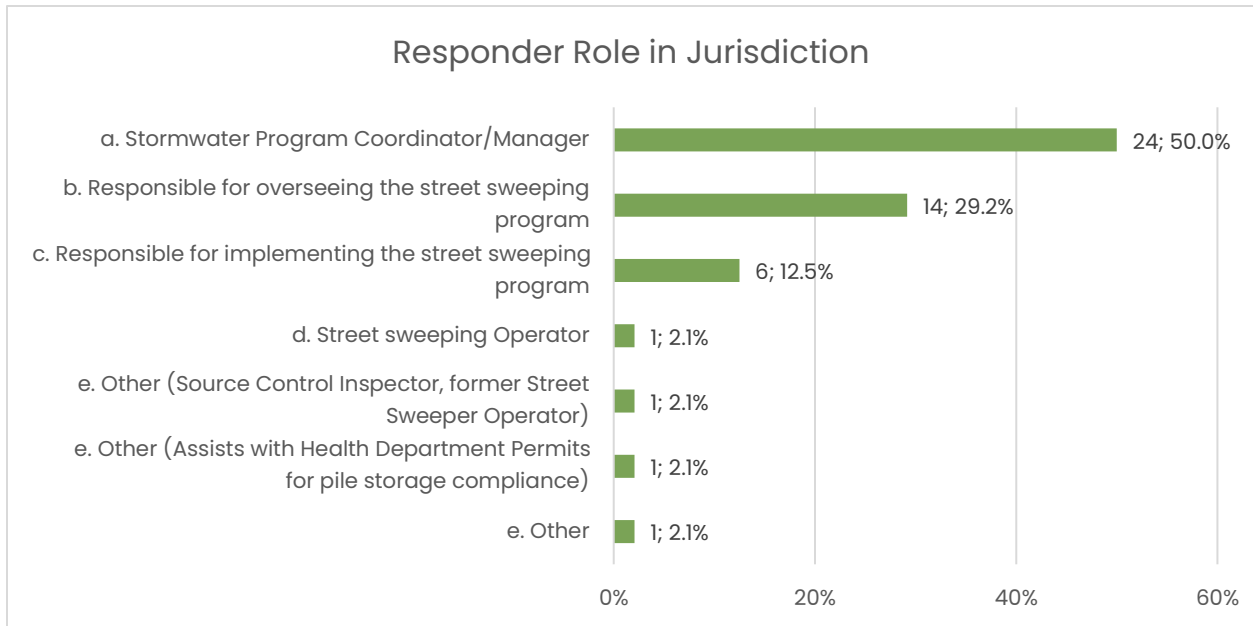
1. What MS4 Permit was your jurisdiction issued or will be issued? (Select one)



2. What is the population residing within your jurisdiction's MS4 permit regulated area? (Select one)



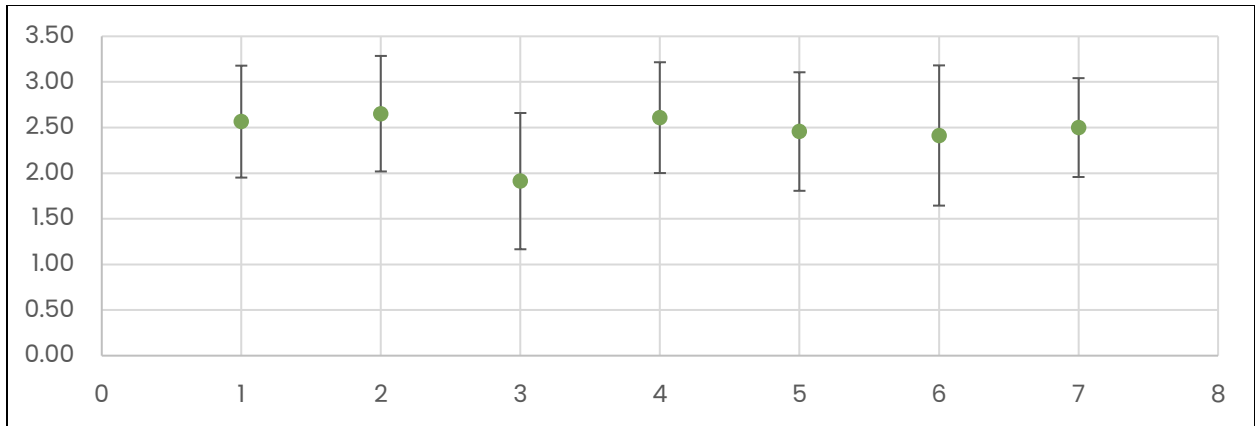
3. What best describes your role at your jurisdiction? (Select one)



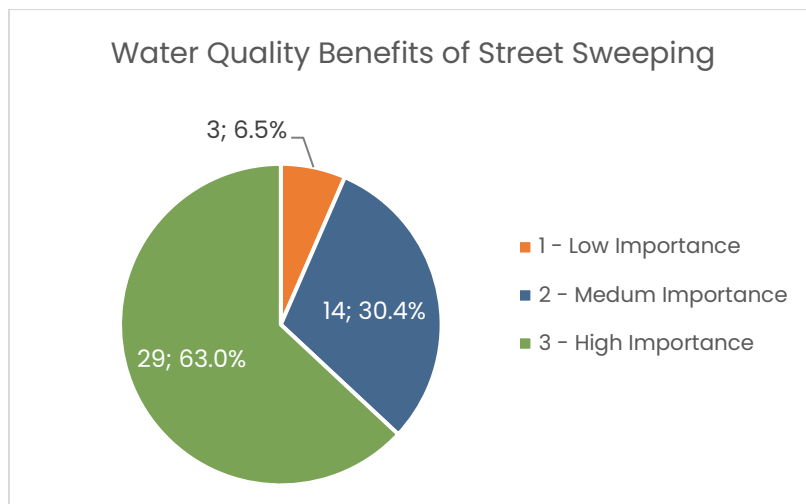
4. The project team developed the following conceptual chapter outline before submitting the proposal. The outline was developed based on discussions with regional stormwater work groups, consideration for the tools needed to meet anticipated MS4 Permit requirements, and professional judgment. On a scale of 3 being high importance and 1 being low importance, indicate the level of importance of the following chapter concepts. If a chapter does not appear on the list that you believe is important, please add it to the text box below.

#	Topic	Average Score (1–3)	Standard Deviation
1	Water quality benefits of street sweeping	2.57	0.61
2	Identifying high priority street sweeping areas	2.65	0.63
3	Establishing new street sweeping programs	1.91	0.75
4	Optimizing existing street sweeping programs	2.61	0.61
5	Documenting and Tracking Street Sweeping Activities	2.46	0.65
6	Street sweeping waste disposal	2.41	0.77
7	Street sweeping program cost considerations	2.50	0.54

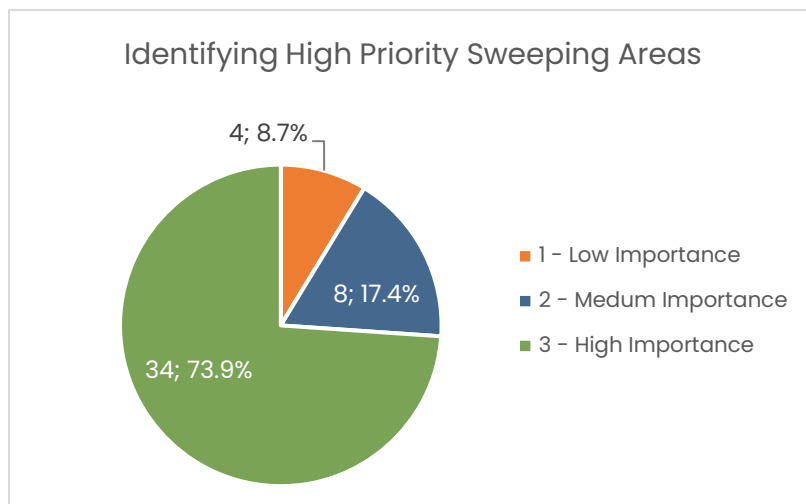




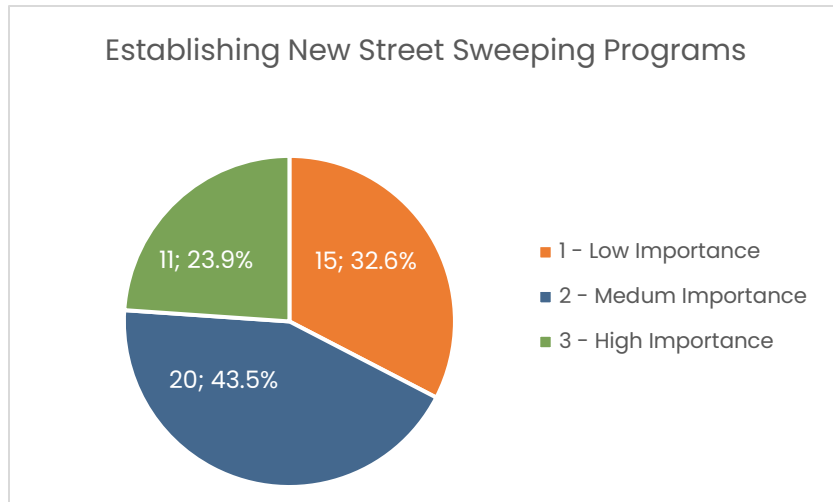
1. Water Quality Benefits of Street Sweeping



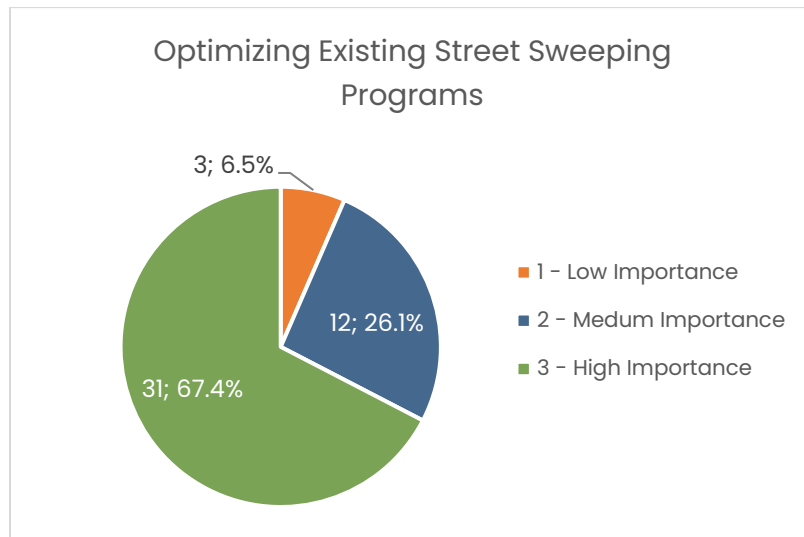
2. Identifying High Priority Street Sweeping Areas



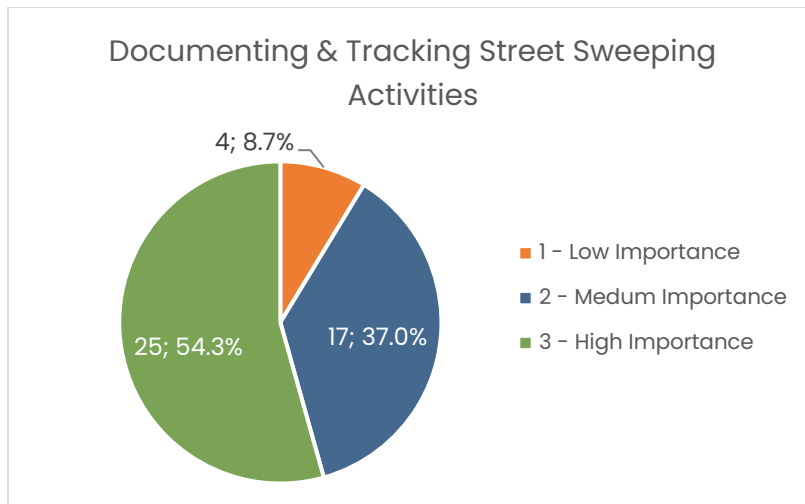
3. Establishing New Street Sweeping Programs



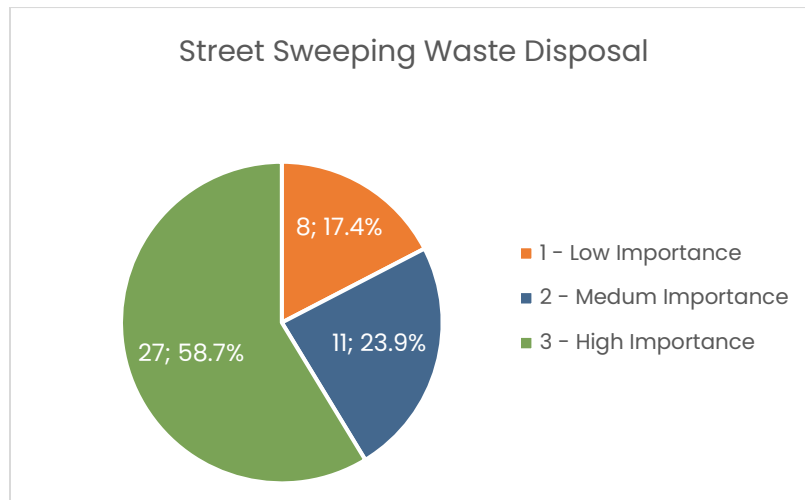
4. Optimizing Existing Street Sweeping Programs



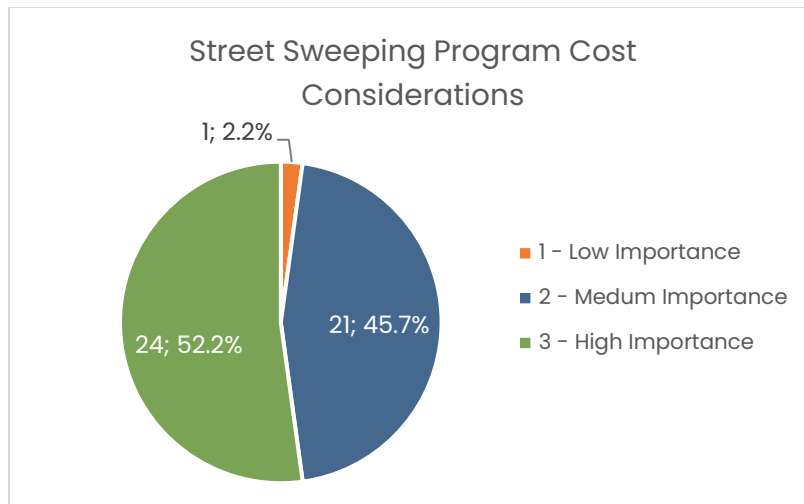
5. Documenting and Tracking Street Sweeping Activities



6. Street Sweeping Waste Disposal



7. Street Sweeping Program Cost Considerations



If an area of importance does not appear above, please add it here.

Theme	Survey Response	Post Survey Notes Addressed in Current Manual Concept?
Rules and Regulations	<ul style="list-style-type: none"> “Knowing and understanding the rules or regulations” 	Permit requirements will be addressed in Chapter 1 Manual Introduction
Equipment/Machinery	<ul style="list-style-type: none"> “Overview of sweeping machines and sweeping methods/efficiencies (such as sweeping on a damp day is more effective to capture materials)” “Would like to get better understanding about allowing water to run off of sweeper in our heavy rain season that happens to fall in our heaviest leaf season. We are told we can't but not one sweeper company has a filter system built to allow this.” 	<ul style="list-style-type: none"> Planned to include Chapter 4 Establishing New Street Sweeping Programs. Could be addressed in Chapter 4 Establishing New Street Sweeping Programs.
Sweeping Methods, Planning, and Improving Efficiency	<ul style="list-style-type: none"> “Route development and sweeping schedule optimization” 	Planned to include Chapter 5 Optimizing Existing Street Sweeping Programs.
Water Quality Benefits/Impacts	<ul style="list-style-type: none"> “Adaptive management: We need more GPPD fate & transport research to know if street sweeping is effective. Allowing the particles to sit in the sun during dry periods may ozonate the GPPD out, sweeping may consolidate GPPD, fine vs. course sweepers.” 	<ul style="list-style-type: none"> Addressed in Chapter 2 Water Quality Benefits literature search (status of current research), Could also be included in Research Gaps and Recommendations document. Could be included in Chapter 2 Water Quality Benefits.



Theme	Survey Response	Post Survey Notes Addressed in Current Manual Concept?
	<ul style="list-style-type: none"> • “The pollution generated by increased street sweeping offsets is at odds with the water quality benefits of increased street sweeping” 	
Testing	<ul style="list-style-type: none"> • “List what contaminants in sweep waste should be tested.” 	Could be included in Chapter 7 Street Sweeping Waste Disposal.
Funding	<ul style="list-style-type: none"> • “Funding for additional equipment and labor/disposal due to the increased sweeping requirements.” 	Addressed in Chapter 8 Street Sweeping Program Cost Considerations.
Additional Cost Considerations	<ul style="list-style-type: none"> • “Cost of permit compliance for temporary disposal of sweepings as a sub-category of Program cost considerations.” 	Could be included in Chapter 8 Street Sweeping Program Cost Considerations.
Additional Comments	<ul style="list-style-type: none"> • “For the two areas I didn't score high, I believe we'll get this information in a separate report (but maybe not other than 6PPD-q) and Ecology is identifying the high priority areas for us in the permit so I scored that lower.” 	

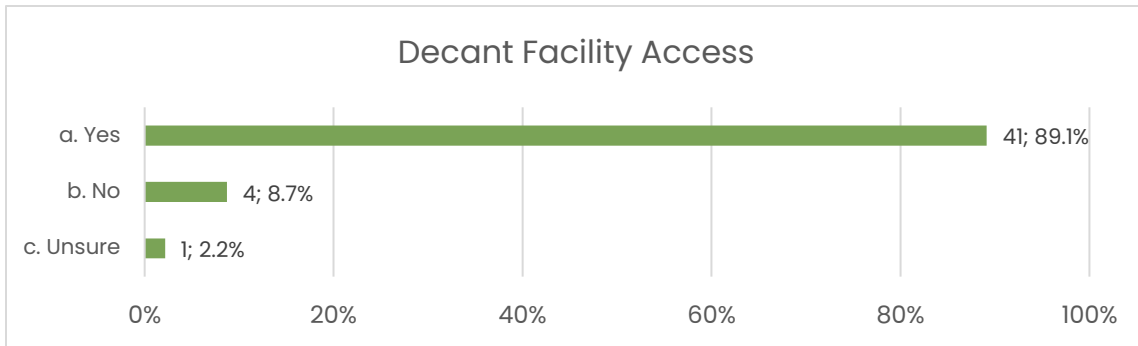


5. During the regional stormwater work group meetings, Permittees identified the following additional topics they would like included in the street sweeping program manual. Please select the top 10 topics you feel are most important to include in the manual.

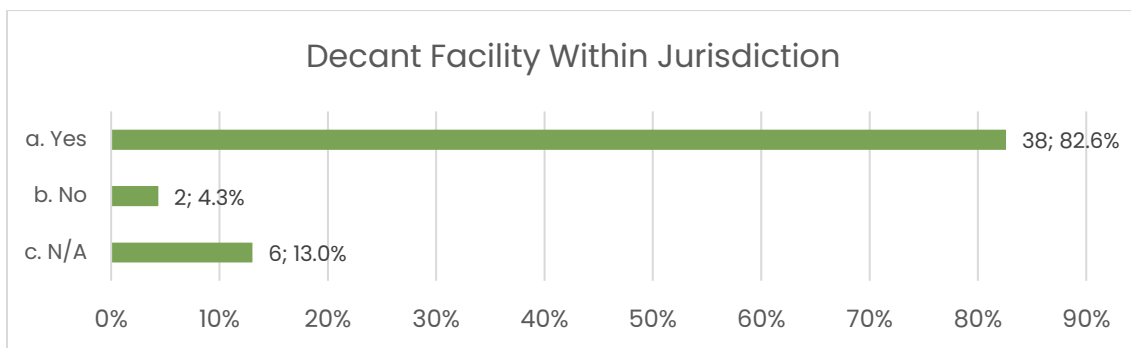
Topic	Selections	Percentage
Using street sweeper tracking data to improve program efficiency	36	8.2%
Methods to assess and prioritize roads (beyond what is required in the Permit) based on variables (weight, bus/truck route, velocity, traffic density, start/stops)	28	6.4%
Methods for identifying when decant materials need to be sampled	27	6.2%
Addressing challenges such as protruding tree limbs, non-standard curbs, and street sweeping during leaf season	26	5.9%
Sweeping different types of surfaces, including permeable pavements	25	5.7%
Addressing labor and equipment issues, such as hiring enough staff and purchasing street sweepers	25	5.7%
Methods to minimize trips to the dewater/decant facility	24	5.5%
Effectiveness of sweeping curb vs non-curb roads	24	5.5%
Information or data a jurisdiction might collect to refine a program	24	5.5%
Program funding options	23	5.3%
Street sweeping program staff training	23	5.3%
Cost considerations for testing street waste to determine if it is hazardous waste	21	4.8%
Cost summary of implementing street sweeping requirements in the Draft 2024-2029 Phase II Permits	21	4.8%
Parking policies and enforcement options	21	4.8%
Comparison of cost between street sweeping and vactoring catch basins	20	4.6%
Methods to effectively sweep areas that are too narrow for a full-size sweeper (e.g., protected bike lanes)	16	3.7%
Street sweeper size/type vs cost tradeoff (i.e., a larger sweeper will make less dewatering/decant trips but will cost more to purchase and operate)	16	3.7%
Ongoing maintenance and staffing requirements required to operate a decant facility	15	3.4%
Sweeping non-street locations (e.g., parking lots, pathways)	13	3.0%
Interlocal agreements and community-based public/private partnerships	10	2.3%



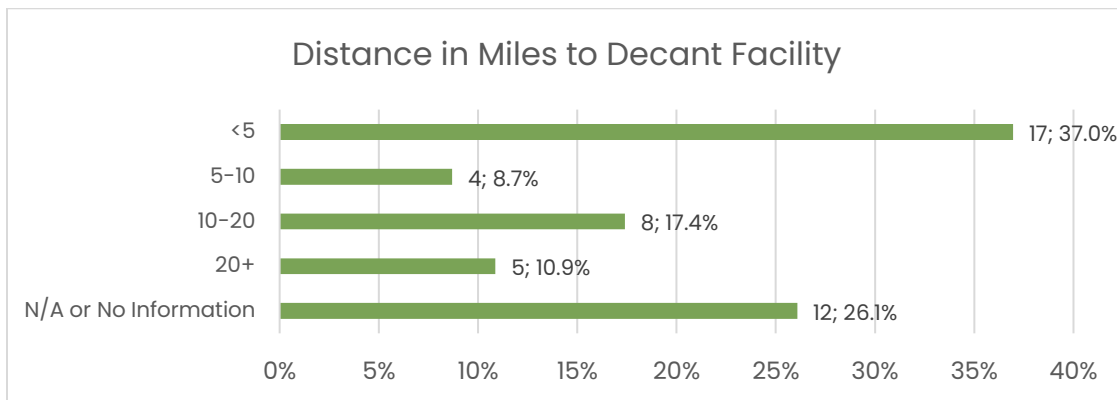
6. Does your jurisdiction have access to a decant facility? (Select one)



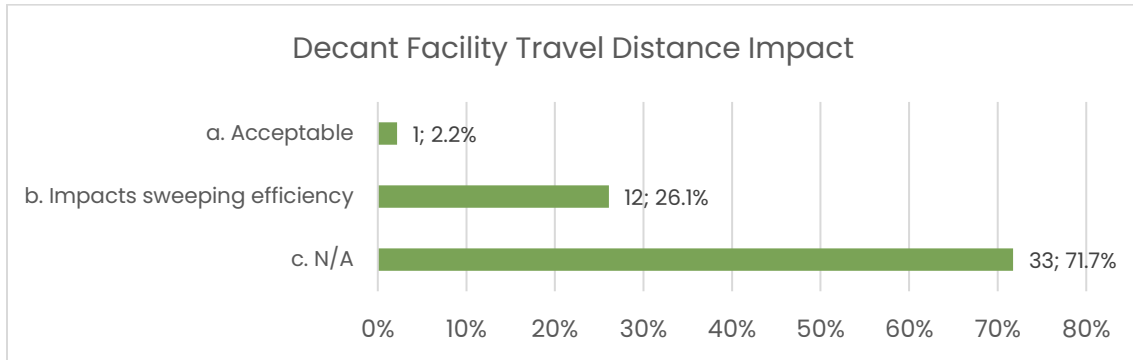
7. If yes, does the decant facility reside within your jurisdiction? (Select one)



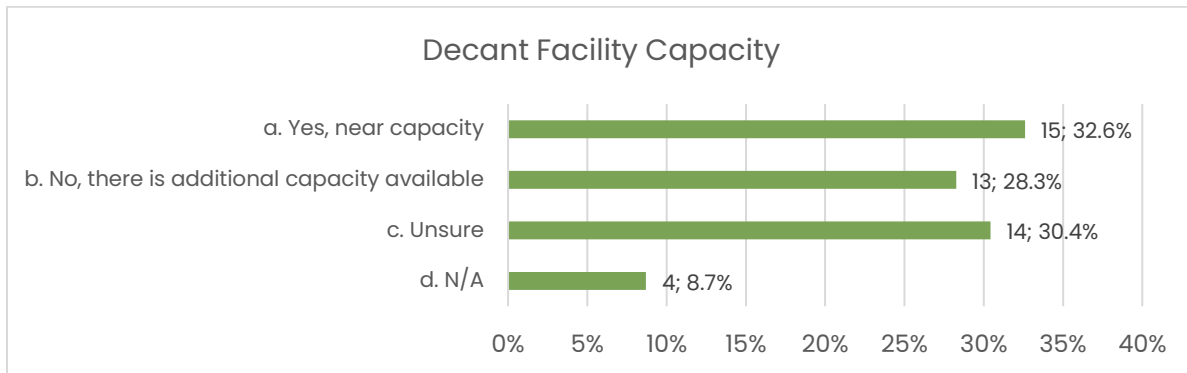
8. How far must the operators travel to access the decant facility? (Fill in the blank)



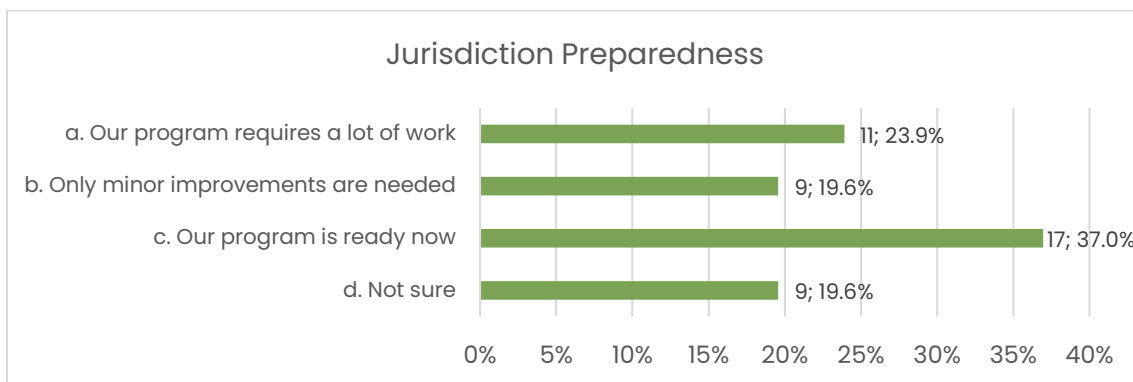
9. If decant facility access requires traveling to another jurisdiction, does the travel distance pose an acceptable burden, or does it greatly hinder your sweeping program's efficiency? (Select one)



10. For jurisdictions with access to a decant facility, is the decant facility at or near capacity? (Select one)



11. How prepared is your jurisdiction to implement a street sweeping program for water quality purposes? (Select one)



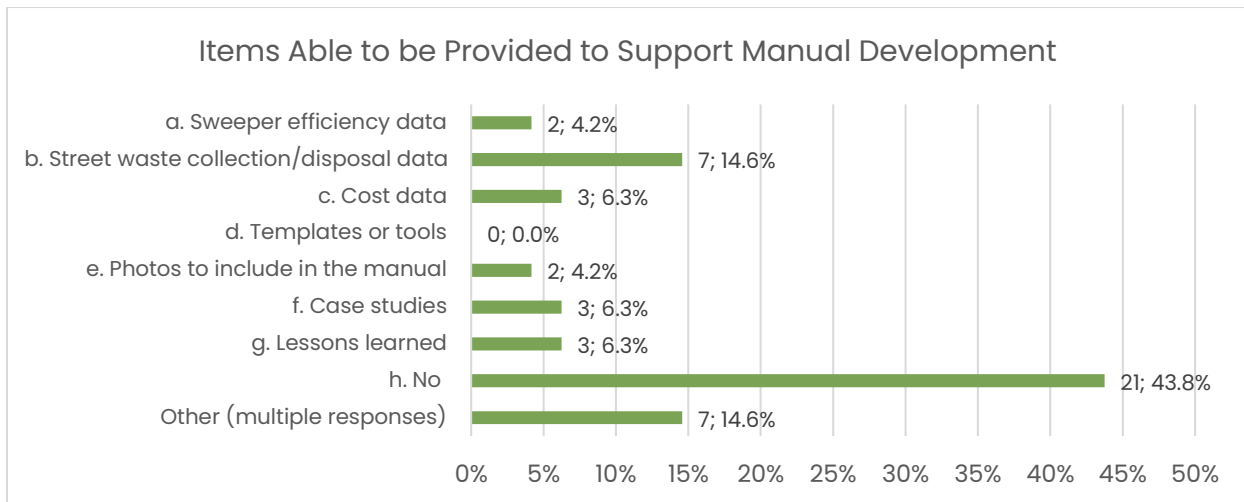
What do you need to be ready that could be included in the manual that has not already been mentioned? (Fill in the blank)

Theme	Survey Response	Post Survey Notes Addressed in Current Manual Concept?
Equipment	<ul style="list-style-type: none"> • “Type of sweeper needed. We only have a mechanical sweeper, and contract out regenerative air vac sweepers.” • “Addressing moving from an internal combustion engine sweeper to an electric or potentially a hydrogen sweeper. What are the impacts(environmentally, cost, availability etc.), what grant funding is available, how to propose for a grant etc.” 	<ul style="list-style-type: none"> • Addressed in Chapter 4 Establishing New Street Sweeping Programs. • Could be included in Chapter 4 Establishing New Street Sweeping Programs.
Measuring, Assessing, and Tracking Program Performance	<ul style="list-style-type: none"> • “How to practically or simply measure sweeping effectiveness for program modification” • “Methods to develop a street sweeping schedule, developing the schedule, delineation of routes or areas (for tracking purposes) called out in the schedule, and anticipating budget and staffing to run the street sweeping program.” 	Addressed in Chapter 5 Optimizing Existing Street Sweeping Practices
Staff and Training	<ul style="list-style-type: none"> • “Priority for an expanded sweepings program is sufficient, Trained Staff (significant issue due to large amount of turnover since COVID), equipment & plans for dealing with equipment maintenance. These items are issues for existing programs.” • “I feel many municipalities will need additional staffing as well as equipment. I think we do a good job but when it is wet or during leaf season we slow way down when I think it is most important and the only thing that would help is additional staff” 	Addressed in Chapter 4 Establishing New Street Sweeping Programs.
Decant Facilities	<ul style="list-style-type: none"> • “Establishing a decant facility” • “Additional sweeper, staff and an additional decant facility/potentially a new solid waste handling permit if waste is deemed hazardous.” 	Addressed in Chapter 7 Disposing of Street Sweeping Waste.
Sweeping Schedule and Establishing Routes	<ul style="list-style-type: none"> • “Adding new routes to meet the permit requirements; how to optimize the routes to reduce travel time, balance the workload, reduce left hand turns, etc.; how to optimize the schedule (e.g., heavy 	Addressed in Chapter 5 Optimizing Existing Street Sweeping Practices.



Theme	Survey Response	Post Survey Notes Addressed in Current Manual Concept?
	traffic, bus, freight routes swept weekly, etc.)”	
Data Collection and Analysis	<ul style="list-style-type: none"> “Efficient data collection and analysis will be key to finding efficiencies and improving water quality” 	Addressed in Chapter 5 Optimizing Existing Street Sweeping Practices.
Program Structure and Organization	<ul style="list-style-type: none"> “how to structure the program. For example, should this be a collection of SOPs, a written report, or some other form? How should it be organized?” 	Addressed in Chapter 4 Establishing New Street Sweeping Programs.
Funding Sources	<ul style="list-style-type: none"> “more money” “We have already implemented an enhanced street sweeping program. We couldn't have done it without a grant to purchase a second sweeper and help fund getting the program started (sweep plan, O&M plan, operation, and adaptive management).” 	Addressed in Chapter 8 Street Sweeping Program Cost Considerations.

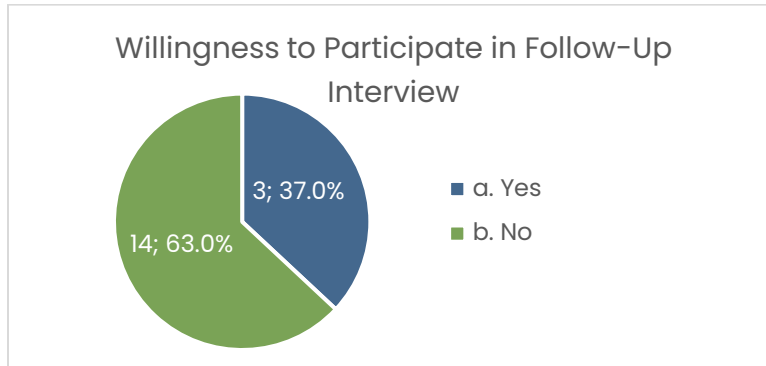
12. Can your jurisdiction provide any of the following to support the manual development? (Select all that apply)



Note: Respondents were unable to select multiple answers, so specific items were described under the “Other” answer response. A total of 25 respondents (54%) would be able to provide supporting materials for the manual development.



13. Are you willing to participate in a follow-up interview? This may include providing a case study or lessons learned or providing instructions on how to use templates or tools. (Select one)



14. If you provided a response other than no for questions 12 or 13, please provide your name, phone, and email address so we can follow up with you. (Fill in the blank). Or email laurie.larson-pugh@wsu.edu.

Answers kept confidential.

