

April 15, 2019

MEMORANDUM

Subject: Bases for Requiring an Update of a Long-Term Control Plan for the City and County of San Francisco Oceanside Water Pollution Control Plant, Wastewater Collection System, and Westside Recycled Water Project (NPDES Permit No. CA0037681)

From: Becky Mitschele
NPDES Permit Writer, NPDES Permits Section

To: Administrative Record

I. Purpose of Memorandum and Objectives of the LTCP Update

This memorandum documents EPA’s bases for requiring an update of the Long-Term Control Plan (LTCP) in the draft NPDES permit for the City and County of San Francisco (the Discharger) Oceanside Water Pollution Control Plant, Wastewater Collection System, and Westside Recycled Water Project (i.e. Oceanside facilities).¹ This memorandum supplements the explanation provided in the factsheet for the draft permit regarding the need for an LTCP update.

As explained in the fact sheet, The *Combined Sewer Overflow (CSO) Control Policy* requires implementation of a LTCP to satisfy water quality-based requirements during wet weather. Section IV.B.2.f of the *CSO Control Policy* specifies that permits should contain requirements for maximizing the treatment of wet weather flows, as appropriate. The Discharger has provided a set of documents as its LTCP, but as described below, some are outdated and/or unclear.

The primary objectives of the LTCP Update include but are not limited to the following:

- a. Ensure that water quality objectives during wet weather are met to the greatest extent practicable, consistent with State Water Resources Control Board Order No. WQ 79-16;
- b. Ensure that the receiving water designated uses are protected;
- c. Reduce risks to human health and the environment associated with discharges from the combined sewer discharge² (CSD) Points;
- d. Evaluate a range of control alternatives that further reduce discharges to sensitive areas (i.e. Discharge Points No. CSD-001, CSD-002, CSD-003, CSD-005, CSD-006, and CSD-007)³; and

¹ These facilities are often referred to as the Westside system in SFPUC planning documents. The Westside system drains approximately 38% of the city or 11,000 acres. The Westside drainage area contains three watersheds: Richmond, Sunset, and the Lake Merced watersheds.

² The draft NPDES permit uses the term combined sewer discharges, which are defined in the draft permit as an authorized combined sewer overflow during a wet weather day from an approved combined sewer discharge point. The Discharger requested use of the term combined sewer discharge in its permit application.

³ Discharge Point No. CSD-004 is directly to the Pacific Ocean, where public recreation and contact is unlikely. This location is different from the other discharge points, which occur along major beaches. Therefore, Discharge

- e. Provide for adaptive management of the combined sewer system.⁴

II. Background

A. CSO Control Policy

EPA published the CSO Control Policy in 1994. The purpose of the policy was to establish “a consistent national approach for controlling discharges from CSOs to the Nation's waters” through the NPDES permit program. 59 FR 18688 (April 19, 1994). The Policy’s major provisions are:

CSO permittees should immediately undertake a process to accurately characterize their CSS and CSO discharges, demonstrate implementation of minimum technology-based controls identified in the Policy, and develop long-term CSO control plans which evaluate alternatives for attaining compliance with the CWA, including compliance with water quality standards and protection of designated uses. Once the long-term CSO control plans are completed, permittees will be responsible to implement the plans' recommendations as soon as practicable.

State water quality standards authorities will be involved in the long-term CSO control planning effort as well. The water quality standards authorities will help ensure that development of the CSO permittees' long-term CSO control plans are coordinated with the review and possible revision of water quality standards on CSO-impacted waters.

NPDES authorities will issue/reissue or modify permits, as appropriate, to require compliance with the technology-based and water quality-based requirements of the CWA. After completion of the long-term CSO control plan, NPDES permits will be reissued or modified to incorporate the additional requirements specified in the Policy, such as performance standards for the selected controls based on average design conditions, a post-construction water quality assessment program, monitoring for compliance with water quality standards, and a reopener clause authorizing the NPDES authority to reopen and modify the permit if it is determined that the CSO controls fail to meet water quality standards or protect designated uses. NPDES authorities should commence enforcement actions against permittees that have CWA violations due to CSO discharges during dry weather. In addition, NPDES authorities should ensure the implementation of the minimum technology-based controls and incorporate a schedule into an appropriate enforceable mechanism, with appropriate milestone dates, to implement the required long-term CSO control plan. Schedules for implementation of the long-term CSO control plan may be phased based on the relative importance of adverse impacts upon water quality standards and designated uses, and on a permittee's financial capability.

Point No. CSD-004 is excluded from the requirement to evaluate control alternatives that further reduce discharges to sensitive areas.

⁴ This objective is consistent the *CSO Control Policy* in that “selected controls should be designed to allow cost effective expansion or cost-effective retrofitting if additional controls are subsequently determined to be necessary to meet water quality standards, including existing and designated uses.” See 75 FR 18691.

Id. Acknowledging that combined sewer systems pose delicate water quality problems, Congress amended the Clean Water Act in 2000 to provide that every permit issued “for a discharge from a municipal combined storm and sanitary sewer shall conform to the [CSO Control Policy] signed by the Administrator on April 11, 1994.” Consolidated Appropriations Act, 2001, Pub.L. No. 106–554, app. D § 112(a) (2000), 114 Stat. 2763, 2763A–224 (codified at 33 U.S.C. § 1342(q)). *Friends of the Earth v. EPA*, 446 F.3d 140, 147 (D.C. Circuit 2006). As the D.C. Circuit noted:

To that end, the CSO [Control] Policy requires municipalities with combined sewer systems to develop long-term control plans (LTCPs) reflecting hard-nosed assessments of cost-effective ways to regulate overflow discharges. Combined Sewer Overflow (CSO) Control Policy, 59 Fed.Reg. 18,688, 18,691–94 (Apr. 19, 1994). The CSO Policy explicitly “recognizes the site-specific nature of [combined sewer overflows] and their impacts and provides the necessary flexibility to tailor controls to local situations. Major elements of the Policy ensure that CSO controls are cost effective and meet the objectives and requirements of the CWA.” *Id.* at 18,688.

Id. Thus, under CWA section 402(q), 33 USC 1342(q)(1), the proposed NPDES permit for the Oceanside facilities, must conform to the CSO Control Policy and address the Discharger’s LTCP.

B. Long Term Control Plan (LTCP)

Under the CSO Control Policy, the LTCP must have the following elements:

1. Characterization, Monitoring, and Modeling of the Combined Sewer System

The permittee should have a thorough understanding of its sewer system, the response of the system to various precipitation events, the characteristics of the overflows, and the water quality impacts that result from CSOs. The permittee should adequately characterize through monitoring, modeling, and other means as appropriate, for a range of storm events, the response of its sewer system to wet weather events including the number, location and frequency of CSOs, volume, concentration and mass of pollutants discharged and the impacts of the CSOs on the receiving waters and their designated uses.

2. Public Participation

To develop its LTCP, the permittee should use a public participation process that actively involves the affected public in the decision-making to select the long-term CSO controls. The affected public includes rate payers, industrial users of the sewer system, persons who reside downstream from the CSOs, persons who use and enjoy these downstream waters, and any other interested persons.

3. Consideration of Sensitive Areas

The LTCP should “give the highest priority to controlling overflows to sensitive areas.” 59 FR at 18692. Sensitive areas, as determined by the NPDES authority in coordination with State and Federal agencies, as appropriate, include designated Outstanding National Resource Waters, National Marine Sanctuaries, waters with threatened or endangered species and their habitat,

waters with primary contact recreation, public drinking water intakes or their designated protection areas, and shellfish beds.

4. Evaluation of Alternatives

The LTCP should consider a reasonable range of alternatives. The plan should, for example, evaluate controls that would be necessary to achieve zero overflow events per year, an average of one to three, four to seven, and eight to twelve overflow events per year. Alternatively, the LTCP could evaluate controls that achieve 100% capture, 90% capture, 85% capture, 80% capture, and 75% capture for treatment.

5. Cost/Performance Considerations

The permittee should develop appropriate cost/performance curves to demonstrate the relationships among a comprehensive set of reasonable control alternatives. This should include an analysis to determine where the increment of pollution reduction achieved in the receiving water diminishes compared to the increased costs. This analysis, often known as knee of the curve, should be among the considerations used to help guide selection of controls.

6. Operational Plan

After agreement between the permittee and NPDES authority on the necessary CSO controls to be implemented under the LTCP, the permittee should revise the operation and maintenance program developed as part of the nine minimum controls to include the agreed-upon long-term CSO controls. The revised operation and maintenance program should maximize the removal of pollutants during and after each precipitation event using all available facilities within the collection and treatment system.

7. Maximizing Treatment at the Existing POTW Treatment Plant

In some communities, POTW treatment plants may have primary treatment capacity in excess of their secondary treatment capacity. One effective strategy to abate pollution resulting from CSOs is to maximize the delivery of flows during wet weather to the POTW treatment plant for treatment. Delivering these flows can have two significant water quality benefits: First, increased flows during wet weather to the POTW treatment plant may enable the permittee to eliminate or minimize overflows to sensitive areas; second, this would maximize the use of available POTW facilities for wet weather flows and would ensure that combined sewer flows receive at least primary treatment prior to discharge.

8. Implementation Schedule

The permittee should include all pertinent information in the long term control plan necessary to develop the construction and financing schedule for implementation of CSO controls. Schedules for implementation of the CSO controls may be phased based on the relative importance of adverse impacts upon WQS and designated uses, priority projects identified in the long-term plan, and on a permittee's financial capability.

9. Post-Construction Compliance Monitoring Program

The selected CSO controls should include a post-construction water quality monitoring program adequate to verify compliance with water quality standards and protection of designated uses as well as to ascertain the effectiveness of CSO controls. This water quality compliance monitoring

program should include a plan to be approved by the NPDES authority that details the monitoring protocols to be followed, including the necessary effluent and ambient monitoring and, where appropriate, other monitoring protocols such as biological assessments, whole effluent toxicity testing, and sediment sampling.

59 FR 18691-18694.

The Discharger's current LTCP is a collection of documents, developed over the course of two decades, dating from 1971. It is not a single document, as is the case with most combined sewer systems, but a number of documents and supplements, whose relationship is not entirely clear. Furthermore, the Oceanside facilities have changed since they were constructed in 1997, and additional changes are underway and planned for the near future.⁵

Specifically, the combined sewer system, the sewershed, and the Discharger's management approach have changed, most notably as documented by the Sewer System Improvement Program (SSIP), which may or may not be part of the Discharger's LTCP. The SSIP began in 2011 as a 20-year, citywide investment to enhance system reliability and performance.⁶ The SSIP program may be complemented by a 2010 Master Plan planning efforts and 2015 Urban Watershed Management Plan, but again, their relationship to the LTCP is also not clear.

These plans are examples of the Discharger's extensive planning efforts since the last permit reissuance in 2009. The new programs and associated planning efforts contain relevant information related to existing and potential technology and water-quality based permit requirements, as these programs and plans are intended to shape the sewer system, including long term capital plans and projects to provide cost-effective controls that affect system performance and protect water quality.

However, these planning documents have not been submitted to the EPA as part of a LTCP and have been developed by different departments within SFPUC. Therefore, EPA is unsure whether these documents have been vetted and approved by SFPUC management since each plan is a piece of the broader planning effort. An updated LTCP will coordinate, and integrate, findings of such existing planning efforts given that circumstances have changed since the original LTCP was first developed in the 1970s and implemented in 1997.

With respect to the NPDES permit, many of the permitting requirements related to the LTCP have been carried over from one permit term to the next, with some requirements dating back to the 1970s.⁷ The disjointed and historic nature of the LTCP is confounded by State Board Order No. WQ 79-16, which granted the Discharger's eight wet weather diversion structures an

⁵ The discharger describes the history of the LTCP in its permit application.

⁶ As of September 2018, the sewer system improvement program phase 1 was 26.4% complete, with 13 projects in construction and 27 projects in closeout or completed. (SFPUC 2018).

⁷ The 1974 Master Plan, which was later updated in 1982, included the upgrade of treatment plants (city-wide) to secondary treatment and control the quality and volume of combined sewer discharges. Implementation of this Master Plan resulted in construction storage and transportation box sewers to improve the conveyance of flows to the treatment plants. The last Master Plan effort occurred in 2010, a year after the last NPDES permit reissuance. However, the Master Plan planning efforts in 2010 did not result in a final master plan. Subsequent planning efforts associated with the SSIP appear to replace the master planning efforts, though this is not certain.

exception to the California Ocean Plan’s prohibition against discharges or by-passes not conforming to standards.⁸ This exception has been in continuous effect for nearly four decades and has not been revised to reflect the current combined sewer system.⁹ An updated LTCP will ensure that future permit requirements, especially wet weather operations and wet weather performance-based requirements, are based on the most recent and appropriate information.

III. A Number of Changes Necessitate a LTCP Update.

A. Changes to the Combined Sewer System

A LTCP update is needed to address operational changes and additional treatment capacity, such as the construction of the Westside Recycle Water Project, upgrades to the sludge handling facilities at the Oceanside Water Pollution Control Plant, and upgrades to the Westside Pump Station. These changes are examples of capital improvement projects that can affect wet weather operations as well as effluent quality.

In addition to capital improvements, the combined sewer system also has undergone condition-related maintenance and operational problems. The 2010 master planning efforts documented such problems and recommended a series of infrastructure and operational changes. For example, the southwest ocean outfall, which became fully operational in 1986, was sized to handle the wastewater from the entire city (i.e. 590 mgd). However, rerouting of flows proved to be infeasible, and the actual flows are much less than the design (i.e. 175 mgd maximum). Due to the lower flow, sediment deposition occurs within the outfall diffuser, reducing discharge capacity, and is exacerbated during high dry weather flows because of saltwater recirculation that occurs from seawater inflow. (Master Plan 2010b, page 4-31).

The collection system also has maintenance and operational problems, some of which are unclear to EPA, which could impact the technology based draft permit requirements related to maximizing collection system storage and flows to the treatment plant. Multiple planning documents have reached the same conclusion that the current level of funding is not adequate to meet the replacement needs to ensure reliable sewer operations.¹⁰ As the service life of sewers exceeds 100 years, the rate of failure is more imminent, including sinkholes in city streets. There

⁸ Instead of having a comprehensive LTCP, the Discharger historically has had a series of documents that address the elements of a LTCP. These documents date from the 1970s through to the 1980s.

⁹ There are discrepancies between the 1979 Order description of the Oceanside facilities and the current configuration of the facilities. For example, the combined sewer system has 7 (not 8) combined sewer discharge locations and operates the Oceanside (not the Richmond Sunset) Water Pollution Control Plant, which discharges via the southwest ocean outfall (not the mile rock outfall). EPA provided specific comments related to the 1979 Order during the public comment period for the state’s proposed amendment to the Ocean Plan bacteria provisions given the age of the Order, public health implications, and 40 CFR 131.14.

¹⁰ “Given the age and current conditions of the local sewers, the current renewal and replacement funding for local sewers is not adequate to meet the replacement needs to ensure reliable sewer operation.” (SFPUC 2010d, page 506-4). “Unfortunately, even though a large percentage of the City’s sewers are nearing the end their useful lives, the current renewal and replacement funding is not adequate to meet replacement needs — since current funding only allows for a more than 200-year replacement cycle.” (SFPUC 2010b, page 4-2).

are over 80-miles are major sewers that have been in service for over 100 years, with 13-miles having an average age of 127-years.¹¹

Through the LTCP Update, the Discharger will be characterizing the current system and provide information that will serve as the basis for permit requirements associated with maximizing storage and treatment.¹² Section IV of this memo describes specific LTCP update tasks in the draft permit. Specifically, Tasks 5 and 6 would address maximizing storage and treatment, which in turn would minimize the impact of combined sewer discharges. Any water quality impacts associated with operational changes would be addressed through Task 8.

B. Changes to the Sewershed

A LTCP update is needed to address changes in the sewershed that affect system flows. These changes include changed land use conditions, subsidence of infrastructure below the hydraulic grade line, and an increase in pollutant loads because of higher employment and population projections.¹³ Changes in land use patterns have resulted in permeable land surfaces becoming more impervious, decreasing stormwater infiltration and increasing surface runoff. Areas of subsidence within the system service area are also prone to flooding or can experience system surcharging because of operational efficiency issues. (Master Plan 2010b, page 4-11 and 4-13).

The LTCP update would capture changes to the sewershed, as specifically described in Task 1 of the draft permit, which is essential when considering the feasibility of additional control alternatives needed to reduce combined sewer discharges to sensitive areas – Ocean, Baker, and China Beaches (i.e. Task 3). *See* section IV of this memo for specifics related to LTCP update tasks.

C. Changes to Management Approach

The *CSO Control Policy* acknowledges the importance of watershed planning in the long-term control of combined sewer discharges and encourages that municipalities develop LTCPs on a

¹¹ The 2014 Westside Drainage Basin Urban Watershed Characterization technical memo identified that almost 16 miles of major sewers in the Westside system (i.e. collection system for the Oceanside facilities) need immediate improvements based on high or very high risks (page xviii). Maintaining the collection system is essential to ensure implementation of the nine minimum controls as well as proper operation and maintenance contained in the draft permit. The nine minimum controls are 1) proper operation and regular maintenance programs for the sewer system and CSO outfalls, 2) maximum use of the collection system for storage, 3) review and modification of pretreatment requirements to ensure that CSO impacts are minimized, 4) maximization of flow to the treatment plant, 5) elimination of CSOs during dry weather, 6) control of solid and floatable materials in CSOs, 7) pollution prevention programs to reduce containments in CSOs, 8) public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts, and 9) monitoring to effectively characterize CSO impacts and the efficacy of CSO controls

¹² The *CSO Control Policy* states NPDES permits should contain narrative requirements which ensure that the selected controls are implemented, operated, and maintained as described in the LTCP. *See* 75 FR 18696. Because the combined sewer system has had upgrades and operational changes, EPA needs an updated LTCP that describes implementation, operation, and maintenance of the new infrastructure and associated operational changes to develop appropriate, and site-specific, permit requirements.

¹³ For example, the Discharger projected in 2010 that pollutant load would increase for the Oceanside facilities by 6.5%. (Master Plan 2010b, page 4-44).

watershed management basis. Specifically, the Discharger has adopted an Integrated Urban Watershed Management approach and is the “principal tool for planning and decision making.” (SFPUC 2010, page 5-1).

This approach along with use of asset management and capital improvement programs impact levels of service, including water quality goals, and overall system performance.¹⁴ The most recent level of service approved by the Discharger includes controlling and managing flows from a storm of 3-hour duration that delivers 1.3 inches of rain (i.e. 1.3 inches of rain in 3 hours). EPA is unsure how this level of service compares to that identified in the State Board Order No. WQ 79-16. The 1979 Order stated that the then current system functioned so that when rainfall exceeded 0.02 inches per hour, combined sewer discharges would occur from any of the eight wet weather division structures (up to 114 overflows per year) and that the Discharger was proposing to construct a system that would limit such discharges to a long-term average of eight per year.¹⁵ Given the most recent level of service managing flows of 1.3 inches of rain in 3 hours, it is unclear how many combined sewer discharges are expected.¹⁶

A LTCP update would address performance standard permit requirements associated with the Discharger’s current level of service. Specifically, through the update, EPA would have existing and anticipated performance information related to frequency, volume, and duration of combined sewer discharges. This information is necessary to implement the *CSO Control Policy*.

IV. Discussion of LTCP Update Tasks in Draft NPDES Permit

The draft permit contains in Table 7 specific tasks for the Discharger to undertake in updating the LTCP.¹⁷ The tasks are consistent with the *CSO Control Policy* requirement that LTCPs provide for compliance with the requirements of the Clean Water Act. The tasks are also consistent with EPA’s guidance document *Combined Sewer Overflows, Guidance for Long-Term Control Plan* (EPA 832-B-95-002) and with the Discharger’s planning efforts. The draft permit states that “Discharger may use previously completed studies to the extent that they accurately provide the required information.” Draft permit at page 19. A description of the tasks and their purposes appears below.

Task 1. Characterization, Monitoring, and Modeling of the Combined Sewer System

The purpose of this task is to establish existing baseline conditions, evaluate the effectiveness of the selected control alternatives, and to determine the conditions upon which the LTCP will be based. Characterization is important in understanding current baseline conditions in comparison

¹⁴ SFPUC also has adopted many new policies and regulations intended to improve watershed health and reduce the burden on the collection system. Example of such policies and regulations adopted since the last permit reissuance include the 2010 Stormwater Management Ordinance, the 2012 Onsite Water Reuse Ordinance, and the 2013 Nonpotable Ordinance.

¹⁵ As described in the State Board Order No. WQ 79-16, the proposed new system would have a maximum of 18 overflows per year (page 6).

¹⁶ The minimum rainfall that caused a combined sewer discharge is described in the permit application and ranged from 0.54 inches for CSD-001, CSD-002, and CSD-003; 0.82 inches for CSD-007 and CSD-005, and 1.16 inches for CSD-006.

¹⁷ See draft permit Table 7. Tasks to Update the Long-Term Control Plan (LTCP) under section VI.C.5.d. LTCP Update.

to those presented in the 1970s, as contemplated in the State Board Order No. WQ 79-16. Specifically, this task will ensure that all stakeholders have a common understanding of the current system and will identify current baseline conditions in comparison to those presented in 1970s and 1980s.¹⁸ This task is consistent with the *CSO Control Policy* in that a thorough understanding of the combined sewer system is needed to ensure that a LTCP will meet the requirements of the Clean Water Act and that monitoring and modeling are used to evaluate the expected effectiveness of both the nine minimum controls and control alternatives to meet water quality standards. *See* 75FR . 18691.

Task 2. Public Participation

The purpose of this task is to ensure that the public has an opportunity to provide input on control alternatives that are selected to reduce the magnitude or frequency of discharges to sensitive areas. This task is consistent with the *CSO Control Policy*, which states that control alternatives shall be developed with public input to meet the goals of the Clean Water Act. Often public input and participation is essential in ensuring the community's support for selected controls and plans. Historically, the Discharger has had extensive public participation in the planning process. For example, as part of the SSIP and associated planning efforts, the Discharger has completed public meetings, surveys, tours, education, workshops and formed an advisory committee.

Task 3. Consideration of Sensitive Areas

The purpose of this task is to identify feasible control alternatives to eliminate, relocate, or reduce the magnitude or frequency of discharges to sensitive areas. This task is consistent with the *CSO Control Policy*, which states that NPDES permits shall require re-assessment of combined sewer discharges to sensitive areas in cases where elimination or relocation of the discharge is not physically possible and economically achievable. The *CSO Control Policy* continues to state that the re-assessment should be based on consideration of new or improved techniques to eliminate or relocate flows or changed circumstances that influence economic achievability. Techniques generally should consider storage, treatment, and abatement/source

¹⁸ A common understanding of the combined sewer system is needed. For example, through reviewing existing planning documents, EPA discovered that the system is designed to direct overflows from the Pine Lake Pump Station to Pine Lake, one of the few remaining natural lakes in San Francisco. The wet weather operations in the draft permit do not include any operational controls at this pump station. More information is needed to understand when and why such overflows occur as well as how such overflows impact combined sewer discharges at the authorized discharge points. Another example of needing a common understanding of the system includes characterizing the amount of rainfall the system can handle before a combined sewer discharge occurs. The State Board Order No. WQ 79-16 stated that the system had overflows when rainfall exceeded 0.02 inches per hour. No information related to how the "new system" would respond (i.e. experience overflows) to various precipitation events was discussed in the 1979 Order. Such a description is found in recent planning efforts. As described in the 2014 Westside Drainage Basin Urban Watershed Characterization technical memo, the system has available storage depths able to handle up to 0.21, 0.32, and 0.22 inches in the Richmond, Sunset, and Lake Merced watersheds (page 2-18). This information could be helpful in developing a definition of wet weather related to precipitation as well as specific wet weather operations related to precipitation. However, it is unclear whether the LTCOP includes this 2014 technical memo. *See* draft permit Appendix A for definition of wet weather and section VI.C.5.c.iv. for wet weather operation requirements.

control measures that will reduce volume or bacteria/pollutant concentrations. *See* 75 FR 18696. These techniques are also consistent with the Discharger's current planning efforts.¹⁹

Historically, the Discharger has stated that it is not feasible to eliminate or relocate CSD-001, CSD-002, CSD-003, CSD-005, CSD-006, or CSD-007. Therefore, EPA anticipates that control alternatives as part of the LTCP update will be selected to reduce the magnitude or frequency of combined sewer discharges from these locations. Such controls have been evaluated during past planning efforts. For example, the 2010 Master Plan planning efforts recommended increasing the Westside Transport Storage box capacity to reduce combined sewer discharges. (SFPUC 2010c, page 6-4). The 2015 Westside Drainage Basin Urban Watershed Opportunities technical memorandum included an evaluation of the feasibility of reducing combined sewer discharges at public beaches. Applicable strategies to reduced combined sewer discharges at Sea Cliff (i.e. Baker Beach) included either retrofitting the existing pump stations or building new pump stations, re-routing flows and implementing operational changes, increased conveyance or pipe upsizing, and reducing runoff. The 2015 report states that combined sewer discharges at Baker and China Beach could be eliminated during a typical year through upsizing the Sea Cliff Pump Station No. 2 (for CSD-007) and through green infrastructure (CSD-005 and CSD-006). (SFPUC 2015, page 2-22). The 2015 report also provides figures that show percent reduction of different strategies to reduce combined sewer discharges at beaches. (SFPUC 2015, page 3-13). It is not clear whether either one of these two documents, the 2010 Master Plan or the 2015 technical memo, is part of the Discharger's LTCP and whether their findings will be implemented.

These recommendations are relevant to draft permit requirements, which require that the Sea Cliff Pump Stations be operated at maximum capacity and that Sea Cliff Pump Station No. 2 pumps at least 1,100 gallons per minute prior to discharging. *See* draft permit provision VI.C.5.c.iv.(e) related to operating parameters that implement the LTCP. The draft permit also contains specific subtasks related to the prioritization and will ensure that sufficient information is used to identify the appropriate control alternatives.²⁰ Prioritization is important because all combined sewer discharges for the Oceanside facilities occur on public beaches. *See* draft permit section VI.C.5.d. for Tasks to Update the LTCP.

Task 4. Cost/Performance Considerations

This task is essential in determining cost-effective control alternatives and for developing the implementation schedule (*See* task 6 below for the implementation schedule requirement) based on the relative importance of adverse water quality impacts and the Discharger's financial capability. This task is consistent with the *CSO Control Policy* in that costs and performance

¹⁹ While the 2011 Sensitive Areas Feasibility Report considered the feasibility of disinfection and green infrastructure, it did not discuss operational improvements that could be made to minimize combined sewer discharges because "current operations maintain compliance." (SFPUC 2011, page 21).

²⁰ The task requires that the Discharger consider the following in the prioritization: 1) recreational use (subtask a); 2) green infrastructure and low impact development, increased storage and treatment capacity, maximize discharges to ocean outfall (Discharge Point No. 001), and use of high rate treatment technologies and disinfection (subtask b); 3) feasibility (subtask c); 4) water quality benefits (i.e. modeling) (subtask d); and cost, performance, and financial capabilities (subtask e).

curves should be a consideration in selecting control alternatives. *See* 75 FR 18693. Similarly, this task is consistent with the Discharger’s SSIP, which outlines proposed projects to be implemented over 20 years, at a cost of \$6.976 billion (in 2016 dollars) to improve system reliability and performance. Later planning documents such as the 2015 Westside Drainage Basin Urban Watershed Opportunities technical memo also describe costs but do not present cost data for all recommended strategies.²¹ It is not clear whether they are part of the LTCP. The 2015 memo states that concurrently a team was conducting a cost-benefit analysis for reducing combined sewer discharges at Ocean Beach and that the objective of that analysis was to provide comprehensive data so that the Discharger could make informed decisions. (SFPUC 2015, page 2-24; SFPUC 2015, page 2-24 and page 3-4). By requiring a LTCP update that includes a task to consider costs and performance of control alternatives, all strategies and associated costs will be presented in one document.

Task 5. Operational Plan

The purpose of this task is to lay out how the system will be operated and maintained to reduce or further treat the combined sewer discharges. This task is needed to determine whether system performance can be improved upon as the operational requirements in the draft permit have been historically carried over from previous permit cycles. This task is consistent with the *CSO Control Policy* requirement that NPDES permits contain specific performance standards, such as a maximum number of combined sewer discharges, a minimum percentage capture, or a minimum pollutant removal. *See* 75 FR 18696.

Specifically, an update is warranted because, as explained above, the combined sewer system is undergoing upgrades and operational changes that relate to the technology-based requirements implemented through the nine minimum control permit requirements. *See* draft permit section VI.C.5.c.iv.(e) related to operating parameters that implement the LTCP and section VI.C.5.a for permit requirements associated with the nine minimum controls.

Task 6. Implementation Schedule

The purpose of this task is to develop the construction and financing schedule of the selected controls. Through this task, the Discharger will solidify plans to implement the selected control alternatives that will reduce the magnitude and frequency of combined sewer discharges to sensitive areas and is consistent with EPA’s LTCP guidance that a municipality is expected to consider eliminating overflows that discharge to sensitive areas. (EPA 1995, page 4-10). This task is also consistent with the *CSO Control Policy* in that an implementation schedule be included in a LTCP and that a schedule considers a phased approach for implementation. The *CSO Control Policy* further states that each municipality is “ultimately responsible for aggressively pursuing financial arrangements” for implementation. *See* 75 FR 18690 and 18694.

From the Discharger’s past planning documents, implementation schedules appear to be lacking for recommended improvements. By requiring this specific task, the selected control alternatives can be implemented in phases based on costs, financial capability, and environmental benefits. Having the implementation schedule also clarifies which of the recommendations the Discharger

²¹ For example, in the Sunset Watershed, green infrastructure has an estimated cost effectiveness range of \$2 to \$4 per gallon of combined sewer discharge reduced and could be used to reduce up to 250,000 gallons of combined sewer discharge. (SFPUC 2015, page 3-4).

will be implementing to reduce the volume and frequency of combined sewer discharges at public beaches.

Task 8. Post-Construction Compliance Monitoring Program

The purpose of this task is to re-evaluate the post-construction compliance monitoring program based on new control alternatives selected to reduce the magnitude, frequency, and/or duration of combined sewer discharges to sensitive areas. Post-construction monitoring is integral to facility optimization, as this type of information provides data for model validation, feedback to the facility operations, and an assessment metric for the effectiveness of selected control alternatives. This task is consistent with the *CSO Control Policy*, which states that monitoring should verify compliance with water quality standards and to ascertain the effectiveness of controls. See 75 FR 18694. By requiring a re-evaluation of the post-construction compliance monitoring program, the Discharger will be able to propose a site-specific, cost-effective program that determines whether control alternatives are achieving expected environmental benefits as well as to assess whether controls are meeting the applicable water quality standards.

Post-construction monitoring also provides information related to the degree to which controls are achieving compliance with water quality standards. This type of information is essential to the development of the draft permit. The applicable water quality standards are described in section III.C of the factsheet for the draft permit and include the Water Quality Control Plan for the San Francisco Bay Basin Plan and the California Ocean Plan.²² The beneficial uses for the Pacific Ocean below:

Basin Plan Beneficial Uses for Pacific Ocean	Ocean Plan Beneficial Uses for Pacific Ocean
Industrial Service Supply	Industrial Water Supply
Ocean, Commercial, and Sport Fishing	Commercial and Sport Fishing
Shellfish Harvesting	Shellfish Harvesting
Marine Habitat	Marine Habitat
Preservation of Rare and Endangered Species	Rare and Endangered Species
Fish Spawning	Fish Spawning
Water Contact Recreation	Water Contact Recreation
Noncontact Water Recreation	Noncontact Recreation, including Aesthetic Enjoyment
Navigation	Navigation
Fish Migration	Mariculture

²² The Basin Plan Section 4.9.1 briefly discusses the combined sewer system, noting that the CSO Control Policy “requires implementation of a long-term control plan that serves as the water quality-based requirements of the Clean Water Act. The long-term control plan must consider the permittee’s financial capability and provide for the attainment of water quality standards.” Appendix VII of the 2015 California Plan includes the State Board Order No. WQ 79-16, which contains eight specific conditions applicable to the Discharger, including that “excepting provision Chapter II.A., to the greatest extent practical, the discharger shall design, construct and operate facilities which will conform to the remaining standards set forth in Chapter II of the Ocean Plan” and that “will comply with the conditions controlled by the requirements provided by Chapter III, Sections A and B of the Ocean Plan.” In the 1978 Ocean Plan, Chapter II was water quality objectives and Chapter II.A was bacteriological characteristics. Chapter III was “General Requirements for Management of Waste Discharge to the Ocean” and section A and B related to narrative water quality standards. (See State Water Resources Control Board 2001, page 25271 and page 25273).

Wildlife Habitat	Preservation and Enhancement of Designated Areas of Special Biological Significance
------------------	---

As noted above one of the beneficial uses is contact and noncontact water recreation. The combined sewer discharges occur at Ocean Beach (CSD-001, CSD-002, and CSD-003), China Beach (CSD-005) and Baker Beach (CSD-006 and CSD-007), which are popular recreation areas used by the community and tourists throughout the year. When shoreline monitoring indicates a bacteria water quality exceedance, no swimming signs are posted. From July 2012 to June 2013, 56 samples resulted in exceedances of the single sample maximum of a bacteria indicator (i.e. E. coli, total coliform, or Enterococcus) and resulted in warning or no swimming signs being posted at beaches for approximately 27 days.²³ Ocean Beach was posted for a total of 17 days, which were coincident with combined sewer discharge events. (SFPUC 2014, page 3-13). The Discharger also notes that combined sewer discharges that occur in the early Fall or Spring potentially impact more users since recreational use increases when days are longer and the duration of storm events is typically shorter, which may contribute to good surf conditions. (SFPUC 2014, page ii). The Discharger summarized recreational use observations from 2008 to 2014 and documented that 20% of users were in contact with receiving water when bacteria indicators may be high (i.e. after a combined sewer discharge). (SFPUC 2014c, page 3-14).

V. LTCP Updates in Other Cities

The table below shows a few examples of Cities that have updated LTCPs. The LTCP updates reflected the need to achieve specific water quality standards, update control commitments, update system requirements based on capital improvements, include additional green infrastructure controls, minimize impacts associated with combined sewer discharges, and clarify technology-based and water-quality based permit requirements.

City and State	Year of Update	Link to Update of the LTCP
City of Alexandria, VA	2018	https://www.alexandriava.gov/Sewers
City of Bangor, MA	2017	https://www.bangormaine.gov/filestorage/318/336/884/Full_LTCP_Report.pdf
Washington, D.C.	2015	https://www.dcwater.com/sites/default/files/green-infrastructure-ltcp-modificaitons.pdf
New York City, NY: Bronx River	2015	http://www.nyc.gov/html/dep/pdf/cso_long_term_control_plan/bronx-river-ltcp-201506.pdf
Seattle, WA	2015	https://www.seattle.gov/util/cs/groups/public/@spu/@drainsew/documents/webcontent/01_030101.pdf
Buffalo, NY	2014	https://buffalosewer.org/app/uploads/2017/08/LTCP-Exec-Summary.pdf
City of Omaha, NE	2014	http://www.omahacso.com/files/6814/1450/8302/Final_Omaha_LTCPUpdate-Appendices_Oct2014.pdf
Hartford, CT	2012	http://www.thecleanwaterproject.com/assets/uploads/files/MDC_LTCP_Update.pdf
Kansas City, MO	2012	https://www.kcwaterservices.org/wp-content/uploads/2013/04/Overflow_Control_Plan_Apri302012_FINAL.pdf
St. Louis, MO	2011	https://www.stlmsd.com/sites/default/files/education/448861.PDF
City of Akron, OH	2011	http://www.akronwaterwaysrenewed.com/documents/long-term-control-plan.aspx
Philadelphia, PA	2009	http://www.phillywatersheds.org/ltcp/LTCPU_Complete.pdf

²³ Table 2-5 from the 2014 efficacy report shows that the average number of days exceeding the total coliform standard in 2012 to 2013 (other bacteria indicators not shown) was 5 days. (SFPUC 2014c, page 2-10).

Portsmouth, NH	2005	http://files.cityofportsmouth.com/files/ww/April2005CSOLTCP.pdf
----------------	------	---

VIII. References

U.S. EPA. 1994. Combined Sewer Overflow Control Policy. 59 Federal Register 18688. EPA-830-B-94-001. <https://www.epa.gov/sites/production/files/2015-10/documents/owm0111.pdf>

U.S. EPA. 1995. Combined Sewer Overflows: Guidance for Long Term Control Plan. EPA-832-B-95-002. <https://www3.epa.gov/npdes/pubs/owm0272.pdf>

SFPUC. 2018. Wastewater enterprise capital improvement program 1st Quarter Fiscal Year 2018-2019. November 27, 2018. <https://sfwater.org/modules/showdocument.aspx?documentid=13245>

SFPUC. 2014. 1997 – 2012 Southwest Ocean Outfall Regional Monitoring Program Summary Report. City and County of San Francisco.

SFPUC. 2014b. Westside Drainage Basin Urban Watershed Characterization Final Draft Technical Memorandum. August 2014. City and County of San Francisco.

SFPUC. 2014c. Characterization of Westside Wet Weather Discharges and the Efficacy of Combined Sewer Discharge Controls. July 30, 2014. City and County of San Francisco.

SFPUC. 2011. Oceanside Special Study, Sensitive Areas Feasibility Report for Overflows. December 21, 2011. City and County of San Francisco.

SFPUC. 2010. San Francisco Sewer System Master Plan Summary Report Final Draft. March 2010. City and County of San Francisco. <https://www.gestaltgraphics.com/docs/SFSSSummary.pdf>

SFPUC. 2010b. Draft San Francisco Sewer System Master Plan. August 10, 2010. City and County of San Francisco.

SFPUC. 2010c. Draft San Francisco Sewer System Master Plan. Chapter 6. November 1, 2010. City and County of San Francisco

SFPUC. 2010d. Task 500. Technical Memorandum No. 506. Collection System Rehabilitation Program. Final Draft. December 2010. City and County of San Francisco. 2030 Sewer System Master Plan.

State Water Resources Control Board. 2019. California Ocean Plan.

State Water Resources Control Board. 2001. Compilation of the California Ocean Plan 1972 – 2001. https://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303d_policydocs/408.pdf