



Protecting Seattle's Waterways

Volume 1

The Plan to Protect Seattle's Waterways Executive Summary

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Executive Summary

The City of Seattle has prepared a comprehensive strategy, called The Plan to Protect Seattle's Waterways, to reduce overflows and discharge of pollutants from combined sewers and the storm drain system. The City must control sewer discharges to protect public health and the environment, and to comply with the Clean Water Act, the United States District Court Consent Decree, and state regulations. The Plan proposes two alternatives to reach compliance. One alternative, the Long Term Control Plan, will control all combined sewer overflows by 2025. The second alternative, the Integrated Plan, will integrate the control of combined sewer overflows with the reduction of pollutants from stormwater discharges and defer some low priority combined sewer overflow control projects beyond 2025.

What is the Plan to Protect Seattle's Waterways?

Seattle is served by a combined sewer system that handles both stormwater runoff and wastewater generated by businesses and residents. Heavy rains can overwhelm the sewers and cause Combined Sewer Overflows, or CSOs. These sewage discharge events can contribute pollutants to surrounding water bodies and impact their quality and uses. In addition, stormwater runoff collected in separate pipes from streets, parking lots, and buildings contributes a wide range of pollutants to the city's waters.

What is stormwater runoff?

Stormwater is rain and melting snow that runs off surfaces that cannot readily absorb water, such as streets, rooftops, and parking lots. As stormwater flows across these hard surfaces, it picks up pollutants such as oil, grease, and metals, carrying them through the City's storm drain system to lakes, streams, rivers, and Puget Sound. It also flows into the combined sewer system and causes overflows of raw sewage and polluted stormwater into Seattle waterways. Recent scientific studies have determined that polluted stormwater runoff poses a significant impact to local water quality.

The City of Seattle (the City) has prepared a comprehensive strategy, called The Plan to Protect Seattle's Waterways (the Plan), to reduce overflows and the discharge of pollutants from combined sewers and the storm drain system. Specifically, the Plan achieves the following objectives:

- Identifies areas of Seattle where projects are needed to reduce CSOs.
- Evaluates alternatives for reducing CSOs in these areas.
- Identifies additional areas where projects to control and reduce polluted stormwater runoff will improve water quality.
- Recommends a schedule for designing and constructing projects.
- Estimates program costs and rate impacts on City customer bills.
- Considers public and stakeholder input.

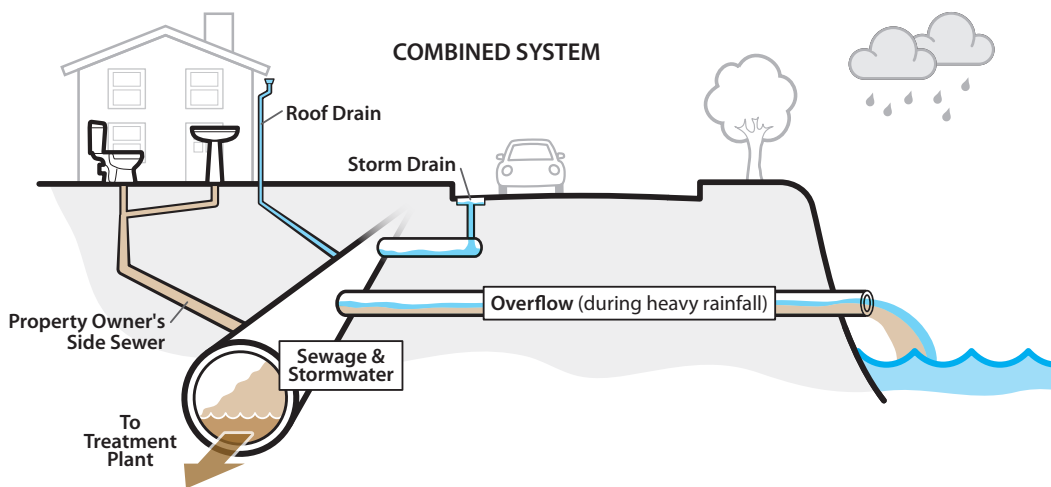
There are four Volumes included in the Plan. This Executive Summary is Volume 1, followed by Volume 2 Long Term Control Plan (LTCP), Volume 3 Integrated Plan, and Volume 4 Environmental Impact Statement (EIS).

Why are CSOs a problem?

About two-thirds of Seattle is served by a combined sewer system, which was designed to carry sewage and stormwater runoff from streets, rooftops, and parking lots in a single pipe—a “combined sewer”. Under dry weather conditions in Seattle, all sewage flows to the treatment plant. During wet weather conditions however, stormwater runoff is considerable and can cause the capacity of the combined sewer system to be exceeded. When this mixture of stormwater (about 90%) and raw sewage exceeds the pipe’s capacity, it results in a CSO.

CSOs present a range of public health and environmental concerns. Pollutants conveyed in CSOs can create human health risks from contact with water or consumption of fish and shellfish from areas of recent CSO discharge and can also cause impacts to aquatic life. The high variability in flow rates within the sewer system associated with heavy storms can also cause operational problems at the wastewater treatment plant.

The image in Figure ES-1 depicts how overflows can occur under heavy rain conditions in combined sewer systems.



Combined Sewer Overflow Quick Facts

The City of Seattle and King County both manage CSO outfalls in the Seattle area: the City manages 86 outfalls; King County manages 38.

In 2014 a total of 406 CSO events from City-managed outfalls resulted in 116 million gallons of overflow.

Figure ES-1. Schematic of a CSO

How is stormwater involved?

In some neighborhoods in Seattle, stormwater is not combined with sewage, but instead drains into a separate pipe (“separated system” as shown on figure ES-2) and is discharged into nearby water bodies. While CSOs happen

occasionally when it rains, stormwater discharges occur every time it rains and have the potential to contribute pollutants such as metals, pesticides, and pathogens that can be harmful to people and aquatic life.

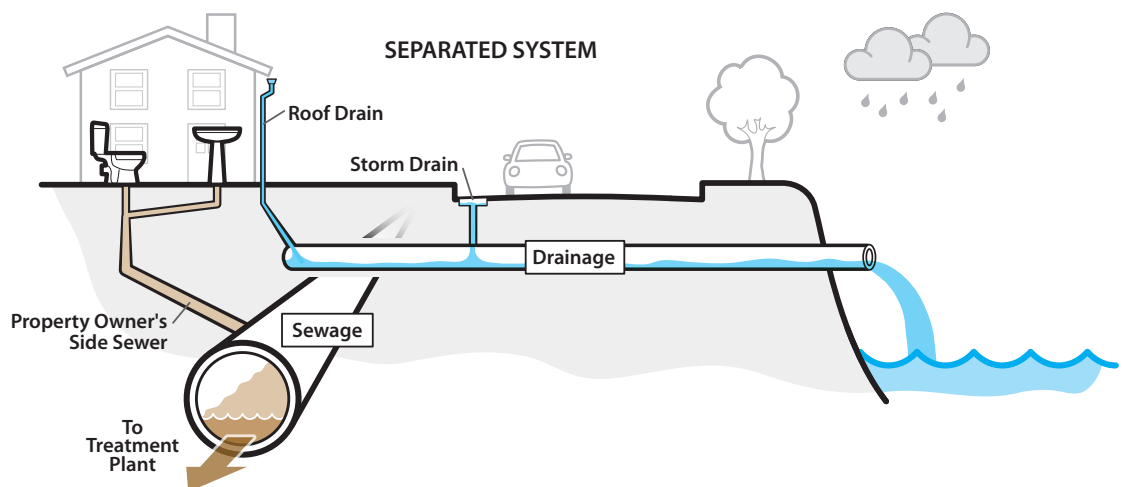


Figure ES-2. Schematic of a Separated System

What Federal and State Regulations pertain to CSOs?

The federal Clean Water Act (33 United States Code 1251) requires water quality sufficient to allow people to swim, boat, fish, and enjoy our waterways. The law's requirements are intended to protect the environment, human health, and quality of life. Municipalities must obtain authorization to discharge wastewater, CSOs, and stormwater into surface water bodies.

The Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) program. The program limits the discharge of pollutants in order to meet water quality criteria. In Washington, the NPDES program is administered by the Washington State Department of Ecology (Ecology). Ecology's regulations in the Washington Administrative Code (Chapter 173-220) govern the City's and King County's NPDES permits.

The City manages sewage and stormwater throughout Seattle. Stormwater is managed in accordance with

Ecology's NPDES municipal stormwater permit requirements. The City reports progress on its compliance activities annually to Ecology. The stormwater permit applies to the municipal separate storm sewers operated by the City within the geographic boundaries established by the permit.

The City's most recent wastewater NPDES permit (WA0031682) was modified on September 13, 2012; it allows wet weather discharges from permitted CSO outfalls. The permit also requires implementation of the "Nine Minimum Controls" to ensure adequate capacity and maintenance of the sewer system, defines monitoring requirements, establishes requirements for detailed reporting to Ecology, and allows discharges only as a result of precipitation events. The City's NPDES permit must be renewed by November 2015.

What is the U.S. Environmental Protection Agency CSO Control Policy?

The Environmental Protection Agency, or EPA, has a CSO control policy that provides the national framework for control of CSOs. Published on April 19, 1994, the policy provides guidance on how communities with combined sewer systems can meet Clean Water Act goals in as flexible and cost-effective a manner as possible. The policy has three

main elements: Nine Minimum Controls, Long Term Control Plans, and Requirement to Meet Water Quality Standards. The LTCP specifically addresses all three policy elements.

What are the State Requirements?

Washington state law (Revised Code of Washington 90.48.480) requires local governments to achieve the greatest reasonable reduction in CSOs at the earliest possible date. The Washington Administrative Code (173-245-020(22)) defines the "greatest reasonable reduction" as an average of no more than one untreated discharge per year per outfall. The City's NPDES permit and Consent Decree direct that a moving 20 year period be used for long-term averaging. Outfalls meeting this standard are considered controlled while outfalls that experience an average of more than one CSO occurrence per year are considered uncontrolled and require City action.

On an annual basis, the City is required to report the duration and volume of each CSO discharge during the most recent year, steps taken during the most recent year to

reduce CSOs, the CSO outfalls now meeting the definition of greatest reasonable reduction, and work planned for the next year to reduce CSOs.

What are the presumption and demonstration approaches?

The presumption approach presumes that water quality goals will be achieved through performance standards, such as the no more than once per year untreated discharge standard. The demonstration approach relies on monitoring to determine the effectiveness of CSO control measures. The State accepts the City and King County strategy of using the Presumption Approach followed by effectiveness monitoring.

What is the Consent Decree?

Until recently, EPA and Ecology have focused primarily on CSO control when administering NPDES CSO discharge requirements. Seattle and other cities across the country have asked EPA for greater flexibility to make smart investments, using a range of tools to achieve federal and state water quality requirements, allowing jurisdictions to customize approaches to their specific situations. Recognizing the contribution of stormwater to water quality issues in local water bodies, and recognizing the overall benefits that can be achieved from a blend of stormwater and CSO reduction projects, the City negotiated a Consent Decree with EPA and the U.S. Department of Justice, that allows a more flexible and integrated approach for Seattle's compliance with the Clean Water Act and State regulations.

The Consent Decree, entered in United States District Court for the Western District of Washington on July 3, 2013, required the City to submit a draft LTCP for regulatory and public review by May 30, 2014 and submit a final LTCP for regulatory approval by May 30, 2015, with the City's recommended solution. The Consent Decree also allowed the City to develop, as an alternative, an "Integrated Plan" that proposes stormwater control projects to be implemented by the City and defers completion of some CSO facilities. The Integrated Plan must demonstrate that the proposed stormwater control projects will result in significant benefits to water quality beyond those that would be achieved by implementation of the CSO control projects alone.

The Consent Decree encourages the use of green infrastructure, also called natural drainage systems, together with traditional engineered measures, as long as the City demonstrates its effectiveness and the combined measures provide substantially the same or greater levels of control than traditional engineered measures alone.

The Consent Decree includes a number of requirements for the Integrated Plan, including a pollutant load reduction analysis and an evaluation of projected benefits to water quality, ecology, and human health that would result from implementing the identified stormwater projects. The Integrated Plan must demonstrate that the proposed stormwater projects will provide greater water quality benefits compared to those CSO control projects that would be deferred, and that they must meet the requirements of the Clean Water Act, Ecology's NPDES and municipal separate storm sewer system (MS4) permits, and EPA's CSO Control Policy.

What is the Consent Decree?

The Consent Decree is a written agreement between the City of Seattle, Washington State Department of Ecology, the Environmental Protection Agency, and the U.S. Department of Justice that describes the actions that the City of Seattle must take to address violations of the Clean Water Act.

What has the City already done about CSOs?

To date, the City has completed five CSO control plans beginning in 1980, as listed below.

- 1980 Facility Plan (201 Facilities Planning)
- 1988 CSO Reduction Plan
- 2001 CSO Reduction Plan Amendment
- CSO Reduction Plan Amendment 2005 Update
- 2010 CSO Reduction Plan Amendment

These CSO control plans have resulted in the construction of various CSO control projects throughout the City, which have substantially reduced CSO discharges. Some

of the projects involved maintenance or modification of existing sewer facilities, while others involved construction of diversion structures to direct flows away from CSO outfalls, or construction of storage facilities to store excess wastewater until flows decrease enough for the stored wastewater to be returned to the conveyance system. The CSO control projects that have been completed since 2008 are shown on Figure ES-3.

What is the City currently doing about CSOs?

Overall, the City's strategy to reduce CSOs has consisted of a three-pronged approach:

- **Fix it First - Sewer System Improvements:** Sewer system improvements are relatively simple improvements to the existing system that provide more capacity for storage or make the system operate more effectively. These solutions can be much more cost-effective than building new facilities. Some examples include raising overflow weirs and replacing mechanical parts that regulate gates.
- **Keep Stormwater Out – Natural Drainage Systems:** Natural drainage, also called green infrastructure, consists of a variety of practices that keep stormwater out of the sewer system by using natural processes to slow, filter, and absorb stormwater.
- **Store What's Left – Underground Storage:** If the first two types of solutions don't solve the problem, then additional underground storage facilities would need to be built. Underground storage can include tanks, pipes, or tunnels.

Currently, the City is implementing a series of underground storage, sewer system improvement, and green infrastructure projects aimed at reducing CSO discharges. These current CSO control projects are grouped into two categories, as shown on page 15: the 2010 Plan Projects, and the Early Action Projects. The underground storage projects were identified in the City's 2010 CSO Reduction Plan Amendment as high-priority projects intended to reduce CSO discharges into Lake Washington. The sewer system improvement and green infrastructure projects

are being implemented because they set the stage for future underground storage projects, which are identified in the LTCP. The sewer system improvement and green infrastructure projects are expected to reduce CSO discharges and will likely eliminate the need for or reduce the size of future underground storage facilities. The current CSO reduction projects are shown on Figure ES-3.

Although the current CSO reduction projects are expected to significantly reduce CSO discharges, in order to comply with the State and Federal regulations described above, the City must achieve additional CSO reductions. The City has developed two alternatives to achieve these additional reductions – the LTCP Alternative and the Integrated Plan Alternative. The following sections describe these alternatives in greater detail, discuss their impacts, and present the City's Recommended Alternative.

Addressing the Remaining CSOs

Over the last 25 years, the City of Seattle has successfully reduced CSO discharge volumes into surrounding receiving waters by nearly 70 percent. However, there is still work to be done to control the remaining CSOs, and the final reduction in CSO volume is the most challenging.



Figure ES-3.
Completed and ongoing CSO
reduction projects for the 2010
Plan and Early Action projects

What is the Long Term Control Plan?

As part of its regulatory compliance efforts, the City must prepare a CSO Reduction Plan, with amendments every five years. The LTCP is the City's 2015 CSO Reduction Plan Amendment, and defines a comprehensive program and schedule for implementing projects and measures to control overflows at all of the City's 86 CSO outfalls.

The LTCP builds upon the alternative analysis work that was performed as part of the development of the City's 2010 CSO Reduction Plan Amendment.

The final LTCP was submitted to EPA and Ecology on May 29, 2015. The solutions identified in the LTCP must be approved by Ecology and EPA, and will be constructed in the years following 2015.

What does the LTCP do?

The LTCP builds upon the 2010 CSO Reduction Plan Amendment. The LTCP defines a comprehensive program and schedule for implementing projects and measures to control the remaining CSO outfalls.

What is the LTCP Alternative?

As a planning-level document, the LTCP presents a comprehensive strategy to reduce the remaining uncontrolled CSO discharges in the city. The City must address these CSOs to protect public health and the environment, and comply with the Clean Water Act and state regulations. The LTCP includes CSO control measures and an implementation schedule to meet the Consent Decree Construction Completion milestone date of December 31, 2025 and the "controlled" status for each outfall as defined in the Consent Decree. The LTCP Alternative includes CSO reduction projects in the Leschi, Montlake, Portage Bay, Duwamish, East Waterway, Magnolia, Central Waterfront, Ballard, Fremont/Wallingford, Delridge, and North Union Bay neighborhoods, each of which contain uncontrolled outfalls.

The LTCP Alternative consists of the Recommended LTCP Option, which was selected from among the various options to control CSOs as presented in the LTCP.

The City published a draft LTCP and accompanying draft EIS in May 2014 inviting public and regulatory agency comment on four options for meeting CSO control requirements. The draft LTCP presented a detailed evaluation of the monetary and non-monetary factors for each of the options. Within the four options, two general strategies were considered: the first was a strategy under which the City would complete all of the necessary actions independently of any other agency, while the second would seek opportunities to partner with

King County to achieve economies of scale or reductions in community and environmental impacts for each agency's parallel CSO control issues.

Following receipt of public and agency comments, additional refinements were made to the four options. The City received updated storage release rates from King County that were used to analyze and adjust the sizing of the proposed control measures. Cost estimates were updated based on the new sizing, then community and environmental impacts were re-assessed. The four options were compared and two of the options (Neighborhood Storage Option and Shared West Ship Canal Tunnel Option) were selected for final analysis. Since the costs of the two options were determined to be similar, the final analysis focused more on environmental and community impacts and the ability of the City and King County to collaborate on a shared project.

The City and King County have been working to coordinate and implement their respective CSO projects and LTCP and in 2014 agreed on a coordination strategy including factors that are to be considered in any ongoing agreement to enter into a shared project. These factors are compared for both the Shared West Ship Canal Tunnel and the Neighborhood Storage Options in Table ES-1.

Table ES-1. Comparison of Final LTCP Options

Determinant Factor	Shared City/King County Objectives	Neighborhood Storage	Shared West Ship Canal Tunnel
Financing	Comparative cost effectiveness; equitable sharing of financial risks and rewards	Cost difference is not a determining factor in the recommendation because the options considered are within the same cost range	
Scheduling	Maintain ability of each agency to meet legally imposed mandates	Complicated permitting due to multiple dispersed locations for tanks, pump stations, and conveyance facilities	A minor schedule milestone modification to the King County Consent Decree may be required for 3rd Ave W; however, compliance will be achieved for 11th Ave NW five years ahead of schedule
Community Impacts	Minimize overall construction and operating impacts on affected communities	Community disruption affects a greater number of neighborhoods; property removed from other uses, additional truck trips and traffic disruption from greater length of conveyance required	Community disruption more concentrated (reduced number of affected neighborhoods); portion of property returned to inventory for other uses, less truck traffic and less traffic impact from conveyance construction
Regulatory Considerations	Maximize likelihood of meeting compliance standards and flexibility to meet future changed conditions	Meets compliance standards based on current climatic conditions; limited flexibility	Serves regulatory request for enhanced coordination between agencies; provides increased flexibility to operate CSO control as a regional system and meet changing climatic conditions
Lead Agency Designation and Responsibilities	Optimize project delivery based on project characteristics	Both agencies have specialized experience in storage facility construction	Shared project agreements are being negotiated; SPU will be the lead agency; a joint oversight committee will be formed to manage the project

Based on the evaluation of the agreed-upon key factors for selection of a shared project, the City has identified the Shared West Ship Canal Tunnel Option as the recommended LTCP Option, as shown in Figure ES-4. This option was selected because it has fewer impacts to the community and the environment, and because it provides the City and King County with greater regulatory and operational flexibility to meet future changed conditions.

The LTCP Alternative consists of the Recommended LTCP Option, which is the Shared West Ship Canal Tunnel Option. This option controls four of the largest combined sewer areas with a single underground storage and conveyance facility. The West Ship Canal Tunnel is proposed as a shared option because the four combined sewer areas (two from the City and two from King County) with the largest control volumes are relatively close to one another. The facility would extend from Wallingford to Ballard and would provide the storage needed to address sewage overflows in the City's Ballard and Fremont/Wallingford areas and from King County's 3rd Avenue West and 11th Avenue NW CSO areas. The facility would eliminate the need for a separate

King County CSO control project at an outfall near 3rd Avenue West and a large-diameter King County pipeline from 11th Ave NW to the Ballard Regulator.

Within this option, and therefore, within the Recommended LTCP Alternative, the remaining CSO areas would be controlled by their respective neighborhood control measures.

Prior to implementing any shared City and King County projects, the agencies will enter into an inter-local agreement.

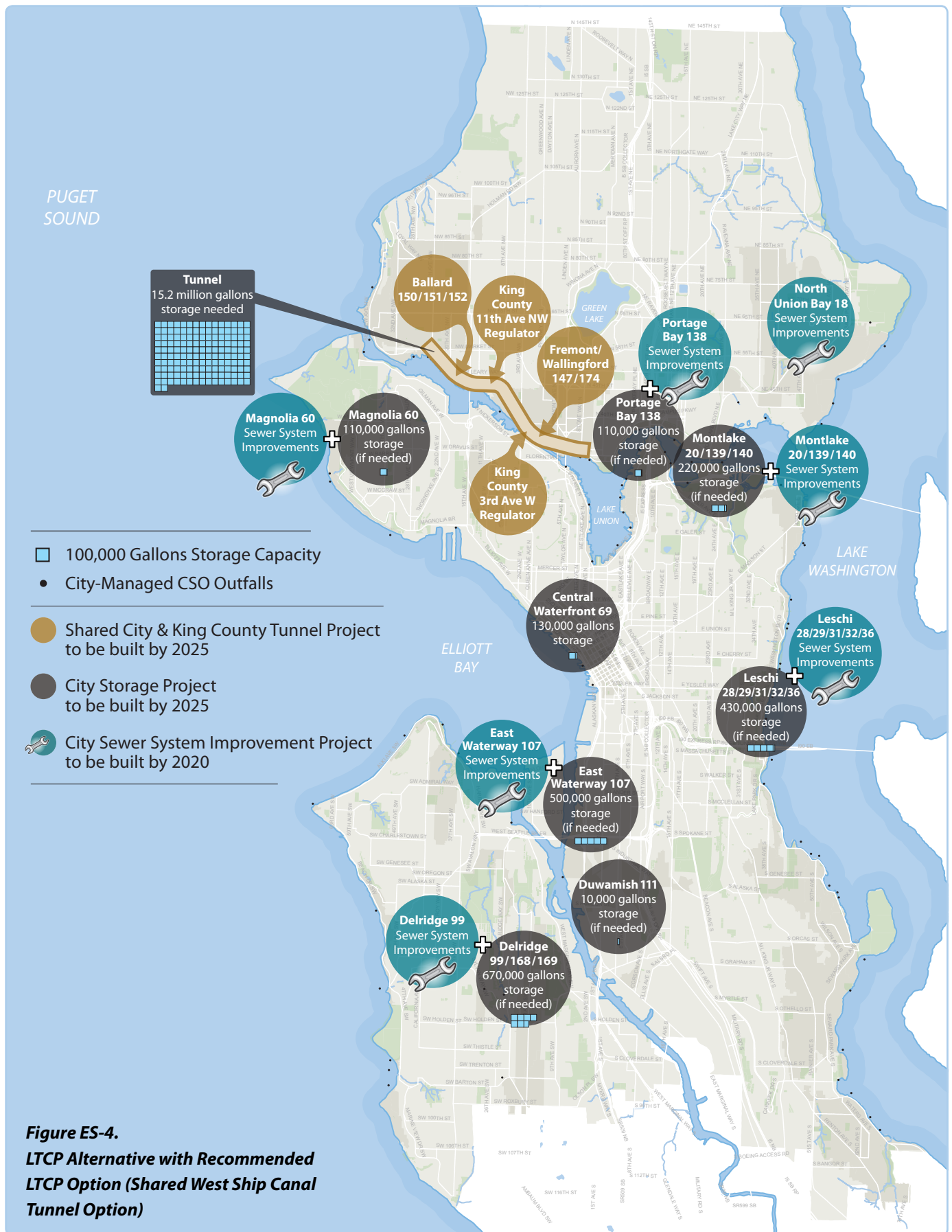


Figure ES-4.
LTCP Alternative with Recommended
LTCP Option (Shared West Ship Canal
Tunnel Option)

What is the Integrated Plan?

The Consent Decree allows the City to submit an Integrated Plan that proposes stormwater projects in addition to the CSO control measures included in the approved LTCP. Some of the CSO control projects can be deferred in order to enable earlier implementation of the stormwater projects, as long as the stormwater projects will result in significant benefits to water quality beyond those that would be achieved by implementation of the CSO controls alone.

The Integrated Plan is an alternative to the LTCP. Whereas the LTCP focuses solely on reducing CSOs, the Integrated Plan meets EPA guidelines for addressing stormwater and CSO control in one plan.

The Integrated Plan identifies stormwater projects that will be completed by 2025, in addition to the CSO reduction projects that will be completed by 2025 and those CSO reduction projects to be deferred until after 2025. By prioritizing and sequencing projects in this way, greater water quality benefits may be achieved, and achieved sooner, than by CSO reduction projects alone.

What does an Integrated Plan do?

Under the Integrated Plan, the City proposes construction of stormwater and the largest CSO control projects by 2025, while deferring some CSO projects until 2030. The Integrated Planning process identified stormwater projects that provide significant benefits over some low frequency/low volume CSO projects. These low frequency/low volume CSO projects will have their planned construction deferred until after 2025.

What is the Integrated Plan Alternative?

The Integrated Plan Alternative would implement stormwater projects along with the recommended LTCP Option (Shared West Ship Canal Tunnel Option). Six relatively small CSO control projects would be deferred up to five years while the stormwater projects are implemented. This alternative integrates stormwater pollution management with CSO reduction strategies to lead to a greater improvement in water quality, and represents a more comprehensive approach to water quality management in Seattle's waters. The proposed stormwater projects would result in significant benefits to water quality beyond those that would be achieved by implementation of lower benefit CSO controls alone.

Whereas the LTCP Alternative focuses solely on reducing CSOs, the Integrated Plan Alternative meets EPA guidelines for integrating stormwater and CSO controls in one plan. Under the Consent Decree, the City may submit an Integrated Plan, provided that the stormwater projects will result in significant benefits to water quality beyond those that would be achieved by implementation of CSO controls alone, and the CSO control projects deferred may be completed by a specific date after 2025. The proposed

stormwater control projects would be in addition to the CSO control measures included in the LTCP, and they would not replace any LTCP CSO control projects but would allow some to be deferred until 2030. The proposed Integrated Plan projects are shown on Figure ES-5 and are listed in Table ES-2 on page 14 and 15.

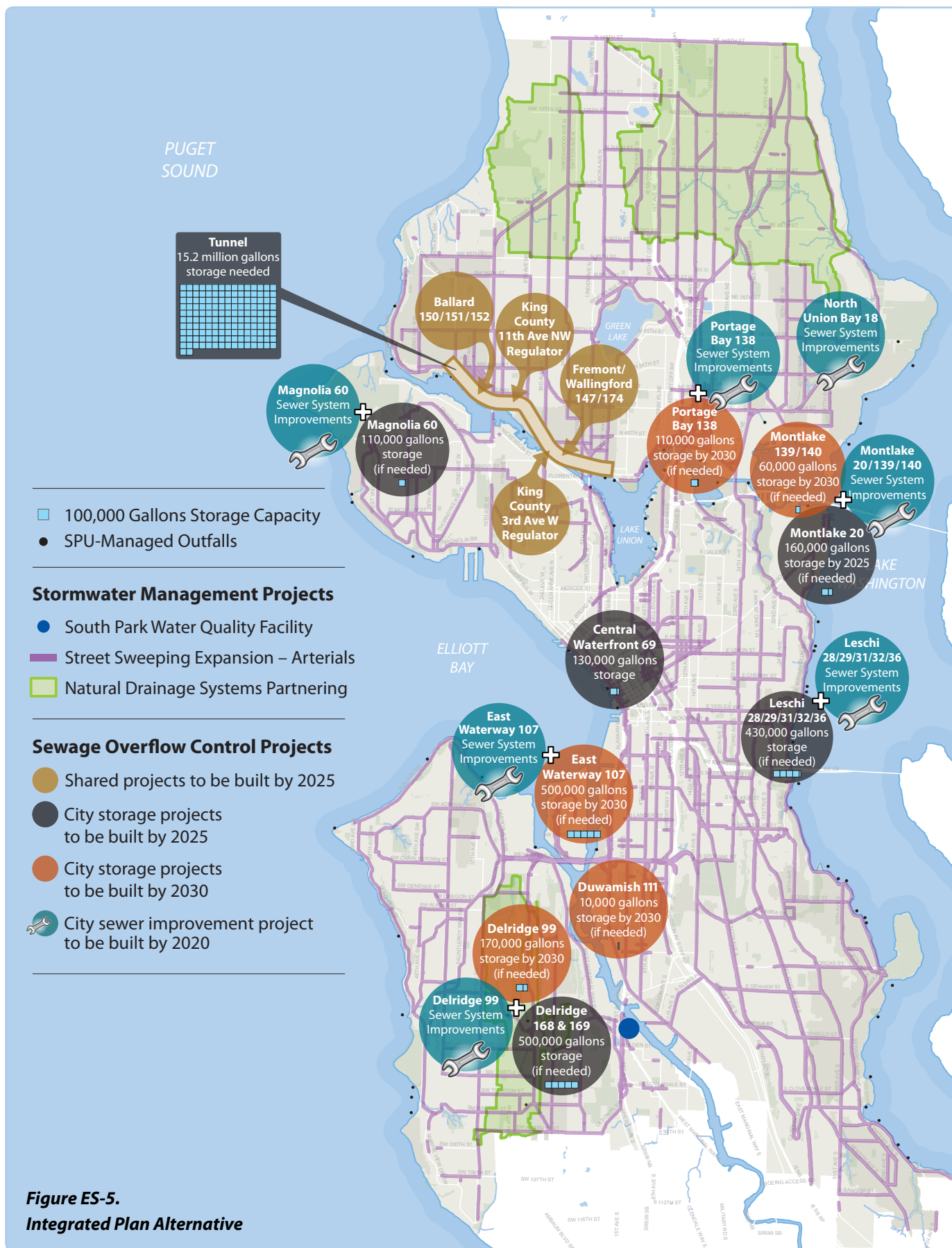


Figure ES-5.
Integrated Plan Alternative

What is the EIS?

The programmatic Plan EIS evaluated the impacts associated with adopting and implementing either of the two Plan alternatives: (1) the LTCP Alternative, and (2) the Integrated Plan Alternative. The EIS also included an evaluation of a No Action Alternative, as required by the State Environmental Policy Act (SEPA). The programmatic EIS was used to assist decision makers in assessing the environmental impacts associated with implementation of the Alternatives developed for the Plan.

What is an EIS?

An Environmental Impact Statement is a document that discloses the probable significant adverse environmental impacts of a proposed project or plan, evaluates reasonable alternatives, discusses ways to avoid or minimize impacts, and identifies any proposed mitigation measures.

Are there significant impacts that can't be mitigated?

Implementation of the Plan will involve a wide range of short term impacts associated with the construction of large infrastructure projects, including large tanks, tunnels, pump stations, and associated pipes and appurtenances. Depending upon the size, location, and type of project, these impacts would include potentially significant traffic impacts, including temporary road closures and traffic detours. Other construction-related impacts of potential significance include short term increases in noise and dust and potential disruptions of access to business, residential, or recreational facilities. These impacts, however, are expected to be reduced by compliance with all applicable regulations and permit requirements, and as such would not be considered significant under SEPA.

Operational impacts include the potential for odor and noise generation, land use and recreational impacts and potential operational implications to King County's regional wastewater system. Given appropriate design and coordination with affected parties, there are no significant long term or operational impacts associated with implementation of the Plan Alternatives that cannot be mitigated.

How do cumulative impacts compare among the Alternatives?

Cumulative impacts are those that could result from the combination of individual effects of multiple actions (projects) over time. The Plan would be implemented in an urbanized area, and projects identified in the Plan could be constructed in areas that may have recently been subject to large-scale construction projects, or will be subject to construction of future planned projects. In addition, there is a potential for construction under the Plan implementation to coincide with the construction of other projects. For instance, King County's 2012 CSO Control Plan identifies several CSO reduction projects that would be located in the same general areas where projects under the City's LTCP Alternative would be constructed.

What are the LTCP Alternative cumulative impacts?

The LTCP Alternative would have a potential for cumulative impacts affecting a broad area because it involves construction of a number of storage tanks and pipes in neighborhoods throughout the City, including the Ship Canal, Lake Washington, Longfellow Creek/Duwamish, Magnolia and Elliott Bay/Lake Union neighborhoods.

While many of these projects would be constructed within public rights of way, there would be construction-related traffic, road closures and/or traffic constraints, dust, odor, and other short term impacts that would last between one and five years. In addition to the projects constructed by the City, King County would construct additional storage tanks and storage pipes in the Montlake and North Union Bay neighborhoods, adding to the impacts in those neighborhoods. The prolonged periods of construction effects could constitute a cumulative impact.

Compared to construction impacts associated with separate control measures such as storage tanks, the single, large tunnel may result in fewer overall impacts in terms of the number of neighborhoods affected. However, the tunnel would create longer duration (up to 3.5 years or more) impacts at the tunnel entrance portal, which would likely be located along the Lake Washington Ship Canal in Ballard, and the exit portal, which would likely be located in the Wallingford neighborhood.

What is Included in the LTCP Alternative?

- Shared West Ship Canal Tunnel to control the Ballard and Fremont/Wallingford CSO areas for the City, and the 3rd Ave. W and 11th Ave. NW CSO areas for King County
- Independent storage facilities for remaining uncontrolled CSO areas in the City

What are the Integrated Plan Alternative cumulative impacts?

The cumulative impacts associated with the Integrated Plan relate largely to construction of the LTCP storage facilities, as described for the LTCP Alternative. Implementing the Integrated Plan Alternative would not represent a substantial increase in cumulative impacts over the LTCP Alternative. The expansion of street sweeping on City arterials would not affect overnight parking and NDS Partnering would have minimal short-term (construction-related) and long-term impacts. Construction of the South Park Water Quality Facility would not result in extensive construction-related impacts. The facility is expected to be sited in an area with compatible land use, with a low potential to cause long term changes in use. Under the Integrated Plan Alternative, construction of LTCP projects would be delayed in some neighborhoods, potentially resulting in reduced or increased cumulative impacts depending on the neighborhood and project schedules.

What does the Integrated Plan Alternative consist of?

- Natural Drainage System (NDS) Partnering
- Street Sweeping Expansion
- South Park Water Quality Facility
- Projects comprising the recommended LTCP Option

What is the City's Recommended Alternative?

The City is recommending that the Integrated Plan Alternative be implemented for compliance with the Consent Decree. The Integrated Plan Alternative integrates stormwater pollution management with CSO reduction strategies in order to provide a comprehensive approach to water quality management. The Recommended Alternative consists of the Integrated Plan stormwater projects combined with the Shared West Ship Canal Tunnel Option from the Long Term Control Plan. Table ES-2 lists the CSO control projects and stormwater measures that comprise the Recommended Alternative.

The CSO control projects will reduce overflow frequencies to meet Consent Decree and NPDES permit requirements. The stormwater projects will reduce pollutant loads from portions of the City served by separate storm sewer systems that drain to sensitive water bodies. As a result, the Recommended Alternative will provide greater benefits to surface water quality than those provided by the CSO control projects alone.

Table ES-2. Recommended Alternative

Project	CSO Outfalls Impacted	Project Description	Construction Completion
Neighborhood CSO Projects			
Leschi Sewer System Improvements (+ Storage, if needed)	28, 29, 31, 32, 36	Sewer system improvements	2017
		3 off-line storage pipes plus 1 off-line storage tank, if needed	2025
Montlake Sewer System Improvements (+ Storage, if needed)	20	Sewer system improvements	2020
		Off-line storage pipe, if needed	2025
	139, 140	Sewer system improvements	2020
		2 off-line storage pipes, if needed	2030
Portage Bay/Lake Union Sewer System Improvements (+ Storage, if needed)	138	Sewer system improvements	2020
		Off-line storage pipe, if needed	2030
Duwamish Storage (if needed)	111	2 off-line storage pipes, if needed	2030
East Waterway Sewer System Improvements (+ Storage, if needed)	107	Sewer system improvements	2020
		Off-line storage tank, if needed	2030
Magnolia Sewer System Improvements (+ Storage, if needed)	60	Sewer system improvements	2020
		Off-line storage pipes, if needed	2025
Central Waterfront Storage	69	Off-line storage pipe	2025
North Union Bay Sewer System Improvements	18	Sewer system improvement	2017
Delridge Sewer System Improvements (+ Storage, if needed)	99	Sewer system improvements	2019
		Off-line storage pipe, if needed	2030
	168, 169	Off-line storage pipes, if needed	2025

Table ES-2 continued. Recommended Alternative

Project	CSO Outfalls Impacted	Project Description	Construction Completion
Shared CSO Projects			
Shared West Ship Canal Tunnel Option	150/151, 152	Shared deep tunnel with Ballard/Fremont/Wallingford and King County 3rd Avenue W and 11th Avenue NW	2025
	King County 3rd Avenue West		
	147, 174		
	King County 11th Avenue Northwest		
Stormwater Projects			
NDS Partnering	N/A ^a	Roadside Bioretention	2025
South Park Water Quality Facility		Basic-Active Stormwater Treatment Facility	2025
Street Sweeping Expansion Arterials		Street Sweeping using vacuum assist sweepers	2016 ^b
2010 Plan Projects			
Genesee	40, 41	Off-line storage tank	2015
	43	Off-line storage tank	2015
Henderson South	49	Off-line storage tank	2025
Windermere	13	Off-line storage tank	2015
Central Waterfront	71	Inline pipe storage	2020
Ballard Green Infrastructure Solutions	150/151, 152	Roadside raingardens	2017
Delridge Green Infrastructure Solutions	168, 169	Roadside raingardens	2019
Sewer System Improvements	see Figure ES-3	Sewer system improvements in various CSO areas	by 2015
Early Action Projects			
Henderson North	44, 45	Off-line storage tank	2018
Henderson South	46	Sewer system improvement	2015
	47 and 171	Conveyance/flow transfer	2015

a. Not applicable; measure would be implemented in separate storm sewer areas.

b. No construction required. Expanded program in place by end of 2016.

Under the Recommended Alternative, the City would implement and assess sewer system improvements in most CSO areas prior to the construction of the more expensive and disruptive storage projects. If the sewer system improvements work as expected, the storage projects will either not be needed or will be smaller than currently sized. The tunnel would provide the storage needed to address overflows from four of the largest CSO areas, two from the City and two from King County. It would eliminate the need for separate King County CSO projects near 3rd Avenue West and 11th Avenue Northwest.

The three stormwater control projects in the Recommended Alternative would use a combination of gray, green, and programmatic measures to reduce pollutant loads from areas that do not drain to the combined sewer system. The proposed stormwater projects would benefit receiving water bodies that the City has deemed high priority based on the criteria in the Consent Decree. Figure ES-6 presents the projects under the Integrated Plan Alternative.

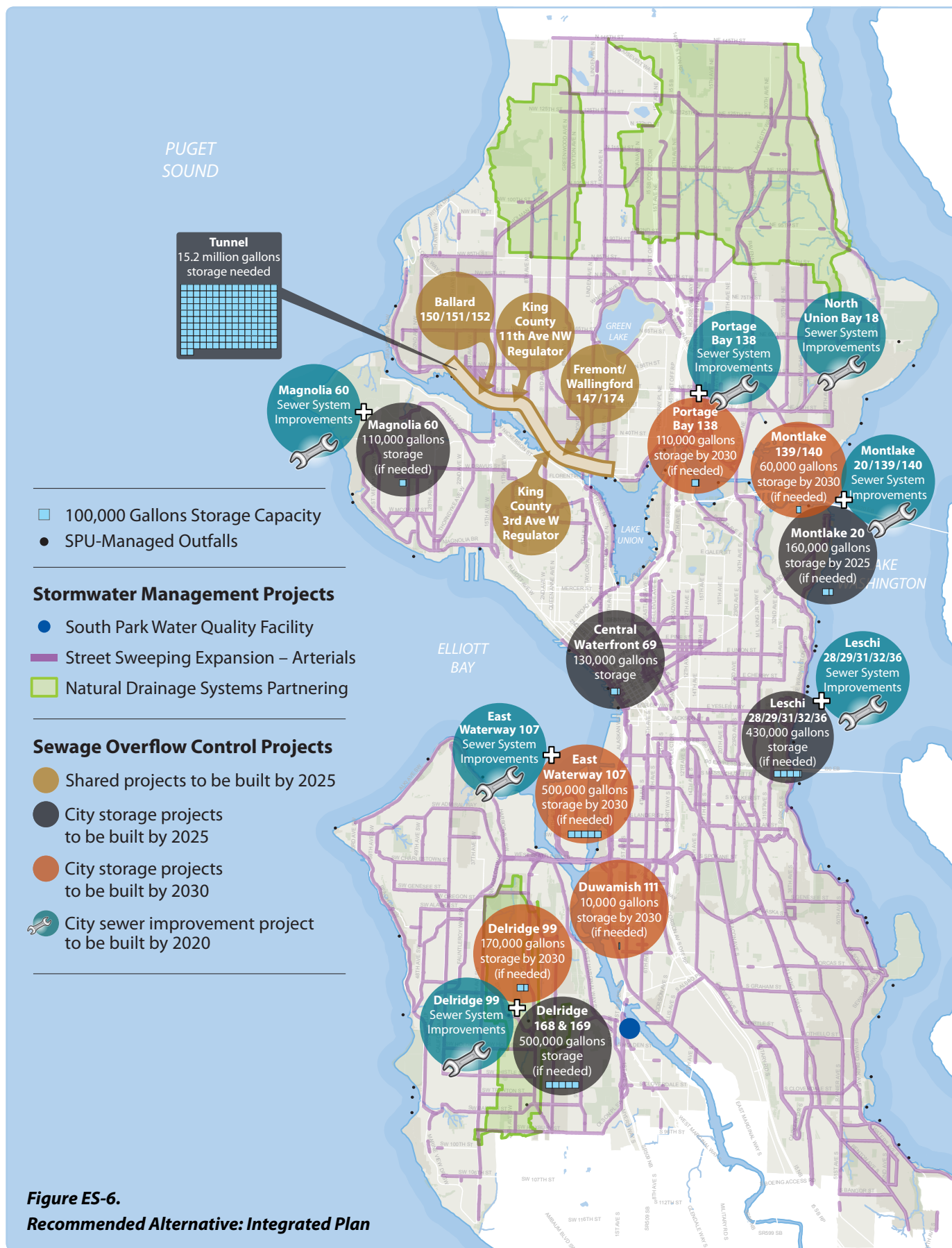


Figure ES-6.
Recommended Alternative: Integrated Plan

How will the City and King County coordinate on CSO projects?

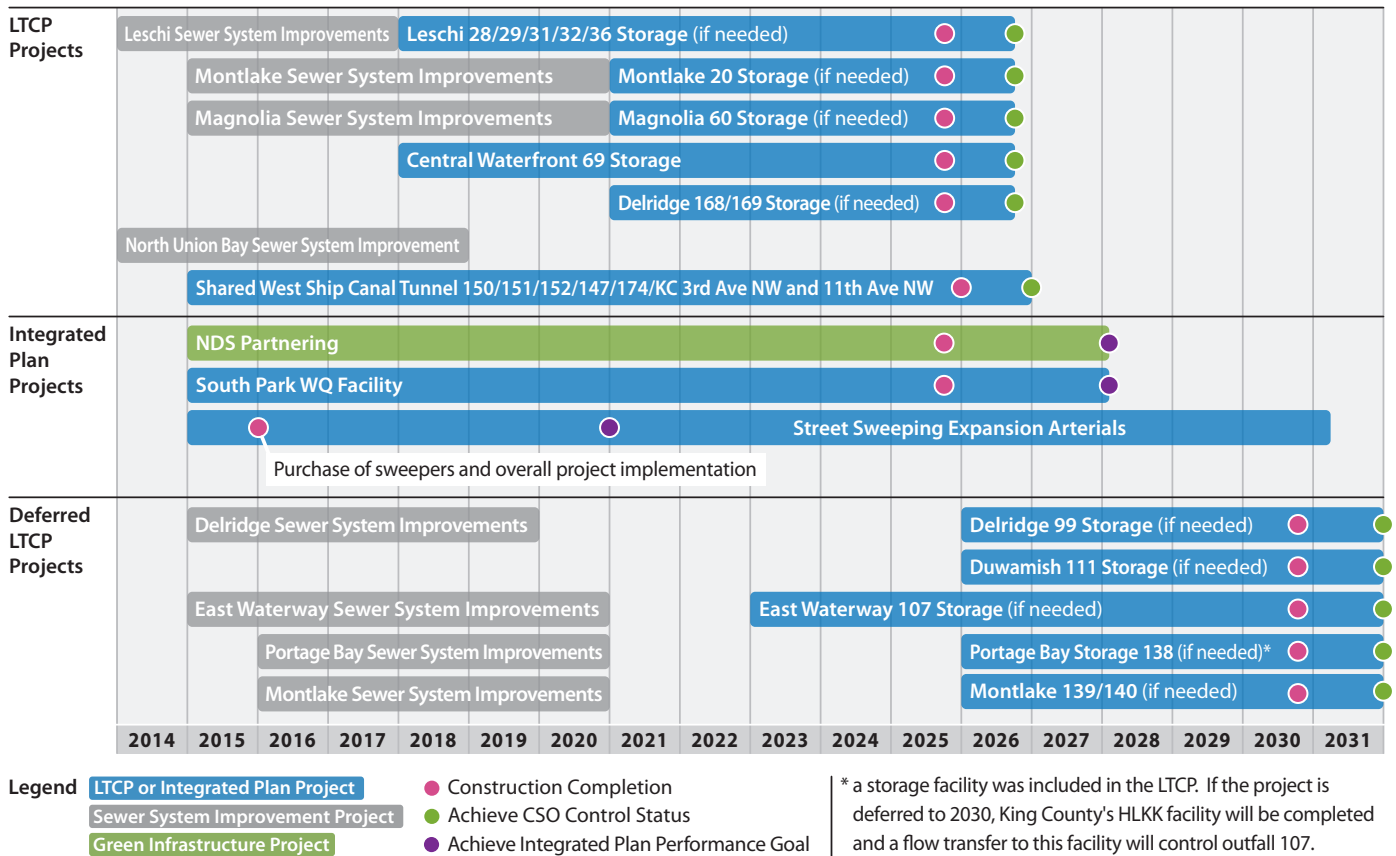
The City recognizes the importance of strong coordination with King County in controlling CSOs in Seattle. The LTCP Alternative has elements that may have an impact on King County's downstream wastewater system. The LTCP Alternative includes sewer system improvements that will convey additional wastewater volume to the downstream King County system. As a result, coordination between the City and King County is critical to successfully designing, constructing, and operating the City's proposed CSO control projects .

The City and King County are continuing to work together to closely analyze and refine the preferred LTCP Alternative to enhance cost-effectiveness, produce better environmental outcomes, and minimize disruption to communities. King County has also determined the benefits of a shared project to the regional system, and the implications of such a project to its own LTCP and Consent Decree. Development of a shared project will be dependent on the City's and King County's analytical results as well as a number of joint factors mutually agreed upon in the City and King County coordination strategy. A term sheet detailing the coordination strategy was signed by the City and King County in February 2015. These factors include such things as which agency will be responsible for the design, construction, and operation of the shared facility, each agency's project cost-share, operational and implementation roles and responsibilities, the process for dispute resolution, and the ability to fulfill regulatory and contractual obligations. A joint project agreement between the two agencies will be necessary prior to designing and constructing the project. In addition, the City and King County will analyze the impacts of any recommended project on the downstream King County system and agree on an approach to addressing those impacts prior to constructing the project.

What is the implementation schedule for the Recommended Alternative?

Figure ES-7 presents the overall schedule for the Recommended Alternative. All of the stormwater and CSO control measures would be constructed by 2025, except

for six CSO control measures that would be constructed by 2030.



What are the rate impacts?

Using planning-level cost estimates, the City evaluated the overall impact to the monthly wastewater and drainage rates to implement the Integrated Plan alternative.

What are the baseline rates?

The first step is to estimate the monthly baseline rates that do not include the Recommended Alternative. The monthly wastewater and drainage rates for the current Strategic Business Plan were used to estimate the baseline rates from 2015 through 2030. The King County treatment baseline rates also include the King County treatment increases provided by King County in June 2013 and the rate

impact estimates provided in the King County Executive's 'Recommended Combined Sewer Overflow Control Plan', June 2012. The baseline monthly rates are listed in Table ES-3.

Table ES-3. Baseline Monthly Wastewater and Drainage Rate Estimate (with Inflation)

Baseline Rates	2015	2020	2025	2030
Wastewater ^a	\$17.85	\$26.84	\$35.89	\$42.51
Drainage ^b	\$29.15	\$42.38	\$52.65	\$58.12
King County Treatment Wholesale Rate ^c	\$33.31	\$41.42	\$39.26	\$39.82
Total Baseline Rate	\$80.31	\$110.64	\$127.80	\$140.46

a The wastewater baseline rate represents the typical residential monthly system rate based on 4.3 ccf (100 cubic feet) drinking water consumption per month. All LTCP-related capital costs have been removed.

b The drainage baseline rate represents the typical residential monthly rate for the average parcel, which is a small residential lot between 5,000-6,999 square feet. All LTCP-related capital costs have been removed.

c King County charges a wholesale treatment rate to cities and local wastewater districts who send flows to the regional system. The City of Seattle passes through this rate to customers via the treatment component of the sewer rate. This analysis assumes the typical residential monthly bill with drinking water consumption of 4.3 ccf.

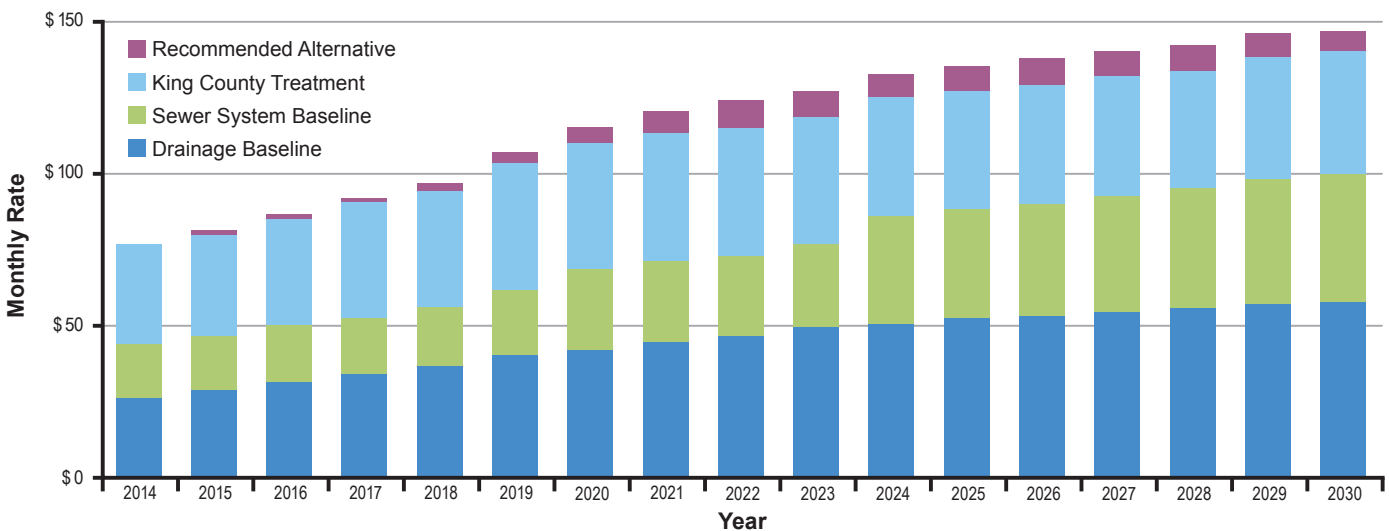
What are the rate impacts for the Recommended Alternative?

The City analyzed how the Recommended Alternative may affect monthly wastewater and drainage rates between 2015 and 2030. Table ES-4 shows the total monthly estimated rates between 2015 and 2030 if the Recommended Alternative is implemented, the stormwater

projects are implemented by 2025, and a portion of the LTCP projects is deferred to 2030. Figure ES-8 presents the total monthly Wastewater and Drainage Rates for City of Seattle ratepayers following implementation of the Recommended Alternative.

Table ES-4. Monthly Wastewater and Drainage Rate Estimate for the Recommended Alternative (with Inflation)

Recommended Alternative	2015	2020	2025	2030
Total Baseline Rate	\$80.31	\$110.64	\$127.80	\$140.46
Recommended Alternative Projects	\$1.18	\$4.84	\$7.63	\$6.58
Base Rate + Recommended Alternative Projects	\$81.49	\$115.48	\$135.43	\$147.04

**Figure ES-8. Monthly Wastewater and Drainage Rate Increase Estimates for Recommended Alternative**

What is the schedule for completing the Plan to Protect Seattle's Waterways?

Figure ES-9 summarizes the schedule for completing the Plan to Protect Seattle's Waterways. On May 29, 2015, the Final Plan for Protecting Seattle's Waterways was submitted to EPA and Ecology for approval. An updated Post Construction Monitoring Plan was also submitted for

approval. It is anticipated that the Plan will be approved by late summer 2015 and implementation will commence immediately, in accordance with the approved milestone implementation schedule provided in the Plan.

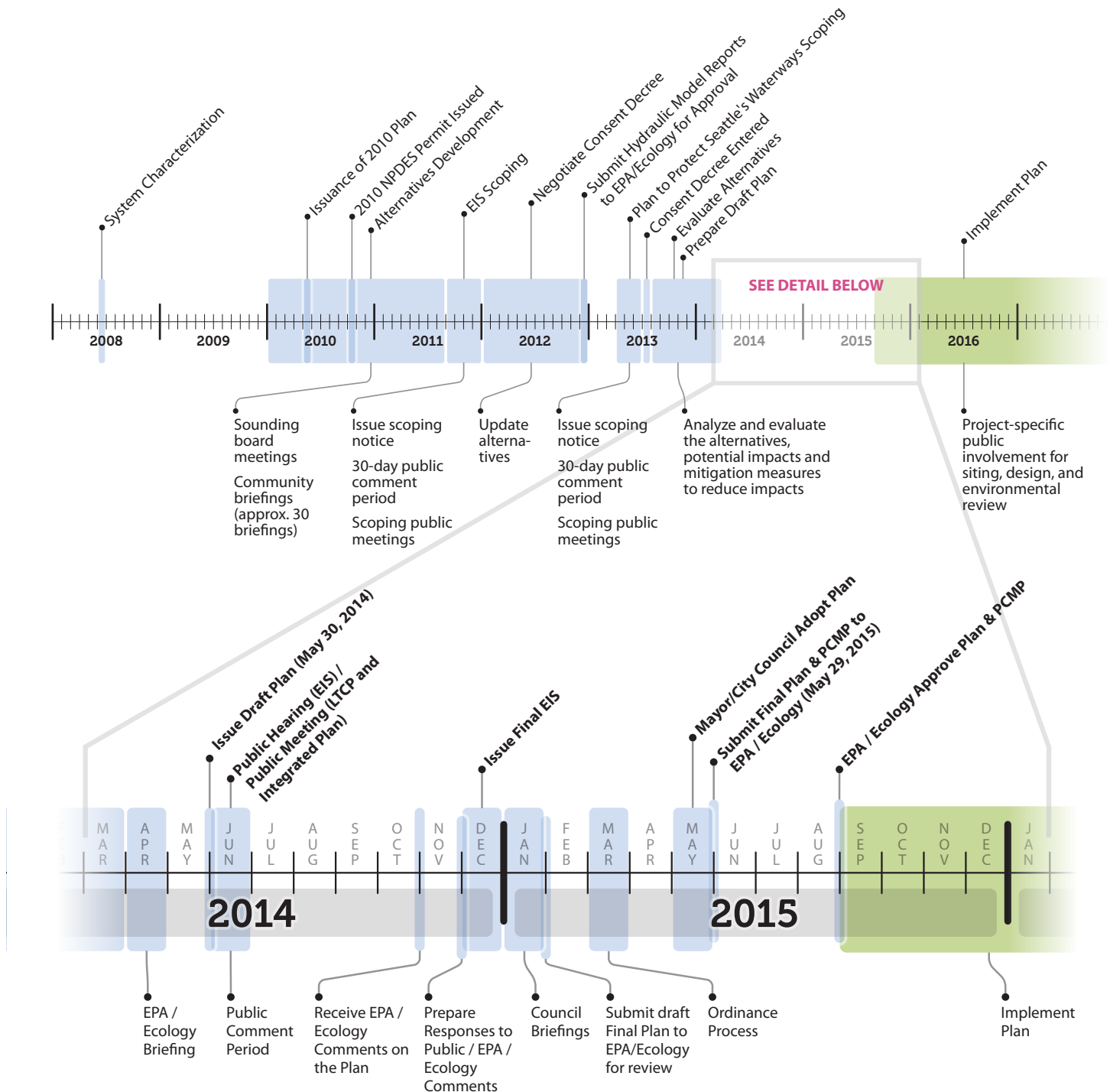


Figure ES-9. Current and Overall Protecting Seattle's Waterways Schedule



Protecting Seattle's Waterways

Learn more about
the Plan to Protect
Seattle's Waterways
online at

www.seattle.gov/CSO

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