16 UTILITIES

The focus of this chapter is utilities in Novato, including water, wastewater and stormwater. The City of Novato works closely with utility providers to supply Novato residents and businesses with reliable, high-quality water, efficient wastewater treatment, and stormwater catchment. Adequate provision of utilities largely determines how Novato functions and accommodates growth. The topics in this chapter are utility regulations, existing supply and demand, and future capacity of utility providers.

A. Water

The following describes regulations and exiting conditions with regard to water service in Novato.

1. Regulatory Framework

A number of federal and State agencies manage and regulate water resources for the City of Novato with the intention of safeguarding these resources for domestic and agricultural use, environmental conservation and power generation. As discussed in detail below, these regulations mandate local assessment of, and planning for, a long-term water supply.

a. State and Federal Water Quality Regulations

i. California State Water Resources Control Board

The California State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) have the authority in California to protect and enhance water quality.

The RWQCB Region 2 office in Oakland regulates water quality for all waters that flow into the San Francisco Bay, which includes all rivers, streams and tributaries within the nine-county San Francisco Bay region. The RWQCB establishes water quality objectives, administrates the National Pollutant Discharge Elimination System (NPDES) permit program for stormwater and construction site runoff, and regulates infill of jurisdictional wetlands or waters of the United States under Section 404 of the Clean Water Act.

ii. Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) of 1969 requires the State to adopt water quality policies, plans and objectives to protect the State's waters for the use and enjoyment of the people. The Act states that the SWRCB and RWQCBs must adopt and periodically update water quality control plans, as required by the Clean Water Act and the Porter-Cologne Act, to establish water quality objectives and implementation programs for each of the nine regions in California. The Novato area falls under the Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin.[1] The Act also requires waste dischargers to notify the RWQCBs of their activities via Reports of Waste Discharge. It authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, and other approvals.[2]

[1] State Water Resources Control Board, San Francisco Bay Regional Water Quality Control Board website, http://www.waterboards.ca.gov/sanfranciscobay, accessed on November 13, 2013.

[2] State Water Resources Control Board website, http://www.waterboards.ca.gov/laws_regulations, accessed on November 13, 2013.

iii. Water Quality Control Plan for the San Francisco Bay Basin

The RWQCB Region 2 office regulates water quality in the San Francisco Bay Basin in accordance with the Water Quality Control Plan or "Basin Plan."[3] The Basin Plan presents the beneficial uses which the Regional Board has designated for surface water, groundwater, marshes and mudflats, as well as the water-quality objectives and criteria that must be met to protect these uses. A number of existing beneficial uses have been designated for Novato Creek and Stafford Lake, and are considered reasonably applicable to their tributaries. The existing beneficial uses for Novato Creek include agricultural, municipal and domestic water supply, recreation, wildlife habitat and preservation of rare and endangered species. The existing beneficial uses for Stafford Lake include municipal and domestic water supply, cold and warm freshwater habitat, fish spawning, wildlife habitat, and non-contact aquatic recreation.

iv. Safe Drinking Water Act

The Safe Drinking Water Act (SDWA), passed in 1974, is the initial federal legislation passed to ensure the quality of drinking water. Under SDWA, the U.S. Environmental Protection Agency (USEPA) sets standards for drinking water quality and oversees the water suppliers who implement those standards. Regulatory standards established by the SDWA include maximum allowable levels of chemicals and other substances in drinking water, protocols for monitoring drinking water quality, and methods for treating drinking water.

In 1976, California enacted its own Safe Drinking Water Act, requiring the California Department of Public Health (CDPH), previously called Department of Health Services, to regulate drinking water by:

- Setting and enforcing federal and State drinking water standards;
- Administering water quality testing programs; and
- Administering permits for public water system operations.

The standards established by CDPH are found in the California Code of Regulations, Title 22.

v. Senate Bill 610 and Senate Bill 221

Statutes of 1995, Chapters 330 and 854 require local water agencies to assess the reliability of their water supplies. Statutes of 1995, Chapter 881 require consultation with local water agencies to determine if an adequate water supply is available to accommodate pending land use planning decisions. Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) amended State law to better coordinate local water supply and land use decisions and ensure adequate water supply for new development. Both statutes require that detailed information regarding water availability is provided to City and County decision-makers prior to approval of large development projects. Large development projects are defined as those that include 500 residential units or more, or that would increase the number of existing service connections to the public water system by 10 percent.

vi. Urban Water Management Planning Act

Through the Urban Water Management Act of 1983, the California Water Code requires all urban water suppliers within California to prepare and adopt an Urban Water Management Plan (UWMP) and update it every five years. Novato is covered by the 2010 UWMP prepared by the North Marin Water District, which is discussed in section A.1.b, below. The Act is intended to support conservation and efficient use of urban water supplies at the local level. The Act requires that total projected water use be compared to water supply sources over the next 20 years in five year increments, that planning occur for single and multiple dry water years, and that plans include a water recycling analysis that incorporates

[3] California Regional Water Quality Control Board, 2013 *Water Quality Control Plan, San Francisco Bay Basin.*

a description of the wastewater collection and treatment system within the agency's service area along with current and potential recycled water uses.[4]

In November 2009, Senate Bill X7-7 (SB X7-7), the Water Conservation Act of 2009, was adopted. One of the new requirements for completing an UWMP under SB X7-7 is for each urban water supplier to develop a baseline daily per capita water use target for 2020 and an interim water use target for 2015.[5] The purpose of SB X7-7 is to establish requirements for the State of California to reduce its statewide urban per capita water use by 20 percent by the year 2020. The interim water use target set for 2015 is a 10 percent reduction in urban per capita water use. Compliance with both of these water use targets is a requirement for eligibility for State water grants and loans.[6]

vii. Groundwater Management Act

The Groundwater Management Act of the California Water Code (AB 3030) provides guidance for applicable local agencies to develop a voluntary Groundwater Management Plan (GMP) in State-designated groundwater basins. GMPs can allow agencies to raise revenue to pay for measures influencing the management of the basin, including extraction, recharge, conveyance, facilities' maintenance and water quality.[7]

viii. Regulations for Water Use Efficiency

The California Constitution prohibits the waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water. It also declares that the conservation and use of water "shall be exercised with a view to the reasonable and beneficial use thereof in the public interest and for the public welfare." Water Code Section 275 directs the California Department of Water Resources and SWRCB to "take all appropriate proceedings or actions before executive, legislative, or judicial agencies to prevent waste or unreasonable use of water."

ix. California Water Code

The North Marin Water District is a County water district operating under the provisions of Division 12 of the California Water Code.

x. Area of Origin Protections

Area of origin protections were added to the California Water Code to protect local northern California supplies from being depleted by water projects. County of origin statutes reserve water supplies for counties from which the water originates when, in the judgment of the SWRCB, transporting water out of a county would deprive that county of water necessary for its present and future development.

xi. Statewide Bond Measures

In recent years, a number of statewide bond measures have been approved by California voters, establishing funding for a wide range of water-related programs and improvements aimed at protecting the State's critical water resources.

---

[4] Department of Water Resources, Urban Water Management Planning Program's website. http://www.owue.water.ca.gov/urbanplan/index.cfm, accessed November 13, 2013.

[5] North Marin Water District, *2010 Urban Water Management Plan,* page 3-1.

[6] *Ibid.*, page 3-4.

[7] California Department of Water Resources' website, http://www.water.ca.gov/groundwater/gwmanagement/ab_3030.cfm, accessed November 13, 2013.

Important among these are the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Bond Act, passed in 2000. This bond authorized $1.97 billion for water-related projects throughout the State. The SWRCB was authorized to allocate $763.9 million of these funds to local projects, such as pollution control programs for coastal and inland waters, watershed protection programs and pesticide source and mitigation programs, mostly through competitive grants.

Passed in March 2002, Proposition 40, the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act, authorizes over one billion dollars for a broad range of water conservation programs, including land acquisition. Later in 2002, an additional $3 billion in bonds was authorized by the voters as part of the Water Quality, Supply and Safe Drinking Water Projects bond measure. The bond funds are to be directed to a wide variety of water resource programs including the CALFED Bay-Delta Program, safe drinking water programs, and integrated regional water management programs, among others.

In November 2006 voters approved an initiative allowing the State to sell $5.4 billion in bonds for projects related to safe drinking water, water quality and supply, flood control, natural resource protection and park improvements.

b. Local Regulations and Plans

Water and other public utilities in Marin County are under the jurisdiction of the Marin Local Agency Formation Commission (LAFCO). LAFCO develops and updates the sphere of influence (SOI) for local jurisdictions within a county, and therefore is involved in drawing service area boundaries. As part of the SOI determination report, called a Municipal Service Review (MSR), LAFCOs must also examine the adequacy of public services and capacity of public facilities within the SOI. Marin LAFCO produced the most recent Novato MSR on February 22, 2002.

Water service depends on complex systems of water supply, treatment and distribution, which are provided to the City of Novato by the North Marin Water District (NMWD), as shown in Figure 16-1.[8] The Novato Water System serves primarily the City of Novato and surrounding unincorporated areas in Marin County encompassing approximately 75 square miles. The NMWD monitors the Stafford Lake watershed and works cooperatively with significant water users such as City of Novato, Novato Unified School District, the Indian Valley Golf Course and the Marin County Parks and Open Space District.

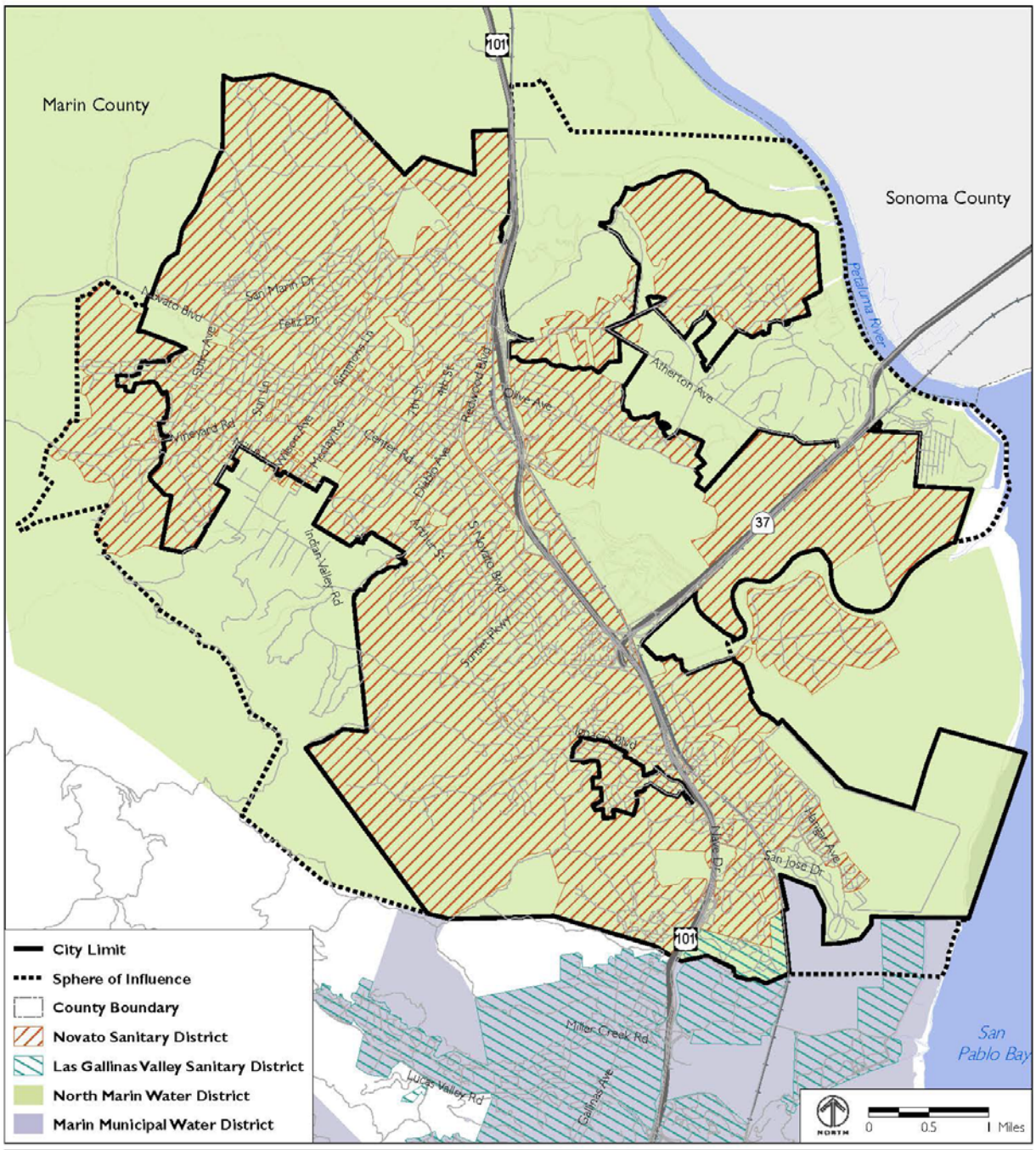
i. Marin County Watershed Management Plan

The Marin County Watershed Management Plan provides recommendations on watershed management practices and policies that protect and restore the natural environment and aesthetics of watersheds in Marin County. The planning corridors studied include inland rural areas, such as the Stafford Lake watershed that is part of the greater Novato Creek watershed, and coastal recreation areas, such as West Marin.

ii. Urban Water Management Plan

The 2010 Urban Water Management Plan revised by the NMWD in June 2011 describes water supply sources, historical and projected water use, and existing water supply and demand within the NMWDNovato service territory. The plan concludes that NMWD has available water to serve future development anticipated under the current 1996 Novato General Plan, presuming future water treatment and transport facilities are completed by the Sonoma County Water Agency.

[8] The Marin Municipal Water District also covers a small portion of Novato's SOI, but this portion is marshland and therefore does not contain any water service customers.



Source: Main County GIS and MarinMap

FIGURE 16-1
WATER DISTRICT AND WASTEWATER SERVICE AREAS

iii. Novato Water System Master Plan

The Novato Water System Master Plan, developed by NMWD in 2002, updated in 2007, and most recently updated in 2012, is a long-range strategic plan that consolidates planning efforts directly related to the water system and develops procedures to regulate and monitor this system. The average annual demand in the Novato water system is expected to increase by approximately 43 percent by year 2035 (buildout projection).[9] Currently, new development in Novato is expected to occur within existing pressure zones and service areas, and therefore will not require new pressure zones or an extension of facilities beyond current boundaries.[10]

The Master Plan also identifies and guides necessary Capital Improvement Plan (CIP) projects for the Novato water system. CIP projects are identified in section 9 of the Master Plan and organized into four categories: Pipeline Replacement and Additions, System Improvements, Storage Tanks and Pump Stations, and Preliminary Project Engineering and Studies. Section 10 of the Master Plan discusses project timelines and completion dates, as well as individual project costs through FY 2035.

iv. Water Conservation Master Plan

Water conservation is a top priority for NMWD. The 2008 Water Conservation Master Plan tiers off the District's 1999, 2002, and 2004 Draft Water Conservation Plans and the 2005 Urban Water Management Plan. The updated 2008 Water Conservation Master Plan (Plan) examines the District's existing Tier One Measures, Tier Two Measures and New Development Standards, and recommends potential water conservation programs to be implemented. Tier One Measures refer to the best management practices recommended by the California Urban Water Conservation Council and approved by NMWD's Board of Directors in 2001. Tier Two Measures are potential conservation programs that reach beyond the Tier One Measures. The Plan also discusses new development standards, necessary funding and staffing for successful program implementation.

The Plan discusses the District's water conservation measures, which are segmented and tailored to four customer types: Residential; Large Landscape; Commercial, Industrial and Institutional; and New Development Standards. The District offers various programs for each customer category, including rebates on water efficient appliances, fixtures and equipment, and free, on-site water use audits. The "Cash for Grass" program is an example of the District's creativity in developing water conservation measures. The "Cash for Grass" program offers residential customers rebates for replacing regularly mowed and irrigated turf with low water use landscaping.

In addition to incentive-based programming, the Plan also describes education-based water conservation measures. The District's educational programming measures include distributing informational newsletters, maintaining the water efficient demonstration garden at the District's administration office, and working with College of Marin and the Marin Municipal Water District to develop the Water Management Technology Education Center.

The Plan also addresses public outreach and conservation marketing. In April 2008, the NMWD hired a consultant to conduct a market penetration study to understand current customer perceptions of water conservation programs. The study gleaned insight into customer perceptions, such as the belief that the bi-monthly water bill was the least expensive domestic utility bill, and therefore saving water to reduce the bill further was not a priority. Customers' perceptions and

[9] North Marin Water District, *2012 Novato Water System Master Plan Update,* page 9-8.

[10] *Ibid.*

the District's water programs were analyzed and used to develop new programming and marketing recommendations. These are presented in the Appendix of the Water Conservation Plan, in the final report titled, "Residential Customer Conservation Focus Groups: A Qualitative Market Research Report".

In the Water Conservation Budget and Funding chapter, the Water Conservation Plan addresses the rising costs of implementing water conservation programs. Future water conservation funding levels were expected to reach a minimum of $500,000 per year to maintain current conservation programs and staffing levels, and to increase conservation activities to meet the water conservation goals of the 2008 Water Conservation Master Plan.[11] The District's water conservation programs saved over 1,014 AF in FY 2011.[12]

In 2010 NMWD entered into a Memorandum of Understanding with Sonoma County Water Agency, the 7 other retail water providers signatory to the Restructured Agreement for Water Supply, and Marin Municipal Water District, to form the Sonoma Marin Saving Water Partnership (SMSWP). The SMSWP's purpose is to identify, recommend, and implement water conservation projects, and regionally to maximize cost effectiveness and the saving of more water than can be done individually. Each of the SMSWP partners have water conservation programs that can assist community members to reduce water use, and each partner has committed to necessary funding for water conservation programs.

v. Climate Protection Management Plan

NMWD supports policies and programs to reduce its effect on greenhouse gas emissions. NMWD is implementing the Climate Protection Management Plan to increase awareness of its dedication to reducing greenhouse gas emissions. The Climate Protection Management Plan continues to facilitate the following actions:

- Use of high efficiency pumps and motors at plants.
- Identification of opportunities to reduce energy use at water facilities.
- Installation of a solar panel system, including a 360kW solar power facility at the Stafford Water Treatment Plant.
- Upsizing of transmission mains to reduce total pumping requirements and energy use.
- Participation in regional Climate Protection Mitigation Management programs with local governments.
- Investigation into becoming 100 percent energy self-sufficient.
- Investigation of impacts of sea level rise by 2050 and 2100 in low-lying areas.
- Planning for floods as a part of emergency response programs at the Stafford Water Treatment Plant and Novato Creek.
- Continued participation in the annual greenhouse gas and carbon footprint inventory management program to achieve reduction goals.
- Inclusion of climate impacts in CEQA documents, as applicable for future system improvement projects.[13]

[11] North Marin Water District, *2008 Water Conservation Master Plan*, page 20.

[12] North Marin Water District, *2012 Novato Water System Master Plan Update,* page E-5.

[13] North Marin Water District, *2012 Novato Water System Master Plan Update,* pages E-4 to E-5.

2. Water Service

Water service and distribution in Novato are provided by the NMWD.

a. Existing Water Supply

Approximately 80 percent of the Novato water supply comes from the Russian River through the NMWD's wholesale water supplier, the Sonoma County Water Agency (SCWA). The remaining 20 percent comes from local runoff into Stafford Lake that is treated at the NMWD Stafford Water Treatment Plant, and a lesser amount of recycled water developed in cooperation with Novato Sanitary District (NSD) and Las Gallinas Valley Sanitary District (LGVSD). Stafford Lake provides about 2,300 acre-feet (AF)[14] or 750 MG per year of Novato's annual water demand.[15]

The City of Novato receives water exclusively from surface water sources. The NMWD supplies the City of Novato with water obtained from three sources: the Russian River, Stafford Lake, and the recycled water facilities (managed under a contract with NSD and LGVSD).

i. Russian River Water

Russian River water supplies are provided to the NMWD by means of the Restructured Agreement for Water Supply with SCWA, which owns and operates water supply, storage and transmission facilities in Sonoma County. Lake Mendocino, located northeast of the City of Ukiah, and Lake Sonoma, located west of Healdsburg, feed into the Russian River. Together, the lakes can store up to 367,500 AF. As of June 2006, NMWD's restructured agreement with SCWA entitles NMWD to a delivery capacity of 19.9 million gallons per day (MGD) and a total delivery of 14,100 AF during any fiscal year.[16] In fiscal year 2011, NMWD received 2,013 MG, or 6,179 AF, of Russian River water.[17]

ii. Stafford Lake Water

Stafford Lake, a local reservoir which captures runoff from an area of 8.3 square miles, is located 4 miles west of downtown Novato. It is impounded by Stafford Dam on Novato Creek. The NMWD operates its Stafford Lake system principally during the summer months to reduce peak water demand on the Russian River system. The surface area of Stafford Lake is 230 acres and it holds 1,450 MG (4,450 AF) of water.[18] Water from the lake is treated at the Stafford Water Treatment Plant, which was completely rehabilitated in 2006 and has a design capacity of 6 MGD.[19] In fiscal year 2011, NMWD delivered 870 MG, or 2,672 AF, of treated water from Stafford Lake.[20]

iii. Recycled Water

Water demand in the City of Novato is greatest during the summer months, when water is used mostly for outdoor irrigation of landscapes. NMWD has a contract with the Novato Sanitary District to provide recycled water to irrigate Stone Tree Golf Course in Novato. This service is provided by the Deer Island Recycled Water Facility, which was completed in 2007, and can treat up to 500,000 gallons of water per day. In 2009 recycled water was extended to Novato Fire Protection District Station No. 2.[21] Approximately 260 AF is available annually to irrigate the Stone Tree Golf

[14] One acre-foot is the amount of water required to cover one acre of ground (43,560 square feet) to a depth of one foot.

[15] North Marin Water District, *2012 Novato Water System Master Plan Update,* page 3-3.

[16] *Ibid.*, page E-3.

[17] I*bid.,* page E-7, Table E-1.

[18] North Marin Water District, *2010 Urban Water Management Plan,* page 4-2.

[19] *Ibid.,* page 2-3.

[20] North Marin Water District, *2012 Novato Water System Master Plan Update,* page E-7, Table E-1.

[21] North Marin Water District, *2010 Urban Water Management Plan,* page 4-9.

Course and any added water customers. In 2007, the Stone Tree Golf Course received 126 AF of recycled water. In FY 2011, 169 AF (55 MG) of recycled water was produced at the Deer Island Recycled Water Facility.[22] In 2010, as part of the North Bay Water Reuse Authority, NMWD joined with NSD and LGVSD to expand recycled water delivery to three distinct service areas (North, Central, and South) within the Greater Novato Service Area. The recycled water supply is being expanded incrementally to approximately 700 AF, and is expected to be completed by 2035.[23]

b. Existing Water Demand

As of June 30, 2011, the estimated Novato Service Area population was 61,000 with approximately 20,467 active service connections serving approximately 23,858 dwelling units.[24] For FY 2011, the average annual water demand in the Novato Water System was 7.9 MGD, while the average day peak month demand was 12.2 MGD. The maximum day demand in the Novato water system was 14.2 MGD. For FY 2011 the total water produced by the two water sources was 2,897 million gallons.[25] Out of the four total pressure zones in Novato, for FY 2011, Zone 1 (0'–60' Elevation) accounted for approximately 46 percent of the total water demand, and Zone 2 (60'-200' Elevation) accounted for approximately 45 percent of the total water demand.[26] In conjunction with the preparation of the 2010 UWMP the NMWD also prepared a 2010 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update, which utilized population and employment projections given by the Association of Bay Area Governments (ABAG) in addition to District input regarding historical and current water service dwelling unit density.[27]

c. Future Estimate of Water Supply Needs

Future water supply needs are estimated based on projections for buildout from the existing 1996 Novato General Plan and from the 2010 UWMP.[28] Based upon known development projects totaling 816 equivalent residential dwelling units (EDU)[29] plus 3,283,347 square feet of potential commercial and institutional (government) floor space, and currently unidentified development projects totaling 2,194 AF in additional residential growth and 1,092 AF in additional commercial and government sector growth, NMWD estimates that at buildout total additional annual demand will be approximately 4,195 AF (average annual demand of 3,744,800 GPD) with 2,551 AF occurring in the residential sector and 1,664 AF in the commercial sector.[30] A majority of this demand – 73 percent – is expected to occur in Zone 1, with over two thirds of that demand occurring in the North Novato area. Approximately 25 percent of the new demand is expected to occur in Zone 2, with over one half of that demand occurring in the San Mateo/Trumbull area. Only 2 percent of the new demand is expected to occur in the higher pressure zones.[31]

With 100 percent of its water supply from surface water, NMWD is susceptible to drought. Water customers in Novato are likely to be affected by any anticipated water shortages, which may result in water use restrictions, drought pricing, and other drought-related inconveniences. SCWA has made projections for water quantity availability for delivery to the

[22] North Marin Water District, *2012 Novato Water System Master Plan Update,* pages E-3 and E-4.

[23] *Ibid.,* page E-4.

[24] *Ibid.,* page 3-1.

[25] *Ibid.,* page 4-5.

[26] *Ibid.,* page E-8.

[27] *Ibid.* page E-8.

[28] *Ibid.,* page E-8.

[29] An equivalent dwelling unit (EDU) is equal to the estimated quantity of water used on an average day of the peak month by an equivalent single-family home. According to NMWD, 1EDU = 636 gallons per day (GPD).

[30] North Marin Water District, *2012 Novato Water System Master Plan Update,* pages 4-9 and 4-14, Table 4-5.

District through 2035, in addition to supply reliability based upon historic conditions during average/normal water years, single dry water years, and multiple dry water years.[32] However, the projected 2015 and subsequent years' water demands are based on a 2010 planning estimate which is not representative of normal water use. Water delivery and use by SCWA and its customers was significantly affected between 2007 and 2010 by a number of factors, including drought conditions, implementation of water shortage response plans, economic recession, and increases in residential and commercial vacancy.[33]

d. Water Quality

NMWD publishes annually Consumer Confidence Reports, also called Water Quality Reports, as required by the Safe Drinking Water Act. According to the May 2013 Novato Annual Water Quality Report, in 2012 Novato's tap water met or exceeded federal and state standards for drinking water.[34] According to the report, potential contaminants have been detected at concentrations low enough so that no further action to maintain safety of the drinking water is necessary. Those potential contaminants and their sources include:

- fluoride from the erosion of natural deposits;
- lead and copper from internal corrosion of household plumbing systems;
- total triahalomethanes and total haloacetic acids as a by-product of drinking water disinfection.

As required by the U.S. EPA, NMWD performed a watershed activities assessment, including Stafford Lake's source of supply, in 2002. This assessment determined that animal feeding and waste disposal at the existing stable and dairy operations on the watershed has the highest potential for contaminating Stafford Lake with microbial contaminants and nutrients. According to Novato's Annual Water Quality Report, NMWD actively coordinates with the stable and dairy owners to control and reduce such potential contaminants. NMWD routinely monitors Stafford Lake source water. The quality of the existing surface water supply sources over the next 25 years is expected to be adequate. Surface water will continue to be treated to drinking water standards, and no water quality deficiencies are anticipated to occur during the next 25 years.[35]

e. North Marin Water District's Existing Water Transmission and Distribution System

Water is treated and transmitted through a system that includes a water treatment plant, pump stations, water mains and pipelines, and reservoirs.

i. Russian River Water Treatment

Russian River water goes through a natural filtration process, including filtration through naturally-deposited sand and gravel, and is then treated with chlorine before being pumped directly into the SCWA aqueduct system.[36] Water is collected and treated through six water collectors located approximately 10 miles upstream from Guerneville. Water is then piped from the Russian River to Petaluma through the SCWA Water Transmission System, then to Novato via the NMWD North Marin Aqueduct, a 9.4-mile pipeline built in 1961.

---

[31] *Ibid.,* page E-11.

[32] North Marin Water District, *2010 Urban Water Management Plan,* page 5-4, Tables 5-4 and 5-5.

[33] *Ibid.,* page 3-12.

[34] North Marin Water District, *2012 Annual Water Quality Report – Novato Edition,* published May 2013.

[35] North Marin Water District, *2010 Urban Water Management Plan,* page 5-5.

[36] North Marin water District, *2012 Novato Water System Master Plan Update,* page 3-5.

ii. Stafford Lake and Water Treatment Plant

As discussed above, Novato is served by one local reservoir, Stafford Lake. Stafford Lake water is treated at the Stafford Water Treatment Plant, which was improved in 2006. The treatment plant is located just below Stafford Lake and Stafford Dam, in the Novato Creek watershed. The Plant can process a maximum of 6 MG of water each day. In FY 2011, the Plant processed a total of 870 MG (2,672 AF) of water for distribution by NMWD.[37]

iii. Water Distribution and Transmission

NMWD manages approximately 37 MG of treated water in four distinct pressure zones, through 31 storage tanks and 26 booster pump stations. As of June 30, 2011, the distribution system totals approximately 307 miles of pipeline.[38]

The two primary transmission mains owned and operated by NMWD are the North Marin Aqueduct, a 30-inch diameter main through which water flows from the SCWA aqueduct system into Novato, and an 18-inch pipeline connecting to the Stafford Water Treatment Plant. Transmission mains generally run north to south across Pressure Zone 1, and larger pipelines are typically made of steel or steel cylinder/reinforced concrete.[39] The distribution system is comprised mostly of 6-, 8-, 10- and 12-inch diameter pipelines connected to the transmission mains. In the older sections of Novato, pipelines were constructed over 60 years ago and are cast iron. During the 1950s, the District began using asbestos cement pipes. PVC pipes have been installed since 1992.[40]

f. Water Reuse and Conservation Measures

A Conservation Incentive Rate (CIR) was implemented in March 2004, focusing on reducing high-end residential water use by targeting a certain tier of residential customers – those who use over three times that of a normal customer during summer month billing periods (over 1,845 gallons per day, or over 112,200 gallons per billing period). The additional rate of $4.01 per 1,000 gallons is intended to alert customers who use a substantial amount of water to reduce consumption. Results from the implementation of the CIR show a reduction in the number of customers affected by the CIR from 525 customers in 2004 to 374 customers in 2007; a 29 percent reduction in customers affected and a 42 percent reduction in water use (20 MG).[41]

In 2006, the NMWD implemented a middle tier rate, called the Conservation Incentive Tier Rate (CITR), which applies an additional surcharge of $1.34 per 1,000 gallons of water used in excess of the 615 gallons per dwelling unit per day. Results from the implementation of the CITR show a reduction in the number of customers affected by the CITR from 6,732 customers in 2004 to 5,535 customers in 2007; an 18 percent reduction in customers affected and a 29 percent reduction in water use (100 MG).[42]

NMWD's Water Conservation Program focuses on improving the efficiency of water usage for residential, commercial and landscape areas. This Water Conservation Program includes Best Management Practices (BMPs) from the Califor-

[37] *Ibid.,* page E-7.

[38] *Ibid.,* page E-6.

[39] *Ibid.,* page E-6.

[40] *Ibid.,* page E-6.

[41] North Marin Water District, *2008 Water Conservation Master Plan,* pages 3 and 10.

[42] *Ibid.* pages 4 and 10.

nia Urban Water Conservation Council (CUWCC). In FY 2011, the District saved approximately 1,014 AF (330 MG) of water through this program.[43]

In addition to the Water Conservation Program, NMWD has stringent water use standards for new development, including the following standards:[44]

- Installation of high-efficiency washing machines.
- Installation of high-efficiency toilets (HETs), which use one gallon per flush or use a dual flush system.
- Use of weather-based irrigation controllers.
- Restriction of turf for residential development to 800 square feet, and prohibition of turf for commercial development.
- Use of drip or other subsurface irrigation for all irrigated non-turf areas.

Focused residential incentive activities include water use surveys; rebates for the installation of high-efficiency washing machines, ultra low flush and high-efficiency toilets, and weather-based irrigation controllers; conservation incentive rates; the Cash for Grass program (turf removal rebate); and a plumbing retrofit on resale program.[45]

For the Water Conservation Master Plan, NMWD classifies its water conservation measures into Tier One Measures (BMPs from the CUWCC), Tier Two Measures (programs beyond the BMPs) and New Development Standards (ND). According to the 2008 Water Conservation Master Plan, the District produced significantly higher savings than expected for Tier One Measures. From the program's inception through 2008, Tier One Measures produced 476 AF in savings per year while the District's 2030 Conservation Savings Target was 294 AF per year. NMWD also aggressively implemented the Tier Two Measures and New Development Standards before their projected start dates. As a result, NMWD found early conservation savings results.[46]

Based on these Tier 1, Tier 2, and ND measures, it is anticipated that a conservation savings of 1,922 AF per year by 2035 can be achieved. Also included in the conservation savings are savings resulting from Cal Green building codes mandated by the State of California for all new development after January 1, 2011.[47]

[43] North Marin Water District, *2012 Novato Water System Master Plan Update,* page 3-8.

[44] *Ibid.,* page 3-9.

[45] *Ibid.* page 3-8.

[46] North Marin Water District, *2008 Water Conservation Master Plan,* page 6.

[47] North Marin Water District, *2010 Urban Water Management Plan,* page 3-13.

B. Wastewater

The following describes regulations and existing conditions with regard to wastewater services in the City of Novato.

1. Regulatory Framework

In California, all wastewater treatment and disposal systems fall under the overall regulatory authority of the State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (RWQCBs). Each are charged with the responsibility of protecting beneficial uses of State waters (ground and surface) from a variety of waste discharges, including wastewater from individual and municipal systems.

The RWQCBs regulatory role involves the formation and implementation of basic water protection policies. These are reflected in the RWQCBs Basin Plan in the form of guidelines, criteria and/or prohibitions related to the siting, design, construction and maintenance of on-site sewage disposal systems. The SWRCB has historically provided overall policy direction, organizational and technical assistance, and a communications link to the State legislature.

a. Federal and State Regulations

Following are several federal and State regulations affecting wastewater management and systems in Novato:

i. Biosolids Disposal Requirements

The Code of Federal Regulations, Title 40, Part 503 regulates the treatment, reuse and disposal of biosolids that are sent to a Dedicated Land Disposal (DLD) site. Some of the biosolids produced in Novato are sent to a DLD.

b. Local Regulations and Plans

The Novato Sanitary District (NSD) is the primary wastewater service provider for the City of Novato and its environs. A portion of the Sphere of Influence south of Novato is served by the Las Galinas Valley Sanitary District, which primarily serves Las Galinas Valley between San Rafael and Novato. Figure 16-1, presented in section A.1.b of this chapter, shows both sanitary districts' boundaries. The Novato Sanitary District Strategic Plan completed in 2001 and revised in 2012,[48]addressed the capital needs of the wastewater collection, pumping, treatment, and recycling facilities through 2025. Novato Sanitary District completed a Wastewater Treatment Facilities Master Plan in 2004 which provided a detailed update of the planning for upgrading the wastewater treatment facilities. In 2004 the North Marin Water District and NSD adopted a Recycled Water Master Plan. A Recycled Water Implementation Plan was completed jointly between NMWD and NSD in 2006.[49] A Wastewater Collection System Master Plan was completed in 2008 and updated in 2012, incorporating the Sewer System Management Plan Capacity Assessment and Criticality Assessment.[50]

i. Wastewater Facilities Master Plan, 2004

The 2004 Novato Wastewater Facilities Master Plan assesses the management, condition and capacity of wastewater treatment facilities in Novato and recommends alternatives for future development of such facilities.

[48] Novato Sanitary District website, http://www.novatosan.com/assets/uploads/documents/planning-and-facilities/NSD.Strategic%20Plan_FINAL.12.9-1.pdf, accessed December 10, 2013.

[49] North Marin Water District/Novato Sanitary District, *2006 Recycled Water Implementation Plan.*

[50] Novato Sanitary District, *2012 Wastewater Collection System Master Plan Update.*

2. Existing Wastewater Collection and Treatment System

The Novato Sanitary District's wastewater flows, treatment system capacity upgrade, treatment operations, wastewater collection system upgrade and ongoing system improvements are described below:

a. Historic Wastewater Flows

Until March 2008, NSD owned and operated two wastewater treatment plants that discharged into a common outfall. The Novato Treatment Plant (NTP) provided service to the northern two-thirds of the service area and the Ignacio Treatment Plant (ITP) provided treatment to the remaining southern portion of the service area. After March 2008, the ITP was operated as a pre-treatment plant only. All of the flows from the ITP were pumped to the NTP for further treatment and discharge or recycling. The total permitted capacity for the wastewater treatment system (both plants) was 5.2 million gallons per day (MGD).[51] The treatment plant had an average dry weather flow (ADWF) of 4.53 MGD. The average wet weather flow (AWWF) was 8.1 MGD and during significant storms, peak daily flows were over 23 MGD.

b. Treatment System Capacity Upgrade

NSD completed the Novato Treatment Plant Improvement Project in 2010. The new wastewater treatment facility was constructed at the former site of the Novato Treatment Plant and combines flows with the former Ignacio Treatment Plant. The total permitted capacity for the new treatment facility is 7.0 MGD. [52]A new transfer pump station and equalization basins with a capacity of 2.5 MGD replace the Ignacio Treatment Plant. A force main pipeline was constructed to convey wastewater between the Ignacio Pump Station and the Novato Treatment Plant.[53] The treatment plant has an ADWF capacity of 7.0 MGD, an AWWF capacity of 10.3 MGD, and a Peak Three-Hour Flow capacity of 52 MGD. In addition, NSD completed a new recycled water treatment facility in 2012 with a treatment capacity of 0.5 MGD.[54] The water recycling plant treats 150 million gallons of wastewater annually to tertiary (higher quality) standards for discharge to landscapes, augmenting fresh water supplies.[55]

c. Collection System Upgrade

The Collection System consists of 225 miles of sewer lines ranging in size from 4-inches to 54-inches in diameter, and 40 pump stations.[56] The system includes approximately 6,000 manholes and other structures. The program for a major upgrade of the collection system is ongoing. NSD has continued to invest up to $5 million each year in upgrades and

[51] State Water Resources Control Board website, http://www.waterboards.ca.gov/board_info/agendas/2007/april/0418_5.pdf, accessed November 14, 2013.

[52] Novato Sanitary District Wastewater Facilities Upgrade website, http://www.docstoc.com/docs/83574081/Novato-Sanitary-District-Wastewater-Facilities-Upgrade, accessed November 14, 2013.

[53] Novato Sanitary District Wastewater Facilities Upgrade website http://www.covellogroup.com/NSD-WWFacilityUpgrade%E2%80%93TPImprovements, accessed November 14, 2013.

[54] Novato Sanitary District Wastewater Facilities Upgrade website http://www.docstoc.com/docs/83574081/Novato-Sanitary-District-Wastewater-Facilities-Upgrade, accessed November 14, 2013.

[55] Novato Sanitary District Newsletter website http://www.novatosan.com/assets/uploads/documents/newsletters/Novato%20news%20web%209_13_12.pdf, accessed November 14, 2013.

[56] Novato Sanitary District Sewer System Management Plan (SSMP) website at http://www.novatosan.com/assets/uploads/documents/planning-and-facilities/Final_SSMP.pdf, accessed November 14, 2013.

maintenance to the collection system. NSD is targeting capacity bottlenecks in the collection system, replacing aging pump equipment, and repairing pipes in poor condition.[57]

d. Treatment Operations

The upgraded Novato Treatment Plant provides secondary treatment for 47 MGD wet weather flow.[58] There is no blending of flows at this facility. During the period of September 1 to May 31, the Novato Treatment Plant can discharge treated wastewater through an outfall and multiport diffuser to San Pablo Bay adjacent to Hamilton Air Force Base. Wastewater discharged into San Pablo Bay must go through secondary treatment, nitrification, filtration, and disinfection. Nitrification converts ammonia, which is toxic to aquatic species, into a non-toxic nitrate. Between June 1 and August 31, wastewater is discharged into effluent storage ponds where it is reclaimed for 820 acres of pastureland irrigation. Treatment and disinfection are needed prior to discharge into storage ponds. Because of the stricter requirements for wastewater discharge into San Pablo Bay, NSD often extends its reclamation and irrigation operations into five or more months of the year.[59]

Novato Sanitary District effluent from the Novato Wastewater Treatment Plant is also provided to the North Marin Water District after undergoing further tertiary treatment at the new Recycled Water Treatment Plant, which provides further filtration and disinfection before conveyance to the Stonetree Golf Course for irrigation.[60]

e. Biosolids Handling

Biosolids from the treatment plant are dried in six sludge holding ponds – two primary and four secondary ponds – for approximately one year, then transferred to a 15.7-acre Dedicated Land Disposal (DLD) site.[61]

f. Wastewater Quality

Wastewater quality in Novato is regulated by the NSDs NPDES permit #CA0037958, which is obtained from the RWQCB. This five-year permit was most recently renewed in 2010, and must be renewed again after 2014. The NPDES permit regulates wastewater discharge into San Pablo Bay from the Novato Treatment Plant.[62] During the irrigation season the recycled water is regulated by RWQCB Order 92-065.[63]

---

[57] Novato Sanitary District Newsletter website http://www.novatosan.com/assets/uploads/documents/newsletters/11-3-10-Novato-news3_10_11FINAL.pdf, accessed November 14, 2013.

[58] California Regional Water Quality Control Board Order No. R2-2010-0074 at http://www.waterboards.ca.gov/rwqcb2/board_decisions/adopted_orders/2010/R2-2010-0074.pdf, accessed December 10, 2013.

[59] California Regional Water Quality Control Board Order No. R2-2010-0074 at http://www.waterboards.ca.gov/rwqcb2/board_decisions/adopted_orders/2010/R2-2010-0074.pdf, accessed November 20, 2013.

[60] *Ibid.*

[61] Novato Sanitary District, 2004, *2004 Wastewater Facilities Plan, Executive Summary,* page 7.

[62] California Regional Water Quality Control Board Order No. R2-2010-0074 NPDES No. CA0037958 at http://www.waterboards.ca.gov/rwqcb2/board_decisions/adopted_orders/2010/R2-2010-0074.pdf, accessed November 20, 2013.

[63] California regional water Quality Control Board Order No. 92-065 at http://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/1992/R2-1992-0065.pdf, accessed on November 20, 2013.

g. Completed Wastewater System Improvements

Based on technical engineering studies of the former wastewater system, Novato Sanitary District determined that it needed to:

- Replace equipment built in the 1950s and 1960s.
- Replace equipment built in the 1980s.
- Upgrade treatment processes to meet current water quality requirements, including the addition of activated sludge treatment, tertiary recycled water treatment, and ultraviolet disinfection.
- Add backup equipment for facilities, including equalization basins at the Ignacio Pump Station.
- Improve operational efficiency by reducing electrical power usage. The treatment plant is expected to reduce greenhouse gas emissions by 14percent.[64]
- Increase usage of methane gas (from treatment process) as an electrical power generator. The treatment plant is expected to self-generate 40percent of its electricity from biomass.[65]
- Add capacity to meet needs called for in the City and County General Plans.

These needs were addressed during the upgrade of the Novato Treatment Plant. The project was completed in 2010.

h. Ongoing System Improvements

Major upgrades to the collection system have resulted in a 96 percent reduction in sanitary sewer overflows since 2008.[66] An increase in capacity of the Novato Treatment Plant has also contributed to a reduction in overflows from inflow and infiltration (I & I) of stormwater. NSD is now in the process of repairing and upgrading private sewer lines (laterals) that run from homes and buildings to the public sewer main in the street. The expanded collection system and treatment plant is expected to accommodate inflows from damaged laterals until about 2025. [67]

[64] Novato Sanitary District Newsletter at http://www.novatosan.com/assets/uploads/documents/newsletters/Novato_news_3_16_10FINAL.pdf, accessed November 20, 2013.

[65] *Ibid.*

[66] Novato Sanitary District Newsletter at http://www.novatosan.com/assets/uploads/documents/newsletters/Novato%20web%20news%209_13_13.pdf, accessed November 20, 2013.

[67] Novato Sanitary District Newsletter at http://www.novatosan.com/assets/uploads/documents/newsletters/11-3-10-Novato-news3_10_11FINAL.pdf, accessed November 20, 2013.

C. Stormwater

The following describes regulations and existing conditions with regard to stormwater services in the City of Novato.

1. Regulatory Framework

Several federal, State and local regulations pertain to stormwater service in Novato.

a. Federal Clean Water Act and National Pollutant Discharge Elimination System

The 1987 amendments to the Federal Clean Water Act [Section 402(p)] provided for U.S. EPA regulation of several new categories of nonpoint pollution sources within the existing National Pollutant Discharge Elimination System (NPDES) Program. The SWRCB is responsible for issuing NPDES permits to cities and counties through the RWQCBs. Phase 2 implementation of NPDES permitting, effective March 10, 2003, extended urban runoff discharge permitting to cities of 50,000 to 100,000 people, and to construction sites which disturb between 1 and 5 acres. Under Phase 2, federal regulations allow two permitting options for stormwater discharges: individual permits and general permits. The California SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ, the first term Phase 2 permit) for Small Municipal Separate Storm Sewer System (MS4s) operators to efficiently regulate stormwater discharges under a single permit. Permitees were required to develop and implement a Stormwater Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The City of Novato is considered a permitee under the statewide general permit.

The first term Phase 2 permit expired in 2008 and was administratively extended until a revised Phase 2 permit was adopted by the State Water Resources Control Board. The second term Phase 2 permit (Order No. 2013-0001-DWQ) was adopted in February 2013 and became effective July 1, 2013.[68] Under Phase 2 requirements, Marin County must obtain an NPDES permit for storm water discharge. The Marin County Stormwater Pollution Prevention Program (MCSTOPPP), under the auspices of the Marin County Flood Control and Water Conservation District (MCFCWCD), submitted a county-wide Stormwater Management Plan (SWMP) to the RWQCB, which secured the Small MS4 permit in March 2004. Under the direction of the SWMP, Marin County and each of the eleven cities and towns within the county operate their own individual Stormwater Pollution Prevention Programs (SPPPs).

b. Local Regulations and Plans

Action Plan 2010 serves as a five-year stormwater management plan for the member agencies of the Marin County Stormwater Pollution Prevention Program (MCSTOPPP). The County of Marin and each of the cities and towns in the County are member agencies of MCSTOPPP, including the City of Novato. The goal of MCSTOPPP is to prevent stormwater pollution, protect and enhance water quality in creeks and wetlands, preserve beneficial uses in waterways and comply with State and federal regulations. MCSTOPPP coordinates consistency between individual stormwater management plans. *Action Plan 2010* was submitted to and approved by the State Water Resource Control Board in May 2005. MCSTOPPP is in the process of updating the 2010 Action Plan, and expects completion by March 2014.[69]

---

[68] Marin County Stormwater Pollution Prevention Program 2012-2013 Annual Report at http://www.marincounty.org/depts/pw/divisions/mcstoppp/about-mcstoppp/~/media/Files/Departments/PW/mcstoppp/Annual%20Report/2012_2013/MCSTOPPP1213_AR_ReportOnly.pdf, accessed on November 20, 2013.

[69] Fashing, Terri. Stormwater Program Administrator, Marin County Stormwater Pollution Prevention Program, email dated November 20, 2013.

2. Existing Stormwater System

The Marin County Flood Control and Water Conservation District maintains and operates the stormwater system in Novato. The City of Novato's NPDES Storm Water Program prevents illicit discharges into drains, waterways and wetlands. Each year, the program is responsible for inspecting, cleaning and restoring 2,900 catch basins, 230,000 linear feet of public storm pipe and over 200 creek pipe outfalls. Additionally, the program runs a street sweeping service that reduces pollutants and removes trash before entering the drainage system. The street sweeping service removes 2,000 to 4,000 cubic yards of debris each year.[70]

The City of Novato is located in Flood Control Zone No. 1 of the District. Zone No. 1 also includes a large portion of unincorporated land surrounding Novato. [71]

a. Drainage System

The District maintains four stormwater pump stations and performs regular maintenance on portions of Novato Creek, a perennial stream that extends approximately 17 miles from San Pablo Bay to Stafford Lake, and its tributaries, Warner Creek and Arroyo Avichi.[72]

b. Transport System

The City of Novato has two stormwater pump stations located at Hamilton Field. These pump stations collect water that flows down the hills. Stormwater is then pumped over the levy and into San Pablo Bay.

3. Future System Improvements

In addition to regular maintenance performed by the District, in accordance with the City of Novato's CIP, work continues on the Storm Drainage Master Plan in conjunction with current NPDES requirements to provide monitoring of flows through the City's network of storm drains, fulfill the outfall monitoring task required by the Clean Storm Water Program (MCSTOPPP), and Best Management Practices.[73] The CIP also includes two additional projects that propose to either study or implement storm water improvements. CIP project 97-001, Olive Avenue Improvements Phase 3, is in the preliminary design stage. CIP project 14-003, Corporation Yard Phase 2, is in the planning stage for clean storm water improvements anticipated to be mandated by new NPDES regulations at the Corp Yard.[74]

[70] City of Novato NPDES Stormwater Program website, http://www.cityofnovato.org/Index.aspx?page=401, accessed December 10, 2013.

[71] Marin County Watershed Program website, http://www.marinwatersheds.org/flood_control_zones.html, accessed December 10, 2013.

[72] County of Marin Flood Control and Water Conservation District's website, http://www.co.marin.ca.us/depts/pw/main/floodcontrol/fczone1.cfm, accessed November 20, 2013.

[73] City of Novato Capital Improvement Program adopted June 22, 2010, *Transportation, Drainage and Utilities, Project No. 98-008,* page E-33.

[74] Skinner, Julian, Public Works Department, City of Novato. Personal communication with Pamela Neronha, City of Novato, December 13, 2013.