



KING COUNTY

1200 King County Courthouse
516 Third Avenue
Seattle, WA 98104

Signature Report

September 10, 2013

Motion 13966

Proposed No. 2013-0260.2

Sponsors Phillips

1 A MOTION approving a scope of work for a water quality
2 assessment and monitoring study.

3 WHEREAS, Ordinance 17413 approved an amendment to the county's long-term
4 combined sewer overflow ("CSO") control plan and authorized the King County
5 executive to prepare a water quality assessment and monitoring study to provide
6 information for the next CSO control program review in 2017, and

7 WHEREAS, Ordinance 17413 requires the executive to transmit legislation for
8 approval of a scope of work for the water quality assessment and monitoring study, and

9 WHEREAS, the primary focus of the scope of work shall be to address items
10 required as part of the CSO program review, plan update and program implementation,
11 and

12 WHEREAS, in accordance with Ordinance 17413, the regional water quality
13 committee ("RWQC") and the RWQC staff group provided guidance on the scope of
14 study to the wastewater treatment division ("WTD") and the water and land resources
15 division ("WLRD") of the department of natural resources and parks, and

16 WHEREAS, WTD and WLRD staff also met with the metropolitan water
17 pollution abatement advisory committee and other interested parties to obtain their input
18 on the scope of work, and

19 WHEREAS, in the development of the scope of work, the executive considered
20 the guidance and input received, and

21 WHEREAS, the scope of work is provided in Attachment A to this motion and, as
22 further detailed in Attachment B to this motion, includes a description of the major tasks,
23 study questions, a schedule and budget to complete the water quality assessment and
24 monitoring study by 2016 is consistent with the direction provided in Ordinance 17413;

25 NOW, THEREFORE, BE IT MOVED by the Council of King County:

26 The attached scope of work for the water quality assessment and monitoring
27 study, Attachments A and B to this motion, is hereby approved.

28 The wastewater treatment division shall provide an annual briefing to the regional
29 water quality committee regarding the water quality assessment and monitoring study,

30 including the costs expended and benefits. The briefing will also include discussion of
31 the need for an executive advisory panel at the appropriate time.

32

Motion 13966 was introduced on 6/3/2013 and passed by the Metropolitan King
County Council on 9/9/2013, by the following vote:

Yes: 8 - Mr. Phillips, Mr. von Reichbauer, Ms. Hague, Ms. Patterson,
Ms. Lambert, Mr. Dunn, Mr. McDermott and Mr. Dembowski
No: 0
Excused: 1 - Mr. Gossett

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON



Larry Gossett, Chair

ATTEST:



Anne Noris, Clerk of the Council

Attachments: A. Scope of Work for Water Quality Assessment and Monitoring Study dated 09-04-13,
B. Further Detail on Scope for Water Quality Assessment and Monitoring Study dated 09-04-13



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

**Scope of Work
for
Water Quality Assessment and
Monitoring Study**

For comments or questions, contact:

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This information is available in
alternative formats on request at
206-684-1280 (voice) or 711 (TTY).

Introduction

On Sept. 17, 2012, the King County Council, through Ordinance 17413, approved an amendment to the County's long-term combined sewer overflow (CSO) control plan. The approved plan includes construction of nine capital projects to control the remaining 14 uncontrolled CSOs to the Washington State Department of Ecology (Ecology) standard.¹ Completion of the projects will meet the Ecology and U.S. Environmental Protection Agency (EPA) requirement that all King County CSOs be controlled by 2030. The planning-level cost estimate to complete the amended long-term CSO control plan is \$711 million (2010 dollars).

Section 2 of Ordinance 17413 authorizes the County Executive to conduct a water quality assessment and monitoring study (assessment) to help ensure that investments in CSO control optimize water quality improvements in the sub-basins where CSOs discharge. Results of the assessment will inform the next CSO control program review.

The assessment will provide information on how CSO control can work in conjunction with other water quality projects, identify opportunities to lower the cost of CSO control, evaluate the effectiveness of emerging technologies, and build a foundation for conducting post-construction monitoring of CSO control projects. It will also help in deciding whether to pursue an integrated CSO control plan under the EPA Consent Decree. Recommendations that emerge from the assessment may include changes in the sequencing and prioritization of the last seven CSO control projects while meeting the County's legal obligations to complete all projects by 2030.

Scope of Work and Cost to Complete the Assessment

The project team plans to complete the assessment in 2016 so that information can be considered during the next CSO control program review, scheduled to be submitted to the Council in 2017.

The scope of work closely follows the elements listed in Section 2C of Ordinance 17413; fulfills the requirement in Section 2E that the assessment include a transparent and inclusive stakeholder process; and reflects guidance from the Regional Water Quality Committee, per Section 2D of the ordinance.

Additional information can be found at:

- The County's long-term CSO control plan:
<http://www.kingcounty.gov/environment/wastewater/CSO/ProgramReview/Plan.aspx>
- Exhibit A of this scope of work - Section 2 of King County Ordinance 17413 Authorizing the Executive to Implement a Water Quality Assessment and Monitoring Study
- Exhibit B of this scope of work – Questions to be Addressed by the Water Quality Assessment and Monitoring Study

¹ Ecology's standard for CSO control is an average of one untreated discharge per CSO outfall per year based on a 20-year moving average.

Elements of the Scope of Work

The main elements of the scope of work and timeframes for their completion are as follows:

- Review and analyze the large amount of existing scientific and technical data on impairments, defined as water quality-related concerns, in receiving waters where uncontrolled county CSOs discharge (e.g., the Ship Canal, Duwamish River, and Elliot Bay); the sources of impairments; and planned and potential corrective actions. 2013
- Provide venues for stakeholders to be engaged throughout the process. 2013–2016
- Conduct targeted data gathering and monitoring, as necessary, to fill identified gaps in scientific data on water quality in these receiving waters. 2014–2015
- Analyze, synthesize, and summarize scientific and technical data collected and reviewed during the assessment and produce a comprehensive synthesis report. 2015
- Make recommendations on (1) the sequencing and integration of CSO control projects and other corrective actions, and (2) additional means, such as coordinating projects with the City of Seattle, to increase the effectiveness and reduce the costs of controlling all County CSOs by 2030. 2016

The Water and Land Resources Division will perform the scientific and technical work. Advice and recommendations will be made by an Executive’s Advisory Panel to the King County Executive and Council as described below. The Wastewater Treatment Division (WTD) will take lead responsibility for completing the assessment.

Transparent and Inclusive Stakeholder Process

Stakeholder involvement began in fall 2012 to help develop the questions to be addressed in the assessment and help shape the stakeholder process. As a starting point for developing a list of stakeholders, WTD began with those parties who had expressed interest in the CSO plan update process that concluded in September 2012. There is a wide range of stakeholders and WTD is planning additional effort to identify stakeholder groups. Input from our stakeholders thus far has emphasized the importance of maintaining communication and seeking independent review throughout the assessment.

To achieve these objectives, two main groups will provide independent review. The groups and their roles are as follows:

- The *Scientific and Technical Review Team* will consist of approximately five independent technical experts in water quality science, stormwater, and wastewater management who will review scientific methodologies and findings.
- The *Executive’s Advisory Panel*, composed of approximately 10 regional leaders with a variety of perspectives and expertise will provide advice and make recommendations based on assessment findings, regional values, and interested party input. Members will

be appointed by the King County Executive and confirmed by the County Council in 2015.

WTD will also provide opportunities for other interested parties to review and provide input. Interested parties are residents, businesses, environmental organizations, elected officials, local sewer utilities, and technical staff from government agencies who want to stay informed and provide input to the assessment. They will have opportunities for involvement during all phases of the assessment, including the recommendations phase. There will be additional effort to collaborate with jurisdictions in the assessment area.

Study Cost

The cost estimate for the water quality assessment and monitoring study will vary depending on the assessment of available data and the data needed to fill identified gaps. The current cost estimate for the assessment and monitoring study is \$2.1 million, not to exceed \$3.2 million; however, the cost estimate will be refined, discussed and approved by the Regional Water Quality Committee in the early phases of the assessment once it has been determined if additional sampling and data analysis is needed. This cost estimate covers technical work, project management, and the stakeholder process as described in more detail below:

- **Technical work and project management.** This component will cover the following work: (1) conducting a comprehensive review of existing data, identifying data gaps, and monitoring and modeling to fill data gaps as needed to address the assessment questions, (2) analyzing the impact of CSO control projects and other projects on water quality, schedule, and cost, and (3) preparing the synthesis report described above.
- **Transparent and objective stakeholder and expert review process.** This includes the following activities: (1) communicating with interested parties throughout the process; (2) convening and facilitating the Scientific and Technical Review Team to ensure the assessment's design and results are scientifically robust; and (3) convening and facilitating the Executive's Advisory Panel to make recommendations to inform the next CSO control program review.

An equivalent of five employees per year will be engaged on the assessment, consisting of existing or temporary staff. This includes County employees and consultants.

Section 2 of King County Ordinance 17413 Authorizing the Executive to Implement a Water Quality Assessment and Monitoring Study

147 SECTION 2. A. The King County executive is hereby authorized to implement a
148 water quality assessment and monitoring study, consistent with applicable legal
149 requirements, including analysis and value engineering of planned projects to inform
150 EPA's integrated planning approach and future CSO control program review with regard
151 to sequencing and prioritization of CSO projects while meeting the county's state and
152 federal legal obligations to complete required CSO control projects by 2030 and to
153 conform to CSO control regulations in chapter 173-245 WAC.

154 B. The study should utilize the new EPA integrated planning approach
155 framework to allow integration and sequencing of projects to ensure that investments in
156 CSO control projects are well-planned and timed to optimize water quality improvements
157 in the sub-basins to which King County's CSOs discharge. Furthermore, the study should
158 emphasize and support value-engineering efforts to refine projects and reduce the costs of
159 constructing CSO infrastructure. This should include opportunities to pursue
160 complementary or combined projects with the city of Seattle or other entities, if it is cost-
161 effective for King County ratepayers.

162 C. The study shall include:

- 163 1. Analyzing and synthesizing findings from existing studies;
- 164 2. Collecting new information and filling data gaps through additional
165 monitoring and sampling where identified as necessary;
- 166 3. Assessing factors affecting water quality in the sub-basins and water bodies
167 where King County CSOs discharge; and
- 168 4. Recommending integration and sequencing of projects to meet current federal
169 and state water quality standards and improve water quality.

170 D. The regional water quality committee shall provide policy guidance and
171 specific questions for analysis in the study scope of work.

172 E. The King County executive shall transmit legislation for approval of a scope
173 of work for the study and its cost, consistent with the direction of this ordinance,
174 including a transparent and inclusive stakeholder process. Where appropriate,
175 participation by federal, state, tribal and regional environmental leaders shall be arranged
176 through executive appointment and confirmation by the King County council.

177 F. The regional water quality committee shall review the recommendations that
178 emerge from the analysis and study.

Questions to be Addressed by the Water Quality Assessment and Monitoring Study

This first set of questions will be addressed during the data gathering and analysis phase of the project:

1. What are the existing and projected water quality impairments in receiving waters (water bodies) where King County CSOs discharge?
2. How do County CSOs contribute to the identified impairments?
3. How do other sources contribute to the identified impairments?
4. What activities are planned through 2030 that could affect water quality in the receiving waters?
5. How can CSO control projects and other planned or potential corrective actions be most effective in addressing the impairments?
6. How do various alternative sequences of CSO control projects integrated with other corrective actions compare in terms of cost, schedule, and effectiveness in addressing impairments?
7. What other possible ways, such as coordinating projects with the City of Seattle and altering the design of planned CSO control projects, could make CSO control projects more effective and/or help reduce the costs to WTD and the region of completing all CSO control projects by 2030?

This second set of questions will be addressed in the recommendations phase of the project:

1. What regional values, priorities, and objectives should be considered when sequencing CSO control and other corrective actions? (examples: saving money, maximizing water quality improvements, expediting CSO control project completion, equity and social justice)
2. What is the best way to sequence CSO control projects and integrate them with other corrective actions to meet these regional values, priorities, and objectives?

Further Detail on Scope for Water Quality Assessment and Monitoring Study

Project Objective

The primary objective of the Water Quality Assessment and Monitoring Study ("WQA" or "assessment") is to help ensure that the significant investments in Combined Sewer Overflow (CSO) control (\$711 million) are well-planned and timed to optimize water quality improvements where King County's CSOs discharge. Specifically, the assessment will:

- identify opportunities to lower the cost of CSO control;
- provide information on how CSO control can work in conjunction with other water quality projects;
- evaluate the effectiveness of emerging technologies (such as green stormwater infrastructure); and
- establish baseline conditions for mandatory post-construction monitoring of CSO control projects.

Any new monitoring conducted in order to fill data gaps during the assessment would help establish baseline conditions for County CSO sub-basins now, which will be used for comparison throughout CSO program implementation to 2030; provide information about the overall contribution of CSO's to existing/current water quality impairments; and help predict water quality outcomes post-CSO project construction.

The assessment will also help inform whether to pursue an integrated CSO control plan under the EPA Consent Decree, and would provide needed information for the plan if a decision is made to pursue it.¹ Recommendations that emerge from the assessment could focus on changes in the composition, sequencing and prioritization of seven of the remaining nine CSO control projects, while maintaining King County's commitment to complete all projects by 2030.

Project Scope Elements and Initial Cost Estimate

The cost estimate for the Water Quality Assessment and Monitoring Study ranges from \$2.1 million to \$3.2 million based on implementation of all scope elements described in Table 1 below. Of this amount, approximately \$1.5 million to \$2 million covers items required for CSO program reviews, plan updates and project implementation. The additional \$620,000 to \$1.2 million covers scope items that add value to the existing CSO program and planning efforts, by providing information that could lead to increased water quality outcomes while potentially reducing the cost of delivering the CSO program objectives by 2030. The additional investments also provide for an independent scientific review of the data analysis, as well as an external advisory group that would provide a transparent regional discussion around policy recommendations that could come from the assessment. All cost items include coordinated project management of scope, schedule and budget for the water quality assessment, team coordination and project reporting.

¹ "Integrated Planning" is a new regulatory approach introduced by the Environmental Protection Agency, that allows entities to pursue ways to meet their CSO control obligations simultaneously with other water quality projects, so that water quality improvements can be achieved more quickly and potentially at lower overall cost.

Attachment B

September 4, 2013

A detailed description of the scope elements and costs are in Table 1 on the next page. The table describes which of the scope elements would already be needed for CSO planning efforts, and those which add value to the program as unique efforts.

**Table 1
Scope Elements**

Scope Element	Accomplishes	CSO Project Planning Needs Met	WQA Added Value to CSO Program	Estimated Cost Required for CSO Projects	Estimated Cost for Added WQA Elements
1. Literature Search & Existing Data Review and Analysis	Analyzes existing reports and data for impairments in water bodies where CSOs discharge, and the causes (the contribution of CSOs and other sources); reviews existing and planned corrective actions; identifies and summarizes data gaps in understanding the impairments and causes.	This work would need to be conducted for each CSO project anyway to establish baseline water quality conditions as part of post-construction monitoring. This information is also needed for the next CSO program review. The previous CSO planning literature review (for the 2012 Plan Update) was high level to inform prioritization, but did not analyze data comprehensively. This additional literature and data review and analysis allows for characterization of water quality in the receiving waters, against which success of the CSO program will be measured. Detailed analysis increases knowledge of baseline conditions and of each CSO contribution to impairment in receiving waters.	Provides comprehensive review sooner than would be done for individual projects.	\$400,000-500,000 (4,500 staff hours over one year if done as part of WQA, or similar level of effort spread over several years if done on project or basin-specific basis for CSO program)	\$0
2. Filling Data Gaps (additional monitoring)	Fills scientific data gaps, as needed, to answer prioritization and benefit enhancement questions.	Monitoring for each of the basins would be needed anyway for post construction monitoring, as well as the next program review. This information would be key to support any future changes to the sequencing of CSO projects.	Provide additional data as needed for baseline and post-construction monitoring for CSO projects. This work also allows a better understanding of water quality impairments where CSOs discharge, and the causes of those impairments.	\$360,000-450,000 (3,800 staff hours over 1.5 year period if done as part of WQA, or similar effort done over several years on a project or basin-specific basis for each project)	\$0

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Scope Element	Accomplishes	CSO Project Planning Needs Met	WQA Added Value to CSO Program	Estimated Cost Required for CSO Projects	Estimated Cost for Added WQA Elements
<p>3. Synthesis Report</p>	<p>Answers: How can CSO control projects and other planned/potential actions be integrated to be most effective? How do various sequences compare? What other possible actions would help to reduce costs or improve water quality outcomes?</p>	<p>The information generated in the synthesis report would be needed for CSO Program review, which reviews prioritization of projects.</p> <p>Responds to King County Auditor's office recommendations to develop more quantitative measures of evaluating CSO project impacts on water quality, and provides information sufficient for WTD to decide whether to pursue integrated planning, or a change in current CSO schedule.</p>	<p>The Synthesis Report would provide information needed to evaluate other means to increase the effectiveness while reducing the costs of controlling all county CSOs by 2030. Synthesizes the literature and data search and results of any monitoring for filling data gaps; examines how CSO projects and other actions can be most effective at addressing impairments, using a variety of metrics; evaluates various CSO and other project sequences.</p>	<p>\$440,000-550,000</p>	<p>\$440,000-550,000</p>
<p>4. Science and Technical Review Team (technical experts)</p>	<p>Independent review of scientific data analysis and methods</p> <p>Note: The synthesis report (#3) and science and technical review team are included in the scope of work because it is anticipated the outcomes will produce long-term savings for ratepayers.</p>	<p>For every CSO program review, WTD does outreach to regional experts and scientists. Responds to KC Auditor's interest in applying the best science to program decisions. Responds to interested party input emphasizing importance of scientific rigor and independent external review.</p>	<p>Obtains objective, independent and expert input on the scientific and technical analyses and report findings.</p>	<p>\$180,000-225,000</p>	<p>\$180,000-225,000</p>
				<p>(9,800 staff hours over one year, including 3 water quality analysts, 1 technical writer and project management. Work completed by WLRD staff in-house)</p>	
				<p>(1,800 staff hours over 2.25 years; \$50K consultant contract; \$150K for science team stipends/salary reimbursements)</p>	

Attachment B

September 4, 2013

Scope Element	Accomplishes	CSO Project Planning Needs Met	WQA Added Value to CSO Program	Estimated Cost Required for CSO Projects	Estimated Cost for Added WQA Elements
5. Executive Advisory Panel (anticipated to include regional leaders with policy expertise)	Independent advisory panel, to be appointed by the County Executive but confirmed by the County Council, which would make recommendations to Executive and Council for next CSO Control Program Review. The panel would have facilitation and staff support.		If convened, this group would make recommendations for changes in CSO sequencing or integrated planning. Would ensure any changes to the recommended CSO project sequencing and timing maximize water quality benefits for the region. There would be significant value in having any major policy recommendations come from a transparent regional discussion. If the synthesis report does not suggest the possibility of significant changes to the CSO program, this Panel would not be convened.		\$0: Low \$225,000: Mid \$450,000: High Dependent on level of effort required. (up to 1,800 staff hours over one year; \$100-200K consultant cost. Range is dependent on the effort required based on relative significance of recommendations.)
6. Outreach to Interested Parties (ongoing communication, one-on-one meetings, web site, workshops, meeting presentations)	Provides a transparent stakeholder process, engaging interested parties for input on the scientific study, milestones, interim findings and conclusions.	Outreach to interested parties is a requirement of the CSO program review and plan update process.	The value of the WQA in terms of stakeholder involvement is that it provides a comprehensive review of data and allows for consolidated communication and engagement with interested parties throughout the data gathering process, so there is understanding and support for the findings.	\$125,000-250,000 (2,000 staff hours over 3.5 years; less effort if findings and recommendations do not result in significant changes)	
Cost Category Subtotals:				\$1.5 million to \$2 million	\$620,000 to \$1.2 million
Combined Project Total Estimate:				\$2.1 million to \$3.2 million	

Attachment B

September 4, 2013

Project Schedule and RWQC Briefing Points

The WQA project has a narrow window to complete the science and technical study and produce a synthesis report to feed into the CSO program review in 2016. Effectively, work needs to be complete on the scientific assessment by the end of 2015. The following schedule illustrates the sequence of work so that the Executive Advisory Panel could deliberate in 2016.

The schedule shows points at which the Regional Water Quality Committee (RWQC) could be briefed during the project. It should be emphasized that in addition to periodic briefings of the technical work, the County Council (and RWQC) will have a role in determining the outcome of the study in late 2015, with its role in approving the Executive Advisory Panel. Any recommendations emerging from the assessment would be made by that body.

Water Quality Assessment and Monitoring Study Schedule

2013	2014	2015	2016	2017-18
★ ☆ ★ ★ ★ ★				
Involve interested parties and public				
Develop Study questions & Scope				
	Perform scientific analysis & produce synthesis report (literature search; fill data gaps; complete synthesis report)			
	Facilitate Science and Technical Team review			
		Form Executive Advisory Panel (if needed)	Executive Advisory Panel recommends	
				Use study results in next CSO control program review to inform 2018 CSO Plan Update

★ = Potential RWQC Briefing and Stakeholder Outreach points (e.g., workshops)

☆ = RWQC and Council Vote