Existing Conditions Report

Chapter 5. Infrastructure

5.1 Introduction

Efficient and flexible infrastructure is critical to supporting planned growth and ensuring that existing homes and businesses have utility services. This chapter summarizes baseline conditions of existing utilities, including water supply and distribution, called wastewater (sewage) treatment, recycled water, storm drainage, and so-called "dry" utilities. This information will provide the basis for recommendations and strategies to ensure that basic services are considered with other strategic infrastructure improvements and area wide benefits associated with development.

This chapter includes the following sections:

- Introduction (Section 5.1)
- Findings (Section 5.2)
- Water Supply and Distribution (Section 5.3)
- Wastewater Collection and Treatment (Section 5.4)
- Stormwater Drainage and Water Quality (Section 5.5)
- Dry Utilities (Section 5.6)

5.2 Findings

Water Supply and Distribution

1. The City's Public Works Department provides water service to approximately 30,000 people through 9,000 service connections throughout the city. The majority of the water supply is provided by the San Francisco Public Utilities Commission. Under the guidance of the Water Master Plan,18 of the highest priority capital improvement projects have been completed, and funds are dedicated each year for additional improvements.

Wastewater Collection and Treatment

1. The City owns, operates and maintains local sanitary sewer collection facilities and the local Burlingame Wastewater Treatment Plant, which has a treatment capacity of 13 million gallons per day.

2. The Sewer System Master Plan completed in 2010 identifies capital improvements projects within the wastewater system. The 5 Year high-priority projects were all related to capacity improvement. As of 2015, 100% of the high priority projects have been completed. The 10 year medium-priority projects were divided into 10 year capacity improvement projects and 10 year basin-wide collection system rehabilitation projects. 85% of the medium-priority capacity

improvement projects will be completed by 2016. The basin-wide collection system improvements are scheduled to start in 2016 and are anticipated to be completed by 2025. This work would significantly improve the existing sanitary sewer system.

3. The Waste Water Treatment Plant (WWTP) was constructed in 1938 and there have been numerous upgrades in recent years. The most recent upgrades include 1994 WWTP improvements ($10 million), 2006 WWTP Improvements ($15 million), and 2011 Retention Basin project ($8 million). The WWTP is anticipated to require continuous upgrades with an average cost of $1 million per year to meet future regulatory requirements. The WWTP effluent is discharged up to a maximum rate of 16 mgd to the San Francisco Bay via the North Bayside System Unit (NBSU) outfall, a jointly-owned outfall pipe shared by the cities of Burlingame, San Bruno, South San Francisco, Millbrae, Colma, and the San Francisco Airport. Currently the City is conducting a WWTP master plan study to address potential regulatory restriction on nutrient removal as well as plant improvement. The study is estimated to be complete at the end of 2015 and a list of recommended capital improvement projects will be developed.

Stormwater Drainage and Water Quality

1. Given Burlingame's highly urbanized condition, impervious surfaces are predominate, which requires a well-developed storm drain system. The 2008 *Storm Drain Improvements Report* highlights plans for high priority storm drain projects. Approximately over 40% of identified projects have been completed, with remaining projects to be completed within ten years. The City concurrently is implementing neighborhood storm drain improvements to improve local drainage and flooding conditions.

Dry Utilities

1. Gas and electricity services are provided by the Pacific Gas and Electric Company (PG&E). The existing electricity supply system consists of overhead and underground facilities.

5.3 Water Supply and Distribution

Burlingame's Public Works Department operates the water distribution system, providing water service to approximately 30,000 people through 9,000 service connections (see Figure 5-1). The majority of the water supply is provided by the San Francisco Public Utilities Commission (SFPUC) via the Hetch-Hetchy reservoir. The City is represented in wholesale transactions with SFPUC by the Bay Area Water Supply and Conservation Agency (BAWSCA). Burlingame has a water supply assurance agreement to receive an allotment of 5.23 million gallons per day (mgd) on an annual average. Prior to the drought (2013), Burlingame used approximately 3.0-5.5 mgd; as of July 2015, that level was down to approximately 2.4-4.6 mgd due to voluntary water conservation

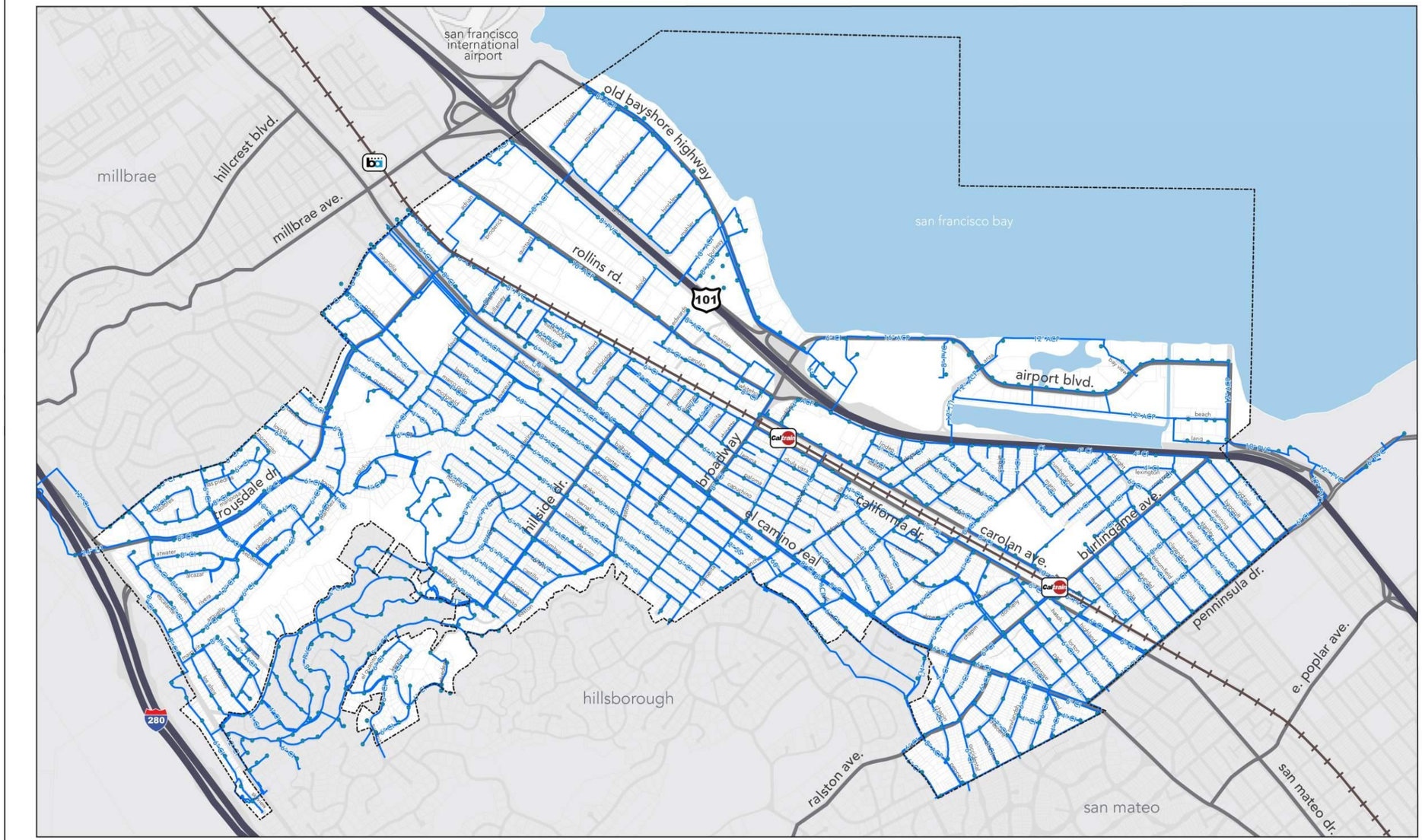
measures. Based upon the 2011, UWMP, which was prepared during pre-drought conditions, the city is projected to use 5.22 mgd by 2034/35, assuming a population equivalent increase of 18% (accounting for both residential and nonresidential users). Over half of the water used is by a combination of residential single-family (43%) and multi-family properties (18%) (2010 Urban Water Management Plan).

The approximately 9,000 potable water system connections extend within the city limits and to the unincorporated Burlingame Hills area. The distribution system consists of six turn-outs and buried pipes of varying compositions, ages and sizes. Water mains range in size from four to 24 inches. According to the City of Burlingame 2010 Urban Water Management Plan (UWMP) adopted in 2011, the system can store approximately 2.94 million gallons in seven water storage tanks at five sites. The 2015 Urban Water Management Plan is being prepared and is expected to be available by mid-year 2016. The City's water system also connects to additional water storage facilities in the cities of Hillsborough and Millbrae in case of a water supply emergency.

In 2004, the Water System Master Plan was developed to identify deficiencies within the water system and prioritize improvement projects to ensure the long-term integrity of the water system. The study identified low-pressure regions for fire flows, supply and reservoir capacity and water lines requiring replacement. Since 2004, 11 technical memorandums to the original Master Plan were added, with the latest dated January 2010. The memorandums address alternative water supplies, groundwater expansion, drought responses, recycled water expansion and identification of capital improvement program (CIP) projects and priorities. Memorandum Number 11 (January 2010) identifies additional CIP projects to be completed within a 30-year time frame. Due to the aging water system, long-term projections for completion of the improvements and annual upkeep and replacement of the system are constant necessities. Since 2004, 18 of the highest priority capital improvement projects have been completed, along with a routine and on-going water line replacement program.

In January 2014, Governor Brown proclaimed a state of emergency due to extreme drought conditions throughout California. The governor requested that residents and water providers voluntarily reduce their water consumption by 20%. In April 2014, with water usage in some parts of the state increasing despite the request, the governor issued an executive order to speed up conservation actions and asked residents and water agencies to redouble their efforts to conserve water. A year later, with conservation efforts in some regions of the state still lacking, the governor issued a 25% mandatory water restriction. This order translates to restrictions ranging from four percent to 36% depending on each jurisdiction's previous conservation efforts. In Burlingame, the mandatory water restriction is 16% due to the City's previously implemented progressive conservation efforts.

Figure 5-1 Citywide Water System (2015)



5.4 Wastewater Collection and Treatment

The City of Burlingame owns, operates and maintains the local sanitary sewer collection facilities, which encompass approximately six square miles and serve 9,000 customers (see Figure 5-2). The sanitary sewer system consists of approximately 100 miles of gravity sewers, seven pump stations and 15,800 linear feet of force mains. Sewer pipe diameter ranges from six to 51 inches; the 3.6 miles of force mains range in diameter from eight to 30 inches. The city also provides wastewater treatment for the neighboring town of Hillsborough.

Wastewater generated within the system is treated at the Burlingame Wastewater Treatment Plant (WWTP), which has a secondary treatment capacity of 15 mgd. The Burlingame WWTP underwent a number of upgrades in 1994, 2006 and 2011. Today it has an average dry weather design capacity of 5.5 mgd. Current average dry weather flows are approximately 3 mgd. This flow rate has remained relatively constant for the past three years. During wet weather, the Burlingame WWTP must accept higher flows because of wet ground conditions that produce an infiltration of groundwater into the sanitary sewer collection system. The WWTP has experienced wet weather flows as much as 25 mgd in the past which exceeds WWTP's secondary treatment capacity of 15.0 mgd. During such events, the additional sewer flow is discharged into the Bay.

Treated effluent from the plant is transported by intertie pipeline by way of the cities of Millbrae and San Bruno to the regional outfall into San Francisco Bay (located off Point San Bruno near South San Francisco). Burlingame's capacity rights to the outfall system are for a maximum instantaneous flow of 16 mgd.

In August 2008, the San Francisco Baykeeper filed a lawsuit against the City because of its high sanitary sewer spill rate and reliance on an unpermitted shallow water discharge point (nearshore outfall) during wet weather. As a result, the City has agreed to stop using the nearshore outfall except during rainfall events greater than a ten-year, 24-hour storm. In addition, as part of the Consent Decree (settlement), the City developed a Wastewater Collection System Master Plan in 2010 to evaluate the system and focus on three major issues:

1. Eliminate capacity-related sanitary sewer overflows during rain events less than the Consent Decree design storm (ten-year event)

2. Eliminate discharges to the unpermitted nearshore outfall during rain events less than the Consent Decree design storm

3. Minimize blending events at the WWTP

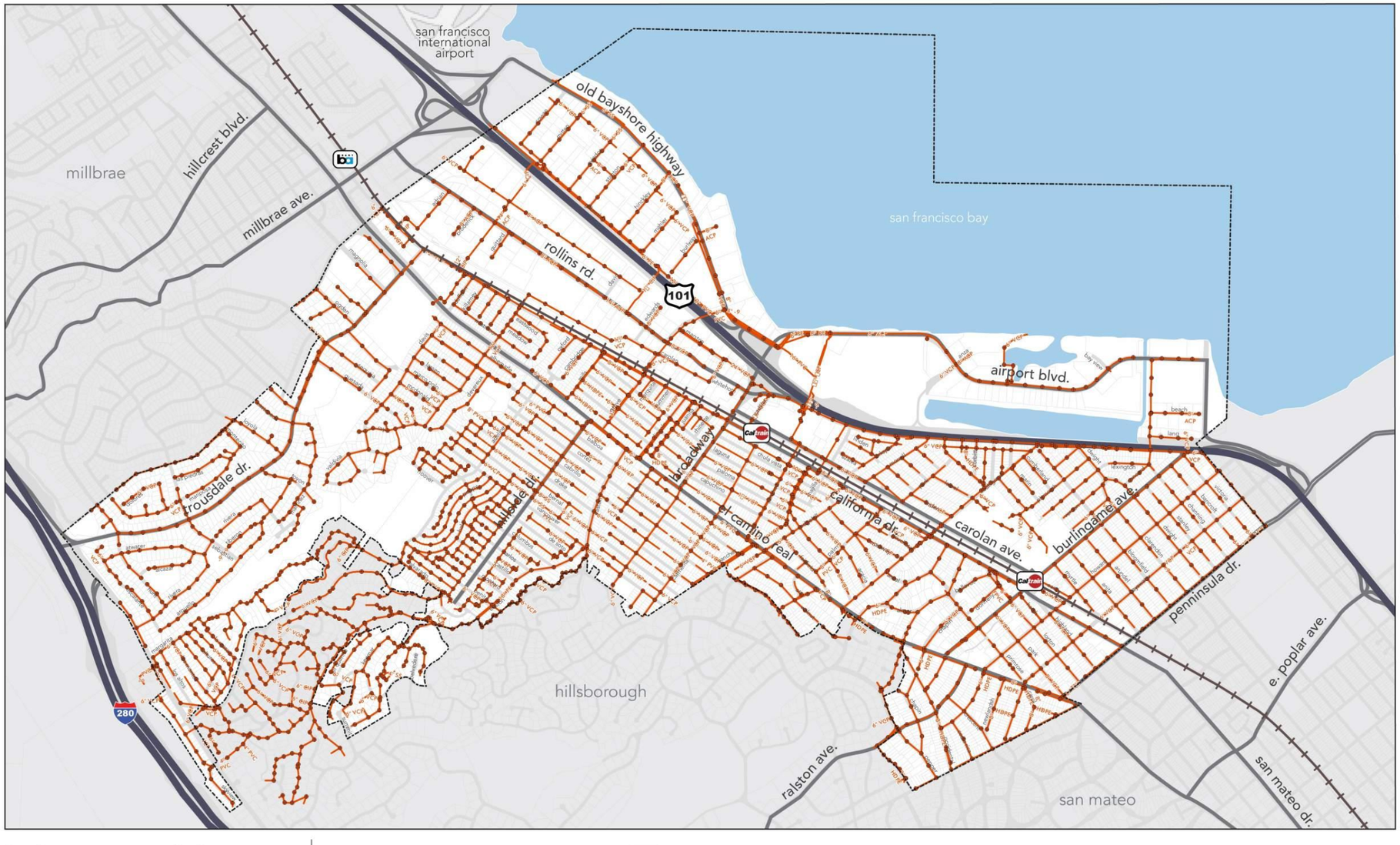
The study identified improvements to provide adequate hydraulic capacity and reduce rainfall dependent inflow and infiltration into the system. The results were delineated into high-, medium- and low-priority projects with five-, ten-, and beyond ten year horizons. The five year high-priority projects consist of five locations to eliminate immediate capacity deficiency. The ten year medium-priority projects are divided into

two categories. The first category is for capacity improvement which includes 11 locations of mains and two pump station habilitations. The second category is for basin-wide collection system rehabilitation to reduce inflow and infiltration. As a result, the discharges to the nearshore outfall are greatly reduced. The basin-wide rehabilitation includes nine City basins and seven basins within the County and Hillsborough. The beyond 10 year low-priority projects include further capacity improvement at five locations. The total estimate cost of the entire sewer rehabilitation is about 70 million dollars.

So far the City has completed all the high priority projects. The City has also completed six of the medium-priority capacity improvement projects. The City is currently working on to finish all the medium-priority capacity improvement projects; the City is also starting to working on basin-wide rehabilitation in 2016. It is estimated that all the basin-wide collection system rehabilitation will be completed by 2025.

Critically, the Sewer Master Plan did not account for any significant growth within the city, as it focused on identifying solutions to improve existing conditions and increase capacity of the system to reduce spills and overflows. Thus, additional analysis of the sewer system or updates to the 2010 Sewer Master Plan may be required to handle long-term growth projections or any significant land use changes that may result through the General Plan update process.

Figure 5-2 Citywide Sewer System (2015)



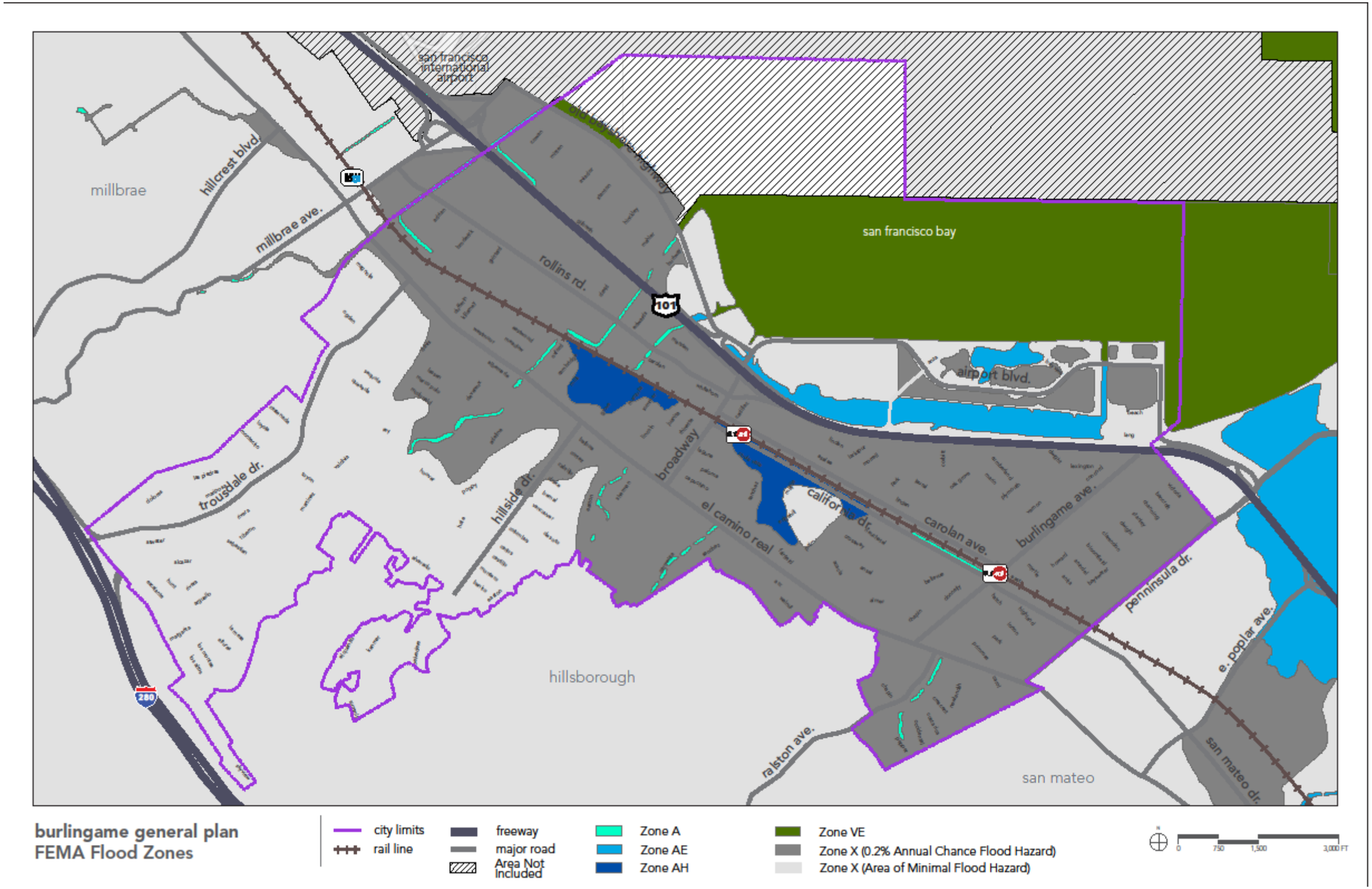
5.5 Storm Water Drainage and Water Quality

Burlingame's storm drainage infrastructure was constructed 85-100 years ago and consists of natural streams, open ditches and subsurface drainage pipes. The city is considered "built out," with a high impervious surface condition. Storm drain lines vary from eight inches to 90 inches in diameter, and the infrastructure also includes a series of pump stations near the shoreline or other low-lying areas. According to the Flood Zone determination, the City is located primarily within Zone X 0.2 PCT Annual Chance Flood Hazard (500-year storm event) and partially within Zone X Area of Minimal Flood Hazard. Parts of the City are also within Zone A, Zone AE, Zone AH and Zone VE which require mandatory flood insurance. Figure 5-3 shows the existing Flood Zones for the City of Burlingame.

The city is divided into five watersheds: Easton, Burlingame/Talston, Sanchez/Terrace, Mills and El Portal/Trousdale, as shown in Figure 5-4. The 2008 Storm Drain Improvements Report highlights high priority projects and serves as the guiding document for capital improvements to the storm drain system. Residents approved an annual storm drainage fee in 2009 to fund a 30-year, $39-million storm drain Capital Improvement Program. The program is divided into three or four bonds with 20-year timelines that will end in 2039. The program is specifically designed to help increase storm drainage capacity, replace aging pipes and pumps, and to improve public safety and reduce local flooding.

Due to the age of the regional system, many of the storm drain systems have a ten-year design storm capacity, as opposed to a standard 30-year capacity for regional facilities. Some local storm drain systems also have less than a two-year design storm capacity, as opposed to a standard ten-year capacity for local facilities. Summaries of the proposed improvements throughout the five watersheds from the 2008 Report are provided below.

Figure 5-3 City of Burlingame Existing Flood Zones



Easton Watershed

The Easton Watershed is located in the center portion of Burlingame, extending east to west. The Easton Watershed is prone to flooding at the Grove Avenue/California Drive, El Camino Real and Broadway-Cortez residential areas. Drainage flowed to the 50-year old Marsten pump station and eventually into San Francisco Bay. In 2013 the Marsten pump station was upgraded to discharge through a force main to the San Francisco Bay. This improvement will significantly reduce local flooding upstream.

Burlingame/Ralston Watershed

The Burlingame/Ralston Watershed is located in the southwest portion of the city. Flooding in the Burlingame/Ralston Watershed occurs at Heritage Park and Crescent Avenue, in downtown, in the Ralston Creek area and in the residential area bounded by California Drive and Rollins Road.

The combined Burlingame Creek and Ralston Creek storm drain system has a capacity of a ten-year storm event, as opposed to a standard 30-year storm capacity. In addition, undersized box culverts and undersized pipelines occur throughout the system. Some proposed improvements include installation of two 60-inch bypass pipelines.

Sanchez/Terrace Watershed

The Sanchez/Terrace Watershed is located on the southwest portion of the city, north of the Burlingame/Ralston Watershed. Flooding occurs in the Laguna Avenue residential area and along California Drive. San Francisco Bay backflows into the residential area during high tides.

The storm drain system has a ten-year storm event capacity during high tides, as opposed to a standard 30-year capacity. In 2015, the City completed the Laguna Drainage Project that involved the construction of a box culvert along Carolan Avenue to increase the capacity for a 30-year storm.

Mills Watershed

The Mills Watershed is located north of the Easton Watershed and extends east to west. Flooding has occurred adjacent to Rollins Road and El Camino Real at the Mills Creek crossing, and the area has erosion, settlement of creek embankments and sinkholes.

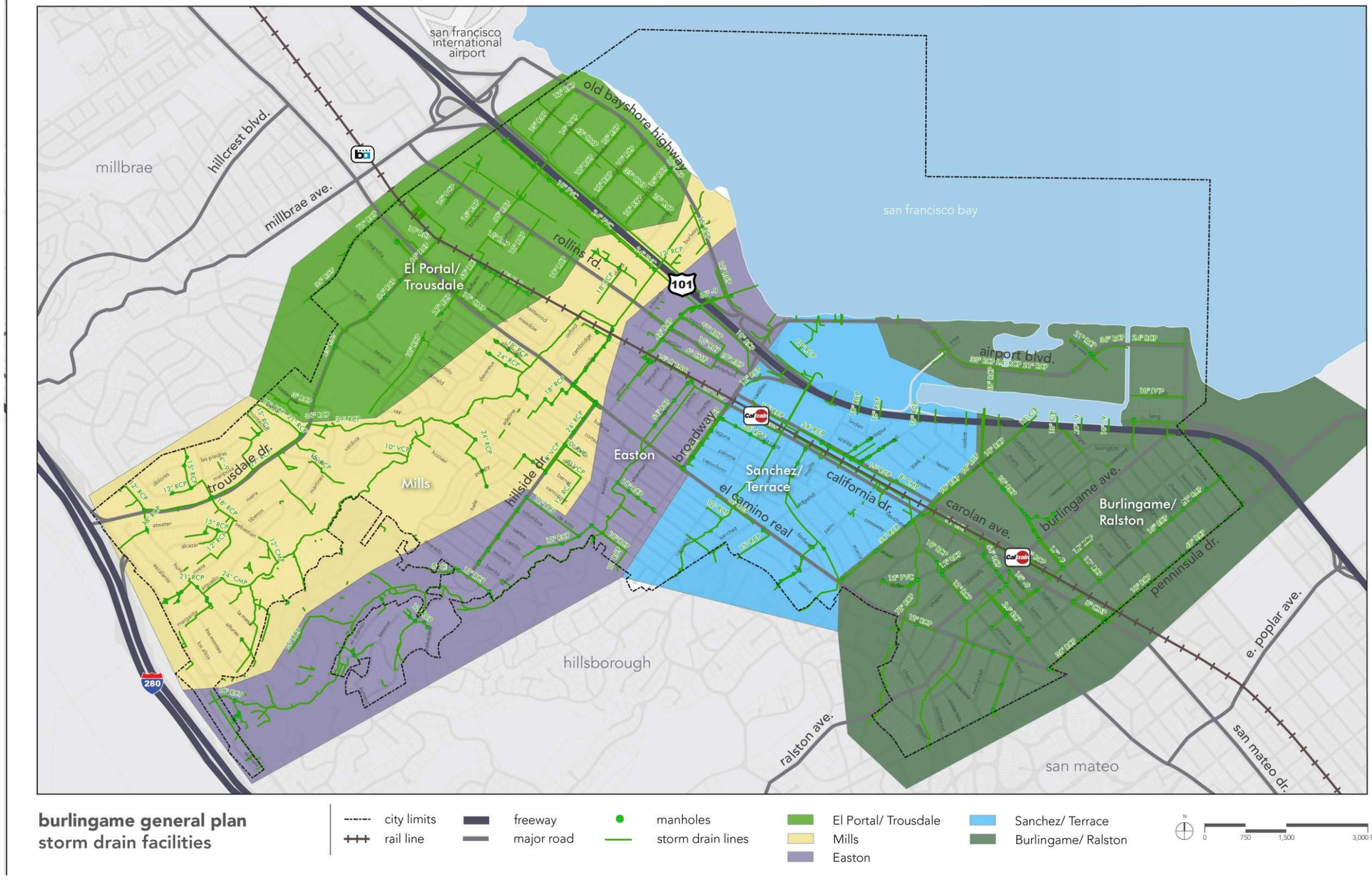
The storm drain system has a ten-year storm event capacity during high tides, as opposed to a standard 30-year capacity, and has undersized box culverts, a narrow channel section and silt deposits in the channels. Proposed improvements include the widening of channel widths and raising embankments and headwalls. A footbridge will be renovated or removed, and a new box culvert will be added across Rollins Road.

El Portal/Trousdale Watershed

The El Portal/Trousdale Watershed is located at the north end of Burlingame and extends east to west. Storm water is carried within the El Portal channel through floodgates to San Francisco Bay. Several overflowing and eroding embankments and sinkholes are found throughout the watershed.

The El Portal Creek system capacity is less than the standard 30-year capacity. Issues also exist with pump stations and the structural integrity of the embankments from erosion. Proposed improvements include repairing damaged concrete liners and installing a more extensive corrosion protection system to the 60-inch and 72-inch pipelines.

Figure 5-4 Citywide Storm Drain System and Watersheds (2015)



Citywide Neighborhood Storm Drain Improvements

In addition to the regional improvements identified in the 2008 Storm Drain Improvements Report and associated CIP, the City has a Citywide Neighborhood Storm Drain Improvement Project. This project consists of replacing deteriorated drainage collection system and installing new curb and gutter, catch basins, storm drains and debris basins to intercept debris that causes localized flooding in the storm drain system. To date, City staff has identified and prioritized over 104 neighborhood projects; as of 2015, 56 locations had been constructed. Approximately $700,000 was approved for local projects in fiscal year (FY) 2013-2014, $700,000 for FY 2014-2015, and $1.2 million for FY 2015-2016. The projects are illustrated in Figure 5-5.

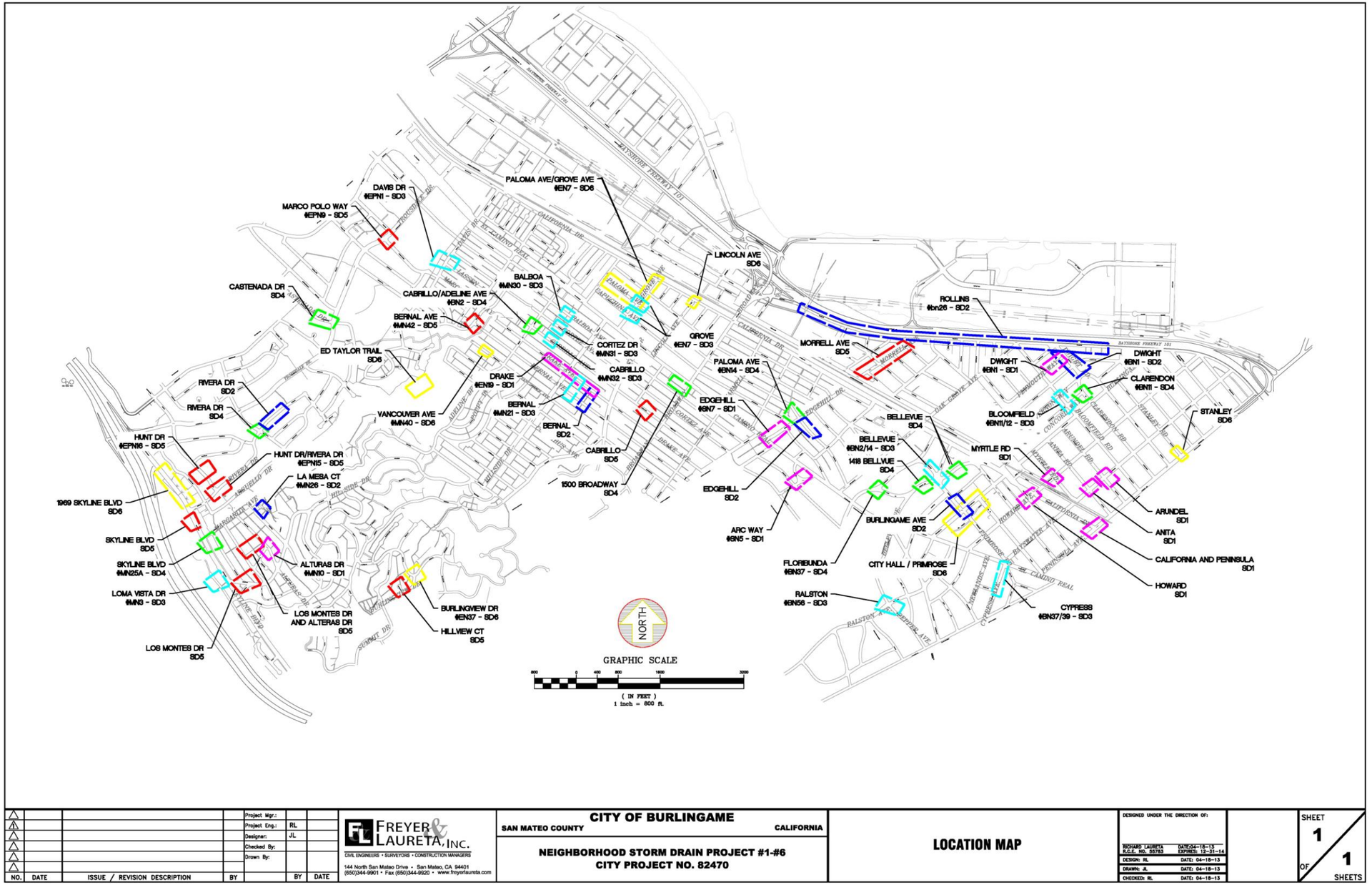
NPDES & MS4 Storm Water Permit

The City's storm water system empties into San Francisco Bay and therefore is subject to the requirements of the federal Clean Water Act of 1972, which prohibits the discharge of storm water into United States waters unless the discharge complies with a National Pollutant Discharge Elimination System (NPDES). To meet its mandate from the state, Burlingame has joined with other cities in San Mateo County to obtain a regional discharge permit from the State Water Quality Control Board (SWQCB) for storm water discharge. The regional permit was issued in 2009 and revised in November 2011.

The current permit is scheduled to expire in October 2015. The new permit (MRP1.0) will require Burlingame to assess each planned infrastructure project and add Green Infrastructure features where feasible. The permit also requires a program to manage PCB-containing materials to be established and full trash capture devices with a defined reduction measure in place.

Every construction project in Burlingame must comply with permit requirements to reduce so-called nonpoint pollution sources. This includes implementing best management practices on job sites to minimize erosion, eliminate contaminated run-off and control construction site pollution. NPDES requirements also encourage post-construction measures in site planning that can help reduce the discharge of pollutants into storm water, including swales, detention ponds and other design elements. The features work to reduce storm water run-off, increase water quality protection to the bay and maintain existing conditions runoff peaks and duration.

Figure 5-5 Neighborhood Storm Drain Projects



5.6 Dry Utilities

PG&E provides electrical and natural gas services to homes and business in the city. Most electrical power service is provided via overhead power lines. As of 2015, regional cable service and telecommunications services are provided by Comcast, Astound! and Peninsula TV.

5.7 Sources

Reports and Data

Bay Regional Desalination Project, Site Specific Analyses Final Report; Delta Modeling Tasks January 2014

City of Burlingame Storm Drain Capital Improvement Project Brochure

City of Burlingame Urban Water Management Plan, 2011

City if Burlingame Wastewater Collection System Master Plan, 2010

City of Burlingame Water System Master Plan Technical Memorandum, 2010

City of Burlingame Water Supply Agreement between the City of Burlingame and San Francisco and Wholesale Customer Alameda, San Mateo, Santa Clara Counties, 2009

Citywide Facilities Improvements – Storm Drain Improvements Report, 2004

Citywide Storm Drain Improvements – Summary, 2008

Storm Drainage Program, Citizens Oversight Committee, March 5, 2015

Persons Contacted

Mai, Lisha. Assistant Engineer, City of Burlingame

Morimoto, Art. Assistant Public Works Director, City of Burlingame