Sanitary District No. 5 of Marin County
Main Wastewater Treatment Plant

Utility Analysis for Wet Weather Bypass of Secondary Treatment "No Feasible Alternatives Analysis"

During peak wet weather flow events, the Main Wastewater Treatment Plant (WWTP) of Sanitary District No. 5 of Marin County (District) must divert a portion of its inflows around the secondary treatment system prior to disinfection and effluent discharge. The District is in the course of implementing a major treatment plant rehabilitation program that, when completed, will reduce the number of blending events that occur at the WWTP. The District is also implementing a long-term Sewer Rehabilitation Plan and a Capital Improvement Plan for reducing inflow and infiltration (I/I) from its collection systems.

As part of the NPDES permit reissuance process, the District is requesting the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) grant approval for the continuation of wet weather diversions and blending based on the information provided in the following paragraphs.

CURRENT TREATMENT SYSTEM AND CAPACITY

The District operates and services the sanitary sewer collection systems for Town of Tiburon and the City of Belvedere and an unincorporated area of the Tiburon Peninsula. The District owns and operates the WWTP which provides secondary level treatment for domestic wastewater prior to its discharge into Raccoon Straits in the Central San Francisco Bay. The WWTP has an average dry weather design flow of 0.98 million gallons per day (MGD). Peak capacity is currently 2.3 MGD, based on the capacity of the secondary treatment system. Average flows of 0.52 MGD were recorded during the 2012 dry season (May through October).

The District has initiated the rehabilitation and replacement of aging equipment at the WWTP. The rehabilitation project includes the replacement and installation of all electrical components, a new SCADA system, and various upgrades for unit process equipment (e.g., new turbine blowers, new rotary drum thickener, new spiral heat exchangers, and new electrical process control equipment). The District will also gain additional capacity for wet weather storage by reconfiguring the piping between the wet weather sedimentation tank, a surge tank, and an offline aeration basin. This reconfiguration will more than double the available onsite storage capacity from 117,249 to 315,249 gallons. A flow schematic depicting the wastewater treatment processes (as planned, upon completion of the Rehabilitation Project) is presented as **Figure 1.**

After rehabilitation, the wastewater treatment processes will remain the same, consisting of raw influent grinders (three grinders), primary clarification (two dry weather primary clarifiers and one extra clarifier which is used during wet weather events), activated sludge biological treatment (two aeration basins), secondary clarification (two secondary clarifiers), chlorine disinfection, and dechlorination with sodium bisulfite.

WET WEATHER FLOW HANDLING

During peak wet weather flow events (inflows greater than 2.3 MGD), diversion and blending procedures are implemented to protect the secondary treatment system. At flow rates greater than 2.3 MGD, solids are washed out of the secondary clarifiers, decreasing treatment effectiveness and effluent quality. Over the past 5 years, peak flows of greater than 2.3 MGD have occurred at a frequency of 5 to 6 times per year. On average, peak flows greater than 2.3 MGD are triggered during rainfall events of one-inch or greater.

As illustrated in **Figure 1**, after WWTP rehabilitation, the capacity of primary treatment will be augmented by use of a third primary sedimentation tank, a surge tank, and a previously offline aeration basin. The third primary sedimentation tank has a higher surface overflow rate than the other two clarifiers (1.15 MGD each), sustaining flows of up to 4.6 MGD for 3-hour peak periods. A peak wet weather flow of 6.7 MGD can be treated when all three primary sedimentation tanks are in operation. However, the highest daily average influent flows experienced in the past have not exceeded 3.0 MGD. Thus, the maximum design capacity the primary sedimentation tanks safely ensures that all the influent flow is processed through primary treatment. Use of the surge tank and aeration basin will increase the on-site storage capacity from 117,249 to 315,249 gallons.

After primary treatment, a maximum of 2.3 MGD of primary effluent can be directed to the secondary aeration basins and clarifiers. After WWTP rehabilitation, primary treated flows above 2.3 MGD will either be stored in the surge tank/second aeration basin or blended with secondary effluent and sent directly to disinfection. Effluent remaining in the surge tank/second aeration basin will be returned to the headworks for treatment after storm flows recede. Based on the storm events and blending that occurred in 2012, the additional capacity would have reduced the blended volume or completely eliminated 5 of the 6 blending events.

NO FEASIBLE ALTERNATIVES ANALYSIS

The following analysis is conducted to comply with Provision VI.C.5.b. of Order No. R2-2008-0057 and 40 CFR 122.41(m)(4)(i)(A)-(C) and to demonstrate that the WWTP currently has no feasible alternatives to its system of diverting and blending peak wet weather flows. The requests outlined in items *a* through *k* were excerpted from the proposed EPA policy entitled "*NPDES Requirements for Peak Wet Weather Discharges from POTW Treatment Plants Serving Separate Sanitary Sewer System Collection Systems" (December 2005).*

a. Document current treatment plant design capacity for all treatment units, the maximum flow that can be processed through those units, and the feasibility of increasing such treatment capacity and related costs;

The information presented in **Table 1** documents the existing treatment capacity for the District's WWTP. The maximum flow that can be processed through the secondary treatment system is 2.3 MGD.

Table 1. Existing Capacity of the Main WWTP

Treatment Unit	Peak Wet Weather Capacity
Grinders	3 units, 7.77 MGD total capacity
Influent Pumping Station	4 pumps, 13.8 MGD total capacity
Primary Clarifiers	2 units, 1.15 MGD capacity each (limited by 1,470 gpd/ft^2 surface overflow rate) + 1 unit, 4.6 MGD capacity (limited by 2,800 gpd/ft^2 surface overflow rate) with a 4.4 MGD discharge (limited by hydraulics) 3 units total (6.7 MGD capacity)
Activated Sludge System	2 units, 2.3 MGD total capacity (limited by washout of solids from secondary clarifiers)
Disinfection	1 chlorine contact basin; 54,000 gallon capacity
Wet Weather Surge Tank and Aeration Basin (under construction)	Surge Tank: approximately 58,000 gal. capacity Aeration Basin: approximately 140,000 gal. capacity

There are no onsite facilities at the WWTP to provide influent flow equalization. As such, peak inflows are immediately directed to primary treatment. Peak wet weather inflow to the WWTP during the last 5 years was 5 MGD, lasting for 2 hours (0.2 Mgal/hr). There is sufficient headworks capacity (13.8 MGD) and primary treatment capacity (6.7 MGD) to handle peak inflows.

The secondary treatment system cannot be expanded because the WWTP site is fully developed and constrained by the existing topography. The purchase of and construction on bordering property is prohibited and infeasible due to the site topography. The WWTP is located adjacent to the coastline, on the northern shores of the Central San Francisco Bay. The site is flanked by very steep inclines to the north and east which immediately lead to developed residential lots. The WWTP site is also bordered by a condominium community located across the street, on the property's western side.

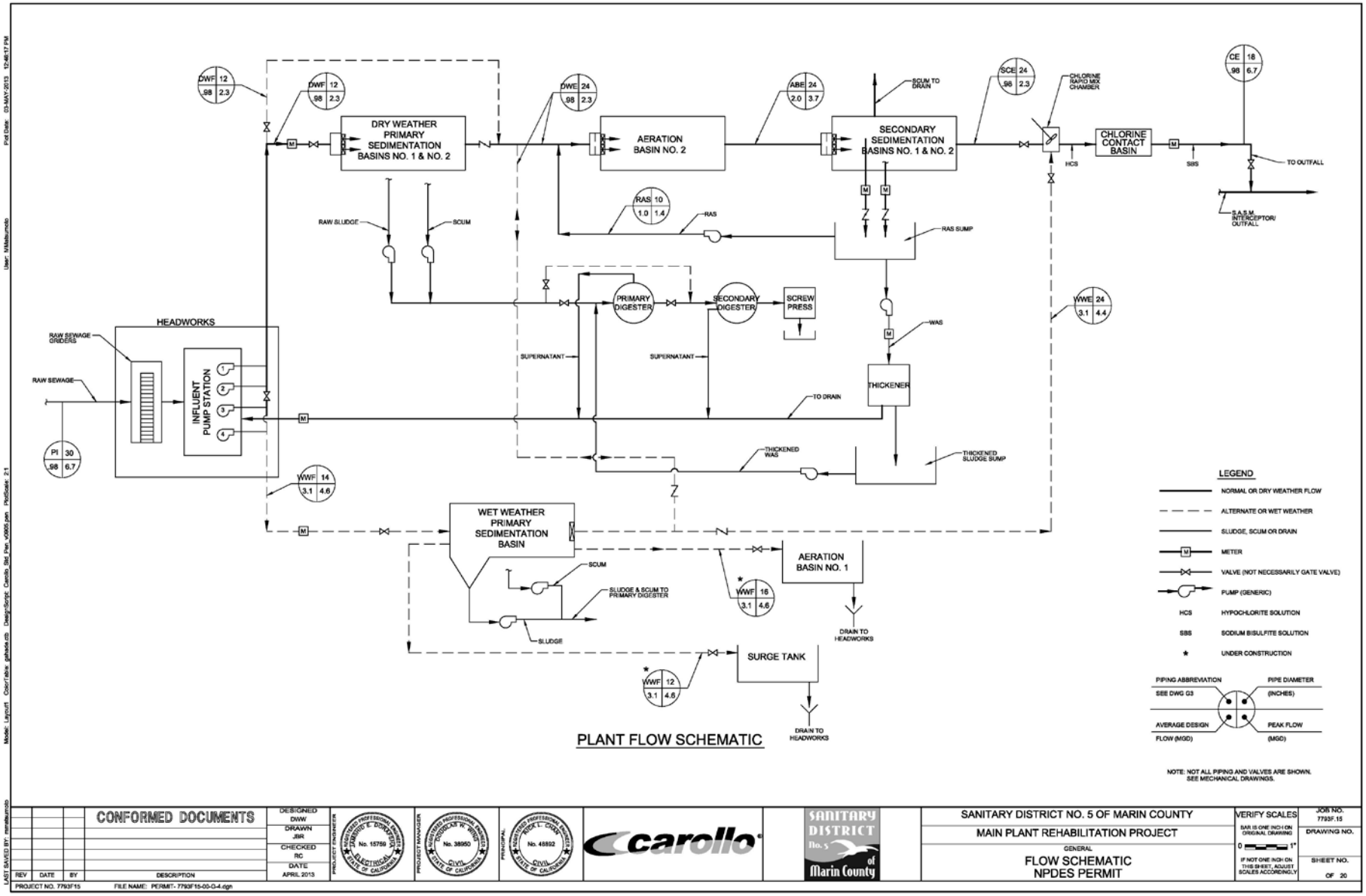

Figure 1. Flow Schematic for the Main WWTP, Sanitary District No. 5 of Marin County

b. Estimate the frequency, duration, and volume of current wet weather diversions, and evaluate alternatives to reduce the frequency, duration, and volume of such occurrences and related costs;

Wet weather diversions have occurred 23 times since the start of the current NPDES permit term, from September 2008 to December 2012. For this period, wet weather diversions occurred approximately 5 to 6 times per year with an average 0.26 Mgal of blended effluent discharged during each event. The wet weather diversion occurrences are detailed in **Table 2**. The largest blending event (1.051 Mgal) occurred on February 15, 2009. During this event, a total of 1.138 Mgal was treated at the WWTP and all effluent met permit requirements prior to disposal.

Table 2. Blending Events and Corresponding Rainfall Information (September 2008 to December 2012)

#	Date	Blended Volume (Mgal)	Storm Event Total Rainfall (inches)
1	2/15/2009	1.051	2.22
2	2/16/2009	0.495	0.65
3	3/5/2009	0.22	1.05
4	10/13/2009	0.147	3.83
5	1/18/2010	0.187	0.96
6	1/19/2010	0.449	2.03
7	1/20/2010	0.302	1.52
8	1/26/2010	0.013	0.32
9	10/24/2010	0.020	0.35
10	12/19/2010	0.266	1.09
11	12/28/2010	0.611	1.37
12	2/17/2011	0.006	1.00
13	2/25/2011	0.018	1.75
14	3/18/2011	0.028	1.75
15	3/19/2011	0.181	1.35
16	3/24/2011	0.366	1.15
17	3/26/2011	0.317	2.65
18	1/20/2012	0.125	4.00
19	3/14/2012	0.233	2.85
20	3/16/2012	0.260	1.65
21	11/30/2012	0.028	1.75
22	12/1/2012	0.111	2.50
23	12/2/2012	0.475	2.60
	Avg. # of events/yr = 5.7	**Avg. vol. blended = 0.26 Mgal**	**--**

The District is reducing the occurrence, duration, and volume of wet weather diversions by improving its WWTP operations and equipment, increasing on-site storage, and reducing I/I within its collection system.

To ensure safe and consistent operation of the WWTP, the District has initiated a $12 million rehabilitation project for the WWTP. The rehabilitation project is focused on improving electrical process control elements (e.g., SCADA) and replacing aging process equipment with more reliable and energy efficient equipment. As a part of this rehabilitation project, the District included $1 million for the addition and retooling of an on-site aeration basin and a surge tank to attenuate wet weather peak flows. Addition of the aeration basin and surge tank will more than double the on-site storage capacity from 117,249 to 315,249 gallons. Based on the storm events and blending that occurred in 2012, the additional capacity would have reduced the blended volume or completely eliminated 5 of the 6 blending events.

The District identified that peak wet weather flows at the WWTP are attributable to I/I contributions from the collection system. Over a two-year period in 2004-2005, a District contractor performed extensive studies to evaluate the condition of the Tiburon and Belvedere collection systems. The studies conducted a line-by-line analysis of both collection systems and a closed-circuit (CCTV) video camera was used to determine the condition of the lines. Besides evaluation of the lines, the studies also involved analysis and GPS identification of all sewer structures including pumping stations, trunk lines, collector lines, and other items. A geographic information systems (GIS) database was created to keep updated records and information pertinent to the sewer system.

The GIS database aids in recording all cleaning, maintenance, and capital improvement efforts as the rehabilitation work is progressing. Improvement projects are prioritized according to the severity of the pipe conditions as identified by CCTV inspections. Thus, reductions in I/I are expected immediately after projects are completed since the most problematic spots are being rehabilitated first.

The evaluation studies summarized the current conditions of the collection system and made recommendations for improvements. Following these studies, the District committed funds for a 10-year, $2 million Sewer Rehabilitation Plan encompassing both the Tiburon and Belvedere collection systems. The Sewer Rehabilitation Plan addresses all the structures and pipes determined to be in an unsatisfactory condition from evaluation of CCTV inspections. The 10-year plan is already underway, with full completion expected by 2015. Since 2006, the District has spent more than $1.2 million on reducing I/I within its collection system.

Between December 2010 and March 2011, a District contractor conducted flow monitoring in the collection system to accurately identify the baseflow and the influence of I/I from sources outside the sewer lines (e.g., private laterals, faulty manholes, and other degraded infrastructure). From the results of the comprehensive flow monitoring, four sub-drainage areas were identified as having the highest volume of inflow. In response to these findings, the District conducted targeted smoke testing in October 2011 and identified 23 sites for corrective action.

The Sewer Rehabilitation Plan is not expected to completely eliminate the need for wet weather diversions at the WWTP, but it is expected to reduce I/I and thus reduce the volume, frequency, and duration of diversion events.

c. Estimate the potential for future peak wet weather diversions based on information such as predicted weather patterns, population growth, and projected treatment plant and collection system changes (e.g.; upgrades, extensions, deterioration) and evaluates options for reducing diversions based on these variables;

It is anticipated that weather patterns will remain similar to what has occurred over the past years. As illustrated in **Figure 2**, there is a strong correlation between the timing and volume of wet weather diversion and the area's precipitation pattern (as recorded at the Point San Pedro Rain Gage, 8 miles from the WWTP site).

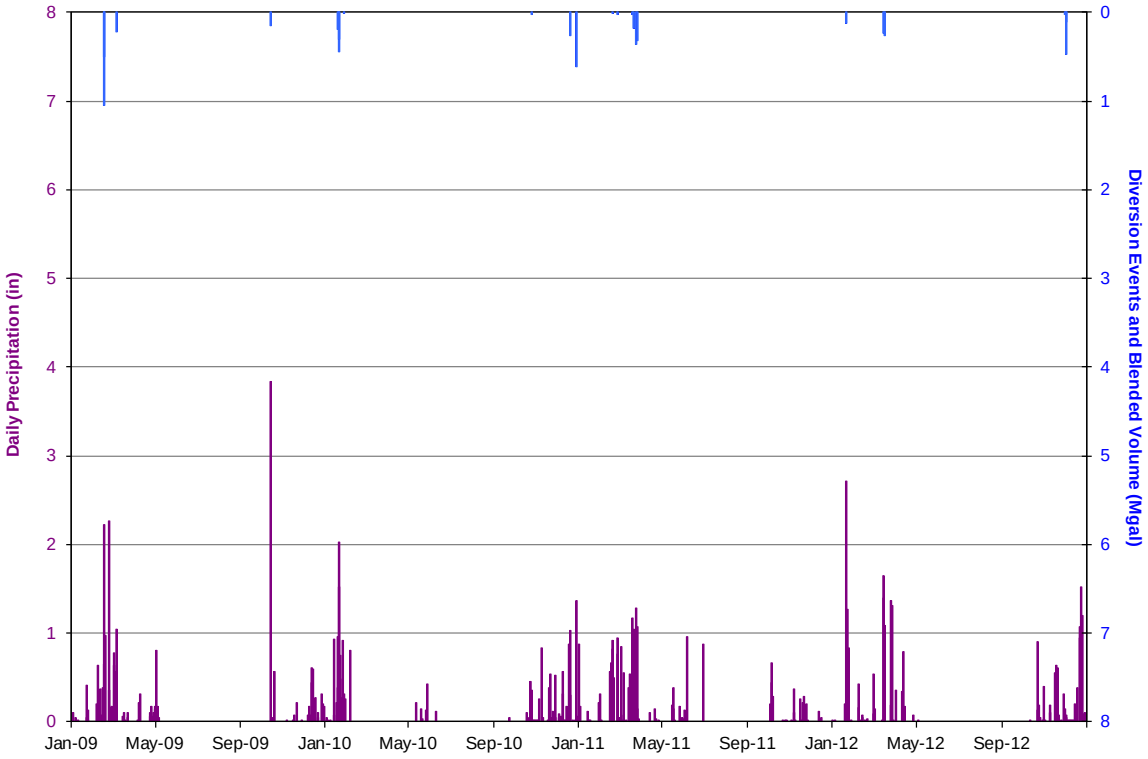

Figure 2. Relationship between Wet Weather Diversion Events and Precipitation Patterns at the Main WWTP, Sanitary District No. 5 of Marin County

In general, but not always, storm events greater than one-inch have triggered WWTP inflows greater than 2.3MGD which in turn prompted a need for blending primary and secondary effluent. However, there have been instances when one-inch rainfall events did not cause inflows greater than 2.3MGD and there was no need to divert any of the WWTP flows. The high rainfall events that failed to trigger blending occurred after periods of low precipitation. The failure of these rainfall events to prompt blending at the WWTP may be attributed to reduced I/I in the collection

system. It is presumed that the I/I reduction is caused by the soil around the collection system absorbing more moisture following a dry weather period. There have also been instances (e.g., January and October 2010) when small volumes of blended wastewater (32,000 and 35,000 gallons) were discharged during storm events with less than one-inch of precipitation. From examining the rainfall records of those periods, these relatively small storms occurred closely after wet weather periods. It is presumed that the soil moisture was already high and the new storms, albeit small, prompted considerable I/I and increased WWTP inflows.

Even though a direct numeric relationship between amount of precipitation and increased volumes of WWTP influent is not always apparent, it is generally expected that storm events higher than one-inch will trigger wet weather diversions at the WWTP. Thus, based on the area's rainfall pattern, current condition of the collection system, and current WWTP operation, wet weather diversions will be required approximately 5 to 6 times per year.

The population in the District's service area is approximately 8,400. The collection system service area is mainly residential, and, due to the area's land constraints, there are no new housing projects expected. As the District population is projected to remain virtually unchanged, there is no need for expansion of WWTP capacity in order to accommodate flows from future population increases.

The District is currently implementing a rehabilitation project at the WWTP, a Sewer Rehabilitation Plan, and Capital Improvement Plan (**item b**) in an effort to improve WWTP operations and reduce I/I from the collection system. These projects are expected to have a positive impact in reducing the need for diversions during wet weather events.

As stated in **item a and b**, the District is in the process of nearly doubling its on-site wet weather storage via the addition of two wet weather storage structures. The addition or expansion of treatment plant units in order to eliminate the need for wet weather diversions is infeasible due to site constraints. Additional treatment units that would reduce blended volumes, cannot be built due to lack of available land, either onsite (the WWTP is already using all available space) or adjacent to the site (occupied by private homes and condominiums).

d. Assess existing storage within the collection system or on-site and options for enhanced utilization or expansion (taking into account physical and technological considerations) of storage to reduce the frequency, duration, and volume of peak wet weather diversions and the related costs;

The existing collection system has no capacity for wastewater storage. Addition of such facilities is prohibited by the area's steep topography (i.e., the sewer line gradient is not conducive to storage) and land use (i.e., no open areas along the sewer line to locate wastewater storage vaults). Increasing capacity in the collection system by installing larger diameter pipes or changing pipeline gradients will require street excavations, pipeline replacements, and pump station upgrades. This large capital

expenditure would be placed on a relatively small service population (~8,400) and is not the most efficient approach to reducing WWTP peak wet weather inflows. The District is currently utilizing its resources in the most effective way – doubling on-site storage at the WWTP and aggressively rehabilitating its collection system to reduce I&I. By increasing on-site storage and reducing I&I, the District is having a direct, relatively expeditious, and appreciable effect on reducing wet weather diversions.

The District evaluated several possibilities for additional storage at the WWTP due to the recent rehabilitation activities at the WWTP, which helped to open up additional space via an adjustment of control strategies and piping. The District will bring two additional structures online (one aeration basin and one surge tank) that will more than double the on-site wet weather storage from 117,249 to 315,249 gallons. The two additional structures will be re-purposed at a cost of approximately $1 million.

The District expects that doubling of on-site storage will make an appreciable difference in reducing the frequency, duration, and volume of peak wet weather diversions. For example, the additional capacity would have likely eliminated 5 of the 6 blending events that occurred in 2012.

e. Assess other ways to reduce peak wet weather flow volumes, such as limiting collection system extensions or slug loadings from indirect dischargers;

The service population in the WWTP collection service area is projected to remain unchanged and thus a very limited number of new connections are expected in the future. The District has no indirect dischargers, so limiting flow from these users is not possible.

f. Evaluate technologies (such as supplemental biological treatment, physical chemical treatment, ballasted flocculation, deep bed filtration, or membrane technology) that are or could be used to provide additional treatment to peak wet weather flows or peak wet weather diversions at the POTW treatment plant and the costs of implementing those technologies;

To increase the flexibility, reliability, and control of the WWTP, the District is implementing a $12 million rehabilitation project for the WWTP. The rehabilitation project includes the replacement and installation of all new electrical components, a new SCADA system, and various upgrades for unit process equipment (e.g., new turbine blowers, new rotary drum thickener, new spiral heat exchangers, and new electrical process control equipment). Upon completion of the Rehabilitation Project, the District expects to have even greater control of its unit process operations which will lead to improved reliability and high quality effluent.

As demonstrated through its monitoring program, the District has consistently met its permit limits and requirements for both regular and blended discharges. The construction of additional unit processes is infeasible due to site constraints, as stated in **item a**. In addition, there is no practical option for the addition or expansion of

treatment capacity at the WWTP without having a temporary negative impact on plant performance due to the need to take process units offline for construction activities (e.g., expansions/upgrades). The addition or expansion of treatment units would both temporarily reduce the performance of the WWTP and dramatically reduce the flexibility and safety margins for treatment activities.

g. Evaluate the extent to which the permit-tee is maximizing its ability to reduce I/I throughout the entire collection system (i.e., not only the portions operated by the utility, but also portions operated by any municipal satellite community), including the use of existing legal authorities, potential improvements in the timing or quality of such efforts, and the options for obtaining or expanding legal authorities to reduce I/I from satellite collection systems;

The District operates and services the sanitary sewer collection systems for Town of Tiburon and the City of Belvedere and an unincorporated area of the Tiburon Peninsula. In July 2005, after years of studies and by mutual agreement, the District annexed Belvedere's sewer collection system. Before annexation, the District had treated Belvedere's sewage but it did not own or manage the sewer lines and equipment. The District now has full legal authority of Belvedere's collection system. Improvements to the system are already underway as part of the 10-yr Sewer Rehabilitation Plan. There are no satellite collection systems in the District's service area.

Since 2006, the District has completed several collection system spot repairs and rehabilitation projects in both Tiburon and Belvedere in order to reduce the frequency, duration, and volume of diversions. Most of the sewer pipe is vitrified clay with an expected useful life of 75 years. Overlapping with the completion of the District's Sewer Rehabilitation Plan (see **item b**), the District is implanting a 10-year Capital Improvement Plan (2013 – 2023) for continuing pipeline replacements, spot improvements, pipe relining, general pipeline maintenance activities, man hole repairs, and CCTV inspections.

In order to reduce sources of I/I outside of faulty pipelines (e.g., private laterals, faulty manholes, and other degraded infrastructure) a District contractor, between December 2010 and March 2011, conducted extensive flow monitoring to accurately identify the collection system's baseflow and the influence of inflow and infiltration during rain events. From the comprehensive flow monitoring, four sub-drainage areas were identified as having the highest volume of inflow, and it was recommended that targeted smoke testing be conducted within those four sub-drainage areas. In response to this, the District conducted targeted smoke testing in October 2011 and identified 23 sites for corrective action.

h. Evaluate peak flow reductions obtainable through the implementation of existing Capacity, Management, Operations, and Maintenance (C-MOM) programs and potential improvements in the timing or enhancement of

those programs and the related costs; or, if no such program exists, reduction obtainable through the development and implementation of a C-MOM program and the related costs;

The District does not have a documented C-MOM program. The District is currently undertaking an extensive Sewer Rehabilitation Plan, detailed in **item b**. The 10-year plan is to be completed in 2015. The District also has an on-going cleaning and maintenance program (see **item g**). Scheduling and recordkeeping is facilitated through a GIS database encompassing all the elements of the Tiburon and Belvedere collection systems.

i. Assess the community's ability to fund peak wet weather flow improvements discussed in the utility analysis, taking into consideration: current sewer rates, planned rate increases, and the costs, schedules, anticipated financial impacts to the community of other planned water and wastewater expenditures, and other relevant factors impacting the utility's rate base, using as a guide EPA's CSO Guidance for Financial Capability Assessment and Schedule Development, EPA 832-B-97-004;

The annual service charges for Tiburon customers are set based on a 5-year (2010 – 2014) sewer service rate plan. The current (2013) fee for Tiburon customers is $923 per household. This is an 11.9% increase from the previous year (2012; $825 per household). In 2014, there will be a 12% increase in fees to $1,034.

The current (2013) annual sewer service charge for the Belvedere service area is $1,928. The current rate will increase by 3.0% for the next year (2014). The recent and planned increases are needed in order to fund rehabilitation of the WWTP, improvements to the collection system as outlined in the District's ambitious 10-year Sewer Rehabilitation Plan, and to maintain adequate cash flow.

District staff held several public meetings and sent flyers and newsletters in order to gain public support of the increases and to educate the residents on wastewater treatment and disposal issues. The District also mailed newsletters, held public meetings, and made presentations at City Council meetings. As a result of these efforts, the rate increases for both Tiburon and Belvedere were approved. However, many residents are not pleased with the financial burdens of the increased rates and will be difficult to convince the residents of future fiscal needs. Public education on wastewater issues will be continued, but based on current politics and the rate climate, the District will not be able to implement an additional rate increase in the near future.

Using the EPA's CSO Guidance for Financial Capability Assessment and Schedule Development, EPA 832-B-97-004 as a guideline, the following information was prepared for the District's two main service areas:

City of Belvedere

- Ratings for Sanitary District No. 5 for $12 million bonds issued in 2012 (Standard and Poor's)[1] – **AA+ stable**
- Overall net debt as percent of full market property value[2] – **0.60%**
- Unemployment rate (Countywide)[3] – **5.8%**
- Median household income[4] – **$160,455**
- Property tax revenue collection rate (Countywide)[5] – **99.6%**
- Property tax revenues as percent of full market value[4] – **0.24%**

Town of Tiburon

- Ratings for Sanitary District No. 5 for $12 million bonds issued in 2012 (Standard and Poor's)[1] – **AA+ stable**
- Overall net debt as percent of full market property value[6] – **0.30%**
- Unemployment rate (Countywide)[2] – **5.8%**
- Median household income[3] - **$136,250**
- Property tax revenue collection rate (Countywide)[4] – **99.6%**
- Property tax revenues as percent of full market value[6] – **0.11%**

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[1] Standard and Poor's *News Release* from 01/13/2012, accessed 02/21/2013 www.standardandpoors.com/prot/ratings/articles/en/us/?articleType=HTML&assetID=1245327289447

[2] Calculated from data presented in the City of Belvedere *Comprehensive Annual Financial Report with Independent Auditors' Report for Fiscal Year 2011-2012*, www.cityofbelvedere.org/archives/37/2011%20-%202012%20City%20Audit.pdf and *Annual Operating Budget Report for Fiscal Year 2012-2013*, www.cityofbelvedere.org/archives/36/2012-13%20_RN805.pdf , both accessed 02/21/2013

[3] Bureau of Labor Statistics. November 2012. http://www.bls.gov/lau/data.htm.

[4] United States Census Bureau. 2011. http://factfinder2.census.gov/.

[5] County of Marin, *Comprehensive Annual Financial Report FY 2010-2011*, http://www.co.marin.ca.us/depts/AC/Main/finance/pages/2011_MarinCAFR.pdf , accessed 02/22/2013

[6] Calculated from data presented in the *Town of Tiburon Municipal Budget Plan Fiscal Year 2012-2013, http://www.ci.tiburon.ca.us/government/guidelines%20&%20ordinances/guidelines%20&%20handbooks/tiburon-municipal-budget-2012-2013-compressed.pdf , accessed 02/21/2013*

j. Propose a protocol for monitoring the recombined flow at least once daily during diversions for all parameters for which the POTW treatment plant has daily effluent limitations or other requirements (e.g., monitoring only requirements) and ensures appropriate representative monitoring for other monitoring requirements of the permit, the total volume diverted, and the duration of the peak wet weather diversion event; and

Monitoring of the diverted/blended flow is conducted at least daily during the diversion events. All monitoring requirements that are specified in the District's NPDES Permit are implemented when diverted/blended effluent is produced. The blended flow goes to the effluent pumping station where it is dechlorinated and pumped to the submerged diffuser located 840 feet offshore. The WWTP has a protocol in place to estimate the volume of flow diverted around secondary treatment.

As specified in the San Francisco Bay Regional Standard Provisions and Monitoring and Reporting Requirements,[7] composite samples are collected at the effluent compliance point for the length of the blending event in 24-hour or less increments. Grab samples are collected daily at the effluent compliance point for the length of the blending event. An aliquot of the composite sample is analyzed for total suspended solids (TSS). Grab samples are analyzed for total coliform. The remaining composite and grab samples are preserved and properly retained for future analysis. If the TSS result exceeds 45 mg/L, the retained samples are analyzed for all constituents with effluent limits except oil and grease, mercury, dioxin-TEQ, and acute/chronic toxicity. All retained samples comply with holding time requirements. The SCADA system continuously monitors and records flow, pH, and chlorine residual for the duration of the blending event. Once a year, the retained samples for one approved blending event are analyzed for all constituents with effluent limits, except oil and grease, mercury, dioxin-TEQ, and acute/chronic toxicity.

k. Project the POTW treatment plant effluent improvements and other improvements in the collection system and the treatment plant performance that could be expected should the technologies, practices, and/or other measures discussed in the utility analysis be implemented.

The District is currently implementing a 10-year Sewer Rehabilitation Plan and Capital Improvement Plant which is expected to significantly reduce the volume of I/I and the frequency of wet-weather blending events. The details of this plan are discussed in **items b and g** of the preceding analysis.

The collection system improvements and anticipated I/I reductions are not expected to completely eliminate the need to divert and blend. It is expected that 2 or 3 diversion events per year may occur even when all collection system improvements are implemented and new onsite storage is brought online. However, the volume of blended effluent will decrease as I/I is reduced and onsite storage is utilized.

[7] NPDES Permit Attachment G, Order No. R2-2010-0054.

Conclusions

Peak wet weather diversions are needed at the District's Main WWTP to protect operation of the existing secondary treatment system. When inflows are greater than 2.3 MGD (the hydraulic capacity of the secondary system), diversion and blending are undertaken to prevent solids from escaping the secondary treatment system. Protection of the secondary system ensures that the microbial population remains constant and it is critical in preventing the exceedance of permit limits for total suspended solids and coliform concentrations.

During wet weather events, the WWTP is operated to achieve peak secondary treatment capacity, producing the highest quality effluent that is possible under existing conditions. The District is implementing a $12 million rehabilitation program to replace and upgrade aging equipment at the WWTP. With these rehabilitation efforts, the District will bring online two additional structural onsite storage facilities (one aeration basin and one surge tank) for attenuating peak wet weather flows. It is reasonably expected that the District will be able to eliminate some, but not all, of the wet weather diversions due to the increased reliability and control of the WWTP and the addition of onsite storage.

Additional expansions of the WWTP secondary treatment units are not feasible at this time due to site constraints. The WWTP operating staff strives to minimize the number of peak wet weather diversions, and ensure that effluent quality is in compliance with permit limits.

Important collection system rehabilitation efforts are underway and are expected to be completed by 2015. The District is also implementing a 10-year Capital Improvement Plan (2013-2023) to continue improvements to the collection system. These improvements will not completely eliminate I/I flows in the collection system, but they are expected to reduce the frequency, duration, and volume of wet weather diversions at the WWTP. The District proposes to implement the actions listed in Table 3 during the upcoming NPDES permit term.

Table 3. Tasks to Improve Wet Weather Management and Reduce Blending

Task	Targeted Completion Date
The District will develop a comprehensive Wet Weather Improvement Plan that establishes measurable goals to minimize blending due to wet weather events. At a minimum, the Plan will detail the implementation schedule and impacts of the following specific activities: • Addition of on-site storage and other improvements at the WWTP • Projects covered under the 10-year, $2- million Sewer Rehabilitation Plan encompassing both the Tiburon and Belvedere collection systems • Corrective actions at the 23 problematic sites identified in the recent flow monitoring study (private laterals, manholes, etc.)	[within 6 months of permit effective date]
The District will submit a Wet Weather Improvement Program Progress Report. This report will evaluate and report on the implementation and effectiveness of its Wet Weather Improvement Plan annually.	Annually with Annual Self-Monitoring Report
If the District seeks to continue to bypass peak wet weather flows around the secondary treatment units based on 40 CFR 122.41(m)(4)(i)(A)-(C) past the upcoming permit term, the District will conduct another No Feasible Alternatives Analysis. The analysis will account for efforts to reduce I/I to the extent that information is available. In addressing these elements, the No Feasible Alternatives Analysis will specifically contain an alternatives analysis for blending reduction to evaluate strategies to further reduce blending. The District will select feasible actions based on factors including, but not limited to, the need to blend (considering the effectiveness of the collection system and WWTP improvement projects), the foreseeable impact on the need to blend, and estimated costs relative to the District's ability to finance the costs. The No Feasible Alternatives Analysis will include a feasible timeline for steps leading to implementation of the preferred alternative strategy.	With Report of Waste Discharge [due 6 months before permit expiration]