

Updated Control Measures Plan for PCBs and Mercury in San Mateo County Stormwater Runoff



September 30, 2019

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Appendix B – Descriptions of Land Uses Referenced in this Report

LIST OF ABBREVIATIONS

BASMAA	Bay Area Stormwater Management Agencies Association
BMPs	Best Management Practices
CW4CB	Clean Watersheds for a Clean Bay
CWA	Clean Water Act
FY	Fiscal Year
GI	Green Infrastructure
MPC	Monitoring and Pollutants of Concern
MRP	Municipal Regional Permit
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollution Discharge Elimination System
PCBs	Polychlorinated Biphenyls
POC	Pollutant of Concern
POTW	Publically Owned Treatment Works
RAA	Reasonable Assurance Analysis
RMP	Regional Monitoring Program for Water Quality in San Francisco Bay
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
TMDL	Total Maximum Daily Load
WY	Water Year
WMA	Watershed Management Area

1.0 INTRODUCTION

1.1. Background

Fish tissue monitoring in San Francisco Bay (Bay) has revealed bioaccumulation of polychlorinated biphenyls (PCBs), mercury, and other pollutants. The levels found are thought to pose a health risk to people consuming fish caught in the Bay. As a result of these findings, an interim advisory has been issued on the consumption of fish from the Bay. The advisory led to the Bay being designated as an impaired water body on the Clean Water Act (CWA) "Section 303(d) list" due to elevated levels of PCBs, mercury, and other pollutants. In response, the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) has developed Total Maximum Daily Load (TMDL) water quality restoration programs targeting PCBs and mercury in the Bay. The general goals of the TMDLs are to identify sources of PCBs and mercury to the Bay, implement actions to control the sources, and restore water quality.

The PCBs and mercury TMDLs stipulate that a 90% reduction in PCBs and 50% reduction in mercury found in discharges from urban stormwater runoff to the Bay are needed to achieve water quality standards and restore beneficial uses. Provisions C.11 and C.12 of the first Bay Area Municipal Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (Municipal Regional Permit, or MRP 1.0; Order R2-2009-0074) required Permittees to implement pilot-scale control measures during the permit term to reduce PCBs and mercury discharges from Municipal Separate Storm Sewer Systems (MS4s) to the Bay. These pilot studies were intended to enhance the collective knowledge about the costs and benefits of different Best Management Practices (BMPs) to control PCBs and mercury.

The reissued (and current) permit (MRP 2.0, Order R2-2015-0049) requires municipal agencies to move from pilot-scale work to focused implementation and defined load reduction goals (e.g., 3 kg/year PCBs across the MRP 2.0 area by June 30, 2020). The strategies and BMPs that will be applied to meet the load reduction goals are anticipated at a minimum to include:

- Stormwater green infrastructure (GI);
- Trash control devices that remove sediments containing PCBs and/or mercury;
- Source property identification and referral for investigation and abatement; and
- Management of PCBs in building materials during demolition.

Permittees may also implement additional types of controls to address the PCBs and mercury reduction goals, such as enhancements to municipal operation and maintenance (O&M) activities that remove sediments containing PCBs and/or mercury.

In compliance with Provisions C.11 and C.12, the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), a program of the City/County Association of Governments (C/CAG) of San Mateo County, is continuing to work with San Mateo County municipal agencies to identify control measures for PCBs and mercury that reduce discharges from their MS4s. This plan documents the approaches taken and progress made to-date, including summaries of:

- The pertinent MRP 2.0 permit requirements;
- Progress to-date identifying sources of and controls for PCBs and mercury discharges in San Mateo County stormwater runoff;

- The types of control measures typically used to control PCBs and mercury discharges in stormwater runoff from local watersheds surrounding San Francisco Bay;
- Documentation of existing and planned PCBs and mercury control measures for each San Mateo County MRP 2.0 Permittee;
- Updated estimates of the reductions in PCBs and mercury loads from San Mateo County stormwater runoff during the MRP 2.0 term that have been quantified to-date, calculated using the interim accounting methodology described later (see Section 5.0); and
- Next steps.

This plan provides an update to the plan that was submitted with the FY 2017/18 Annual Report in September 2018 (SMCWPPP 2018b), including updated estimates of the PCBs and mercury load reductions achieved in San Mateo County this permit term (including a period immediately preceding the permit term, as explained later, see Section 4.0) that have been quantified to-date. Consistent with the Provision C.11/12 requirements, the information contained within this plan will continue to be updated periodically during MRP 2.0 as new information is developed about control measures and associated pollutant load reductions.

1.2. Summary of Permit Requirements

MRP 2.0 Provisions C.11.a.iii and C.12.a.iii required Permittees to submit with their FY 2015/16 Annual Reports a prioritized list of watersheds and management areas where control measures for PCBs and mercury are currently implemented or will be implemented during the term of permit along with an implementation schedule (accomplished by SMCWPPP 2016b).¹ Permittees were also required to provide the monitoring data and other information used to select the management areas. In addition to the list of management areas, Permittees were also required to report on the following:

- The number, type and locations and/or frequency (if applicable) of control measures;
- A cumulative listing of all potentially PCBs-contaminated sites Permittees have discovered and referred to the Regional Water Board to-date, with a brief summary description of each site and where to obtain further information;
- The description, scope and start date of control measures;
- For each structural control and non-structural control BMP, interim implementation progress milestones and a schedule for milestone achievement; and
- Clear statements of the roles and responsibilities of each participating Permittee for implementation of pollution prevention or control measures identified by Permittees.

In subsequent Annual Reports, Permittees are required to provide updates to the initial information presented with the FY 2015/16 Annual Report.

The MRP also requires that Permittees demonstrate and report on achievement of PCBs load reductions and ancillary load reduction benefits for mercury during the term of the Permit. As part of this requirement to report load reductions, MRP Provisions C.11/12.b., Assess Mercury/PCBs Load Reductions from Stormwater, required Permittees to submit with their FY 2015/16 Annual Report for Executive Officer approval an assessment methodology (which was referred to as the interim accounting

¹The MRP also required submittal of an initial progress report by April 1, 2016 (accomplished by SMCWPPP 2016a).

methodology (BASMAA 2017), that updates the load reduction accounting system outlined in the MRP 2.0 factsheet. Permittees were required to use the assessment methodology to quantify in a technically sound manner PCBs and mercury loads reduced through implementation of pollution prevention and treatment control measures, including source control, stormwater treatment, GI, and other measures. Beginning with their FY 2016/17 Annual Report, Permittees were required to report on the use of the methodology to demonstrate progress toward achieving the PCBs and mercury load reductions required this permit term (accomplished by SMCWPPP 2017b), with updates provided in subsequent Annual Reports (accomplished by SMCWPPP 2018b and this report).

2.0 PROGRESS TO-DATE IDENTIFYING PCBs AND MERCURY SOURCES AND CONTROLS

The below sections briefly summarize progress to-date identifying sources of and controls for PCBs and mercury discharges in San Mateo County stormwater runoff and related efforts such as developing the interim accounting methodology.

In addition to the efforts described in the below sections, during the past several years the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) has conducted stormwater runoff monitoring in San Mateo County and other parts of the Bay Area through its Small Tributary Load Strategy (STLS). The monitoring in San Mateo County has been coordinated with SMCWPPP, with SMCWPPP staff assisting with selection of sampling stations and coordination with staff from local agencies. Monitoring objectives have included characterizing PCBs and mercury concentrations in stormwater runoff from the bottom of selected urban catchments with potential pollutant source areas (referred to as Watershed Management Areas or WMAs, see below discussion for further details) and estimating pollutant loading rates from some catchments. SMCWPPP (2017a, 2018a, and 2019) include additional information on the STLS efforts in San Mateo County.

2.1. 2000 through 2015

From 2000 to 2015, SMCWPPP and others conducted periodic sediment sampling programs in San Mateo County to begin to characterize the distribution of PCBs in various land uses throughout the urban landscape and identify catchments and properties within catchments that are potential sources of PCBs to the MS4. During this period, over 270 sediment samples were collected in San Mateo County, mainly from streets and MS4s in the public right-of-way (e.g., storm drain lines accessed via manholes, storm drain inlets, drainage channels, and pump station sumps). The samples were analyzed for PCBs congeners, total mercury, and ancillary analytes (KLI and EOA 2002, SMSTOPPP 2002, 2003, and 2004, Yee and McKee 2010, SMCWPPP 2015, and CW4CB 2017a). The remainder of this section provides more details about these sediment monitoring efforts.

The initial step in the sediment sampling programs was a 2000 and 2001 collaborative project among SMCWPPP and other Bay Area countywide stormwater programs referred to as the Joint Stormwater Agency Project (JSAP). The JSAP measured concentrations of PCBs, mercury and other pollutants in embedded sediments collected from stormwater conveyance systems in San Mateo County and other parts of the Bay Area (KLI and EOA 2002). The primary goal was to characterize the distribution of pollutants among land uses in watersheds draining to the Bay.

In follow-up to the JSAP regional survey, SMCWPPP and other Bay Area countywide stormwater programs began performing “case studies” in some areas where relatively elevated PCBs were found during the JSAP. The primary goals were to develop methods to identify PCBs sources and begin to identify measures to address any controllable sources found. The techniques employed included collection and analysis of embedded stormwater conveyance sediment samples and research on historical and current land use. In the early 2000s, SMCWPPP completed PCBs case study work in four San Mateo County areas where elevated levels of PCBs were found during the JSAP survey. The case studies investigated the Bradford and Broadway pump station drainages in Redwood City, the South Maple pump station drainage in South San Francisco, an area in the vicinity of Colma Creek, and the Pulgas Creek pump station drainage in San Carlos (SMSTOPPP 2002, 2003, and 2004).

In 2007, a State of California Proposition 13 grant-funded study by the San Francisco Estuary Institute (SFEI) collected street dirt and MS4 sediment samples in the City of San Carlos in San Mateo County and other parts of the Bay Area (Yee and McKee 2010). In addition, beginning in 2010 SMCWPPP partnered with the Bay Area Stormwater Management Agencies Association (BASMAA) in the USEPA grant-funded Clean Watersheds for a Clean Bay (CW4CB) project to conduct additional investigation of PCBs sources to the MS4 in the Pulgas Creek pump station drainage in San Carlos (CW4CB 2017a).

In 2014, SMCWPPP worked with San Mateo County MRP Permittees to conduct a process to screen for “high interest parcels” for PCBs in the county. The screening covered all land areas in the county that drain to the Bay. The process was generally consistent with a framework developed through a collaboration of SMCWPPP and the other Bay Area countywide stormwater programs in consultation with Regional Water Board staff. Parcels were identified that were industrialized in 1980 or earlier (i.e., old industrial parcels) or have other land uses associated with PCBs (i.e., electrical, recycling, and military). SMCWPPP then worked with municipal staff to prioritize these parcels based on the evaluation of existing information on current land uses and practices (e.g., redevelopment status, extent and quality of pavement, level of current housekeeping, any history of stormwater violations, and presence of electrical or heavy equipment, storage tanks, or stormwater treatment) identified via land use analysis, local institutional/historical knowledge, and surveys of site conditions (windshield, Google Street View, and/or aerial photograph). The prioritization resulted in a list of about 1,600 high interest parcels for PCBs in San Mateo County (SMCWPPP 2015a).

In January and February 2015, SMCWPPP designed a monitoring plan based on the above screening for high interest parcels and then collected 101 sediment samples from the urban storm drainage system (e.g., manholes, storm drain inlets) and public right-of-way surfaces (e.g., street gutters). The general goal was to continue attempting to identify potential source areas for PCBs. Samples were distributed among the nine municipalities that collectively encompass 93% of the old industrial land use in San Mateo County that drains to San Francisco Bay (SMCWPPP 2015a).

2.2. FY 2015/16

In FY 2015/16, SMCWPPP implemented a process to identify Watershed Management Areas (WMAs) and prioritize them based on the potential for reducing PCBs loads by implementing controls within each WMA. WMAs were defined as all catchments with high interest parcels and/or existing or planned stormwater pollutant controls (e.g., GI implemented on parcels per Provision C.3 requirements, built on public lands such as parks, or retrofitted into the public right-of-way (ROW)).

WMAs generally coincide with stormwater runoff hydrologic catchments in San Mateo County that drain to 24-inch or larger diameter outfalls. These urban catchments were originally delineated at this geographical scale as part of SMCWPPP’s program to help local agencies develop trash controls in San Mateo County (SMCWPPP 2014).² The process identified 110 catchments with high densities of high

²The WMA numbering system starts with the numerical designations (ranging from 0 to 408) used by SMCWPPP (2014). Additional WMAs were delineated for areas that contain parcels of interest but were not delineated in 2014, with numerical designations ranging from 1000 to 1017. These 18 WMAs were not necessarily hydrologic catchments. They combine areas that drain to outfalls ≥ 24-inches, drain directly to natural waterways including the Bay, and/or private drainages. Finally, additional WMAs were delineated that lack parcels of interest but include pollutant controls (mainly GI in old urban parcels that were redeveloped). These WMAs are not hydrologic catchments and were delineated for each Permittee that drains to the Bay. They were designated “Other –” followed by three letters representing the jurisdiction (e.g., Other – SSF for South San Francisco).

interest parcels (and usually with existing pollutant controls), and an additional 26 catchments with pollutant controls only, for a total of about 130 WMAs (SMCWPPP 2016a and b).

In FY 2015/16, SMCWPPP also participated in a BASMAA regional project to develop an interim accounting methodology to account for PCBs and mercury load reductions during MRP 2.0 associated with all control measures. The methodology is fully described by BASMAA (2017), a report that was approved by the Regional Water Board's Executive Officer in April 2017. Per MRP 2.0 requirements, the interim accounting methodology will eventually be replaced by more robust accounting methods, including a modeling approach for estimating pollutant loads reduced via GI and stormwater treatment, via the ongoing development of a Reasonable Assurance Analysis (RAA) and associated efforts.

Also in FY 2015/16, SMCWPPP worked with San Mateo County MRP Permittees to develop a database of existing and planned GI and stormwater treatment projects on parcels or in the public ROW in San Mateo County, including Low Impact Development (LID) measures at redevelopment sites. The database includes existing and planned GI and treatment facilities constructed in 2005 or later (SMCWPPP 2016b).

Finally, during the 2015/16 rainy season SMCWPPP collected eight composite samples of stormwater runoff. The samples were collected from outfalls at the bottom of WMAs that contain high interest parcels (i.e., with land uses associated with PCBs such as old industrial, electrical and recycling, as described above). The RMP STLS collected an additional seven stormwater runoff composite samples in San Mateo County in coordination with SMCWPPP. Composite samples consisting of six to eight aliquots collected during the rising limb and peak of the storm hydrograph (as determined through field observations) were analyzed for PCBs congeners, total mercury, and other analytes (SMCWPPP 2017a).

2.3. FY 2016/17

SMCWPPP's major FY 2016/17 efforts related to PCBs and mercury load reduction included the following:

- Collected 17 composite samples of stormwater runoff from outfalls at the bottom of WMAs that contain high interest parcels with land uses associated with PCBs. The RMP STLS collected an additional four stormwater runoff composite samples in San Mateo County in coordination with SMCWPPP. Composite samples consisting of six to eight aliquots collected during the rising limb and peak of the storm hydrograph (as determined through field observations) were analyzed for PCBs congeners, total mercury, and other analytes (SMCWPPP 2018).
- Collected 67 sediment samples as part of the program to attempt to identify source properties within WMAs. These samples were collected in the public ROW, including locations adjacent to high interest parcels. Individual and composite sediment samples collected from manholes, storm drain inlets, driveways, and sidewalks were analyzed for PCBs congeners, total mercury, and other analytes (SMCWPPP 2018).
- Worked with Permittees to update the database of existing and planned GI and stormwater treatment projects in San Mateo County. The database includes existing GI and treatment facilities constructed in 2005 or later and all known planned facilities (SMCWPPP 2017b).
- Continued updating and prioritizing the list of WMAs in San Mateo County (SMCWPPP 2017b).
- Summarized the preliminary PCBs and mercury load reductions achieved this permit term that had been quantified to-date (SMCWPPP 2017b).

2.4. FY 2017/18

SMCWPPP's major FY 2017/18 efforts related to PCBs and mercury load reduction included the following:

- Collected 13 composite samples of stormwater runoff from outfalls at the bottom of WMAs that contain high interest parcels with land uses associated with PCBs. The RMP STLS collected an additional two stormwater runoff composite samples in San Mateo County in coordination with SMCWPPP. Composite samples consisting of six to eight aliquots collected during the rising limb and peak of the storm hydrograph (as determined through field observations) were analyzed for PCBs congeners, total mercury, and other analytes (SMCWPPP 2019).
- Collected 57 sediment samples as part of the program to attempt to identify source properties within WMAs. These samples were collected in the public ROW, including locations adjacent to high interest parcels. Individual and composite sediment samples collected from manholes, storm drain inlets, driveways, and sidewalks were analyzed for PCBs congeners, total mercury, and other analytes (SMCWPPP 2019).
- Continued working with San Mateo County MRP Permittees to update the database of existing and planned GI and stormwater treatment projects in the County. The database includes existing GI and treatment facilities constructed in 2005 or later and all known planned facilities (SMCWPPP 2018b).
- Summarized the preliminary PCBs and mercury load reductions achieved this permit term that had been quantified to-date (SMCWPPP 2018b).
- Began evaluating opportunities to take credit for PCBs and/or mercury loads avoided due to contaminated site cleanups (referred to as "self-abatements") in San Mateo County that were initiated during 2005 or later, typically a result of enforcement actions to remediate sites overseen by federal or state regulatory agencies. Cleanups completed during the MRP 2.0 permit term that prevent the discharge of PCBs to storm drains should result in credit towards MRP 2.0 load reduction requirements. This evaluation may also lead to opportunities to identify additional PCBs source properties that could be referred to the Regional Water Board for further investigation and abatement, either because cleanup at a site was never completed, or because the cleanup standards applied were not adequate relative to TMDL goals for reducing pollutant loads in stormwater runoff.
- Worked with San Mateo County Permittees to begin evaluating new or enhanced municipal O&M activities implemented in 2005 or later that may remove sediments containing PCBs and/or mercury, including any opportunities to monitor existing activities (e.g., via analysis of sediments removed for PCBs and mercury) and/or readily enhancing existing actions to reduce pollutant loads (i.e., "no missed opportunities"). The types of municipal O&M evaluated include maintenance of MS4 infrastructure (e.g., channel desilting and cleanout and/or retrofit of detention ponds, flood control basins, pump stations or storm drain inlets).

2.5. FY 2018/19

During FY 2018/19, SMCWPPP continued identifying areas of interest and opportunity for PCBs and mercury controls, including refining the list of WMAs and their prioritization. This is a multi-year process designed to identify the land areas in San Mateo County that contribute relatively high loads of PCBs and/or mercury to MS4s. Consistent with MRP requirements, the focus remained on PCBs, with ancillary/secondary benefits assumed to be realized for controlling mercury. SMCWPPP's major FY 2018/19 efforts related to PCBs and mercury load reduction included the following:

- Continued working with San Mateo County MRP Permittees to update the database of existing and planned GI and stormwater treatment projects in San Mateo County. The database includes existing GI and treatment facilities constructed in 2005 or later and all known planned facilities (see Section 4.0).
- Submitted two source property referrals (both in San Carlos) to the Regional Water Board (see Section 4.15):
 - 270 Industrial Road / 495 Bragato Road, San Carlos
 - 977 and 1007/1011 Bransten Road, San Carlos
- Summarized the preliminary PCBs and mercury load reductions achieved this permit term that had been quantified to-date (see Section 5.0).
- Collected 25 sediment samples as part of the program to attempt to identify source properties within WMAs. These samples were collected in the public ROW, including locations adjacent to high interest parcels. Individual and composite sediment samples collected from manholes, storm drain inlets, driveways, and sidewalks were analyzed for PCBs congeners, total mercury, and other analytes. In addition, in FY 2018/19 the RMP STLS collected two stormwater runoff composite samples in San Mateo County in coordination with SMCWPPP. The full results of this WY 2019 POC monitoring program will be reported with SMCWPPP's Integrated Monitoring Report, which is due March 2020.
- Continued evaluating opportunities to take credit for PCBs and/or mercury loads avoided due to contaminated site cleanups (referred to as "self-abatements") in San Mateo County that were initiated during 2005 or later, typically a result of enforcement actions to remediate sites overseen by federal or state regulatory agencies. Cleanups completed during the MRP 2.0 permit term that prevent the discharge of PCBs to storm drains should result in credit towards MRP 2.0 load reduction requirements.
- Worked with San Mateo County Permittees to continue evaluating new or enhanced municipal O&M activities implemented in 2005 or later that may remove sediments containing PCBs and/or mercury, including any opportunities to monitor existing activities (e.g., via analysis of sediments removed for PCBs and mercury) and/or readily enhancing existing actions to reduce pollutant loads (i.e., "no missed opportunities"). The types of municipal O&M evaluated include maintenance of MS4 infrastructure (e.g., channel desilting and cleanout and/or retrofit of detention ponds, flood control basins, pump stations or storm drain inlets).

The PCBs load reduction credited when a source property is referred to the Regional Water Board is directly proportional to the area of the referred property (acres is the unit used in the load reduction calculation). In September 2018, SMCWPPP conducted an analysis of total industrial area and average industrial parcel size among the four most populous counties in the MRP area, based on county assessor parcel data. Table 2.1 and Figure 2.1 show the results (it is important to note that the y-axis of Figure 2.1 is on a log scale). The total industrial acreage and average industrial parcel size are much lower in San Mateo County relative to the other counties, illustrating the challenge for San Mateo County Permittees to achieve PCBs load reductions via source property referrals compared to the other counties. In particular, even though the total population of Contra Costa County is roughly only 50% greater than San Mateo County, the total industrial acreage and average industrial parcel size in Contra Costa County exceeds San Mateo County by roughly a factor of four and six, respectively.

Table 2.1 Total Industrial Acreage and Average Industrial Parcel Size in Most Populous MRP Counties

	San Mateo County	Alameda County	Contra Costa County	Santa Clara County
Total Industrial Area (acres)	3,043	14,034	12,833	16,039
Average Industrial Parcel Size (acres)	1.25	2.03	7.55	3.00

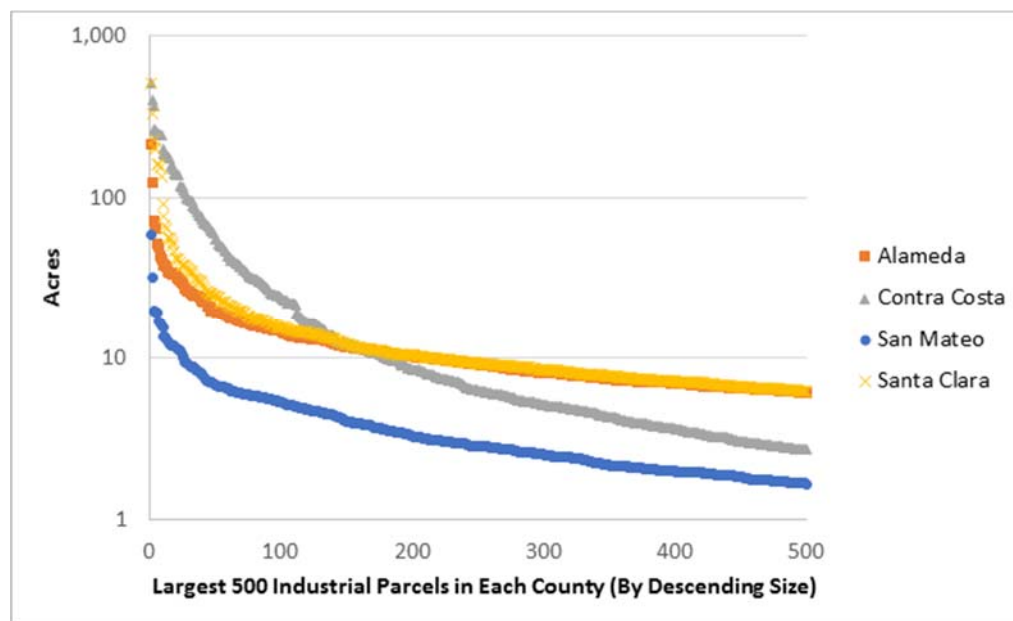


Figure 2.1. Area of 500 Largest Industrial Parcels in Most Populous MRP Counties

3.0 SUMMARY OF CONTROL MEASURES

Permittees have implemented a variety of control measures since the development of PCBs and mercury urban stormwater loading estimates incorporated into the TMDLs. Control measures were implemented to reduce PCBs and/or mercury in stormwater and/or other impacts of stormwater runoff. The control measures that have a direct benefit towards reducing the impacts of PCBs and mercury on the Bay are documented in this plan.

The types of control measures implemented to control PCBs and mercury in stormwater runoff generally fall into the following three categories:

- **True Source Controls (Load Avoidance)** – Controls that focus on the original source or use of a potential pollutant. True source controls include regulations and laws adopted to minimize or eliminate the use of a pollutant for specific activities and pollution prevention activities, such as inspections, that identify high risk practices that could release PCBs or mercury into the environment. The one true source control for mercury is the reduction of mercury in devices and equipment as a result of legislation or voluntary reduction by manufacturers. No additional true source controls are currently available for PCBs due to the production of these organic compounds being banned in the 1970s and the tight regulation of PCBs still in use.
- **Source Controls (Load Reduction)** – Source controls are load reduction control measures that reduce the risk of the pollutant entering the environment after it has already been used in devices/materials/equipment, or that intercept the pollutant before it is discharged to a receiving water body. The control measure types that fall into this category include: source property abatement, enhanced street sweeping, MS4 and flood control facility maintenance, mercury device recycling, and the control of PCBs-containing material during building demolition/renovation.
- **Treatment Controls (Load Reduction)** – Treatment controls are load reduction control measures that remove pollutants via physical, biological, or chemical processes. The control measure types that fall into this category include stormwater treatment measures, GI, and diversions of stormwater to Publicly Owned Treatment Works (POTWs).

Control measures needed to address PCBs and mercury load reduction criteria included in MRP 2.0 are currently under development by Permittees based on continued evaluations of sources of these contaminants and load reduction benefits associated with existing control measures. To the extent possible with the available information, control measures implemented to-date and those planned for implementation within each WMA during the term of MRP 2.0 are summarized in Section 4.0, consistent with MRP requirements.

Descriptions of each control measure type that Permittees may implement or cause to be implemented by other responsible parties to control PCBs and/or mercury are provided below.

3.1. Source Property Identification and Abatement

Source Property Investigation and Referral Process

PCBs and mercury source properties discharge these pollutants to the MS4s. One typical mechanism is for on-site contaminated surface soils to be mobilized by stormwater runoff, wind and/or vehicles and enter on-site or off-site storm drains. Identification and subsequent abatement of these properties

and/or focused control measure implementation in the public ROW around source properties can provide an opportunity for PCBs and mercury stormwater load reductions. Reductions occur through the abatement of properties via available mechanisms, including referrals to the Regional Water Board or through enforcement actions brought against property owners by Permittees.

San Mateo County MRP Permittees continue to implement a program to attempt to identify source properties in priority WMAs. These investigations typically include the following tasks:

- 1) Property records and aerial photography review;
- 2) Public ROW surveys and/or property inspections;
- 3) Private property and public ROW soil/sediment sampling; and
- 4) Reporting and planning/identifying control measures (including planning referrals).

As source properties are identified, information regarding pollutant concentrations observed, evidence of transport to the MS4, property ownership, previous stormwater violations, and any other pertinent information is documented. Additionally, the location and geographical extent of the property is delineated in GIS to facilitate the calculation of PCBs and mercury load reductions.

In October 2018, SMCWPPP submitted two source property referrals (both in San Carlos) to the Regional Water Board (Section 4.15). In addition, SMCWPPP and San Mateo County Permittees will continue attempting to identify source properties for referral to the Regional Water Board, based on the evaluation of the results of the WY 2019 POC monitoring program and other appropriate data, as it becomes available.

Review of Contaminated Site Cleanups (Potential Self-Abatements)

In addition to the source property investigations and referral process described above, SMCWPPP has also been evaluating opportunities to take credit for PCBs and mercury loads avoided due to contaminated site cleanups in San Mateo County that were initiated during 2005 or later, since these cleanups are assumed to reduce urban runoff pollutant loads relative to the PCBs TMDL baseline urban runoff load. The cleanups are referred to as “self-abatements” and are typically a result of enforcement actions with cleanup oversight by federal, state and local regulatory agencies, including United States Environmental Protection Agency (USEPA), California Department of Toxic Substance Control (DTSC), the Regional Water Board, and/or local municipal agencies. In addition, cleanups completed during the MRP 2.0 permit term should result in credit towards MRP 2.0 load reduction requirements. Investigation of contaminated site cleanups may also lead to opportunity to identify additional PCBs source properties that could be referred to the Regional Water Board for further investigation and abatement, either because cleanup at a site was never completed, or because the cleanup standards applied were not adequate relative to TMDL goals for reducing pollutant loads in stormwater runoff.

Regional Water Board staff has compiled a list of contaminated sites that were or are targeted for cleanup of soil and/or groundwater impacts under USEPA, DTSC, Regional Water Board, or local municipal agency oversight. The list was compiled primarily from a review of online databases, including DTSC’s Envirostor and the State Water Resource Control Board’s GeoTracker, and targeted sites that may have been associated with PCBs. The purpose in compiling this list was so that Regional Water Board staff could follow-up with the oversight agencies to ensure stormwater runoff concerns were or will be adequately addressed as part of the cleanups. The list has been updated periodically as new information

becomes available. SMCWPPP is reviewing the latest versions of the Regional Water Board list to help identify PCBs and mercury cleanup sites in San Mateo County. SMCWPPP is also in the process of reviewing online databases (Envirostor and GeoTracker) to review site histories and cleanup records, and compile the information needed to determine the cleanup status of the site, justify calculating any pollutant load reductions for the site cleanup, and document the data inputs needed to calculate loads avoided. The following information is being collected, as available:

- Area of the site;
- Current cleanup status;
- Date of cleanup;
- Evidence of PCBs on the site prior to cleanup (i.e., pre-cleanup PCBs concentrations in soils or groundwater);
- Cleanup/abatement methods;
- Evidence of adequate PCBs cleanup at the site (e.g., post-cleanup PCBs concentrations in soils or groundwater);
- Available evidence to justify designation as a potential PCBs source property for referral to Regional Water Board; and
- Documentation of any follow-up needed at the site.

3.2. Green Infrastructure and Treatment Control Measures

Green Infrastructure

Green infrastructure (GI) and other treatment controls may be installed in roadway and storm drain infrastructure in the public ROW to treat stormwater runoff (e.g., construction of green streets). GI may be retrofitted into existing infrastructure or included as part of new infrastructure capital improvement projects (e.g., transportation improvements such as street projects). In addition, applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via GI/LID techniques or equivalent. Installation of GI facilities on private property or public lands in San Mateo County continues to improve stormwater quality and help reduce PCBs and mercury loads. GI facilities include infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. Examples of GI include bioretention, LID, green/complete streets, and other systems that generally use the natural filtration or infiltration of stormwater.

MRP 2.0 requires that a 370 grams/year PCBs load reduction is achieved in San Mateo County by the end of this permit term. Of this, at least 15 grams/year must be achieved via GI. For the purposes of tracking and crediting pollutant load reductions achieved through GI and stormwater treatment, During FY 2015/16, SMCWPPP staff worked with San Mateo County MRP Permittee staff to begin developing a database of existing and planned public and private GI and stormwater treatment projects in San Mateo County, including GI/LID measures at redevelopment sites and GI installed in the public ROW during infrastructure projects (SMCWPPP 2016b). The database includes existing and planned GI and treatment facilities constructed in 2005 or later since these facilities are assumed to reduce urban runoff pollutant loads relative to the PCBs TMDL baseline urban runoff load. In addition, 2005 was the year that San Mateo County's municipal stormwater permit was amended to include more stringent Provision C. 3

requirements; thus most new or redevelopment projects constructed in 2005 or later include stormwater treatment.

The types of information in the database of existing and planned public and private GI and stormwater treatment projects in San Mateo County include the following:

- Project name
- Description of GI and stormwater treatment system(s)
- Location - street address or location description and coordinates
- Whether the facility is located on private property or in public ROW
- Area treated by facility (acres)
 - For GI/LID at redevelopment or new developments sites, this is generally assumed to be the project area
 - For Green Street or other retrofits in public ROW, estimated drainage area to facility
- Hydraulic sizing criteria
- Date of construction
 - Existing facilities: date of construction completion (e.g., initial inspection sign-off)
 - Planned facilities: estimated construction completion date

During FYs 2016/17, 2017/18 and 2018/19, SMCWPPP staff continued working with municipal staff to update the GI database with available new or revised information. For each San Mateo County Permittee with urban areas that drain to San Francisco Bay, a summary of the information gathered to-date on existing and planned GI and stormwater treatment facilities is presented in Section 4.0 of this report. Preliminary load reductions calculated for all GI and stormwater treatment implemented in San Mateo County during the MRP 2.0 permit term are reported in Section 5.0.

The information in this section and Section 4.0 also helps to fulfill the requirement in MRP Provision C.3.j.iv to report on development and implementation of methods to track and report implementation of GI. Section 3.0 of SMCWPPP's 2018/19 Annual Report provides more information about SMCWPPP's efforts to track GI on behalf of San Mateo County MRP Permittees.

Trash Full Capture Systems

Trash full capture systems are devices or series of devices that trap all particles retained by a 5mm mesh screen and have a design treatment capacity of not less than the peak flow rate resulting from a one-year, one-hour, storm in the tributary drainage catchment area. Examples of full capture systems include storm drain inlet screening devices that treat relatively small areas to hydrodynamic separators and netting devices treating hundreds or thousands of acres.

To-date, two hydrodynamic separators (which are a type of large trash full capture system) have been retrofitted into the MS4 in urban areas of San Mateo County that drain to the Bay (one system is in Foster City and the other is in the City of San Mateo). A summary of the information gathered to-date on these trash full capture systems is presented in Sections 4.8 and 4.16 of this report. Preliminary load reductions estimated for these systems are included in Section 5.0.

3.3. Municipal O&M Activities that Potentially Remove Sediments with PCBs and/or Mercury

SMCWPPP is working with San Mateo County MRP Permittees to continue evaluating new or enhanced municipal O&M activities that may remove sediments containing PCBs and/or mercury. SMCWPPP is tracking actions implemented in 2005 or later since these actions are assumed to reduce urban runoff pollutant loads relative to the PCBs TMDL baseline urban runoff load. The types of municipal O&M evaluated are described below. As part of this evaluation SMCWPPP is assessing whether new or enhanced municipal O&M activities were implemented or planned for implementation during the MRP 2.0 permit term.

Street Sweeping and Flushing

Most San Mateo County Permittees conduct street sweeping, which along with trash and debris also removes sediments and particle-bound pollutants such as PCBs and mercury to some extent. If enhancements are made by San Mateo County MRP Permittees to street sweeping programs that would increase PCBs and mercury removal from stormwater runoff, the associated pollutant load reductions will be documented.

In addition to traditional street sweeping, street flushing may also provide pollutant reduction benefits in stormwater runoff. Street flushing includes pressure washing and/or the use of water to flush streets of sediment, trash and sediment-associated pollutants, then collecting and properly disposing of the water, sediments and pollutants. A street flushing pilot project was conducted in San Carlos during MRP 1.0 (CW4CB 2017b). However, additional street flushing projects have not occurred in San Mateo County under MRP 2.0 to-date. If street flushing projects are implemented by San Mateo County MRP Permittees in the future, pollutant load reductions associated with this control measure will be documented.

MS4 Line Flushing

Occasionally, opportunities present themselves to remove PCBs or mercury associated sediment deposited in MS4 lines. These opportunities typically do not occur often because the traditional MS4 is designed to convey stormwater (and associated sediments) effectively through the system. MS4 line flushing pilot projects have been conducted in the Bay Area, but not in San Mateo County to-date. If MS4 line flushing projects are implemented by San Mateo County MRP Permittees, load reductions associated with this control measure will be documented.

Storm Drain Inlet Maintenance

Municipalities periodically conduct storm drain inlet maintenance (e.g., clean-outs of catch basins). Most San Mateo County MRP Permittees inspect and maintain their inlets annually. Through these efforts, sediment and organic material (and associated pollutants) are removed from the MS4. If enhancements are made by San Mateo County MRP Permittees to inlet maintenance programs that would increase PCBs and mercury removal from stormwater runoff, the associated pollutant load reductions will be documented.

Channel and Pump Station Maintenance

San Mateo County MRP Permittees periodically remove sediment from storm drain channels and pump stations as part of their ongoing maintenance programs. As sediment and organic material are removed, sediment-associated pollutants such as PCBs and mercury are also removed. If enhancements are made

by San Mateo County MRP Permittees to channel and pump station maintenance programs that would increase PCBs and mercury removal from stormwater runoff, the associated pollutant load reductions will be documented.

3.4. Managing PCBs in Building Materials

PCBs were used in many applications and materials in buildings, especially those constructed from about 1950 through 1980. MRP 1.0 required the implementation of a pilot project to assist in developing management practices that address legacy caulks containing PCBs. Permittees complied with this requirement by participating in a regional project led by the San Francisco Estuary Partnership (SFEP) that: 1) evaluated PCBs levels in caulk in buildings; and 2) developed preliminary BMPs, a Model Implementation Process, and associated model policies and ordinances to reduce or prevent the release of PCB-laden caulks to the environment during demolition of Bay Area buildings.

Building upon the requirements in MRP 1.0, MRP 2.0 Provision C.12.f requires Permittees to develop and implement or cause to be developed and implemented an effective protocol for managing materials with PCBs concentrations of 50 parts per million or greater in applicable structures³ at the time such structures undergo demolition, so that PCBs do not enter municipal storm drain systems. A Permittee is exempt from this requirement if it provided evidence acceptable to the Executive Officer in its FY 2016/17 Annual Report that the only buildings that existed pre-1980 within its jurisdiction were single-family residential and/or wood-frame buildings.

Permittees were required to develop a protocol by June 30, 2019 that includes each of the following components, at a minimum:

- The necessary authority to ensure that PCBs do not enter municipal storm drains from PCBs-containing materials in applicable structures at the time such structures undergo demolition;
- A method for identifying applicable structures prior to their demolition; and,
- Method(s) for ensuring PCBs are not discharged to the municipal storm drain from demolition of applicable structures.

By July 1, 2019 and thereafter, Permittees are required to:

- Implement or cause to be implemented the PCBs management protocol for ensuring PCBs are not discharged to municipal storm drains from demolition of applicable structures via vehicle track-out, airborne releases, soil erosion, or stormwater runoff; and,
- Develop an assessment methodology and data collection program to quantify in a technically sound manner PCBs loads reduced through implementation of the protocol for controlling PCBs during demolition of applicable structures.

On behalf of MRP Permittees, BASMAA conducted a multi-year regional project to assist MRP Permittees to address Provision C.12.f. The BASMAA project, which began in FY 2016/17 and was completed in March 2019, assisted Permittees in developing local programs to manage PCBs-containing materials during building demolition. It developed guidance materials, tools and training materials and conducted outreach. SMCWPPP actively participated in the project, including providing BASMAA's project manager.

³ Applicable structures are buildings built or remodeled from January 1, 1950 through December 31, 1980, with the following exemptions: single-family residential buildings, wood-framed buildings, and partial building demolitions.

At the outset of the project, a BASMAA Steering Committee was convened to provide project oversight and guidance during the project. The Steering Committee included BASMAA Directors, countywide stormwater program staff, and Permittee staff from various relevant municipal departments. The Steering Committee met periodically throughout the project. In addition, a project TAG, a small balanced advisory group formed from industry, regulatory, and Permittee representatives to provide review and input on selected project work products, was convened. The TAG was comprised of representatives from industry and state/federal regulatory agencies, and Permittees. Other efforts to engage key stakeholders included an industry stakeholder roundtable meeting (August 2017) and two larger stakeholder group meetings (December 2017 and May 2018) that included industry, regulatory and municipal representatives. During FY 2018/19, Permittees tailored the BASMAA products for local use, adopted the program (e.g., via local policy or ordinance), and trained local staff to implement the new program starting July 1, 2019.

Key BASMAA project deliverables provided to each Permittee to use as appropriate given local procedures and needs included:

- A protocol for pre-demolition building survey for priority PCBs-containing building materials;
- Model language for municipal adoption (e.g., ordinance) of the new program to manage PCBs materials during building demolition and model supporting staff report and resolution;
- CEQA strategy and model notice of exemption;
- Supplemental demolition permit model application materials, including forms, process flow charts, and applicant instructions; and
- An analysis to assist municipalities that pursue cost recovery.

Other project deliverables included:

- A coordination/communication strategy for the project;
- A technical memorandum summarizing any new information & decisions needed by BASMAA at outset, including an annotated table of regulatory drivers and relevant requirements;
- A technical memorandum with the state of the practice for identifying PCBs-containing building materials (developed to inform development of the pre-demolition building survey protocol listed below);
- Industry stakeholder outreach materials and a fact sheet for municipal staff;
- A spreadsheet tool used to develop the prioritized list of potential PCBs-containing building materials that the demolition program will focus on;
- A conceptual approach for an assessment methodology and data collection program to quantify PCBs loads reduced through managing PCBs-containing materials during building demolition.

During FY 2018/19, the BASMAA project concluded by conducting the following outreach and training tasks:

- Prepared training materials for municipal staff on adoption and implementation of the new program;

- Developed outreach materials and a standard presentation to inform industry stakeholders including developers, planning firms, urban planning non-governmental organizations, demolition firms, property owners, property managers, and realtors about the new program to manage PCBs in building materials during demolition;
- Using the above training materials, conducted training workshops (in-person and a webinar) for key municipal and countywide stormwater program staff;
- Conducted a webinar for industry stakeholders; and
- Developed a list of Bay Area opportunities, including contact information and dates, for municipal and/or stormwater program staff to conduct additional outreach to industry stakeholders using the above industry outreach materials.

In addition, during FY 2018/19 MRP Permittees worked together through the BASMAA Monitoring and Pollutants of Concern Committee (MPC) to begin developing a framework to comply with data collection/evaluation and reporting requirements under Provision C.12.f. As mentioned previously, these requirements include developing an assessment methodology and data collection program to quantify PCBs loads reduced through implementation of the new program. The preliminary regional process developed to-date includes the following steps:

1. The municipality informs demolition permit applicants that their projects are subject to the MRP Provision C.12.f requirements, necessitating, at a minimum, an initial screening for priority PCBs-containing materials.
2. For every demolition project, applicants complete and submit a version of BASMAA's model "PCBs Screening Assessment Form" (Screening Form) or equivalent to the municipality.
3. The municipality reviews the Screening Form to make sure it is filled out correctly and is complete and works with the applicant to correct any deficiencies.
4. The municipality then issues the demolition permit or equivalent, according to its procedures.⁴
5. For Applicable Structures only, the municipality submits completed Screening Forms and any supporting documents (consultant's report from PCBs building survey, QA/QC checklist, and lab reports) to its countywide program; forms for exempt sites need not be submitted. Forms should be submitted to the countywide programs electronically if feasible, and at a minimum annually, but quarterly is preferred.
6. The countywide programs compile the completed Screening Forms and any supporting documents. The countywide program then works with the other MRP countywide programs through BASMAA to manage and evaluate the data, and to assist Permittees with associated MRP reporting requirements.

⁴ Municipalities should require that applicants fill out and certify a Screening Form for every demolition. For non-Applicable Structures, applicants simply check the boxes, certify, and submit to municipality. Then the municipality can authorize the demolition (e.g., issue a demolition permit). In general, municipalities should have a completed and certified Screening Form before authorizing a demolition, unless they are a small community that is exempt or has some other arrangement with Regional Water Board staff. But there is no need to track non-Applicable Structures otherwise.

Permittees began implementing the program on July 1, 2019. The MRP stipulates a collective PCBs load reduction credit of 246.67 grams/year for San Mateo County Permittees, if all the Permittees implement a program consistent with the permit requirements.

3.5. Managing PCBs in Storm Drain or Roadway Infrastructure

Studies in areas outside of the Bay Area have shown that PCBs may be present in storm drain and/or roadway infrastructure due to their use in caulks and sealants in the mid to late 20th century. Provision C.12.e of MRP 2.0 requires Permittees to evaluate the presence of PCBs in caulks/sealants used in storm drain or roadway infrastructure in public ROWs by collecting samples of caulk and other sealants used in storm drains and between concrete curbs and street pavement. BASMAA completed a regional project to address this permit requirement on behalf of all MRP Permittees. The results of the study are documented in a project report that was submitted with SMCWPPP's FY 2017/18 Annual Report.

3.6. Diversions of Urban Runoff to Wastewater Treatment Facilities

The diversion of urban runoff (i.e., dry weather flows and/or stormwater runoff) to existing wastewater treatment facilities could potentially reduce PCBs and mercury loads to the Bay. A study was conducted in the City of San Carlos during MRP 1.0 to evaluate diversion of urban runoff to a publicly-owned treatment works (POTW). Stormwater runoff collected at the Pulgas Creek Pump Station (PCPS) during WY 2013 and WY 2014 rainfall events was diverted to a regional domestic wastewater treatment plant that is located in Redwood City and operated by Silicon Valley Clean Water (SVCW). The PCPS drains catchments with primarily old industrial land uses with the most elevated concentrations of PCBs in MS4 sediment and stormwater runoff samples collected to-date in San Mateo County. The study included monitoring PCBs and mercury concentrations in the diverted stormwater runoff. In addition, an engineering firm was retained to provide conceptual designs and associated planning-level costs for two full-scale design options (gravity or pumped flow) for diversions from the PCPS to the SVCW treatment plant. The pumped flow design included repurposing an existing sanitary sewer booster pump station located adjacent to the PCSC.

Both designs accounted for capacity limitations in the local sanitary sewer collection system during wet weather conditions. The City of San Carlos' sanitary sewer system is susceptible to overflows during storm events due to infiltration and inflow (I/I) of groundwater and stormwater into the collection system. The City entered a Consent Decree with San Francisco Baykeeper in 2010 which requires implementation of measures to reduce sanitary sewer overflows (SSOs), which led to development of a January 2013 Sewer Collection System Master Plan. For this study, a hydraulic model developed during the master planning process was used to analyze the capacity of the collection system for conveying flows from the PCPS to the SVCW treatment plant during rainfall events. Not surprisingly, the model indicated that the collection system had limited capacity to accept additional flows during wet weather conditions without causing system overflows or surcharge.

Based upon the study monitoring and conceptual designs, the estimated pollutant loads that could be diverted from reaching the Bay by a full-scale pumped or gravity flow diversion from the PCPS to the SVCW treatment plant were relatively low (2 to 5 grams/year of PCBs and < 1 gram/year of mercury). Planning-level estimated costs ranged from \$11,000 to \$23,000 per gram of PCBs diverted to the treatment plant. Given the relatively low effectiveness in terms of pollutant load reduction and the relatively high costs, a full-scale diversion at the PCPS did not appear cost-effective compared to other PCBs controls and was not pursued further (SMCWPPP 2015b).

3.7. Addressing Illegal Dumping

This source control measure category entails addressing illegal dumping of waste (e.g., construction and demolition debris, stockpiles, spilled materials) containing PCBs or mercury to prevent it from entering MS4s. If enhancements are made by San Mateo County MRP Permittees to programs that address illegal dumping and would prevent PCBs or mercury removal from entering stormwater runoff, the associated pollutant load reductions will be documented.

3.8. Mercury Reduction via Hazardous Waste Collection Programs

Many types of devices and equipment (e.g., thermometers, switches, and fluorescent lamps) can contain mercury. When these devices are not adequately managed at their end-of-life, mercury can be released into the environment and become available to stormwater runoff. Control measures currently implemented by Permittees that address the potential for mercury releases include: 1) the support of policies and laws that reduce the mass of mercury in specific devices/equipment; and 2) the implementation of recycling programs that reduce the risk of mercury from being released at the end-of-life of these devices and equipment.

San Mateo County municipalities participate in San Mateo County Health Department's Household Hazardous Waste (HHW) Program and Very Small Quantity Generator Business Collection (VSQG) Program. The HHW Program offers residents the opportunity to drop-off mercury-containing devices and equipment and other hazardous wastes at designated drop-off points or drop-off events free of charge. The VSQG Program provides an inexpensive hazardous waste disposal option to eligible businesses, non-profits, and other government agencies that generate less than 100 kilograms of waste per month. It operates by appointment only and charges a fee to cover the cost of transportation and disposal. Many San Mateo County municipal agencies promote the availability of the HHW Program and VSQG Program on their agency websites. The estimated mass of mercury collected in FY 2018/19 via these programs is presented in Section 5.0.

4.0 EXISTING AND PLANNED CONTROL MEASURES

SMCWPPP is tracking all existing and planned control measures that should result in pollutant load reduction credits towards meeting the San Mateo County portion of the PCBs and mercury TMDL wasteload allocations and MRP 2.0 load reduction requirements. All existing controls that commenced or were enhanced in 2005 or later are assumed to reduce urban runoff pollutant loads relative to the PCBs TMDL baseline urban runoff load. This year was selected because load reductions due to controls fully implemented before 2005 were already accounted for in the PCBs TMDL baseline urban runoff load estimate. As part of the evaluation SMCWPPP is assessing whether each existing or planned control would represent a new action or an enhancement during the MRP 2.0 permit term, including a period immediately preceding the permit term.⁵ In addition to credit towards TMDL goals, such controls should result in credit towards the MRP 2.0 requirement that a 3,000 grams/year PCBs load reduction is achieved across the MRP 2.0 area by the end of the permit term. Of this, an interim 500 grams/year reduction was required by June 2018, which was achieved on a regional basis (see SMCWPPP's FY 2017/18 Annual Report for more details). In addition, MRP 2.0 requires that at least 15 grams/year PCBs load reduction in San Mateo County is achieved via GI by the end of the permit term. The permit also requires a 6 grams/year mercury load reduction in San Mateo County via GI by the end of the permit term. The GI load reductions have already been achieved (see Sections 5.2 and 5.3).

The WMAs identified in San Mateo County and the associated control measures currently implemented (i.e., existing) or the control measures under development (i.e., planned) within these WMAs to-date are described for each San Mateo County Permittee in Sections 4.1 through 4.19. Each WMA and the GI/LID facilities within it are mapped in Appendix A, Figures A-1 through A-19. The Cities of Half Moon Bay and Pacifica drain to the Pacific Ocean and therefore were not included below, since this plan is focused on the PCBs and mercury TMDLs for San Francisco Bay. The inventory is organized alphabetically by Permittee and includes information on control measures in each WMA compiled by SMCWPPP to-date. It is important to note that the below summaries may not include all existing or planned control measures. The inventory will continue to be updated and refined as additional information becomes available. The land uses referenced in this report, including in Sections 4.1 through 4.19 below, are described in Appendix B.

⁵Based on language in the MRP and discussions with Regional Water Board staff, it is assumed that applicable controls implemented from July 1, 2013 through the end of the permit term should result in credit towards these load reduction requirements.

4.1. Town of Atherton

Watershed Management Areas

Table 4.1 lists the five WMA's identified to-date in the Town of Atherton, and its total land area and associated land uses.

Table 4.1. Atherton WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
238	San Francisco Bay	8	0%	0%	100%	0%	0%	0%
252	Atherton Creek	10	0%	2%	98%	0%	0%	0%
261	Redwood Creek	882	0%	1%	99%	0%	0%	0%
71	Ravenswood Slough	10	0%	17%	83%	0%	0%	0%
ATH	Multiple	2,314	0%	9%	87%	0%	4%	0%

Existing and Planned Control Measures Summary

Table 4.2 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the Town of Atherton.

Table 4.2. Existing (E) and planned (P) PCBs and mercury control measures in Atherton WMAs

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
238	E			E		E	E			E
252				E		E	E			E
261				E		E	E			E
71	E			E		E	E			E
ATH		E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the Town of Atherton to-date in WMAs 71 and 238. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Atherton treat **14 acres** of land comprised of old urban land use. Of this total, **1.16 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.3). An additional **12.50 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

Atherton is also pursuing a new multi-benefit GI facility to help reduce existing flooding issues in the lower reaches of Atherton Creek and reduce pollutant loads. A preliminary project design was developed in early 2018. The project was presented at the Town's Park and Recreation Committee and Town Council multiple times. The project received significant public opposition with respect to siting the project in the Town's only park (Holbrook-Palmer Park). As a result, the Council directed Town staff to evaluate other potential project locations at which a facility could be sited and still take advantage of the \$13.6 million funding commitment for the project from Caltrans. The project is now being proposed at Cartan Field located at Menlo College in Atherton. The project would include a diversion structure to re-direct all dry-weather urban runoff and the first flush of wet-weather runoff from the Atherton Channel through a pre-treatment device to remove trash, debris, and sediment before conveying the water into a buried multi-chambered storage/infiltration facility with a targeted storage capacity of eight to 10 acre-feet.

Table 4.3 Land area in the Atherton WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel-based New & Redevelopment or Retrofit	ATH	1.16	0	1.16	0	0	0
	Total	1.16	0	1.16	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

The Town of Atherton conducted a one-time desilting of the Atherton Channel at Watkins Avenue and Station Lane in 2004/2005. Approximately 25 cubic yards of sediment was removed during this activity.

However, the sediment was not tested for PCBs and mercury. If the Town were to repeat this enhanced municipal O&M activity in the future it may be possible to test the sediment removed for PCBs and mercury and estimate the pollutant loads avoided.

SMCWPPP is also continuing to evaluate whether other relevant PCBs and mercury control measures are present in Atherton or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.2. City of Belmont

Watershed Management Areas

Table 4.4 lists the six WMAs identified to-date in the City of Belmont, and their total land areas and associated land uses.

Table 4.4. Belmont WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
101	Laurel Creek	10	1%	3%	96%	0%	0%	0%
1011	Steinberger Slough	60	21%	49%	9%	11%	10%	0%
32	Steinberger Slough	27	0%	33%	66%	0%	1%	0%
60	Laurel Creek	270	5%	29%	60%	5%	1%	0%
77	Belmont Creek	59	16%	23%	52%	9%	0%	0%
BEL	Multiple	2,505	0%	12%	62%	2%	24%	0%

Existing and Planned Control Measures Summary

Table 4.5 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Belmont.

Table 4.5. Existing (E) and planned (P) PCBs and mercury control measures in Belmont WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
101	E			E		E	E			E
1011	E	E/P		E		E	E			E
32	E			E		E	E			E
60	E	E/P		E		E	E			E
77		E/P		E		E	E			E
BEL		E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of Belmont to-date in WMAs 101, 1011, 32, and 60. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Belmont treat **30 acres** of land, of which **1 acre** is comprised of old industrial land use and another **10.87 acres** is comprised of old urban land use. Of this total, **17.80 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.6). An additional **14.82 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. Belmont is also planning to construct green streets on public lands or ROWs that will treat **1.42 acres** of land. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

Table 4.6 Land area in the Belmont WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel-based New & Redevelopment or Retrofit	60	2.74	0	2.74	0	0	0
	77	1.00	1.00	0	0	0	0
	1011	3.39	0	0	0	0	3.39
	BEL	10.67	0	10.67	0	0	0
	Total	17.80	1.00	13.41	0	0	3.39

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Belmont or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.3. City of Brisbane

Watershed Management Areas

Table 4.7 lists the four WMAs identified to-date in the City of Brisbane, and their total land areas and associated land uses.

Table 4.7. Brisbane WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1004	San Francisco Bay	721	72%	5%	2%	0%	21%	0%
17	Guadalupe Valley Creek	788	25%	11%	30%	0%	34%	0%
350	San Francisco Bay	8	14%	0%	2%	0%	84%	0%
BRI	Multiple	215	1%	10%	7%	25%	57%	0%

Existing and Planned Control Measures Summary

Table 4.8 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Brisbane.

Table 4.8. Existing (E) and planned (P) PCBs and mercury control measures in Brisbane WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1004	E	E/P		E		E	E			E
17	E	E/P		E		E	E			E
350	E			E		E	E			E
BRI				E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of Brisbane to-date in WMAs 17, 350, and 1004. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Brisbane treat **38.43 acres** of land which is comprised of old industrial land use. All of this GI was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.9). An additional **65 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

Brisbane was also awarded funding from C/CAG in December 2017 for a Safe Routes to School / Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees imposed by C/CAG on registered vehicles in San Mateo County.

Table 4.9 Land area in the Brisbane WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	17	21.02	21.02	0	0	0	0
	1004	17.41	17.41	0	0	0	0
	Total	38.43	38.43	0	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

Brisbane may cleanout sediment in mixing basins that are downstream of an area where elevated PCBs in storm drain sediments have been observed. If the City were to conduct this enhanced municipal O&M activity it may be possible to test the sediment removed for PCBs and mercury and estimate the pollutant loads avoided.

SMCWPPP is also continuing to evaluate whether other relevant PCBs and mercury control measures are present in Brisbane or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.4. City of Burlingame

Watershed Management Areas

Table 4.10 lists the 11 WMAs identified to-date in the City of Burlingame, and their total land areas and associated land uses.

Table 4.10. Burlingame WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1005	San Francisco Bay	18	30%	65%	3%	0%	2%	0%
1006	San Francisco Bay	290	26%	41%	17%	11%	5%	0%
138	San Francisco Bay	15	69%	11%	0%	0%	20%	0%
139	Sanchez Creek	63	8%	2%	90%	0%	0%	0%
141	Easton Creek	62	31%	15%	54%	0%	0%	0%
142	Easton Creek	20	71%	29%	0%	0%	0%	0%
149	San Francisco Bay	81	10%	11%	79%	0%	0%	0%
16	San Francisco Bay	24	31%	0%	0%	0%	69%	0%
164	El Portal Creek	241	49%	22%	28%	0%	0%	0%
85	El Portal Creek	121	48%	51%	0%	0%	0%	0%
BUR	Multiple	1,845	1%	19%	75%	1%	4%	0%

Existing and Planned Control Measures Summary

Table 4.11 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Burlingame.

Table 4.11. Existing (E) and planned (P) PCBs and mercury control measures in Burlingame WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1005	E			E		E	E			E
1006	E	E/P		E		E	E			E
138				E		E	E			E
139		E/P		E		E	E			E
141	E	E		E		E	E			E
142	E	E		E		E	E			E
149	E	P		E		E	E			E
16	E	P		E		E	E			E
164	E	E/P		E		E	E			E
85	E	P		E		E	E			E
BUR	E	E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of Burlingame to-date in the nine WMAs indicated by Table 4.11. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at green streets and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Burlingame treat **45 acres** of land which is comprised of **7.57 acres** of old industrial and **37 acres** of old urban land uses. Of this, **12.04 acres** was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.12). An additional **46 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. Burlingame has six existing green street projects on public lands or ROWs that treat **2.37 acres** of old urban land use. Two of these project were completed during FY 2018/19, the Public Parking Lot H on El Camino Real and Ralston Avenue featuring rain gardens, and the California Drive Roundabout project with bioretention facilities. The Carolan Avenue Complete Streets Project featuring rain gardens, and reconstruction of the U.S. 101 / Broadway interchange featuring bioretention areas, were both completed in FY 2017/18. The Downtown Burlingame Streetscape Project featuring curb extensions and rain gardens was completed in 2014. The Donnelly Avenue Sustainable Streets and Parking Lot Demonstration project also featuring curb extensions and rain gardens was

completed in 2011. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

Table 4.12 Land area in Burlingame WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	164	4.64	3.87	0.77	0	0	0
	1006	2.79	0	2.79	0	0	0
	BUR	2.24	0	2.24	0	0	0
	Total	9.67	3.87	5.80	0	0	0
Green Street or Regional Retrofit	139	0.04	0	0.04	0	0	0
	164	0.81	0	0.81	0	0	0
	BUR	1.52	0	1.52	0	0	0
	Total	2.37	0	2.37	0	0	0
Total - All GI		12.04	3.87	7.36	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Burlingame or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.5. Town of Colma

Watershed Management Areas

Table 4.13 lists the 3 WMAs identified to-date in the Town of Colma, and their total land areas and associated land uses.

Table 4.13. Colma WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
181	Colma Creek	21	1%	37%	1%	0%	60%	0%
329	Colma Creek	65	6%	91%	1%	0%	2%	0%
COL	Multiple	1,139	1%	12%	3%	0%	84%	0%

Existing and Planned Control Measures Summary

Table 4.14 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the Town of Colma.

Table 4.14. Existing (E) and planned (P) PCBs and mercury control measures in Colma WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
181				E		E	E			E
329		E		E		E	E			E
COL	E	E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the Town of Colma to-date in WMA COL (Table 4.14). Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at green streets and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Colma treat **33 acres** of land which includes **25 acres** of old urban land uses. Of this, **19 acres** was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.15). An additional **6.73 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The Town was also awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County. Colma has one existing green street project on public lands or ROWs that was constructed in 2015 and treats **0.93 acres** of old urban land use. Colma is currently planning to construct a second green street project on Mission Road.

Table 4.15 Land area in Colma WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	COL	18.14	0	11.28	0	0	6.86
Green Street or Regional Retrofit	COL	0.93	0	0	0	0	0.93
Total - All GI		19.07	0	11.28	0	0	7.79

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Colma or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.6. City of Daly City

Watershed Management Areas

Table 4.16 lists the six WMAs identified to-date in the City of Daly City, and their total land areas and associated land uses.

Table 4.16. Daly City WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1004	San Francisco Bay	50	5%	68%	24%	0%	3%	0%
181	Colma Creek	28	1%	91%	0%	0%	8%	0%
307	Colma Creek	161	3%	22%	69%	0%	6%	0%
329	Colma Creek	742	0%	46%	45%	0%	9%	0%
350	San Francisco Bay	269	5%	30%	41%	0%	24%	0%
DCY	Multiple	1,131	1%	20%	64%	0%	16%	0%

Existing and Planned Control Measures Summary

Table 4.17 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Daly City.

Table 4.17 Existing (E) and planned (P) PCBs and mercury control measures in Daly City WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1004	E	P		E		E	E			E
181		P		E		E	E			E
307				E		E	E			E
329		E/P		E		E	E			E
350	E	P		E		E	E			E
DCY		E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of Daly City to-date in WMAs 1004 and 350 (Table 4.17). Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Daly City treat **nearly 108 acres** of land, which is comprised of **1 acre** of old industrial and **107 acres** of old urban land use. All of this GI was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.18). An additional **96 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

Daly City was also awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County.

Table 4.18 Land area in the Daly City WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	329	103.24	0	103.24	0	0	0
	DCY	4.52	1.02	3.50	0	0	0
	Total	107.76	1.02	106.74	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Daly City or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.7. City of East Palo Alto

Watershed Management Areas

Table 4.19 lists the eight WMAs identified to-date in the City of East Palo Alto, and their total land areas and associated land uses.

Table 4.19. East Palo Alto WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1015	San Francisco Bay	63	97%	3%	0%	0%	0%	0%
66	Ravenswood Slough	5	0%	1%	99%	0%	0%	0%
67	San Francisco Bay	95	17%	8%	64%	0%	11%	0%
68	San Francisquito Creek	317	1%	24%	70%	0%	4%	0%
70	San Francisco Bay	443	4%	25%	67%	0%	3%	0%
71	Ravenswood Slough	183	1%	20%	79%	0%	0%	0%
72	San Francisco Bay	26	79%	12%	0%	0%	9%	0%
EPA	Multiple	265	2%	18%	63%	0%	17%	0%

Existing and Planned Control Measures Summary

Table 4.20 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of East Palo Alto.

Source Property Investigation

Source property investigative work has been conducted in the City of East Palo Alto to-date in the seven WMAs indicated by Table 4.20. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Table 4.20. Existing (E) and planned (P) PCBs and mercury control measures in East Palo Alto WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1015	E	E/P		E		E	E			E
66	E			E		E	E			E
67	E	E/P		E		E	E			E
68		E		E		E	E			E
70	E	E/P		E		E	E			E
71	E			E		E	E			E
72	E	P		E		E	E			E
EPA	E	E		E		E	E			E

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in East Palo Alto treat **35 acres** of land which includes **13.5 acres** of old industrial and **16.5 acres** of old urban land uses. Of this, **17.77 acres** was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.21). An additional **1.62 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The City was also awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County. The City currently has six green street projects on public lands and/or in public ROW that are either under construction or in the planning stages that will treat at least **2 acres** of land. Additional information will be documented when it becomes available.

Table 4.21 Land area in East Palo Alto WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	67	1.20	1.20	0	0	0	0
	68	1.77	0	1.77	0	0	0
	70	9.48	4.98	1.55	0	0	2.95
	1015	2.70	2.70	0.00	0	0	0
	EPA	2.62	0	0.62	0	0	2.00
	Total	17.77	8.88	3.94	0	0	4.95

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

The City of East Palo Alto has reported preliminary information about potential opportunities to conduct sediment removal activities from locations that may have elevated PCBs concentrations. A large volume of soil (~150,000 cubic yards) resulting from past remediation activities (e.g., on the Stanford Campus) and believed to contain PCBs was stockpiled on a private property at 391 Demeter Street in East Palo Alto. The owner had stockpiled soils there for decades and the site was under Regional Water Board order until 2008. The City was not responsible for removing this material but believes soils may have migrated into nearby wetlands. In general, the City is addressing this old industrial area as part of its Ravenswood Specific Plan Area. The site may be undergoing redevelopment and the soil stockpiles may have been removed with testing of the soils for PCBs and other pollutants. SMCWPPP is currently in the process of obtaining more information from East Palo Alto staff.

SMCWPPP is also continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M, including channel desilting projects and cleanout of a stormwater pump station located at the east end of O'Connor Street and adjacent stormwater basin) are present in East Palo Alto or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.8. City of Foster City

Watershed Management Areas

Table 4.22 lists the two WMAs identified to-date in the City of Foster City, and their total land areas and associated land uses.

Table 4.22. Foster City WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1010	San Francisco Bay	271	19%	19%	1%	49%	11%	0%
FCY	Multiple	2,061	0%	7%	54%	31%	9%	0%

Existing and Planned Control Measures Summary

Table 4.23 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Foster City.

Table 4.23. Existing (E) and planned (P) PCBs and mercury control measures in Foster City WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1010		E/P	E	E		E	E			E
FCY		E/P		E		E	E			E

Source Property Investigation

Source property investigative work has not been conducted in WMAs in the City of Foster City to-date.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Foster City treat **63 acres** of land, which is comprised of **3.4 acres** of old industrial and **16.36 acres** of old urban land use. Of this total, **54 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.24). An additional **28 acres**

will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The City is also planning to construct a green street project in the median at Chess Drive that will include bioretention facilities to treat at least **0.5 acres** of land. Additional information will be documented when it becomes available.

Table 4.24 Land area in Foster City WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	1010	41.52	3.41	0	38.11	0	0
	FCY	12.26	0	7.12	3.30	0	1.84
	Total	53.78	3.41	7.12	41.41	0	1.84

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

Foster City has installed one hydrodynamic separator (a large full trash capture treatment system) in the public ROW in WMA 1010. This device treats nearly **25 acres** of land, including **6.8 acres** of old industrial and **18 acres** of old urban land uses.

Foster City conducted dredging in its lagoon in 2005 and removed about 100,000 cubic yards of sediment. Prior to this dredging project, in 1996 ten surface sediment samples were collected from locations that were spatially distributed throughout the lagoon. The samples were analyzed for PCBs (as Aroclors) and total mercury. PCBs were not detected in any of the 10 samples (detection limit of 20 µg/kg for each Aroclor). Mercury was detected in only 3 of the ten samples, at a relatively moderate level (0.2 mg/kg in each sample). It should be noted that Foster City was built in the 1960s and land uses, which are primarily residential and commercial/retail, have generally not changed since that time. In general, these land uses are associated with relatively low levels of PCBs and mercury in stormwater runoff. Based on the above data and the City's land use, it appears unlikely that enhancing efforts to periodically dredge the Foster City lagoon would be a cost-effective measure to reduce loads of PCBs and mercury to the Bay.

SMCWPPP is also continuing to evaluate whether other relevant PCBs and mercury control measures are present in Foster City or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.9. Town of Hillsborough

Watershed Management Areas

Table 4.25 lists the one WMA identified to-date in the Town of Hillsborough, and its total land area and associated land uses.

Table 4.25. Hillsborough WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
HIL	Multiple	3,974	0%	3%	81%	0%	15%	0%

Existing and Planned Control Measures Summary

Table 4.26 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the Town of Hillsborough.

Table 4.26. Existing (E) and planned (P) PCBs and mercury control measures in Hillsborough WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
HIL		E/P		E						E

Source Property Investigation

Source property investigative work has not been conducted in WMAs in the Town of Hillsborough to-date.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Hillsborough treat **0.12 acres** of land, all of which is comprised of old urban land use. All of this GI was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.27). An additional **5.63 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. The Town is also planning to construct an infiltration trench at Crossroads Park. It should be noted that the acres treated by GI

reported in this section are preliminary and may be revised in the future as additional information becomes available.

Table 4.27 Land area in Hillsborough WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	HIL	0.12	0	0.12	0	0	0
	TOTAL	0.12	0	0.12	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Hillsborough or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.10. City of Menlo Park

Watershed Management Areas

Table 4.28 lists the 12 WMAs identified to-date in the City of Menlo Park, and their total land areas and associated land uses.

Table 4.28. Menlo Park WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1012	Ravenswood Slough	50	84%	16%	0%	0%	0%	0%
1014	Atherton Creek	102	44%	53%	2%	0%	1%	0%
238	San Francisco Bay	337	39%	32%	28%	0%	1%	0%
239	Atherton Creek	19	84%	16%	0%	0%	0%	0%
247	San Francisquito Creek	118	0%	35%	64%	0%	1%	0%
252	Atherton Creek	98	8%	23%	68%	0%	1%	0%
332	Atherton Creek	9	94%	6%	0%	0%	0%	0%
378	San Francisquito Creek	138	3%	2%	94%	0%	0%	0%
66	Ravenswood Slough	59	54%	9%	0%	36%	1%	0%
70	San Francisco Bay	47	0%	15%	84%	0%	1%	0%
71	Ravenswood Slough	1,041	6%	26%	61%	5%	3%	0%
MPK	Multiple	2,290	1%	23%	56%	1%	18%	0%

Existing and Planned Control Measures Summary

Table 4.29 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Menlo Park.

Source Property Investigation

Source property investigative work has been conducted in the City of Menlo Park to-date in the nine WMAs shown in Table 4.29. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Table 4.29. Existing (E) and planned (P) PCBs and mercury control measures in Menlo Park WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1012	E	E/P		E		E	E			E
1014	E	E		E		E	E			E
238	E	E/P		E		E	E			E
239	E	E		E		E	E			E
247		E/P		E		E	E			E
252		E/P		E		E	E			E
332	E			E		E	E			E
378				E		E	E			E
66	E	E/P		E		E	E			E
70	E	E		E		E	E			E
71	E	P		E		E	E			E
MPK	E	E/P		E		E	E			E

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Menlo Park treat **245.44 acres** of land, of which **105.56 acres** is comprised of old industrial and **71.54 acres** is comprised of old urban land use. Of this total, **133.33 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.30). An additional **84 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The City was also awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County. The City currently has two green street projects that are under construction or planned for construction that will treat **4 acres** of land.

Table 4.30 Land area in Menlo Park WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	66	15.06	3.76	0	11.30	0	0
	71	10.96	6.52	4.44	0	0	0
	238	20.30	16.71	3.59	0	0	0
	239	9.69	9.69	0	0	0	0
	247	12.99	0	12.99	0	0	0
	252	3.80	1.55	2.25	0	0	0
	1012	47.35	47.35	0	0	0	0
	1014	9.12	5.19	3.93	0	0	0
	MPK	4.06	0	4.06	0	0	0
	Total	133.33	90.77	31.26	11.30	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

Menlo Park removed sediment from a section of the Atherton Channel at Haven Avenue and Bayfront Expressway (Highway 84) in 2007, 2008, 2009, 2011, 2013 and 2015. Each of these years the City removed about 500 cubic yards of sediment, except that only vegetation was removed in 2015. Since 2015, this cleaning has been performed every year and the City anticipates continuing with this schedule. Although the sediment has not been tested for PCBs to-date, the ongoing cleanout schedule provides a potential opportunity for future testing and calculation of load avoidance.

The Facebook West Campus is a 22 acre property located at 312-314 Constitution Avenue in Menlo Park. This site was identified in Envirostor as a voluntary PCBs cleanup site overseen by DTSC. The property is a former Raychem Corporation Facility, which later became Raychem/Tyco. The property was purchased by Facebook in 2011. Initial remedial actions at the site completed in 2007 included the excavation and off-site disposal of 6,561 cubic yards of contaminated soil and installation of a multi-media cap. Further remediation was conducted between 2012 and July 2013, and included excavation and off-site disposal of 1,800 cubic yards of PCBs contaminated soil with > 50 mg/Kg PCBs, and excavation and off-site disposal of 10,600 cubic yards of soil with < 50 mg/Kg PCBs. PCBs concentrations in the soil were as high as 2,600 mg/Kg prior to cleanup. The remediated soil cleanup concentration of <0.74 mg/Kg was achieved except for 100 cubic yards of soil with PCBs > 50 mg/Kg and 500 cubic yards of soil with PCBs < 50 mg/Kg that were left buried in place at 27 - 37 feet below the ground surface. SMCWPPP is evaluating whether a PCBs load reduction credit could be estimated for this site as a self-abatement.

SMCWPPP is also continuing to evaluate whether other relevant PCBs and mercury control measures are present in Menlo Park or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.11. City of Millbrae

Watershed Management Areas

Table 4.31 lists the four WMAs identified to-date in the City of Millbrae, and their total land areas and associated land uses.

Table 4.31. Millbrae WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1005	San Francisco Bay	241	14%	27%	33%	0%	25%	0%
395	Highline Creek	481	3%	15%	77%	0%	5%	0%
401	Highline Creek	52	13%	69%	16%	0%	2%	0%
MIL	Multiple	1,309	2%	14%	71%	0%	13%	0%

Existing and Planned Control Measures Summary

Table 4.32 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Millbrae.

Table 4.32. Existing (E) and planned (P) PCBs and mercury control measures in Millbrae WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1005	E	P		E		E	E			E
395		E/P		E		E	E			E
401				E		E	E			E
MIL		E		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of Millbrae to-date in WMA 1005 (Table 4.32). Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Millbrae treat **15 acres** of land, all of which is comprised of old urban land use. None of this GI was built from July 1, 2013 through June 30, 2018 (i.e., FY 2013/14 through FY 2017/18). An additional **20.53 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The City was also awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County. Millbrae is currently constructing a green street project on Taylor Boulevard and Almenar Street that will treat **0.5 acres** of land with bioretention facilities.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Millbrae or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.12. Town of Portola Valley

Watershed Management Areas

Table 4.33 lists the one WMA identified to-date in the Town of Portola Valley, and its total land area and associated land uses.

Table 4.33. Portola Valley WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
PVY	Multiple	5,794	0%	2%	36%	3%	58%	0%

Existing and Planned Control Measures Summary

Table 4.34 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the Town of Portola Valley.

Table 4.34. Existing (E) and planned (P) PCBs and mercury control measures in Portola Valley WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
PVY		E		E		E	E			E

Source Property Investigation

Source property investigative work has not been conducted in WMAs in the Town of Portola Valley to-date.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Portola Valley treat **1.67 acres** of land, all of which is comprised of old urban land use. All of this total was built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.35). An additional **11.6 acres** will be treated by new or redevelopment

projects that are currently under construction or planned for construction. It should be noted that the information on GI reported in this section is preliminary and may be revised in the future as additional information becomes available.

Table 4.35 Land area in Portola Valley WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	PVY	1.67	0	1.67	0	0	0
	Total	1.67	0	1.67	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Portola Valley or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.13. City of Redwood City

Watershed Management Areas

Table 4.36 lists the 26 WMAs identified to-date in the City of Redwood City, and their total land areas and associated land uses.

Table 4.36. Redwood City WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1000	San Francisco Bay	143	75%	4%	0%	12%	9%	0%
1011	Steinberger Slough	153	6%	4%	0%	62%	28%	0%
1013	Atherton Creek	38	15%	33%	37%	0%	14%	0%
1014	Atherton Creek	69	1%	16%	83%	0%	0%	0%
1016	Pulgas Creek	6	0%	15%	0%	0%	85%	0%
239	Atherton Creek	17	62%	36%	2%	0%	0%	0%
253	Atherton Creek	193	2%	12%	85%	0%	1%	0%
254	Atherton Creek	37	26%	67%	0%	1%	6%	0%
261	Redwood Creek	432	2%	26%	70%	0%	2%	0%
266	Redwood Creek	91	9%	63%	25%	4%	0%	0%
267	Redwood Creek	74	37%	35%	4%	23%	2%	0%
269	San Francisco Bay	45	9%	0%	0%	74%	16%	0%
323	Redwood Creek	185	1%	41%	57%	0%	0%	0%
324	Redwood Creek	44	8%	42%	50%	0%	0%	0%
325	Redwood Creek	21	15%	29%	56%	0%	0%	0%
327	Redwood Creek	126	19%	52%	29%	0%	1%	0%
333	Redwood Creek	15	29%	18%	0%	53%	0%	0%
334	Redwood Creek	19	48%	3%	0%	39%	10%	0%
335	Redwood Creek	24	73%	23%	0%	0%	4%	0%
336	Redwood Creek	66	24%	66%	10%	0%	1%	0%
337	Redwood Creek	137	17%	31%	52%	0%	0%	0%
379	Atherton Creek	400	27%	43%	30%	0%	0%	0%
388	Redwood Creek	42	2%	48%	50%	0%	0%	0%
405	San Francisco Bay	22	100%	0%	0%	0%	0%	0%
407	San Francisco Bay	18	61%	11%	0%	19%	9%	0%
RCY	Multiple	4,595	1%	8%	55%	21%	15%	0%

Existing and Planned Control Measures Summary

Table 4.37 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of Redwood City.

Table 4.37. Existing (E) and planned (P) PCBs and mercury control measures in Redwood City WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1000	E	E/P		E		E	E			E
1009	E	E		E		E	E			E
1011	E	E		E		E	E			E
1013				E		E	E			E
1014	E	E		E		E	E			E
1016	E			E		E	E			E
239	E	E		E		E	E			E
253	E	E/P		E		E	E			E
254	E	E		E		E	E			E
261		E/P		E		E	E			E
266	E	E/P		E		E	E			E
267	E			E		E	E			E
269				E		E	E			E
323	E			E		E	E			E
324	E	E/P		E		E	E			E
325		P		E		E	E			E
327	E	E/P		E		E	E			E
333	E			E		E	E			E
334				E		E	E			E
335				E		E	E			E
336		E/P		E		E	E			E
337	E	E		E		E	E			E
379	E	E/P		E		E	E			E
388	E	E/P		E		E	E			E
405				E		E	E			E
407	E			E		E	E			E
80				E		E	E			E
RCY	E	E/P		E		E	E			E
SMC	E	E/P		E		E	E			E
WDE	E	E		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of Redwood City to-date in the 21 WMAs indicated by Table 4.37. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at green streets and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in Redwood City treat **221 acres** of land, of which **24 acres** is comprised of old industrial and **121 acres** is comprised of old urban land use. Of this total, **115 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.38). An additional **52 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

Redwood City has four existing GI projects on public lands and ROWs. One project was constructed in 2008 and treats **3.55 acres**, and two projects were constructed in 2014 and treat **2.4 acres** of old industrial and new urban land use. For the fourth project, the City was awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County. The project was completed in 2019 and treats **1.17 acres** of old urban land use in WMA RCY as part of the Kennedy Middle School Safe Routes to School Project. These projects include bioretention facilities and vegetated swales.

The City is also planning to construct additional green streets on public lands or ROWs that will treat **6.09 acres** of land. One of these projects is the Middlefield Road Streetscape, which was awarded funding via a Proposition 1 stormwater implementation grant administered by the State Water Resources Control Board and is expected to be completed by about June 2020. Another project is a green street project on 5th and Page that will include bioretention facilities, which is currently in the planning stages.

SMCWPPP has also developed a concept for regional stormwater retention facilities beneath playing fields at the City's Red Morton Park that would potentially manage runoff from up to **1,650 acres**. The concept was presented to the City's Utilities Subcommittee and City Council as part of its GI Plan adoption, and C/CAG is working with the County Office of Sustainability to advance preliminary design of the project via funds awarded from the EPA San Francisco Bay Water Quality Improvement Fund to the County. Additional coordination among interested parties is continuing in early FY 2019/20.

Other PCBs and Mercury Controls

SMCWPPP has also begun to evaluate the load reduction opportunity available through potential future sediment removal actions at a small stormwater detention pond in Redwood City. Areas draining to the pond include a portion of San Carlos with old industrial land uses that are associated with elevated PCBs in street and storm drain sediments, including the Delta Star / Tiegel site, a PCBs source property (see Section 4.15). There are currently no sediment removal actions conducted at the pond.

The stormwater detention pond is located within the Redwood Shores Ecological Reserve (Figure 4.1), which is owned and managed by the California Department of Fish and Wildlife. However, the Redwood City Public Works Department operates a pump station at the pond, including providing daily

management of water levels in the pond and pump station maintenance as needed. As water levels in the pond rise, the pumps are turned on and water from the pond is pumped through a discharge pipe at the south-eastern edge of the pond into the adjacent Steinberger slough at discharge point A (Figure 4.1). A second discharge pipe conveys gravity-fed flow from the north-eastern edge of the pond into the Steinberger Slough at discharge point B (Figure 4.1). Both discharge pipe outfalls typically remains below the water surface in the slough, except at low tide.

Table 4.38 Land area in Redwood City WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	239	0.70	0	0.70	0	0	0
	253	0.50	0	0.50	0	0	0
	254	3.91	3.91	0	0	0	0
	261	7.04	0.99	5.78	0	0	0.27
	266	7.17	4.65	2.52	0	0	0
	324	2.96	0	2.96	0	0	0
	327	5.47	0	5.47	0	0	0
	336	7.02	0	7.02	0	0	0
	337	0.61	0	0.61	0	0	0
	379	28.55	8.84	19.71	0	0	0
	388	1.19	1.19	0	0	0	0
	1000	1.66	1.66	0	0	0	0
	1009	0.14	0	0.14	0	0	0
	1014	1.09	0	1.09	0	0	0
	RCY	43.43	0.85	23.51	18.10	0	0.97
	Total	111.45	22.09	70.02	18.10	0	1.24
Green Street or Regional Retrofit	1000	1.66	1.66	0	0	0	0
	RCY	1.94	0	1.17	0.77	0	0
	Total	3.60	1.66	1.17	0.77	0	0
Total - All GI		115.05	23.75	71.19	18.87	0	1.24

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

SMCWPPP previously conducted a site visit to the pond with representatives from Redwood City Public Works and the California Fish and Wildlife Department. Based on the observations made during the visit, SMCWPPP identified several potential tasks that could be implemented as initial steps that would help inform the costs and benefits of implementing enhanced sediment removal activities at the site.

The tasks under consideration include:

- Characterizing PCBs and mercury concentrations in accumulated pond sediments;
- Characterizing concentrations of PCBs and mercury in sediments that have accumulated in the adjacent slough near the pond's outfalls and upstream and downstream, to better understand whether polluted sediment are transported from the pond to the slough;
- Monitoring stormwater flows into and out of the pond for PCBs and mercury to estimate loads into the pond, and subsequently into the slough from the pond.
- Estimate annual stormwater loads of PCBs and/or mercury that flow to the pond from the adjacent old industrial source areas;
- Estimating pollutant loads avoided via one-time or periodic sediment removal actions (e.g., sediment dredging) and the costs of those actions;
- Estimate the mass of PCBs and mercury in annual stormwater flows that are deposited within the pond and could be removed through ongoing sediment-removal actions;

If such monitoring and evaluation indicates that sediment removal actions at the pond would be a cost-effective control for PCBs and mercury, SMCWPPP and/or the City would work with the appropriate agencies (e.g., California Department of Fish and Wildlife) to further identify logistical considerations (e.g., methods, permits, schedules).

SMCWPPP is also continuing to evaluate whether other relevant PCBs and mercury control measures are present in Redwood City or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.



Figure 4.1. Drainage catchment and storm drain lines for the Redwood Shores Ecological Reserve Stormwater Detention Basin in Redwood City (shown in blue). Point A is the pump station discharge pipe location. Point B is the gravity fed discharge pipe location. Both discharge pipes empty to the Steinberger Slough.

4.14. City of San Bruno

Watershed Management Areas

Table 4.39 lists the eight WMAs identified to-date in the City of San Bruno, and their total land areas and associated land uses.

Table 4.39. San Bruno WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1005	San Francisco Bay	301	6%	22%	65%	0%	7%	0%
290	San Bruno Creek	1,773	2%	29%	54%	0%	15%	0%
291	Colma Creek	23	0%	100%	0%	0%	0%	0%
292	Colma Creek	155	23%	56%	21%	0%	0%	0%
296	Colma Creek	573	0%	9%	55%	0%	36%	0%
307	Colma Creek	25	0%	24%	76%	0%	0%	0%
362	San Bruno Creek	3	48%	52%	0%	0%	0%	0%
SBO	Multiple	659	0%	20%	57%	0%	23%	0%

Existing and Planned Control Measures Summary

Table 4.40 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of San Bruno.

Source Property Investigation

Source property investigative work has been conducted in the City of San Bruno to-date in the five WMAs indicated by Table 4.40. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Table 4.40. Existing (E) and planned (P) PCBs and mercury control measures in San Bruno WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1005	E	P		E		E	E			E
290		E/P		E		E	E			E
291	E			E		E	E			E
292	E			E		E	E			E
296	E			E		E	E			E
307		E		E		E	E			E
362	E			E		E	E			E
SBO				E		E	E			E

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in San Bruno treat **22 acres** of land, of which **7 acres** is comprised of old industrial and **15 acres** is comprised of old urban land use. Of this total, **11.5 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.41). An additional **11.4 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

SMCWPPP also developed a project concept for a regional retention facility on Caltrans property between the I-280 and I-380 interchange. The project concept was responsive to an identified need for upstream retention in San Bruno's Storm Drain Master Plan to alleviate downstream flooding. The project concept was submitted to Caltrans for consideration for funding given that approximately 40 acres of Caltrans rights-of-way are in the project drainage area. The concept is currently on a list for Caltrans consideration for future funding, but it is currently anticipated to be a low priority project for Caltrans due to low overall benefit relative to Caltrans interests (primarily trash load reduction and then TMDL load reductions). Because there is also upstream drainage area within unincorporated San Mateo County, C/CAG and the County are also hoping to advance design work for this project, leveraging the EPA grant funds mentioned in the above Redwood City project.

Table 4.41 Land area in San Bruno WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	290	11.54	7.00	4.54	0	0	0
	Total	11.54	7.00	4.54	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in San Bruno or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.15. City of San Carlos

Watershed Management Areas

Table 4.42 lists the 11 WMAs identified to-date in the City of San Carlos, and their total land areas and associated land uses.

Table 4.42. San Carlos WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1011	Steinberger Slough	261	52%	24%	24%	0%	0%	0%
1016	Pulgas Creek	135	74%	26%	0%	0%	0%	0%
207	Steinberger Slough	82	11%	33%	54%	0%	2%	0%
210	Pulgas Creek	141	57%	43%	0%	0%	0%	0%
31	Pulgas Creek	99	69%	15%	16%	0%	0%	0%
32	Steinberger Slough	39	21%	37%	42%	0%	0%	0%
57	Pulgas Creek	63	7%	58%	34%	0%	2%	0%
59	Steinberger Slough	28	88%	12%	0%	0%	0%	0%
75	Steinberger Slough	65	86%	14%	0%	0%	0%	0%
80	Cordilleras Creek	20	8%	82%	10%	0%	0%	0%
SCS	Multiple	2,510	0%	5%	80%	0%	15%	0%

Existing and Planned Control Measures Summary

Table 4.43 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of San Carlos.

Source Property Investigation

Source property investigative work has been conducted in the City of San Carlos to-date in the eight WMAs indicated by Table 4.43. WMA 31 and WMA 210, referred to respectively as the Pulgas Creek pump station north and south drainages, have been a particular focus areas for source property investigation work over the past 15 years. These primarily old industrial catchments have the most elevated concentrations of PCBs in MS4 sediment and stormwater runoff samples collected to-date from WMAs in San Mateo County. Collectively they were designated as a “pilot watershed” for the grant funded Clean Watershed for a Clean Bay (CW4CB) project (CW4CB 2017a). Two potential source properties that have been identified in these WMAs to-date are: (1) 977 and 1007/1011 Bransten Road in WMA 31 and (2) 1411 Industrial Road in WMA 210. SMCWPPP and the City of San Carlos have referred the 977 and 1007/1011 Bransten Road Bransten Road property to the Regional Water Board, as described below. SMCWPPP and the City of San Carlos are working with the property owner on next steps at the 1411 Industrial Road property. The property owner is working with Regional Water Board staff and has retained a consultant to investigate potential sources of PCBs associated with the property.

Table 4.43. Existing (E) and planned (P) PCBs and mercury control measures in San Carlos WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1011	E	E		E		E	E			E
1016	E	E/P		E		E	E			E
207		P		E		E	E			E
210	E			E		E	E			E
31	E	E/P		E		E	E			E
32	E	P		E		E	E			E
57		E/P		E		E	E			E
59	E	E		E		E	E			E
75	E	P		E		E	E			E
80				E		E	E			E
SCS	E	E/P		E		E	E			E

Based on the spatial distribution of PCBs in MS4 and street dirt sediments collected in WMA 31 and WMA 210, it appears that other source(s) remain unidentified in WMA 210. PCBs from unknown sources were previously found in inlets and manholes in the vicinity of Center, Washington and Varian Streets and Bayport Avenue in WMA 210. The PCBs in these samples could have originated from any of about 20 small industries on these streets. During WY 2017, seven additional samples were collected in this area. The results suggested that three small properties could be PCBs sources. Two samples collected from the driveways of 1030 Washington Street, a construction business, had elevated PCBs (1.29 and 3.73 mg/kg). A sample from the driveway of 1029 Washington Street was also elevated with a concentration of 5.64 mg/kg. In addition, samples from the driveway of 1030 Varian Street, an unpaved lot used for storage, had an elevated PCBs concentration of 1.84 mg/kg. It should be noted that all of the buildings in this area appear to be of the type and age that may have PCBs in building materials. SMCWPPP is currently working with the City of San Carlos to determine next steps for these properties.

Another source property identified through SMCWPPP's investigations is located at 270 Industrial Road / 495 Bragato Road in WMA 1011 in San Carlos. 270 Industrial Road is occupied by the Delta Star facility where transformers are manufactured, including transformers with PCBs historically (from 1961 to 1974). Adjacent to 270 Industrial Road is 495 Bragato Road (Tiegel Manufacturing), a roughly three acre site that is largely unpaved. PCBs appear to have migrated to this property from the Delta Star property.

In October 2018, SMCWPPP and the City of San Carlos worked together to submit two source property referrals (both in San Carlos) to the Regional Water Board:

- 270 Industrial Road / 495 Bragato Road, San Carlos (Delta Star / Tiegel)
- 977 and 1007/1011 Bransten Road, San Carlos

The total combined acreage of these properties is about 10 acres, resulting in an estimated about 20 g/year load reduction (see Section 5.1 for the calculation methods) when these properties are formally referred and the associated enhanced municipal O&M is implemented, per MRP requirements.

Green Infrastructure

Based on the information compiled to-date, GI at green streets and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in San Carlos treat **46 acres** of land, of which **35.6 acres** is comprised of old industrial and **10.7 acres** is comprised of old urban land use. Of this total, **44 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.44). An additional **20 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

San Carlos also has an existing green street project that was constructed in 2014 in the public ROW along Bransten Road, which is located in an old industrial area (CW4CB 2017c). These bioretention facilities were constructed within curb extensions and treat **0.54 acres** of old industrial land use.

The City is also planning a green street along San Carlos Ave between Wellington Ave and Prospect St. The San Carlos Avenue Pedestrian Project will incorporate flow through planters and trees at various locations along the corridor. As part of this project, the City is also working with Arundel Elementary School to construct bioretention facilities in the school's parking lot.

Other PCBs and Mercury Controls

As part of the CW4CB project, in 2013 San Carlos conducted a street flushing pilot project to test the effectiveness of this type of control measure in reducing PCBs and mercury in stormwater runoff (CW4CB 2017b). Additional street flushing is not currently planned in San Carlos or other locations in San Mateo County.

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in San Carlos or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

Table 4.44 Land area in San Carlos WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	57	0.37	0	0.37	0	0	0
	59	18.22	18.22	0	0	0	0
	1011	13.39	13.39	0	0	0	0
	1016	2.62	2.62	0	0	0	0
	SCS	8.84	0	8.84	0	0	0
	Total	43.44	34.23	9.21	0	0	0
Green Street or Regional Retrofit	31	0.54	0	0.54	0	0	0
Total - All GI		43.98	34.23	9.75	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

4.16. City of San Mateo

Watershed Management Areas

Table 4.45 lists the 20 WMAs identified to-date in the City of San Mateo, and their total land areas and associated land uses.

Table 4.45. City of San Mateo WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1007	San Mateo Creek	87	11%	31%	56%	0%	2%	0%
1008	16th Avenue Channel	111	5%	15%	79%	0%	1%	0%
1009	Multiple	175	33%	34%	33%	0%	0%	0%
101	Laurel Creek	211	5%	22%	73%	0%	0%	0%
1010	San Francisco Bay	2	0%	0%	0%	99%	1%	0%
1017	San Francisco Bay	18	82%	17%	0%	0%	1%	0%
111	San Mateo Creek	95	8%	57%	33%	0%	2%	0%
114	16th Avenue Channel	85	18%	24%	58%	0%	0%	0%
120	16th Avenue Channel	10	6%	14%	80%	0%	0%	0%
149	San Francisco Bay	399	5%	12%	82%	0%	1%	0%
156	16th Avenue Channel	40	17%	57%	25%	0%	1%	0%
25	Poplar Creek	219	6%	17%	77%	0%	0%	0%
399	San Mateo Creek	32	6%	9%	85%	0%	0%	0%
403	16th Avenue Channel	48	4%	13%	83%	0%	0%	0%
408	16th Avenue Channel	43	19%	51%	28%	0%	2%	0%
60	Laurel Creek	28	0%	13%	1%	85%	1%	0%
89	Borel Creek	98	15%	49%	35%	0%	1%	0%
90	Borel Creek	21	6%	10%	84%	0%	0%	0%
92	Borel Creek	136	3%	36%	61%	0%	0%	0%
SMO	Multiple	5,789	1%	21%	64%	4%	9%	0%

Existing and Planned Control Measures Summary

Table 4.46 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of San Mateo.

Table 4.46. Existing (E) and planned (P) PCBs and mercury control measures in City of San Mateo WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1007	E	E/P		E		E	E			E
1008		E		E		E	E			E
1009	E	E/P		E		E	E			E
101	E			E		E	E			E
1010				E		E	E			E
1017				E		E	E			E
111	E	E/P		E		E	E			E
114	E	P		E		E	E			E
120		E		E		E	E			E
149	E	E/P		E		E	E			E
156	E	E/P		E		E	E			E
25	E		E	E		E	E			E
399				E		E	E			E
403	E			E		E	E			E
408	E	P		E		E	E			E
60	E			E		E	E			E
89	E	E/P		E		E	E			E
90		E		E		E	E			E
92		E/P		E		E	E			E
SMO	E	E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of San Mateo to-date in the 13 WMAs shown in Table 4.46. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at green streets and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in the City of San Mateo treat **60 acres** of land which is comprised of **13 acres** of old industrial and **42 acres** of old urban land uses. Of this, **44.72 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.47). An additional **153 acres** will be treated by new or redevelopment projects and green streets that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The City of San Mateo has four existing green street projects and one planned green street project that are described in more detail below.

1. Laurel Elementary School Safe Routes to School. The San Mateo-Foster City School District, the City of San Mateo, and SMCWPPP created a project that built upon the Safe Routes to School program. A semicircular rain garden and seating area captures a portion of rooftop runoff while interior and perimeter stormwater planters in the parking lot manages building and parking lot runoff. Two street intersections now feature stormwater curb extensions that shorten crossing distance while at the same time capturing, slowing, and cleaning runoff before it enters Laurel Creek. The project was completed in 2015.
2. Delaware Street Bike Lane and Streetscape Improvement Project. The project consists of improvements to the bike lane and streetscape on South Delaware Street between Sunnybrae Boulevard and Charles Lane. Bioretention facilities are incorporated into street, traffic signage and striping, lighting, landscape, and irrigation improvements. In addition, the project includes a bioretention bulb-out at East 16th Avenue and South Claremont Street. The project was completed in 2014.
3. Poplar Corridor Safety Improvement Project. The project included safety improvements along the Poplar Avenue Corridor as well as neighborhood enhancements along Humboldt Street between Peninsula Avenue and Poplar Avenue. The project includes bioretention bulb-outs at the intersection of Humboldt Street and College Avenue and a mid-block bioretention curb extension along Humboldt Avenue in front of the San Mateo Superior Court, Central Branch location. The project was completed in 2016.
4. North Central Pedestrian Improvements Project. The North Central Pedestrian Improvements Project is part of the City's Pedestrian Master Plan. The intersection improvements include curb bulb-outs with bioretention. The project was completed in 2017.
5. East 4th Avenue and Fremont Street GI Project. The City plans to build a Green Street project at East 4th Avenue and South Fremont Street (with curb extension and bioretention) as part of the San Francisco Estuary Partnership / BASMAA Urban Greening Bay Area grant from EPA through its San Francisco Bay Water Quality Improvement Fund. This project will install bioretention bulb-outs on the northwest and southwest corners of the intersection of East 4th Avenue and South Fremont Street, and on the northeast and southeast corners of South Delaware Street at East 5th Avenue and East 9th Avenue. The project will include replacing concrete sidewalk, curb and gutter, and ramps, installing planters with bioretention soil and underdrain pipes, and adjusting the adjacent storm drain catch basins. The total project budget is \$400,000 and is scheduled for completion in 2019.

Table 4.47 Land area in City of San Mateo WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	90	1.12	1.12	0	0	0	0
	111	0.28	0	0	0	0	0.28
	149	3.08	3.08	0	0	0	0
	156	3.31	0	3.31	0	0	0
	1007	0.29	0.29	0	0	0	0
	1008	3.20	3.20	0	0	0	0
	1009	3.35	3.35	0	0	0	0
	SMO	22.92	0	18.88	1.17	0	2.87
	Total	37.55	11.04	22.19	1.17	0	3.15
Green Street or Regional Retrofit	156	2.11	0	2.11	0	0	0
	SMO	5.06	0	5.06	0	0	0
	Total	7.17	0	7.17	0	0	0
Total - All GI		44.72	11.04	29.36	1.17	0	3.15

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

The City of San Mateo has installed one hydrodynamic separator (a large full trash capture treatment system) in the public ROW in WMA 25. This device treats nearly 284 acres of land, including 15 acres of old industrial and 269 acres of old urban land uses.

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in the City of San Mateo or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.17. Unincorporated San Mateo County

Watershed Management Areas

Table 4.48 lists the 17 WMAs identified to-date in unincorporated County of San Mateo, and their total land areas and associated land uses.

Table 4.48. Unincorporated County of San Mateo WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1005	San Francisco Bay	224	9%	33%	0%	0%	57%	0%
1011	Steinberger Slough	33	60%	38%	2%	0%	0%	0%
17	Guadalupe Valley Creek	850	1%	0%	0%	0%	99%	0%
181	Colma Creek	26	47%	44%	9%	0%	0%	0%
247	San Francisquito Creek	121	17%	70%	12%	0%	1%	0%
253	Atherton Creek	87	15%	4%	79%	0%	1%	0%
261	Redwood Creek	319	0%	13%	87%	0%	0%	0%
290	San Bruno Creek	224	0%	10%	0%	0%	90%	0%
293	Colma Creek	18	0%	0%	0%	0%	100%	0%
296	Colma Creek	131	0%	11%	37%	0%	52%	0%
307	Colma Creek	126	0%	0%	0%	0%	100%	0%
332	Atherton Creek	8	7%	6%	87%	0%	0%	0%
350	San Francisco Bay	40	0%	0%	0%	0%	100%	0%
379	Atherton Creek	403	28%	20%	50%	0%	1%	0%
71	Ravenswood Slough	158	0%	6%	94%	0%	0%	0%
77	Belmont Creek	27	81%	7%	11%	0%	0%	0%
SMC	Multiple	174,760	1%	1%	3%	0%	94%	0%

Existing and Planned Control Measures Summary

Table 4.49 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in unincorporated County of San Mateo.

Source Property Investigation

Source property investigative work has been conducted in unincorporated County of San Mateo to-date in the 14 WMAs indicated by Table 4.49. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Table 4.49. Existing (E) and planned (P) PCBs and mercury control measures in unincorporated San Mateo County WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1005				E		E	E			E
1011	E	P		E		E	E			E
17	E			E		E	E			E
149 ^{1,2}	n/a ⁵	E/P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
181		E		E		E	E			E
247				E		E	E			E
253	E			E		E	E			E
261		P		E		E	E			E
266 ^{1,3}	n/a	P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
290		P		E		E	E			E
293	E			E		E	E			E
296	E			E		E	E			E
307		P		E		E	E			E
327 ^{1,3}	n/a	P								
332	E			E		E	E			E
336 ^{1,3}	n/a	P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
350	E			E		E	E			E
379	E	E/P		E		E	E			E
71	E	E		E		E	E			E
77		E		E		E	E			E
SMC	E	E/P		E		E	E			E
SMO ^{1,2}	n/a	E/P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SSF ^{1,4}	n/a	P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

1 – Although the WMA is not under unincorporated County’s jurisdiction, the County owns one or more parcels in the WMA that have existing or planned GI projects. Other control measures in these WMAs are identified in the existing and planned control measure tables for each municipality that has jurisdiction over the WMA land area, as identified below.

2 – WMAs 149 and SMO are located in the City of San Mateo. See Section 4.1.6 for all control measures in these WMAs.

3 – WMAs 266, 327, and 336 are located in Redwood City. See Section 4.1.3 for all control measures in these WMAs.

4 – WMA SSF is located in South San Francisco. See Section 4.1.8 for all control measures in this WMA.

5 – n/a = not applicable, because the control measure is or would be implemented by another municipality.

Green Infrastructure

Based on the information compiled to-date, GI at green streets and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in unincorporated County of San Mateo treat **188 acres** of land which includes **6.7 acres** of old industrial and **163 acres** of old urban land uses. Of this, **146 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.50). An additional **35 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The County is also constructing or planning to construct two additional green street projects on public lands that will treat **2.07 acres** of land. The first project is the reconstruction of 7th Avenue from Middlefield Road to Edison Way in the North Fair Oaks area in Menlo Park. The second project is the Middlefield Road Improvement Project which is currently planned to feature 14 curb bulb outs with bioretention facilities and flow-through planters.

The County was also awarded funding from C/CAG in December 2017 for a Safe Routes to School/Green Streets Infrastructure Pilot Project funded by local Safe Routes to School and stormwater funding, all from vehicle registration fees in San Mateo County.

Table 4.50 Land area in Unincorporated County of San Mateo WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	71	9.46	0	9.46	0	0	0
	77	2.19	2.19	0	0	0	0
	149	2.00	0	2.00	0	0	0
	181	0.99	0	0.99	0	0	0
	379	8.22	1.84	6.38	0	0	0
	SMC	118.87	0	115.87	0	0	3.00
	SMO	0.81	0	0.81	0	0	0
	Total	142.54	4.03	135.51	0	0	3.00
Green Street or Regional Retrofit	SMC	3.30	0	3.30	0	0	0
Total - All GI		145.84	4.03	138.81	0.00	0.00	3.00

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

Updated Control Measure Plan for PCBs & Mercury in San Mateo County Stormwater Runoff (September 2019)

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures are present in unincorporated County of San Mateo or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.18. City of South San Francisco

Watershed Management Areas

Table 4.51 lists the 30 WMAs identified to-date in the City of South San Francisco, and their total land areas and associated land uses.

Table 4.51. City of South San Francisco WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
1001	Colma Creek	410	42%	35%	17%	0%	6%	0%
1002	San Francisco Bay	293	62%	31%	0%	2%	5%	0%
1005	San Francisco Bay	7	0%	100%	0%	0%	0%	0%
1011	Steinberger Slough	40	41%	39%	0%	0%	21%	0%
291	Colma Creek	171	81%	18%	0%	0%	2%	0%
292	Colma Creek	65	95%	4%	0%	0%	2%	0%
293	Colma Creek	636	27%	22%	39%	0%	12%	0%
294	Colma Creek	67	92%	8%	0%	0%	0%	0%
295	Colma Creek	25	73%	22%	0%	0%	4%	0%
296	Colma Creek	568	4%	24%	70%	0%	2%	0%
297	Colma Creek	30	13%	18%	69%	0%	0%	0%
298	Colma Creek	122	9%	9%	72%	0%	10%	0%
306	Colma Creek	37	37%	23%	41%	0%	0%	0%
307	Colma Creek	943	1%	19%	74%	1%	5%	0%
311	Colma Creek	111	3%	11%	85%	0%	1%	0%
313	San Francisco Bay	77	42%	21%	34%	0%	4%	0%
314	San Francisco Bay	66	78%	16%	0%	0%	6%	0%
315	San Francisco Bay	108	84%	16%	0%	0%	0%	0%
316	San Francisco Bay	117	82%	18%	0%	0%	0%	0%
317	San Francisco Bay	32	89%	11%	0%	0%	0%	0%
318	San Francisco Bay	70	84%	16%	0%	0%	1%	0%
319	San Francisco Bay	99	75%	25%	0%	0%	0%	0%
352	Colma Creek	40	17%	2%	81%	0%	0%	0%
354	Colma Creek	10	85%	14%	0%	0%	0%	0%
356	Colma Creek	10	79%	20%	0%	0%	1%	0%
357	Colma Creek	17	65%	32%	0%	0%	3%	0%
358	Colma Creek	32	73%	27%	0%	0%	0%	0%
359	Colma Creek	23	92%	8%	0%	0%	0%	0%
362	San Bruno Creek	14	61%	39%	0%	0%	0%	0%
SSF	Multiple	1,539	13%	18%	56%	1%	12%	0%

Existing and Planned Control Measures Summary

Table 4.52 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the City of South San Francisco.

Table 4.52. Existing (E) and planned (P) PCBs and mercury control measures in South San Francisco WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
1001	E	E/P		E		E	E			E
1002	E	E/P		E		E	E			E
1005	E			E		E	E			E
1011	E			E		E	E			E
291	E	E/P		E		E	E			E
292	E	E		E		E	E			E
293	E	E/P		E		E	E			E
294	E			E		E	E			E
295	E			E		E	E			E
296	E	E/P		E		E	E			E
297				E		E	E			E
298		P		E		E	E			E
306	E	E/P		E		E	E			E
307		E/P		E		E	E			E
311				E		E	E			E
313	E	E/P		E		E	E			E
314	E	P		E		E	E			E
315	E	E/P		E		E	E			E
316	E	E/P		E		E	E			E
317	E			E		E	E			E
318	E	E/P		E		E	E			E
319	E	E/P		E		E	E			E
352				E		E	E			E
354	E			E		E	E			E
356	E			E		E	E			E
357	E			E		E	E			E
358	E	E		E		E	E			E
359	E	E		E		E	E			E
362	E	E		E		E	E			E
SSF	E	E/P		E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the City of South San Francisco to-date in the 25 WMAs indicated by Table 4.52. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at green street and new and redevelopment project sites built since 2005 (the PCBs TMDL loading baseline year) in the City of South San Francisco treat **324 acres** of land which includes **251 acres** of old industrial and **73 acres** of old urban land uses. Of this, nearly **110 acres** were built from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) (Table 4.53). An additional **194 acres** will be treated by new or redevelopment projects that are currently under construction or planned for construction. It should be noted that the acres treated by GI reported in this section are preliminary and may be revised in the future as additional information becomes available.

The City of South San Francisco also continues to pursue a regional retention facility at Orange Memorial Park with \$9.5 million in funding from Caltrans in an initial Cooperative Implementation Agreement and an additional \$6 million also from Caltrans to support their trash requirement goals. The project is in the 90% design phase for a stormwater capture facility that will remove sediment and associated pollutants from Colma Creek before flowing into San Francisco Bay, and potentially provide for parkland irrigation at Orange Memorial Park. This regional stormwater capture project would potentially capture flows from approximately **2,486 acres** of a multi-jurisdictional area of primarily old urban land uses. The City anticipates starting construction in 2019, with an estimated completion date of September 2021.

Table 4.53 Land area in City of South San Francisco WMAs treated by GI built from July 1, 2013 to June 30, 2019.^{1,2,3,4}

Project Type	WMA ID	Total Area (Acres)	Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Other	Open Space
Parcel-based New & Redevelopment or Retrofit	291	5.32	5.32	0	0	0	0
	292	26.49	26.49	0	0	0	0
	293	13.14	11.89	1.25	0	0	0
	307	10.02	0.00	10.02	0	0	0
	313	7.63	7.63	0	0	0	0
	316	14.03	14.03	0	0	0	0
	318	4.80	4.80	0	0	0	0
	319	5.00	5.00	0	0	0	0
	359	3.36	3.36	0	0	0	0
	1001	15.11	13.85	1.26	0	0	0
	1002	0.85	0.85	0	0	0	0
	SSF	4.09	2.35	1.74	0	0	0
	Total	109.84	95.57	14.27	0	0	0

1 – Preliminary - may not include all acres currently treated by GI and treatment controls.

2 – GI includes (1) parcel-based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.

3 – GI and treatment controls may include proprietary vault-based systems.

4 – The land use at the point location for each project provided by Permittees was assumed to represent the land use for the entire project.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in the City of South San Francisco or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

4.19. Town of Woodside

Watershed Management Areas

Table 4.54 lists the two WMAs identified to-date in the Town of Woodside, and its total land area and associated land uses.

Table 4.54. Woodside WMAs and associated land uses.

WMA ID	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban Commercial	% Old Urban Residential	% New Urban	% Open Space	% Other
261	Redwood Creek	46	0%	0%	98%	0%	2%	0%
WDE	Multiple	7,275	0%	5%	48%	2%	45%	0%

Existing and Planned Control Measures Summary

Table 4.55 provides a preliminary list of PCBs and mercury control measures currently in place or planned for future implementation in the Town of Woodside.

Table 4.55. Existing (E) and planned (P) PCBs and mercury control measures in Woodside WMAs.

WMA ID	Control Measure Categories									
	Source Property Investigation	Green Infrastructure and Treatment Control Measures	Trash Full Capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices		Diversion to Wastewater Treatment Facilities	Addressing Illegally Dumped PCBs-containing Wastes	Reduction/Recycling of Mercury-containing Devices & Products
						Street Sweeping or Flushing	Inlet Cleaning			
261				E		E	E			E
WDE	E			E		E	E			E

Source Property Investigation

Source property investigative work has been conducted in the Town of Woodside to-date in WMA WDE. Updated results will be provided in the SMCWPPP's Integrated Monitoring Report due in March 2020.

Green Infrastructure

Based on the information compiled to-date, GI at new and redevelopment project sites have not been built since 2005 (the PCBs TMDL loading baseline year) in Woodside, and there are no projects under

construction or planned. It should be noted that the information on GI reported in this section is preliminary and may be revised in the future as additional information becomes available.

Other PCBs and Mercury Controls

SMCWPPP is continuing to evaluate whether other relevant PCBs and mercury control measures (e.g., enhanced municipal O&M) are present in Woodside or should be planned there. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports.

5.0 PCBs AND MERCURY LOADS REDUCED

Preliminary PCBs and mercury loads reduced through stormwater control measures implemented in San Mateo County during the current MRP term are reported in this section. The loads reduced were quantified for those control measures and projects reported in Section 4.0 that were implemented and/or completed from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19).

In general, the load reductions reported in this section are preliminary and do not include all existing and planned control measures. For example, the load reductions reported in this section do not account for any contamination site cleanups (referred to as “self-abatements”) or municipal O&M enhancements (e.g., channel desilting, enhanced street sweeping, inlet cleaning, inlet-based trash capture systems) implemented by Permittees during the permit term. Any load reductions during the permit term associated with these controls will be reported in future reports. SMCWPPP will continue to track all relevant control measures and update the associated load reduction calculations as additional information becomes available and as new or enhanced actions are implemented.

5.1. Summary of Loads Reduced Accounting Methodology

The accounting methodologies used to calculate the load reductions reported in this section were developed by BASMAA and approved by the Executive Officer of the Regional Water Board for the purpose of load reduction reporting during MRP 2.0. These methods and data inputs are described fully in the BASMAA *Interim Accounting Methodology Report* (BASMAA 2017). The equations and default data inputs that are used to calculate load reductions are summarized below. The data on acres addressed by each type of control measure that were reported in Section 4.0 were used in the equations below to calculate the PCBs and mercury load reductions.

Source Property Identification and Abatement

The projected POC loads reduced through source property identification and abatement were calculated using the equation below:

$$\text{Load of POC Reduced} = SP_A \cdot (SP_Y - OU_Y)$$

Where:

SP_A	=	Source property area (acres)
SP_Y	=	Source property POC yield
OU_Y	=	Old Urban land use POC yield

Default inputs:

PCBs Source property yield	= 4,065 mg/acre/year
PCBs Old urban land use yield	= 30.3 mg/acre/year
Mercury Source property yield	= 1,300 mg/acre/year
Mercury Old urban land use yield	= 215 mg/acre/year

Fifty percent of the load reduced is projected here for each anticipated source property referral that was identified in Section 4.0. (Per the MRP, the remaining 50% will be credited upon completion of the abatement process, or at ten years, whichever occurs first.)

Green Infrastructure and Treatment Controls

Parcel-Based GI/LID (e.g., New Development and Redevelopment)

The POC loads reduced through parcel-based new development, redevelopment, and retrofit projects were calculated using the equation below:

$$\text{Load of POC Reduced} = P_A \cdot (P_Y - NU_Y)$$

Where:

P_A	=	Project area (acre)
P_Y	=	Existing PCBs or mercury yield (mg/acre/year)
NU_Y	=	New Urban PCBs or mercury yield (mg/acre/year)

Default inputs:

PCBs New Urban land use yield = 3.5 mg/acre/year
 Mercury New Urban land use yield = 33 mg/acre/year

Green Streets and Regional Retrofit Projects

The POC loads reduced due to green streets and regional retrofit projects were calculated using the equation and inputs provided below:

$$\text{Annual Mass of PCB Reduced} = P_A \cdot P_Y \cdot E_f$$

Where:

P_A	=	Tributary area treated (acres)
P_Y	=	Area-weighted PCBs or mercury yield (mg/acre-year)
E_f	=	Efficiency factor for green infrastructure/retrofit treatment control measure (assumed to be 70%)

5.2. PCBs Loads Reduced

Preliminary Estimated PCBs Loads Reduced from July 1, 2013 through June 30, 2019

The preliminary estimated PCBs loads reduced by San Mateo County Permittees from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) are shown in Table 5.1. Permittees achieved more than 60 g/year of PCBs load reductions cumulatively over this time period. Table 5.2 shows the PCBs loads reduced, itemized by control measure category. New and re-development projects have been and continue to be ongoing across all San Mateo County municipalities. Over the permit term to-date, more than 855 acres have been developed or redeveloped, including more than 321 acres of old industrial and 438 acres of old urban land uses. Green streets and regional retrofit projects have been constructed that treat an additional 15 acres of urban land uses. It is important to emphasize that the PCBs loads reduced that are reported here are preliminary, and may not include all control measures that have been implemented by San Mateo County Permittees to-date. SMCWPPP will report on any additional controls and associated pollutant load reductions in future reports. Table 5.2 also illustrates that the 15 g/year PCBs load reduction through GI by the end of the permit term required by the MRP has already been achieved.

In addition, as described in Section 4.15, during October 2018 SMCWPPP submitted two source property referrals (both in San Carlos) to the Regional Water Board. The total combined acreage of these

properties is about 10 acres, resulting in an about 20 g/year PCBs load reduction (see Section 5.1 for the calculation methods).

Table 5.1. Preliminary estimates of PCBs loads reduced by San Mateo County Permittees from July 1, 2013 through June 30, 2019 (FY 2013/14 through FY 2018/19).

Permittee	PCBs Loads Reduced (g/year)						Cumulative Load Reduced
	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	
Atherton	0.03	0	0	0	0	0	0.03
Belmont	0	0	0	0.01	0.10	0.34	0.45
Brisbane	0.75	0	0	0	2.44	0	3.19
Burlingame	0	0.15	0.01	0.27	0.05	0.04	0.53
Colma	0.00	0.00	0	0.00	0.24	0.06	0.31
Daly City	0.01	0.18	0	0.43	2.25	0.08	2.96
East Palo Alto	0.12	0.24	0.03	0.46	0	0	0.85
Foster City	0.07	0	0.12	0.00	0.00	0.57	0.77
Hillsborough	0	0	0.00	0	0.00	0	0.00
Menlo Park	2.08	0.21	1.68	0.65	3.71	0.06	8.38
Millbrae	0	0	0	0	0	0	0
Portola Valley	0	0	0	0	0.04	0	0.04
Redwood City	0.20	1.12	0.71	0.30	0.77	0.64	3.75
San Bruno	0.12	0	0.58	0	0	0	0.70
San Carlos	1.74	0	0.75	0	0.62	20.38	23.48
San Mateo City	0.44	0.52	0.32	0.23	1.94	0.11	3.56
San Mateo County	3.19	0.36	0.36	0.05	0.10	0	4.05
South San Francisco	3.45	1.47	0	0.29	1.05	2.07	8.33
Woodside	0	0	0	0	0	0	0
Total	12.20	4.25	4.56	2.69	13.32	24.36	61.38

Table 5.2. Preliminary estimates of PCBs loads reduced in San Mateo County by control measure category from July 1, 2013 through June 30, 2019 (FY 2013/14 through FY 2018/19).

Control Measure Category		PCBs Loads Reduced (g/year)						Cumulative Load Reduced
		FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	
Source Property Identification and Referral	270 Industrial Road / 495 Bragato Road, San Carlos						15.53	15.53
	977 and 1007/1011 Bransten Road, San Carlos						4.84	4.84
GI and Other Stormwater Treatment Controls	Parcel-based GI/LID (i.e., new development and redevelopment projects)	12.19	4.15	4.49	2.67	11.38	3.64	38.51
	Green Streets and Regional Retrofits	0.01	0.10	0.07	0.02	0.05	0.06	0.31
	Hydrodynamic Separators (a large full trash capture system) ³					1.89	0.29	2.18
Enhanced O&M Measures ⁴								
Manage PCBs in Building Materials ⁴								
Manage PCBs in Infrastructure ⁴								
Diversion to POTW ⁴								
Source Controls / Other ⁴								
Total – All San Mateo County Permittees and Controls		12.20	4.25	4.56	2.69	13.32	24.36	61.38

1. Load Reduced = (Source Property Area (acre)) x (4.065 – 0.0303 (g/acre/year)).

2. For parcel-based projects, Load Reduced = (Project Area (acre)) x (Existing Yield – 0.0035 (g/acre/year)). For green street or regional retrofit projects, Load Reduced = (Project Drainage Area (ac)) x (area-weighted PCBs yield (g/acre/year)) x 0.70. See Section 4.0 for acres associated with this control measure.

3. Load Reduced = (Project Drainage Area (acre)) x (area-weighted PCBs yield (g/acre/year)) x 0.20.

4. Loads reduced for these control measures will be provided in future reports, as applicable.

5.3. Mercury Loads Reduced

Preliminary Estimated Mercury Loads Reduced from July 1, 2013 through June 30, 2019

The preliminary estimated mercury loads reduced by San Mateo County Permittees from July 1, 2013 through June 30, 2019 (i.e., FY 2013/14 through FY 2018/19) are shown in Table 5.3. San Mateo County Permittees have achieved more than 507 g/year of mercury load reductions over this time period. Table 5.4 shows the mercury loads reduced by control measure category. New development and redevelopment projects currently account for 95% of the mercury load reduction reported to-date. Large full trash capture systems account for an additional 4% of the mercury load reduction reported to-date. Green streets and regional retrofit projects account for the remaining 1%. Table 5.4 also illustrates that the 6 g/year mercury load reduction through GI by the end of the permit term required by the MRP has already been achieved.

Table 5.3. Preliminary estimates of mercury loads reduced by San Mateo County Permittees from July 1, 2013 through June 30, 2019 (FY 2013/14 through FY 2018/19).

Permittee	Mercury Loads Reduced (g/year)						Cumulative Load Reduced
	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	
Atherton	0.21	0	0	0	0	0	0.21
Belmont	0	0	0	0.07	0.66	2.97	3.71
Brisbane	11.42	0	0	0.00	37.28	0	48.69
Burlingame	0	1.39	0.09	4.04	0.50	0.30	6.32
Colma	0	0.02	0	0	1.62	0.44	2.07
Daly City	0.08	1.24	0	2.90	15.20	1.29	20.72
East Palo Alto	1.63	3.53	0.17	6.63	0	0	11.97
Foster City	0.48	0	0.82	0	0	7.59	8.88
Hillsborough	0	0	0.02	0	0.00	0	0.022
Menlo Park	30.8	2.48	22.24	8.98	55.76	0.41	120.7
Millbrae	0	0	0	0	0	0	0
Portola Valley	0	0	0	0	0.30	0	0.30
Redwood City	2.52	14.84	8.55	3.92	6.72	4.36	40.91
San Bruno	0.83	0	8.87	0	0	0	9.69
San Carlos	24.6	0	11.36	0	9.15	0	45.11
San Mateo City	6.7	7.38	2.39	1.54	15.80	0.75	34.56
San Mateo County	21.6	4.99	2.41	0.36	0.93	0	30.27
South San Francisco	50.4	22.34	0	3.98	15.87	31.05	123.27
Woodside	0	0	0	0	0	0	0
Total	151.3	58.21	56.93	32.43	159.79	49.16	507.83

Table 5.4. Preliminary estimates of mercury loads reduced in San Mateo County by control measure category from July 1, 2013 through June 30, 2019 (FY 2013/14 through FY 2018/19).

Control Measure Category		Mercury Loads Reduced (g/year)						Cumulative Load Reduced
		FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	
Source Property Identification and Referral								
GI and Other Stormwater Treatment Controls	Parcel-based GI/LID (i.e., new development and redevelopment projects)	151.23	57.48	56.42	32.31	143.96	45.49	486.90
	Green Streets and Regional Retrofits	0.08	0.73	0.51	0.11	0.38	0.40	2.21
	Hydrodynamic Separators (a large full trash capture system) ³					15.45	3.27	18.72
Enhanced O&M Measures ⁴								
Manage PCBs in Building Materials ⁴								
Manage PCBs in Infrastructure ⁴								
Diversion to POTW ⁴								
Source Controls/Other ⁴								
Total – All San Mateo County Permittees and Controls		151.31	58.21	56.93	32.43	159.79	49.16	507.83

1. Load Reduced = (Source Property Area (acre)) x (1.033 – 0.215 (g/acre/year)).
2. For parcel-based projects, Load Reduced = (Project Area (acre)) x (Existing Yield – 0.033 (g/acre/year)). For green street or regional retrofit projects, Load Reduced = (Project Drainage Area (ac)) x (area-weighted mercury yield (g/acre/year)) x 0.70. See Section 4.0 for acres associated with this control measure.
3. Load Reduced = (Project Drainage Area (acre)) x (area-weighted mercury yield (g/acre/year)) x 0.20.
4. Loads reduced for these control measures will be provided in future reports, as appropriate.

Mercury Mass Collected via Countywide Hazardous Waste Collection Program

San Mateo County municipalities participate in San Mateo County Health Department's Household Hazardous Waste (HHW) Program and Very Small Quantity Generator Business Collection (VSQG) Program (see Section 3.8). The estimated mass of mercury collected in FY 2014/15 through FY 2017/18 via these programs is shown in Table 5.5. It should be noted that these mass estimates are not directly comparable to pollutant load reductions in stormwater runoff discharges.

Table 5.5. Estimated mercury mass collected via the San Mateo County Health Department's Household Hazardous Waste (HHW) and Very Small Quantity Generator Business Collection (VSQG) programs.

Mercury Containing Device/Equipment	FY 2014-15		FY 2015-16		FY 2016-17		FY 2017-18		FY 2018-19	
	Total Amount of Devices Collected	Estimated Mass of Mercury Collected (kg)	Total Amount of Devices Collected	Estimated Mass of Mercury Collected (kg)	Total Amount of Devices Collected	Estimated Mass of Mercury Collected (kg)	Total Amount of Devices Collected	Estimated Mass of Mercury Collected (kg)	Total Amount of Devices Collected	Estimated Mass of Mercury Collected (kg)
Fluorescent Lamps (linear ft)^{1,2}	25,532	0.05	89,662	0.19	93,896	0.19	125,582	0.26	107,269	0.22
CFLs (each)³	1,881	0.01	17,211	0.08	17,354	0.08	18,689	0.08	18,513	0.08
Thermostats (each)⁴	26	0.10	12	0.05	10	0.04	11	0.04	15	0.06
Thermometers (each)⁵	313	0.19	13	0.01	19	0.01	0	0.00	25	0.02
Switches (each)	18	0.05	0	0.00	0	0.00	0	0.00	26	0.07
Total Mass of Mercury Collected (Kg)		0.40		0.32		0.32		0.39		0.45

^[1]The County HHW Program reported the number of circle tubes and U-bent lights. A conservative assumption was made that all U-bent tubes were 22 inches and all circle tubes were 8 inches based on the most available, smallest sizes found on Internet searches.

^[2]The average mercury content for a four-foot linear fluorescent lamp is 8.3 milligrams (mg). This is equal to 2.075 mg per linear foot. Source: NEMA 2005. Fluorescent and Other Mercury-Containing Lamps and the Environment: Mercury Use, Environmental Benefits, Disposal Requirements. National Electrical Manufacturers Association. March 2005. 14p.

^[3]The National Electrical Manufacturers Association (NEMA) announced that under the new voluntary commitment, effective October 1, 2010, participating manufacturers will cap the total mercury content in CFLs that are under 25 watts at 4 mg per unit, and CFLs that use 25 to 40 watts of electricity will be capped at 5 mg per unit. Each CFL recycled is assumed to have an average mass of 4.5 mg mercury. New CFLs are also assumed to have 4.5 mg mercury on average. Source: NEMA 2010. NEMA Lamp Companies Agree to Reduction in CFL Mercury Content Cap. Available at <http://www.nema.org/media/pr/20101004a.cfm>. Accessed April 11, 2012.

^[4]The amount of mercury in a thermostat is determined by the number of ampoules. There are generally one or two ampoules per thermostat (average is 1.4) and each ampoule contains an average of 2.8 grams (g) of mercury. Therefore, each thermostat recycled is assumed to contain approximately 4.0 g of mercury. Source: TRC 2008. Thermostat Recycling Corporation's Annual Report for the U.S. Prepared by the Thermostat Recycling Corporation. [http://www.thermostat-recycle.org/files/u3/2008 TRC Annual Report.pdf](http://www.thermostat-recycle.org/files/u3/2008%20TRC%20Annual%20Report.pdf).

^[5]USEPA reports that glass mercury fever thermometers contain about 0.61 g of mercury. Source: USEPA 2012. Thermometers. Available at <http://www.epa.gov/mercury/thermometer-main.html>. Accessed April 11, 2012.

6.0 DISCUSSION AND NEXT STEPS

Building on the efforts described in this report, SMCWPPP and San Mateo County MRP Permittees plan to continue to work together to conduct a variety of activities to continue addressing MRP requirements for PCBs and mercury and making progress towards achieving the TMDL allocations, including the following tasks:

- SMCWPPP will continue to refine and prioritize the current list of WMAs in San Mateo County, identify new priority WMAs as needed, and attempt to identify source areas within WMAs. As part of these efforts, SMCWPPP is currently evaluating the results of its WY 2019 POC monitoring program (sediment sampling for PCBs and mercury) that targeted selected catchments and parcels of interest. SMCWPPP is also evaluating the results of PCBs and mercury sampling conducted in San Mateo County during the RMP STLS's WY 2019 stormwater runoff monitoring program.
- During WY 2020, SMCWPPP plans to conduct additional POC monitoring (8 sediment samples for PCBs and mercury), targeting selected catchments and parcels of interest. SMCWPPP will also continue to assist the RMP STLS select PCBs and mercury sampling stations in San Mateo County for its WY 2020 stormwater runoff monitoring program.
- SMCWPPP and San Mateo County Permittees will continue attempting to identify PCBs source properties in the County and refer them to the Regional Water Board, based on the evaluation of the results of the WY 2019 POC monitoring program and other appropriate data, as they become available.
- SMCWPPP will continue to evaluate the cost-effectiveness of conducting additional POC monitoring efforts in future years (e.g., sediment and stormwater runoff sampling for PCBs and mercury) that could further inform implementation of controls in priority WMAs.
- SMCWPPP will complete the RAA to support GI planning and demonstration of PCBs and mercury load reductions to meet goals set by the MRP. The modeling system supporting the RAA will be used to test various combinations of GI projects within each city and unincorporated county jurisdiction, and will provide output that will support decision-making and GI planning. SMCWPPP will also submit the GI RAA for peer review and address any comments received.
- SMCWPPP will continue its efforts to work with San Mateo County municipalities, schools, and the San Mateo County Office of Sustainability, to pursue funding for and facilitate implementation of cost-effective GI, including regional multi-jurisdiction and multi-benefit stormwater capture and treatment projects. This will include continued follow-up on project concepts and related prioritization efforts presented in SMCWPPP's Countywide Stormwater Resource Plan. SMCWPPP will also continue developing an implementation-level approach to achieving water quality goals and other community benefits associated with GI, via the ongoing development of the San Mateo Countywide Sustainable Streets Master Plan (funded by a Caltrans Adaptation Planning Grant issued to C/CAG). In addition, SMCWPPP will continue advancing GI project designs through \$2.94 million in state grant funds issued to C/CAG through the California Natural Resources Agency. All of these efforts to support GI implementation in San Mateo County and seek new project funding and opportunities will be integrated to the extent feasible with plans to create a new Flood and Sea Level Rise Resiliency Agency (FSLRRD) (resilientsanmateo.org) in the County by January 2020. SMCWPPP's FY 2018/19 Annual Report provides additional details.

- With continued assistance and guidance from SMCWPPP, San Mateo County Permittees will begin to implement their GI Plans that were submitted to the Regional Water Board in September 2019.
- SMCWPPP will develop a control measures plan, including a schedule and corresponding RAA, which demonstrates quantitatively that sufficient control measures will be implemented to attain the San Mateo County portions of the mercury and PCBs TMDL wasteload allocations by 2028 and 2030, respectively. Per the requirements in MRP Provisions C.11/12.d., this control measures plan is due in September 2020. As part of this effort, SMCWPPP and San Mateo County Permittees will continue planning scenarios for control measure implementation in priority WMAs in San Mateo County. High priority will continue to be given to the Pulgas Creek pump station north and south drainages (WMA 31 and WMA 210), which are the two WMAs in San Mateo County with the greatest number of samples with elevated concentrations of PCBs in sediment and stormwater runoff samples to-date.
- SMCWPPP will continue to evaluate opportunities to take credit for PCBs and mercury loads avoided due to “self-abatement” of existing PCBs contamination sites in San Mateo County.
- SMCWPPP will continue to work with San Mateo County Permittees to look for opportunities to take credit for PCBs and mercury loads avoided due to planned removals of sediments with elevated levels of pollutants. SMCWPPP will also continue to evaluate opportunities to optimize existing municipal O&M activities, enhance planned sediment removals, and/or identify new removal actions, as cost-effective.
- SMCWPPP will continue to work with San Mateo County Permittees to update the existing San Mateo County GI and stormwater treatment tracking database described previously, and update the associated PCBs and mercury load reduction calculations. This effort will be coordinated with ongoing development of C/CAG’s San Mateo Countywide Sustainable Streets Master Plan (funded by an Adaptation Planning Grant from Caltrans), which includes a task to develop a San Mateo County GI tracking tool per the requirements in MRP Provision C.3.j.iv.
- SMCWPPP will continue to work with other Bay Area stormwater management programs through the BASMAA MPC to develop a system for managing data during the new programs to manage PCBs materials during building demolition in compliance with Provision C.12.f., and refine, document and report on the data collection and assessment methodology currently under development. SMCWPPP will also assist San Mateo County Permittees with other closely related Provision C.12.f. reporting requirements (e.g., Permittees must submit with their FY 2019/20 Annual Reports a running list of applicable structures that applied for a demolition permit and those that had materials with PCBs at 50 ppm or greater).
- SMCWPPP will continue to participate in the RMP PCBs Work Group to help oversee RMP studies concerning the fate, transport, and biological uptake of PCBs discharged from urban runoff to San Francisco Bay margin areas. A continued focus will be the conceptual model under development for Steinberger Slough in San Mateo County and associated monitoring fieldwork by the RMP.
- SMCWPPP will continue to work with San Mateo County Environmental Health Services (EHS) on education and outreach efforts to San Mateo County residents likely to consume locally-caught fish from the Bay. EHS’s Fish Smart program conducts a variety of related activities, such as maintenance of strategically placed signs, training of healthcare workers to disseminate information, and targeted social media posts. SMCWPPP will also work with EHS to conduct an evaluation of this risk reduction program.

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Appendix A

Maps for each San Mateo County Permittee showing WMAs
and GI/LID facilities

0 0.4 0.8 1.6 Miles

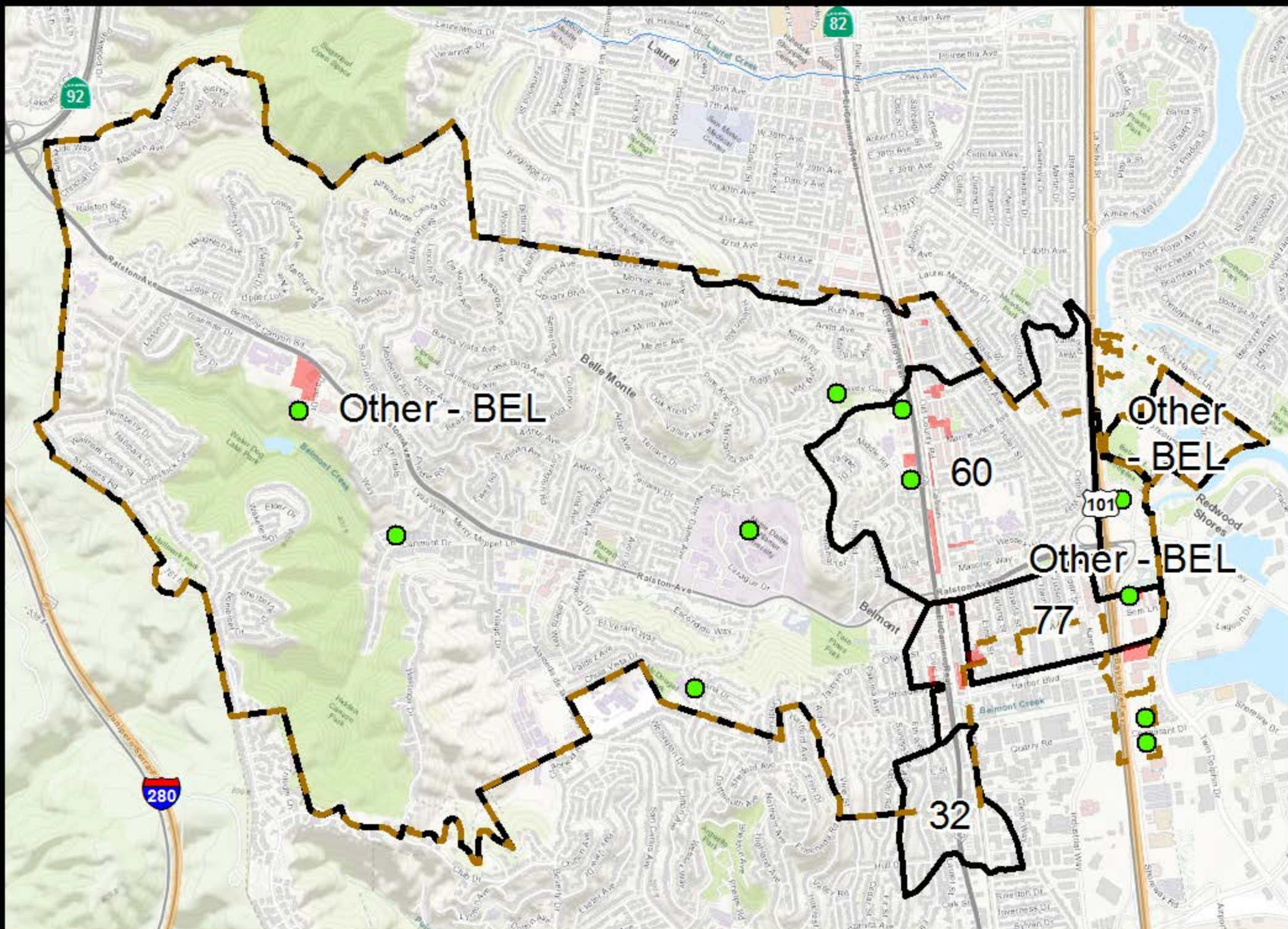
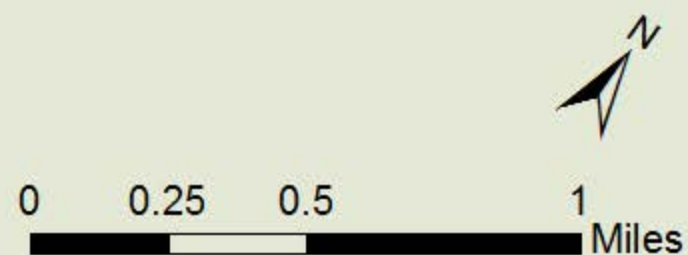


Figure A-2. WMAs and GI/LID in Belmont
Belmont Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



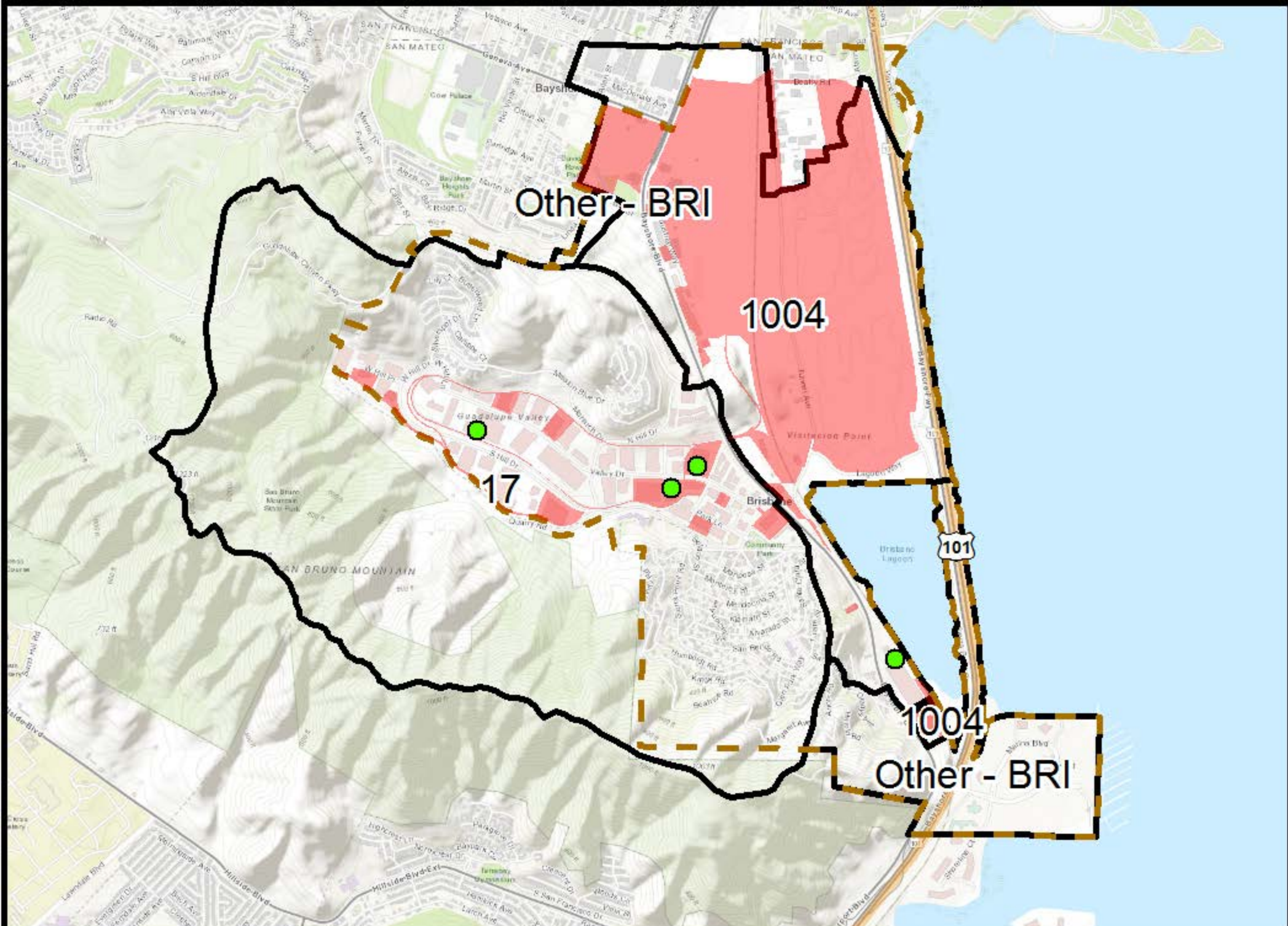
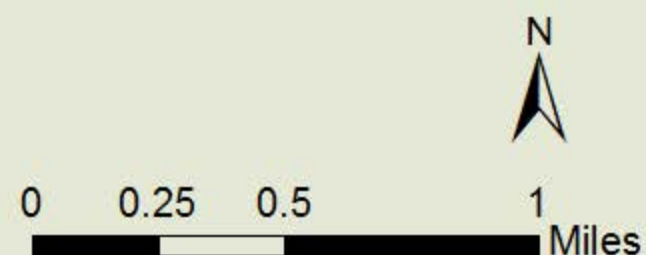


Figure A-3. WMAs and GI/LID in Brisbane
Brisbane Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



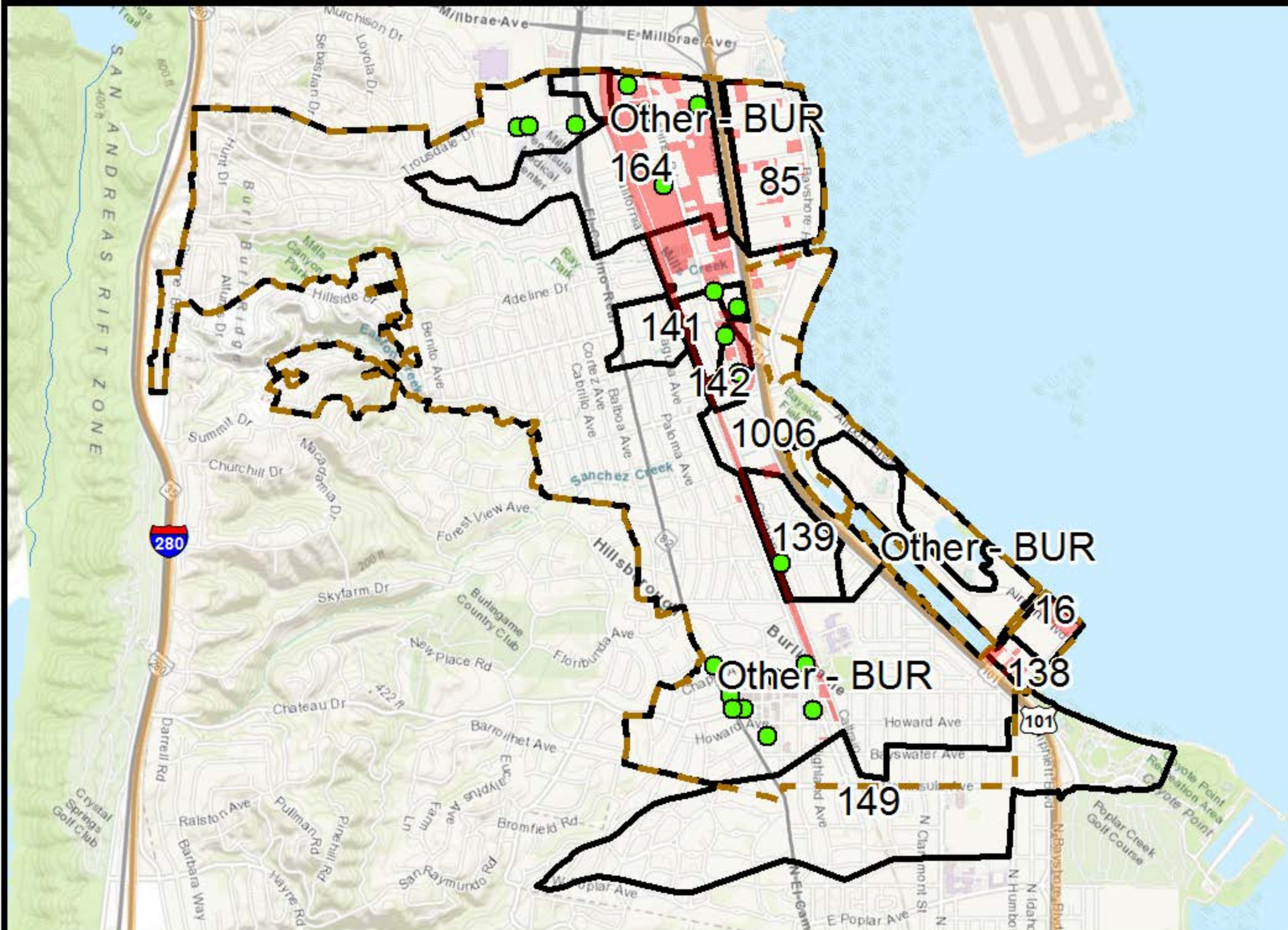
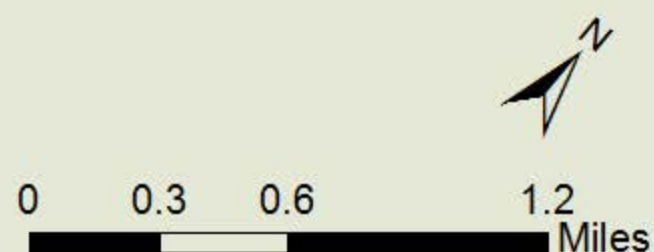


Figure A-4. WMAs and GI/LID in Burlingame
Burlingame Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



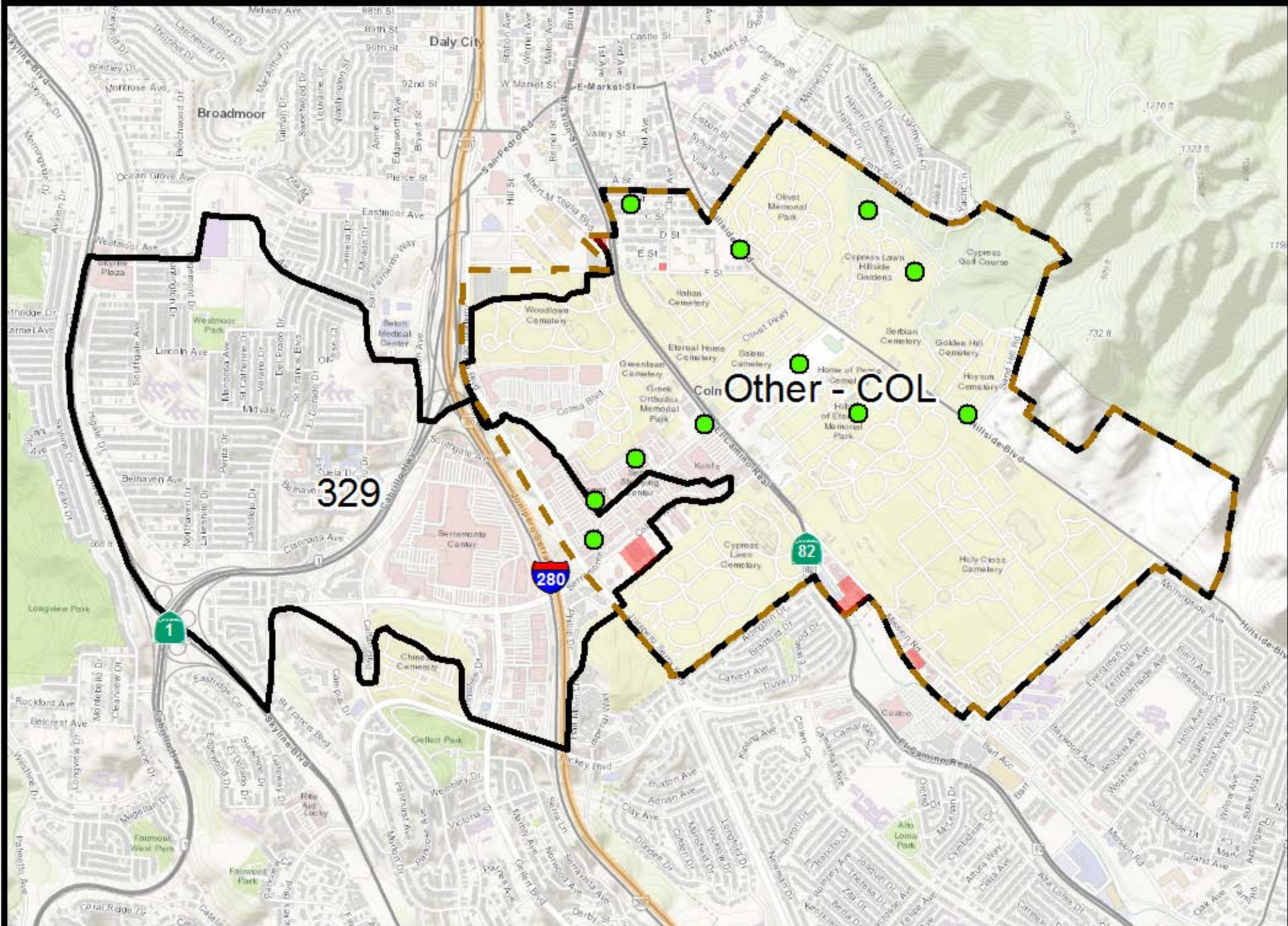
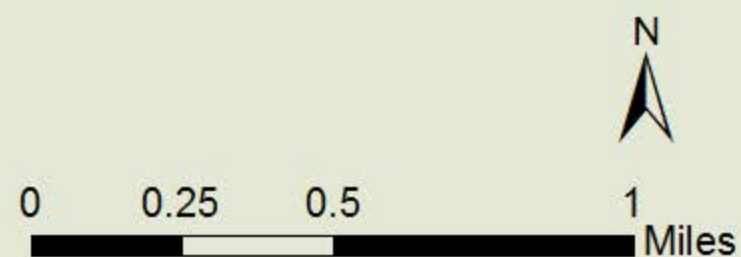


Figure A-5. WMAs and GI/LID in Colma
Colma Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



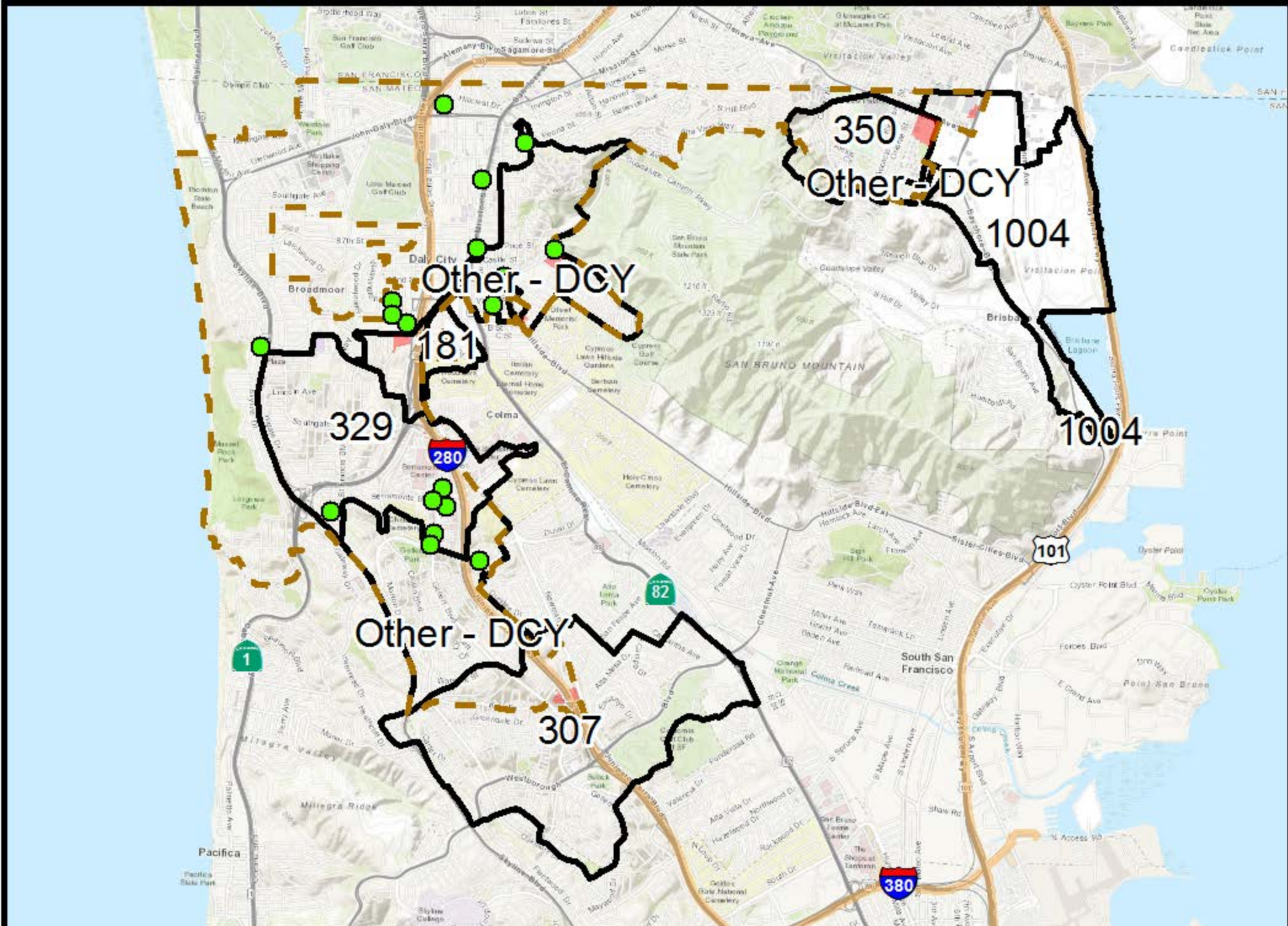


Figure A-6. WMAs and GI/LID in Daly City
Daly City Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



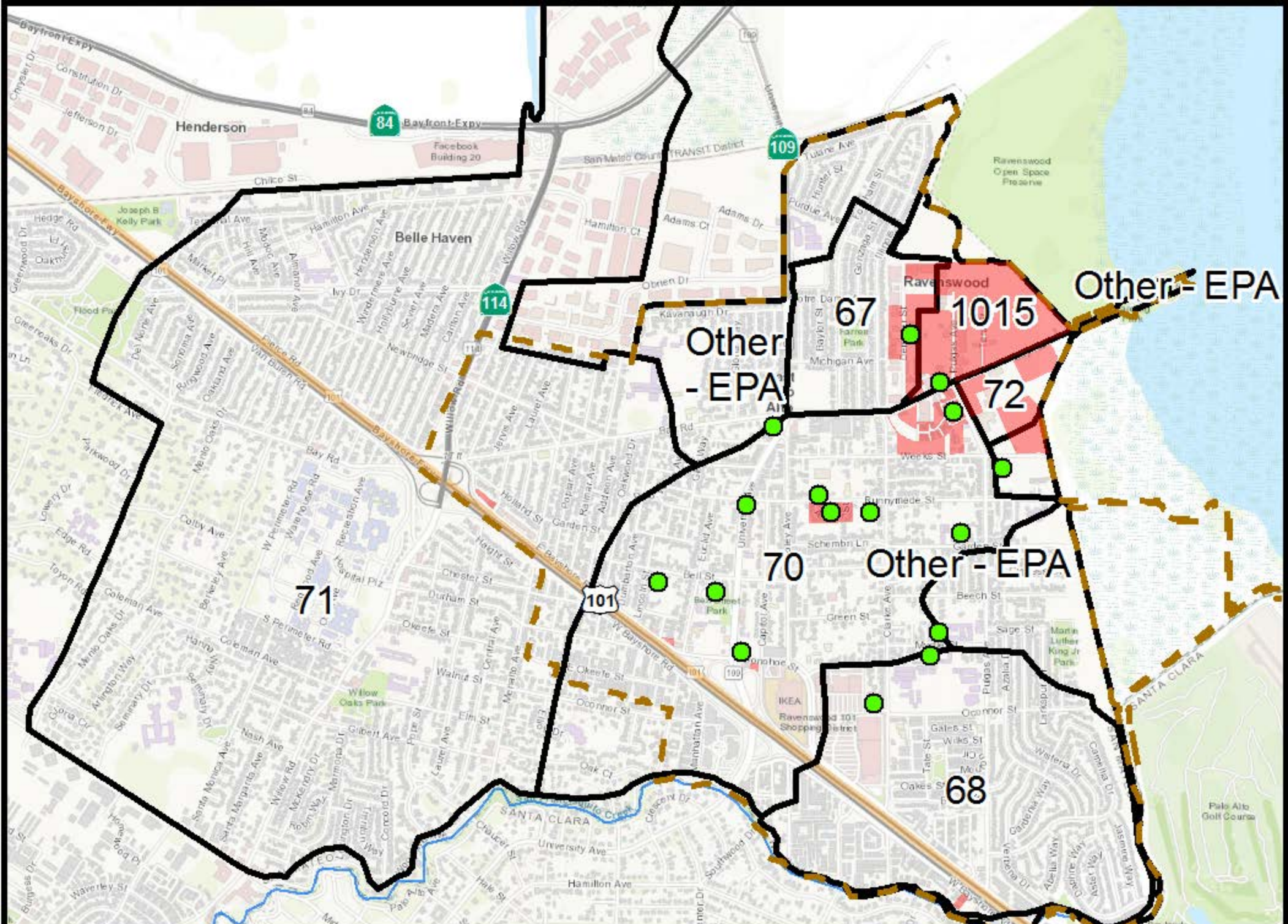
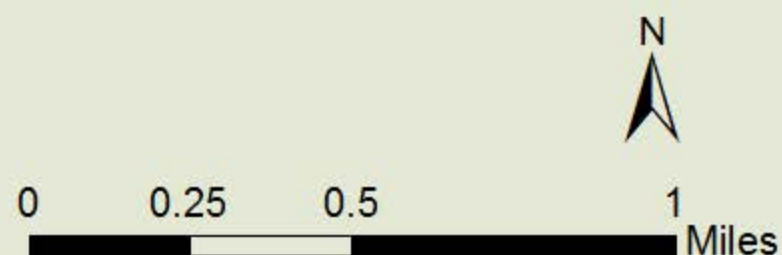


Figure A-7. WMAs and GI/LID in East Palo Alto
East Palo Alto Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



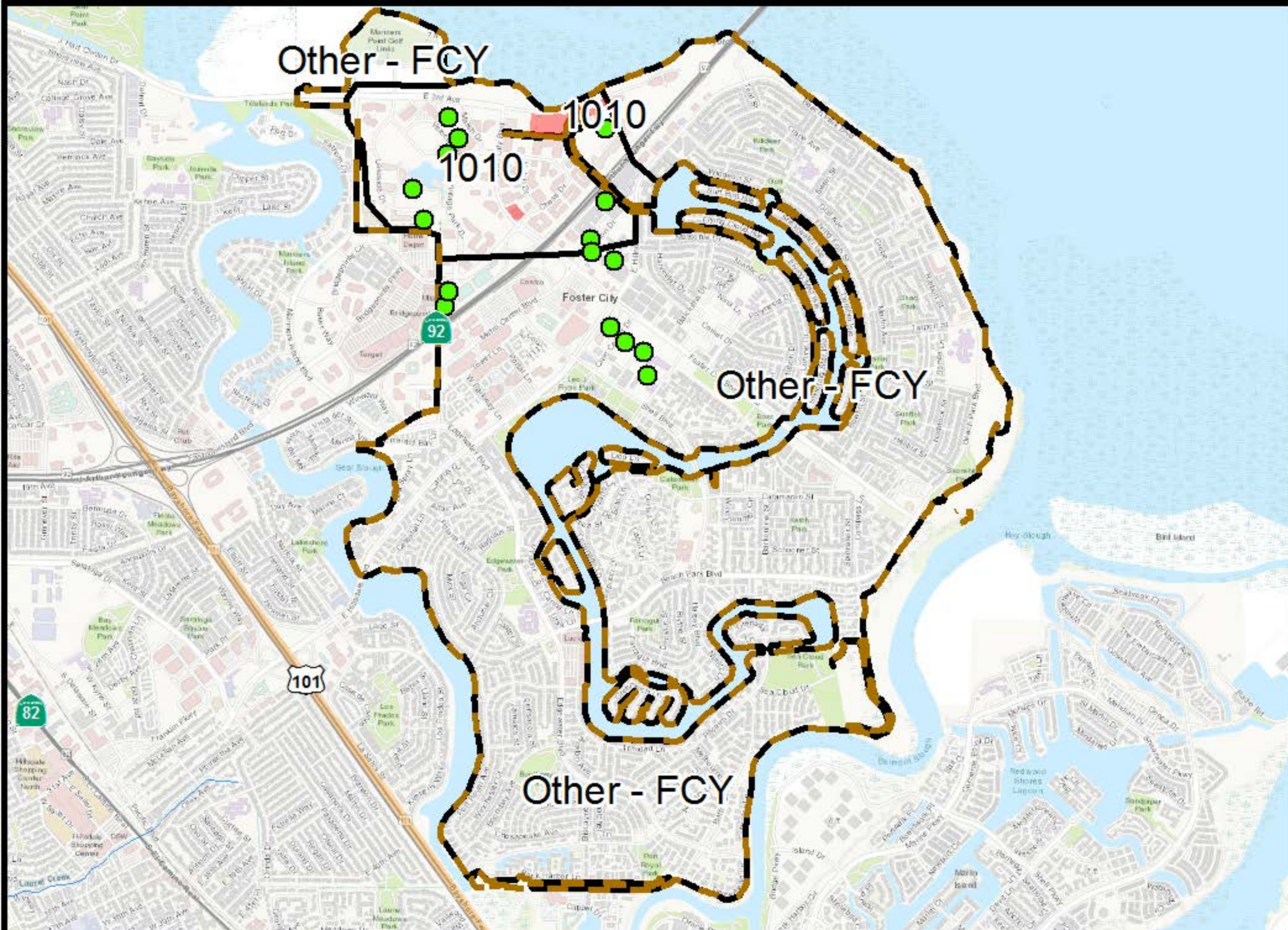
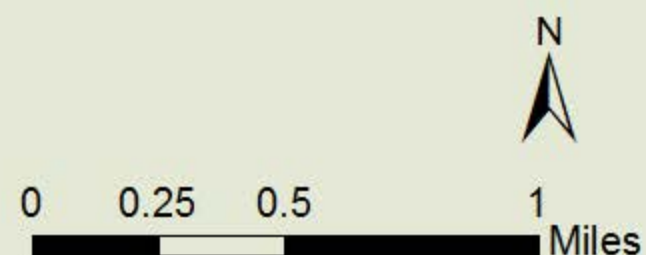


Figure A-8. WMAs and GI/LID in Foster City
Foster City Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



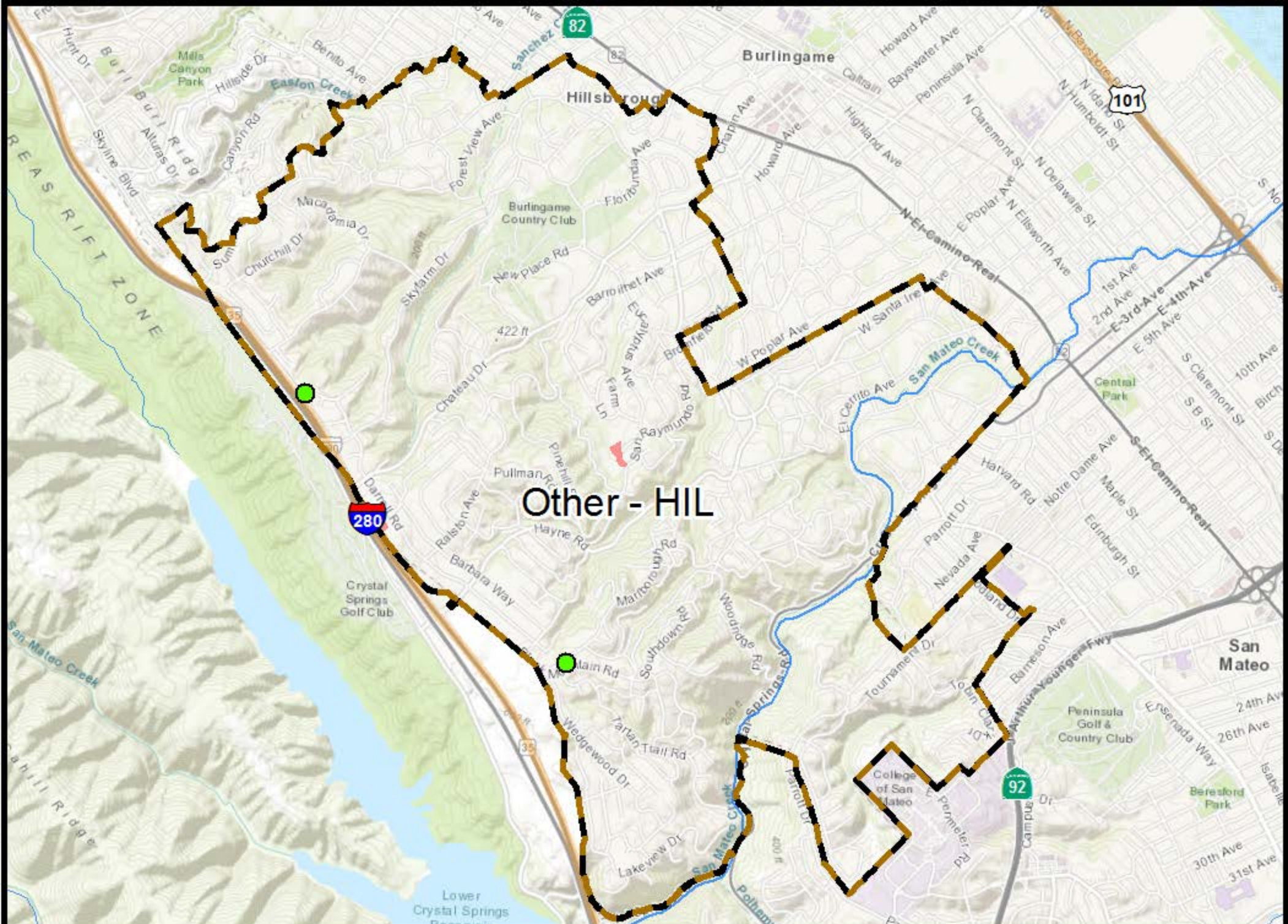
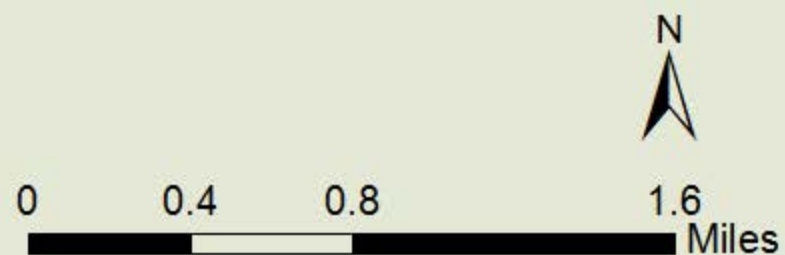
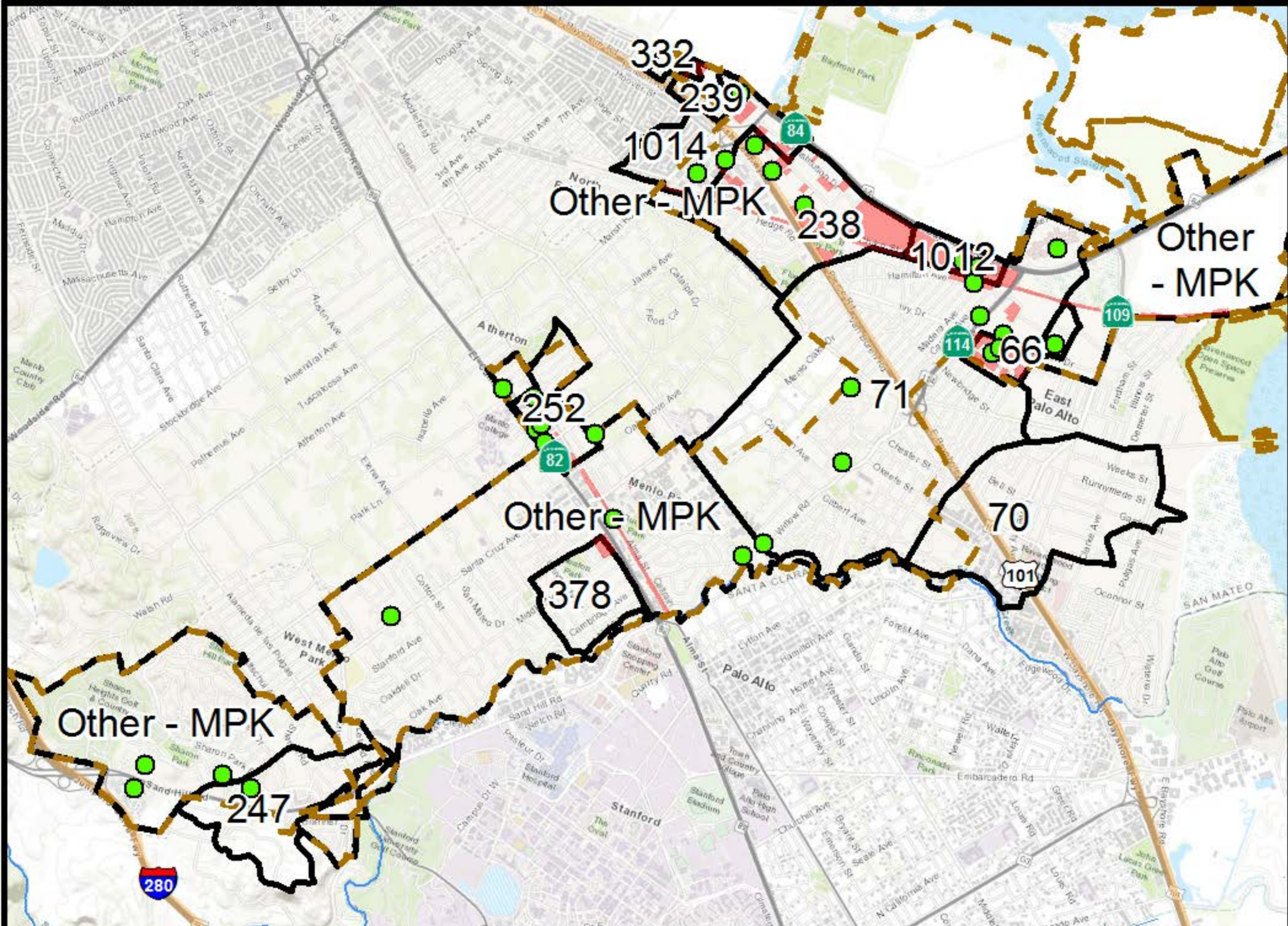


Figure A-9. WMAs and GI/LID in Hillsborough
Hillsborough Watershed Management Area Map

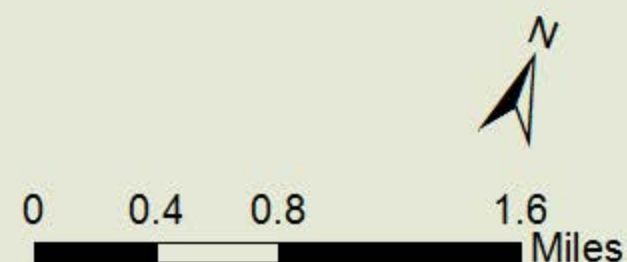
- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary





**Figure A-10. WMAs and GI/LID in Menlo Park
Menlo Park Watershed Management Area Map**

- GI/LID Location
- High Interest Areas
- Watershed Management Area (VMA)
- Permittee Boundary



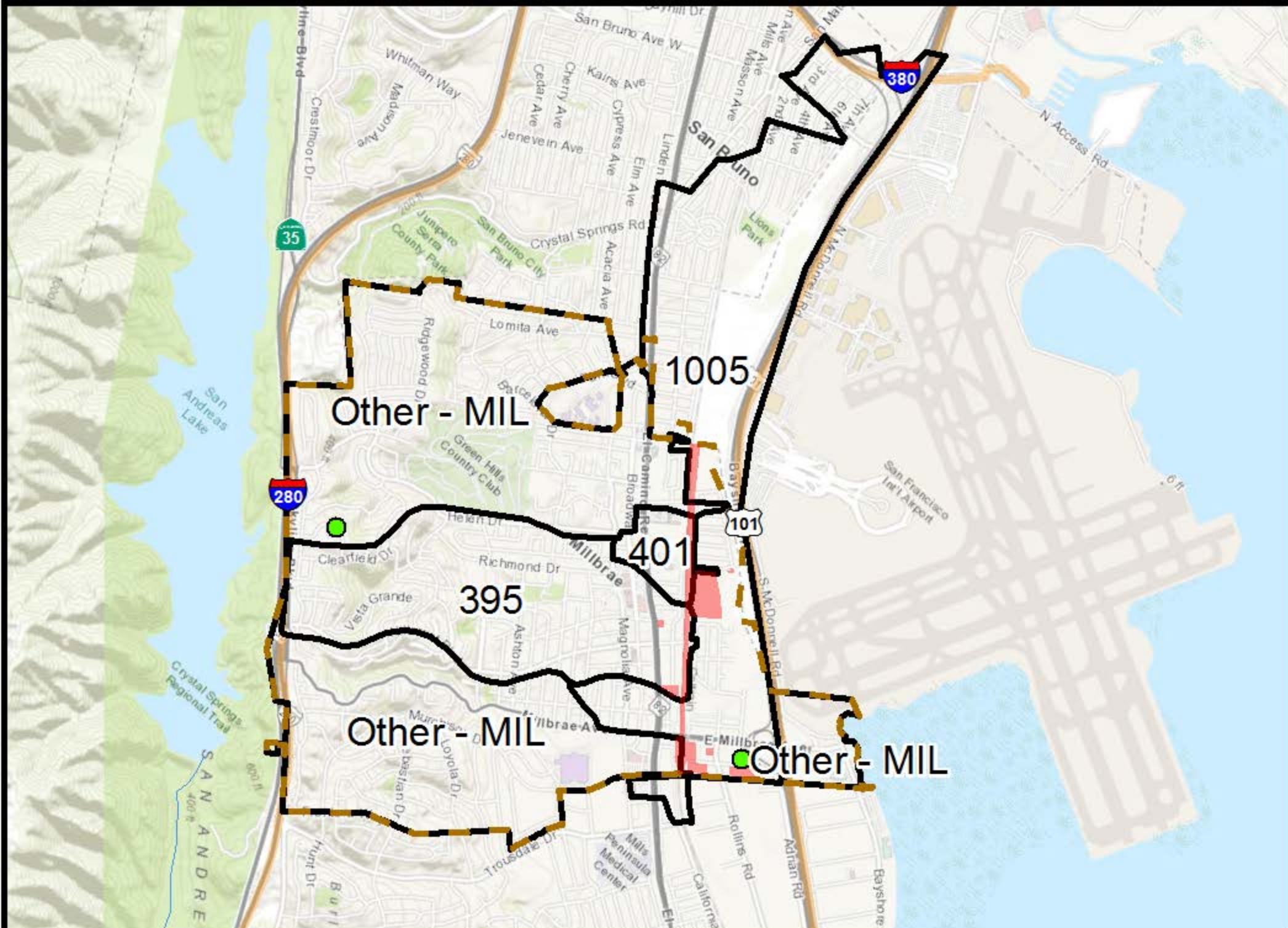
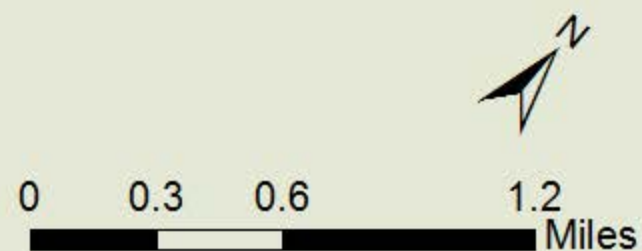


Figure A-11. WMAs and GI/LID in Millbrae
Millbrae Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



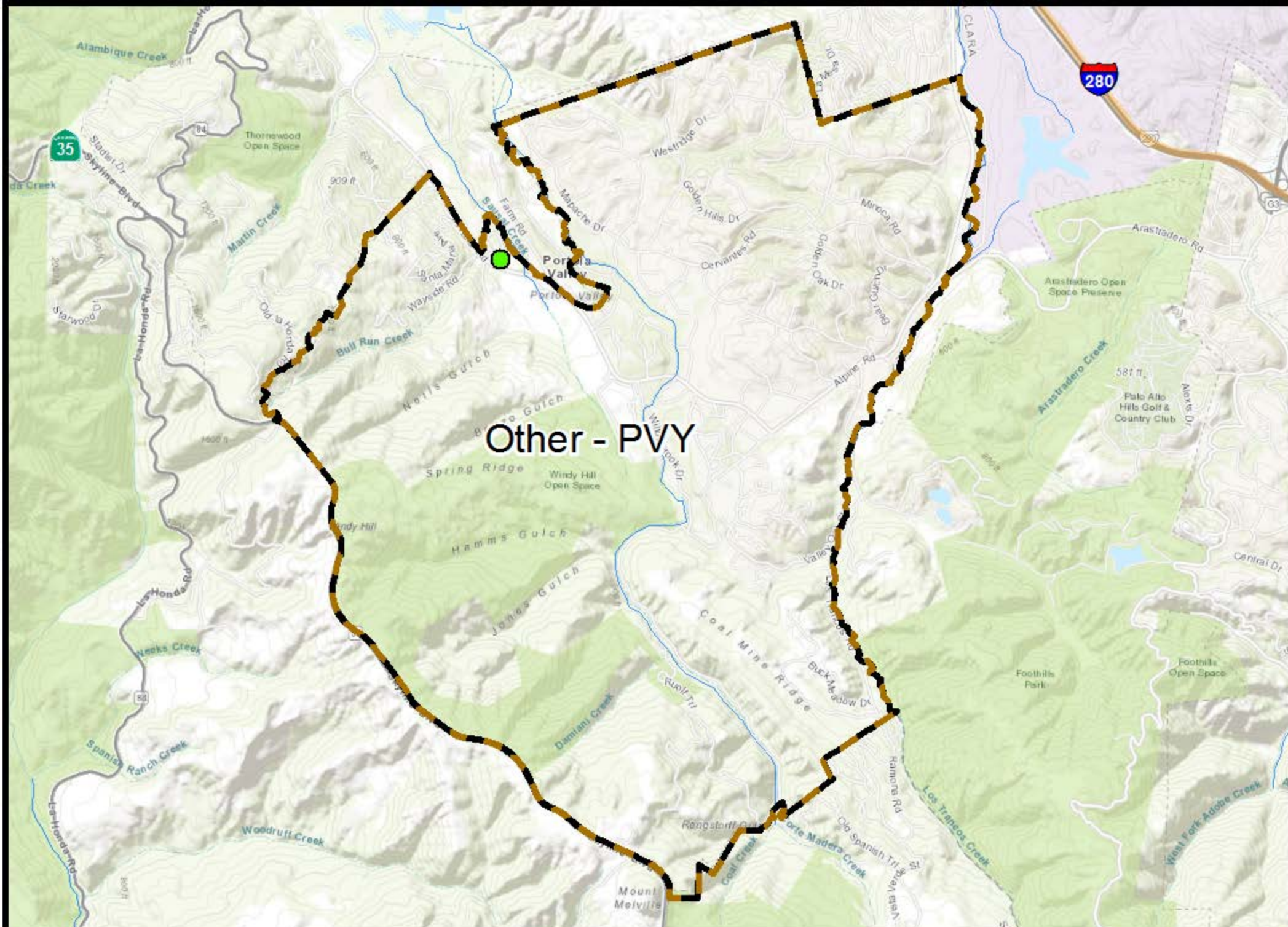
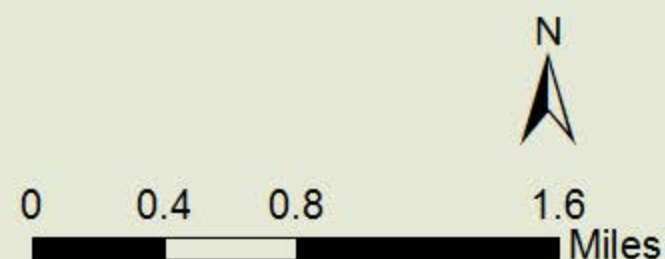


Figure A-12. WMAs and GI/LID in Portola Valley
Portola Valley Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



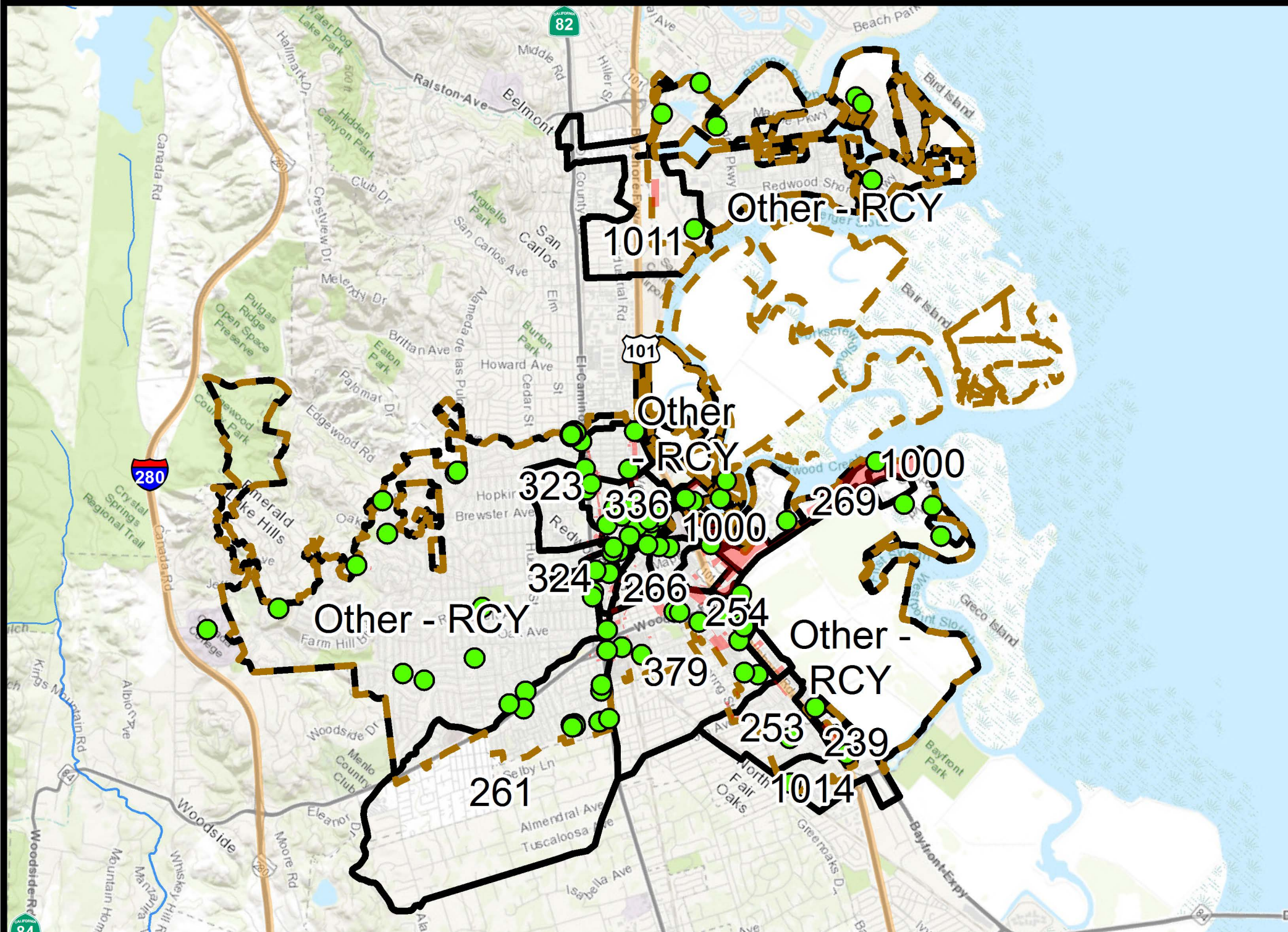
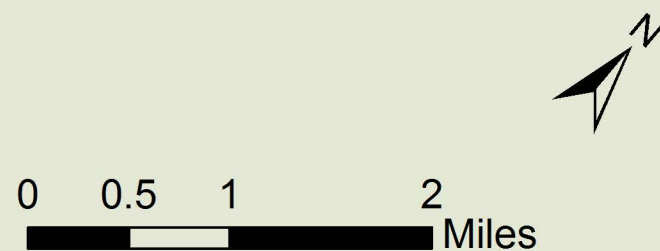


Figure A-13. WMAs and GI/LID in Redwood City
Redwood City Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



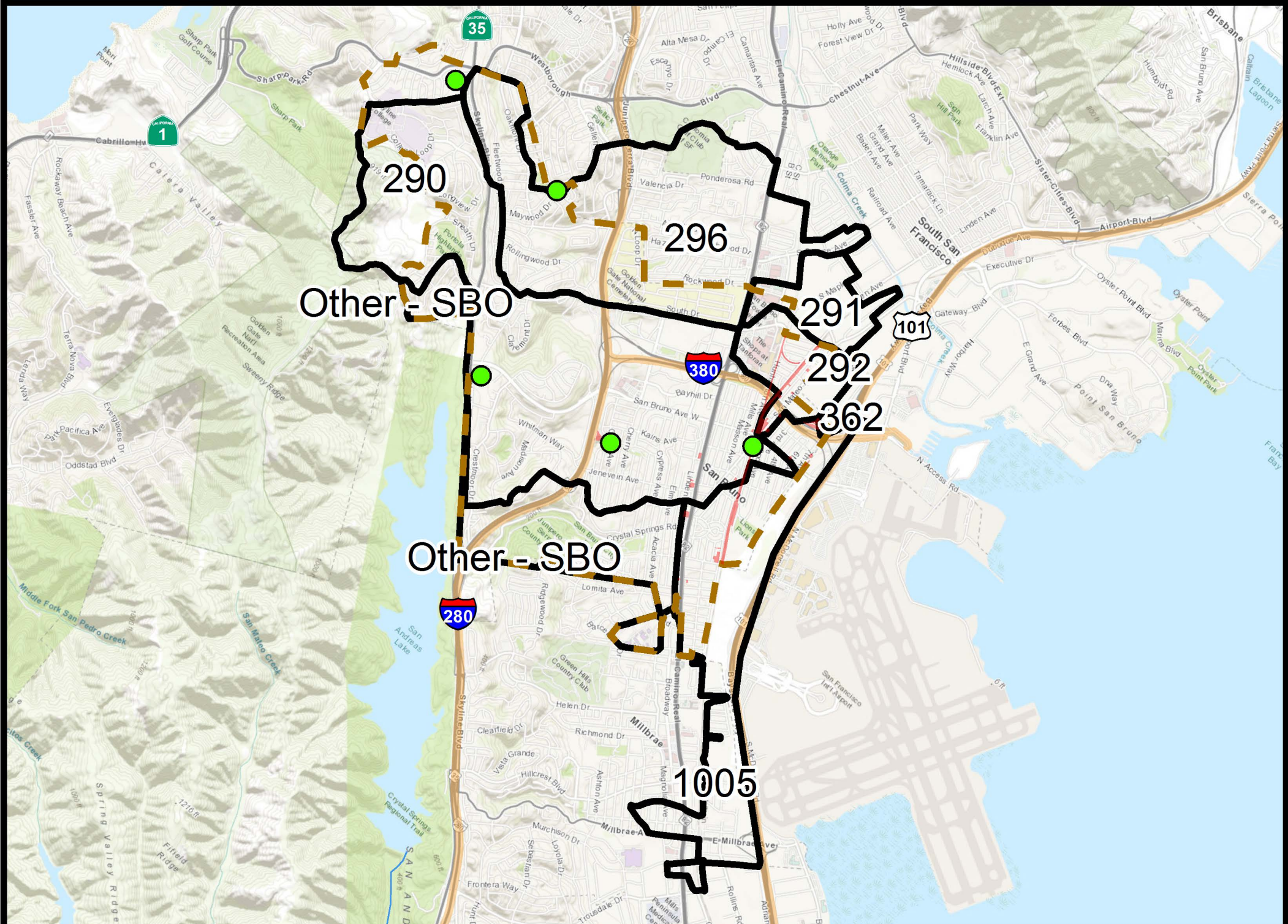
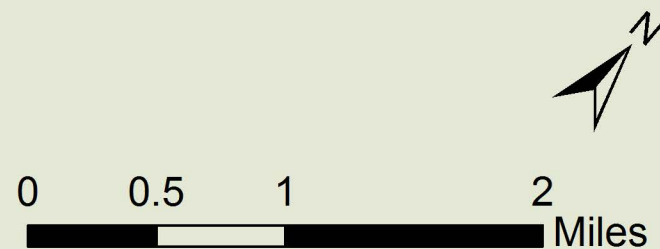


Figure A-14. WMAs and GI/LID in San Bruno
San Bruno Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



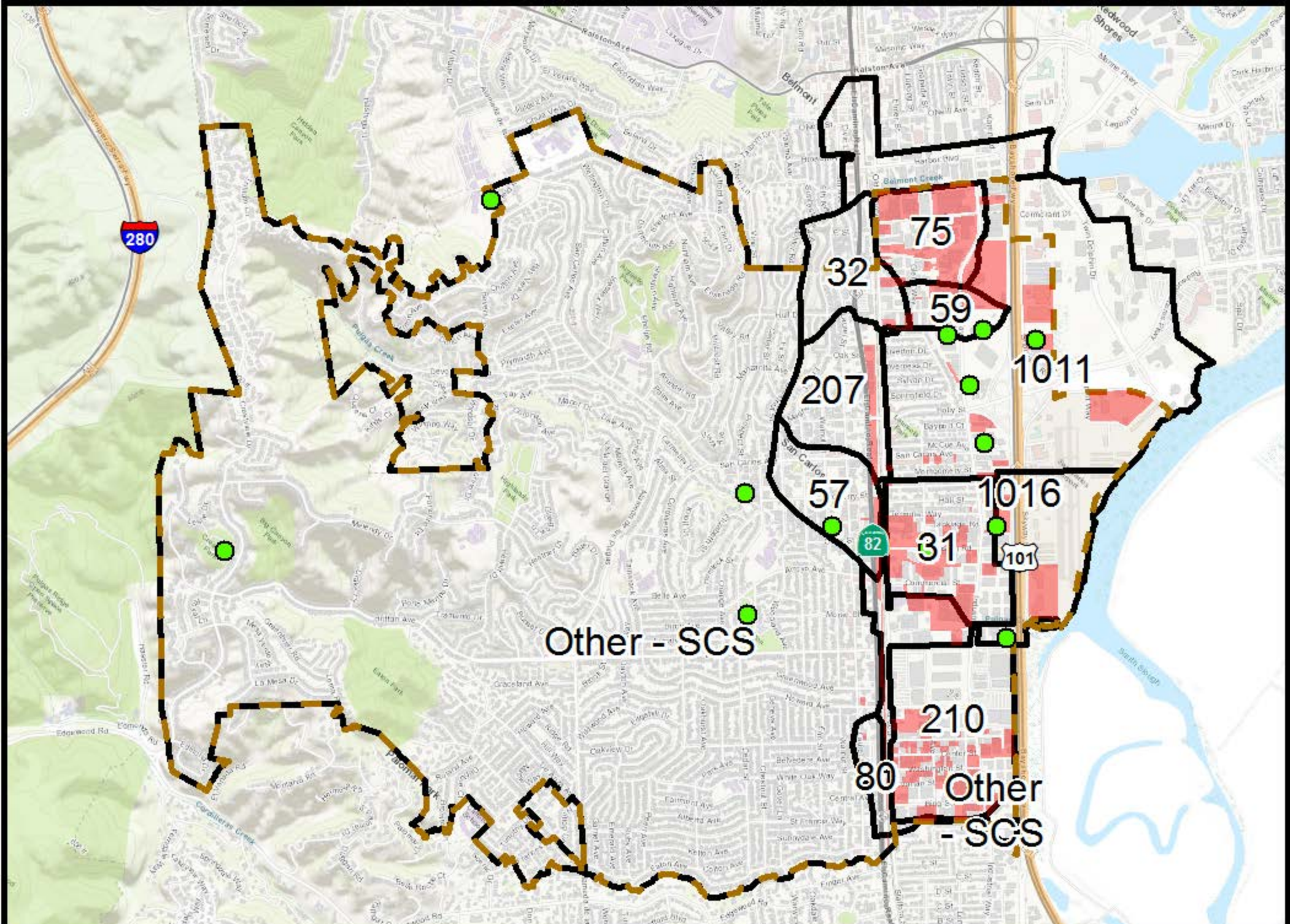


Figure A-15. WMAs and GI/LID in San Carlos
San Carlos Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (VMA)
- Permittee Boundary



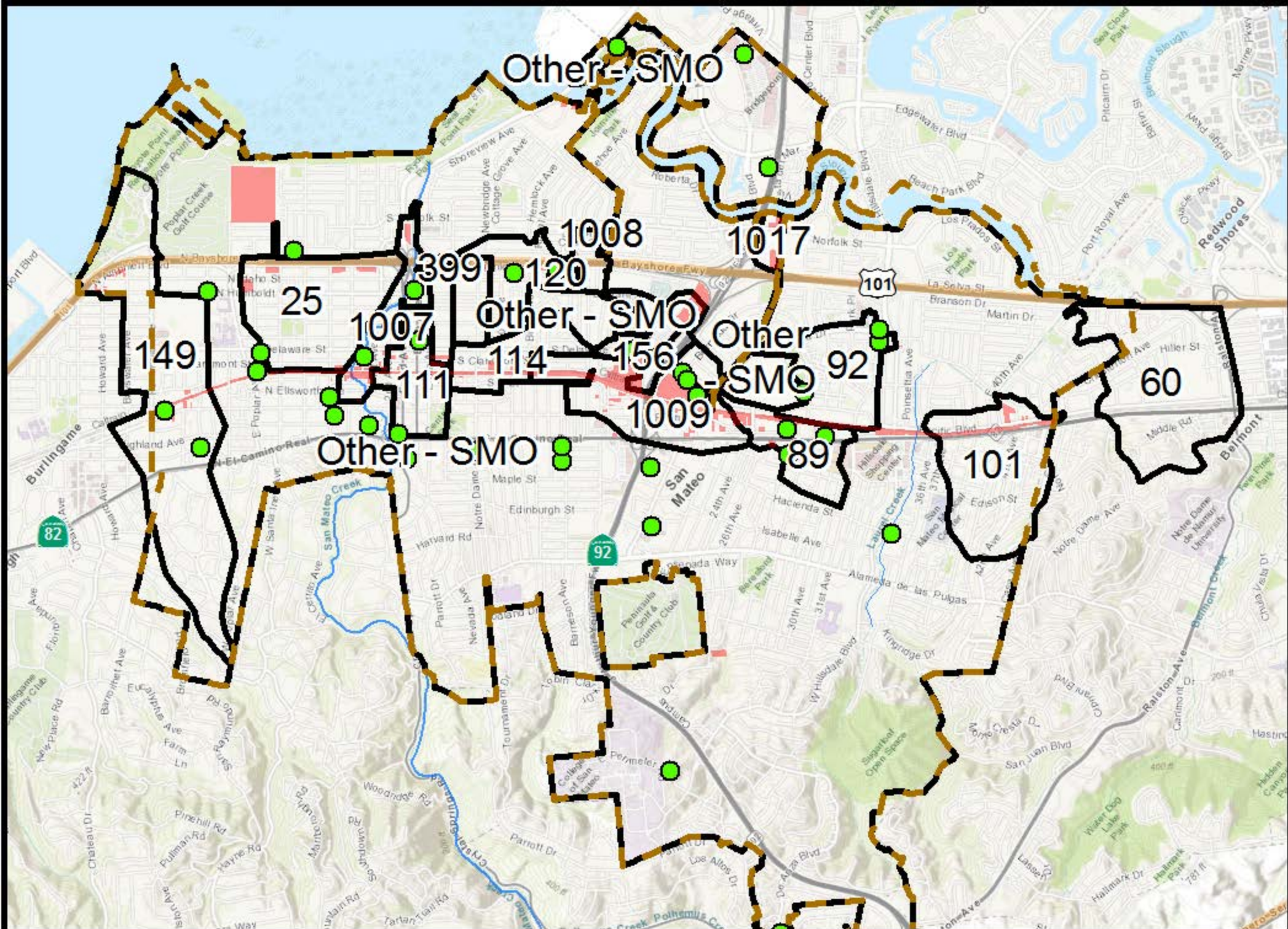
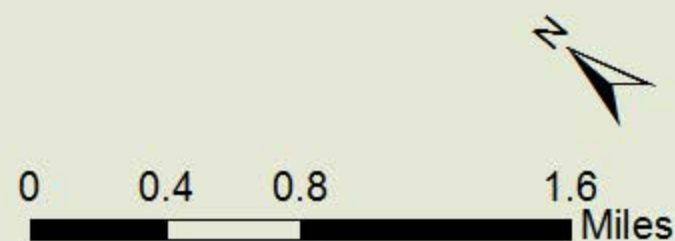


Figure A-16. WMAs and GI/LID in San Mateo
San Mateo Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



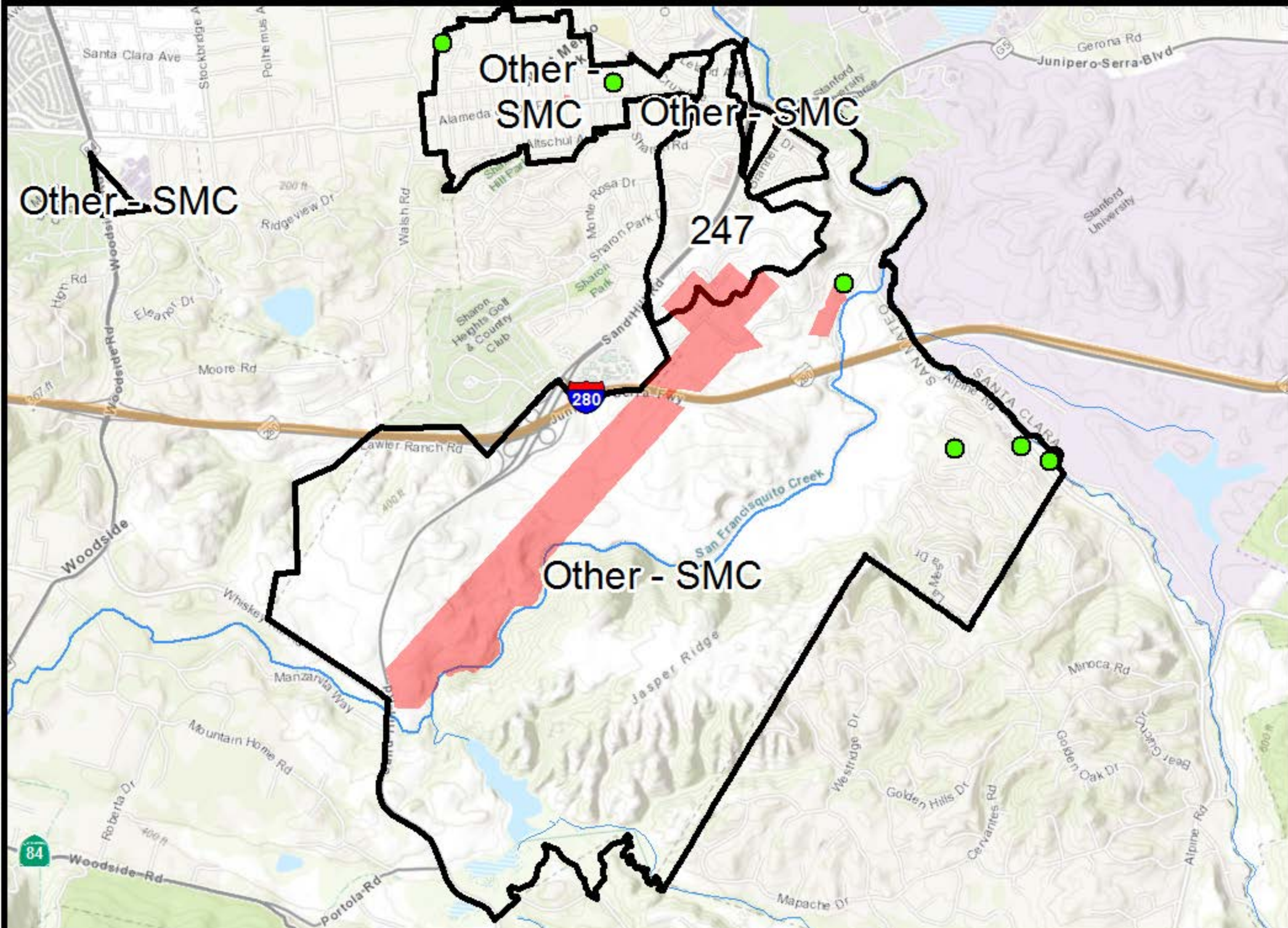


Figure A-17a. WMAs and GI/LID in San Mateo County
San Mateo County Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary

0 0.4 0.8 1.6
Miles



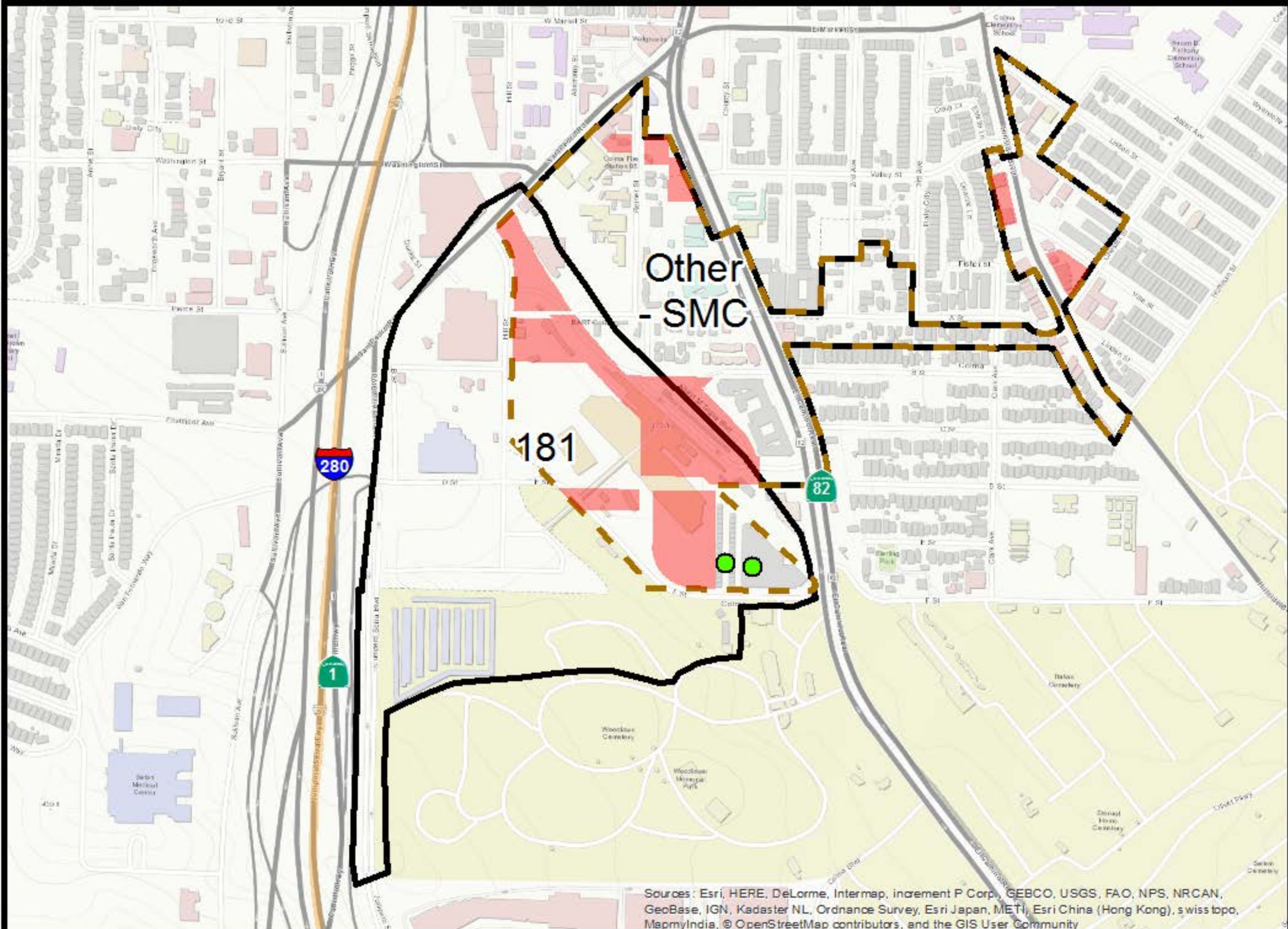


Figure A-17b. WMAs and GI/LID in San Mateo County
San Mateo County Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary

0 0.1 0.2 0.4 Miles



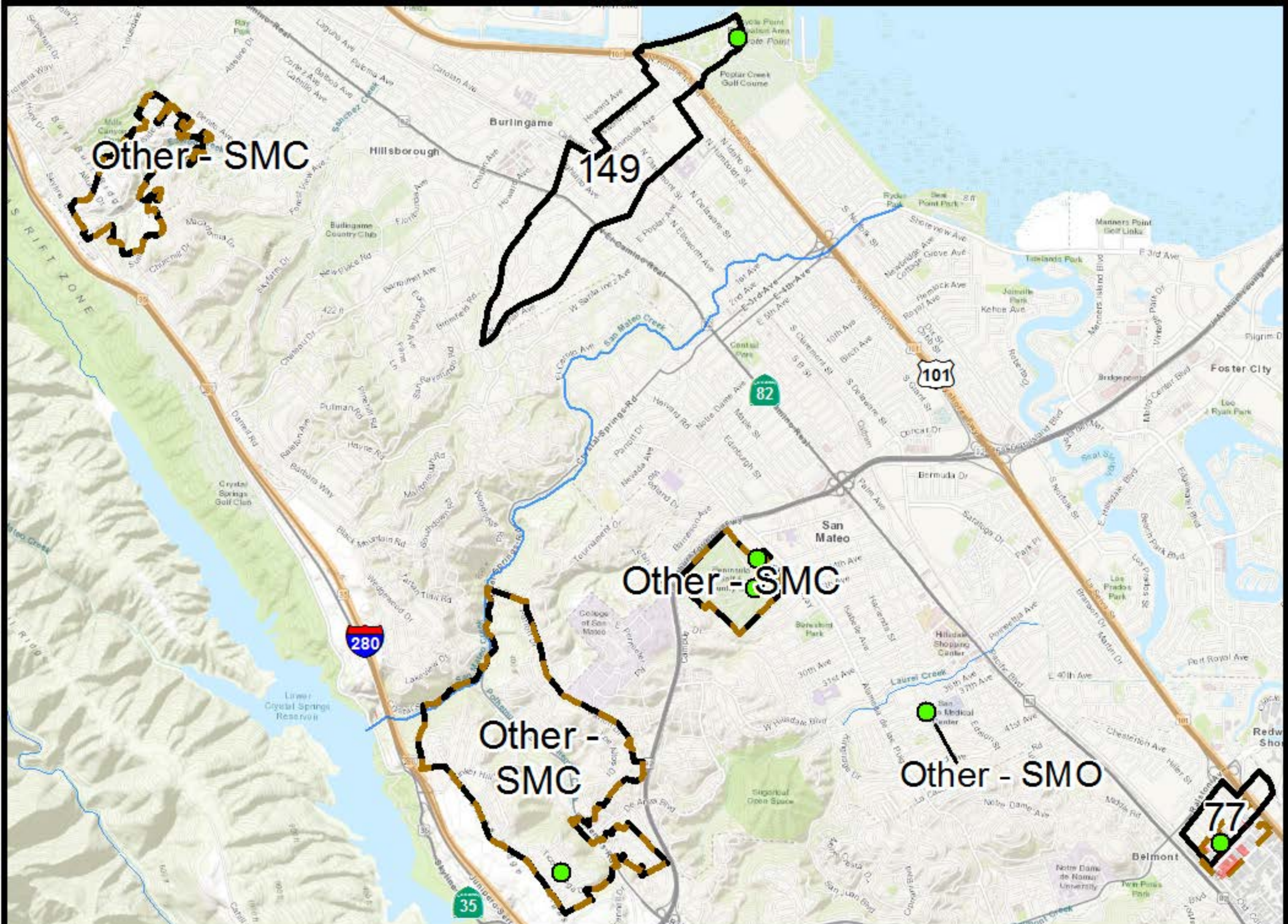


Figure A-17c. WMAs and GI/LID in San Mateo County
San Mateo County Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



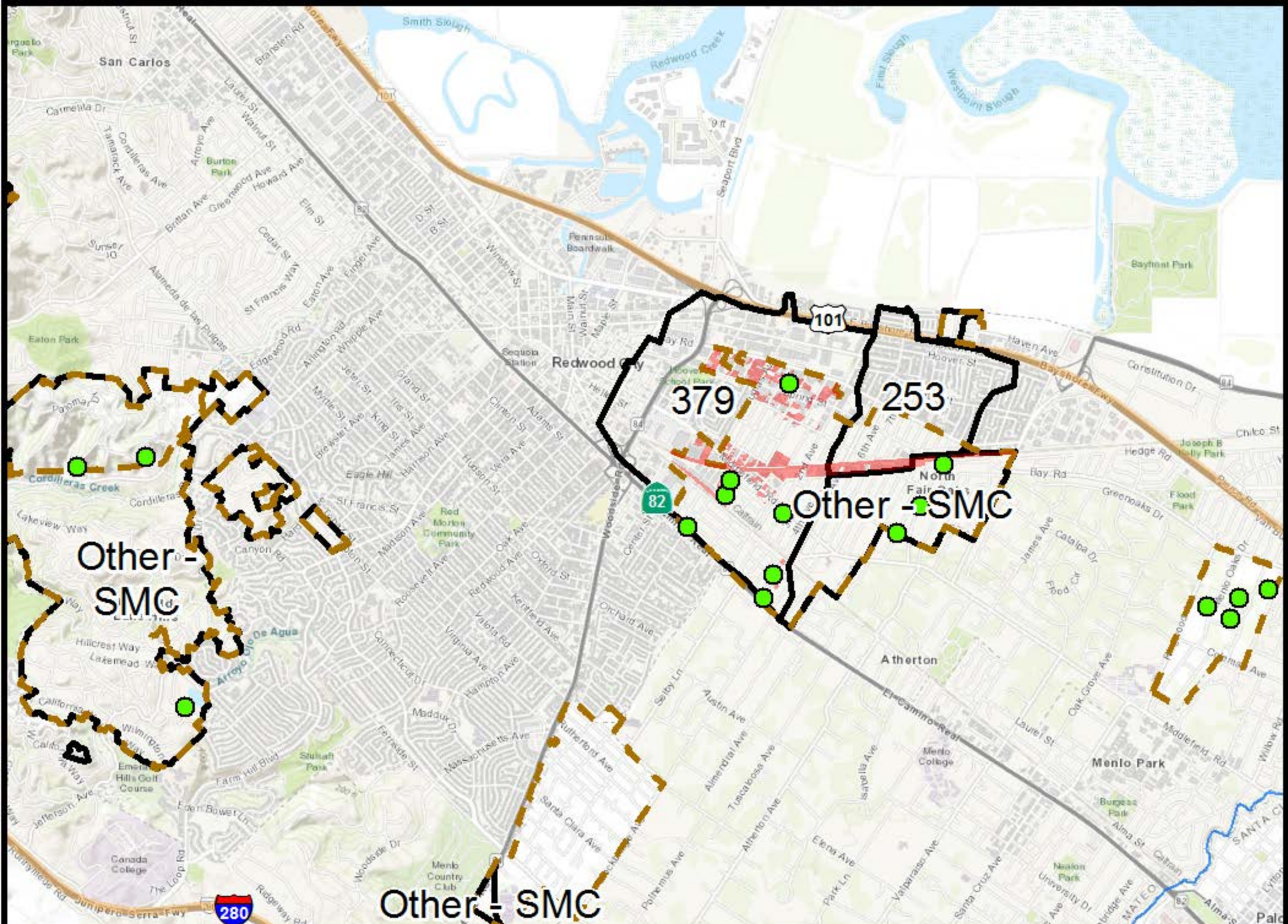
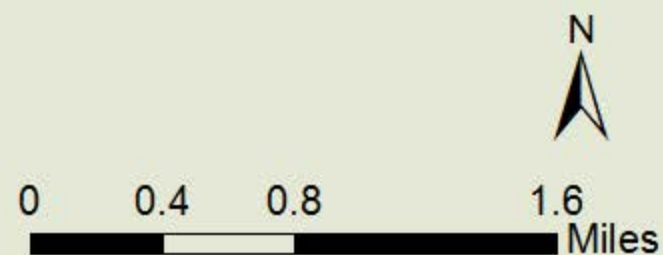


Figure A-17d. WMAs and GI/LID in San Mateo County
San Mateo County Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



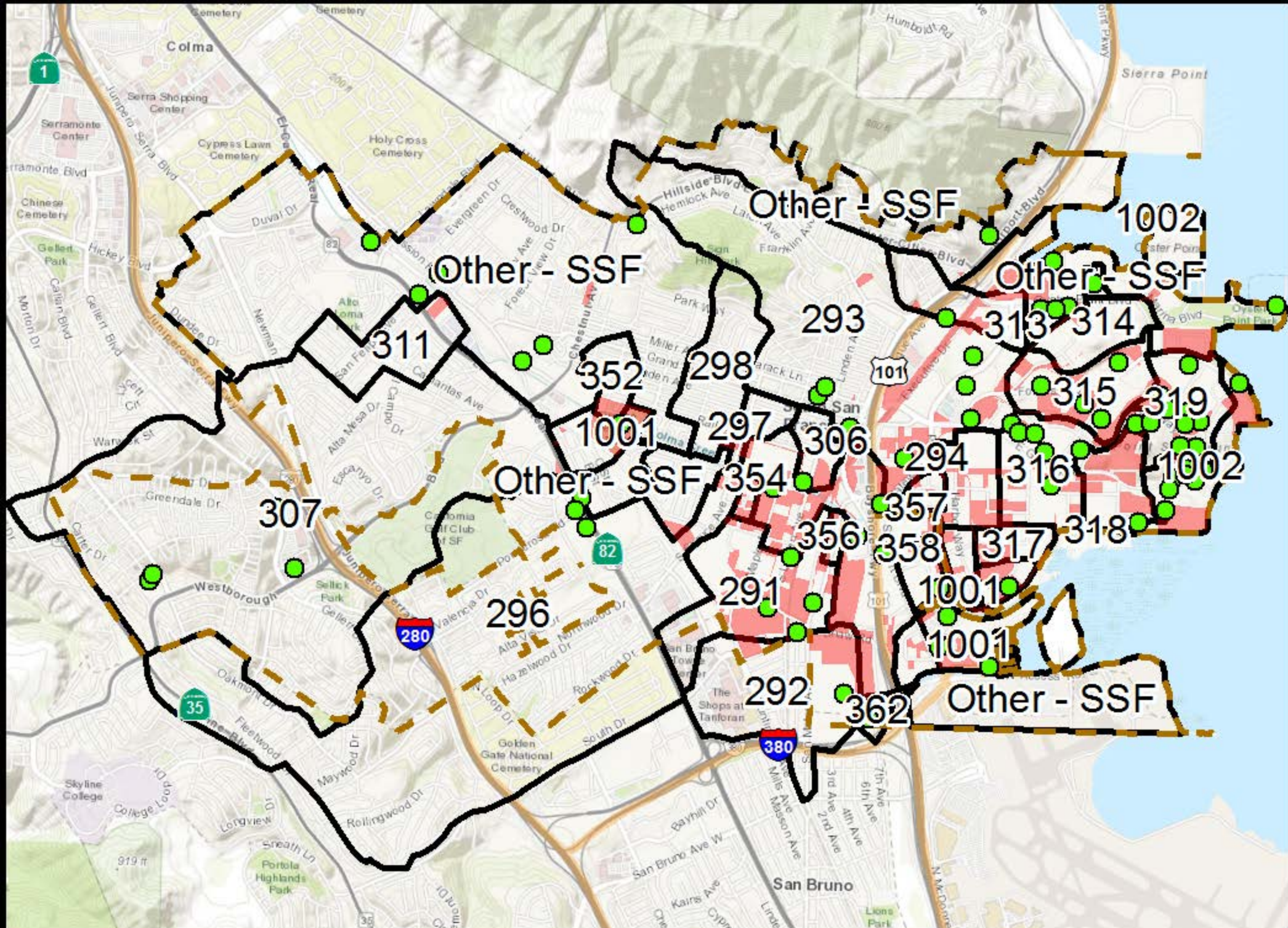
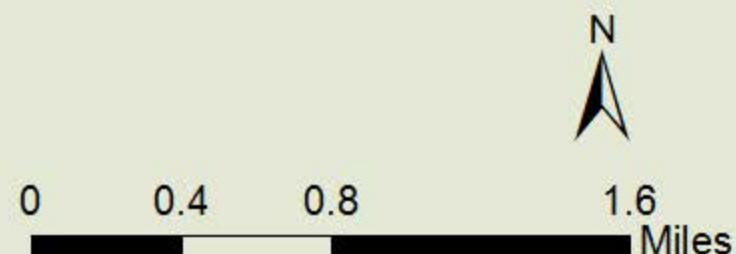


Figure A-18. WMAs and GI/LID in South San Francisco
South San Francisco Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



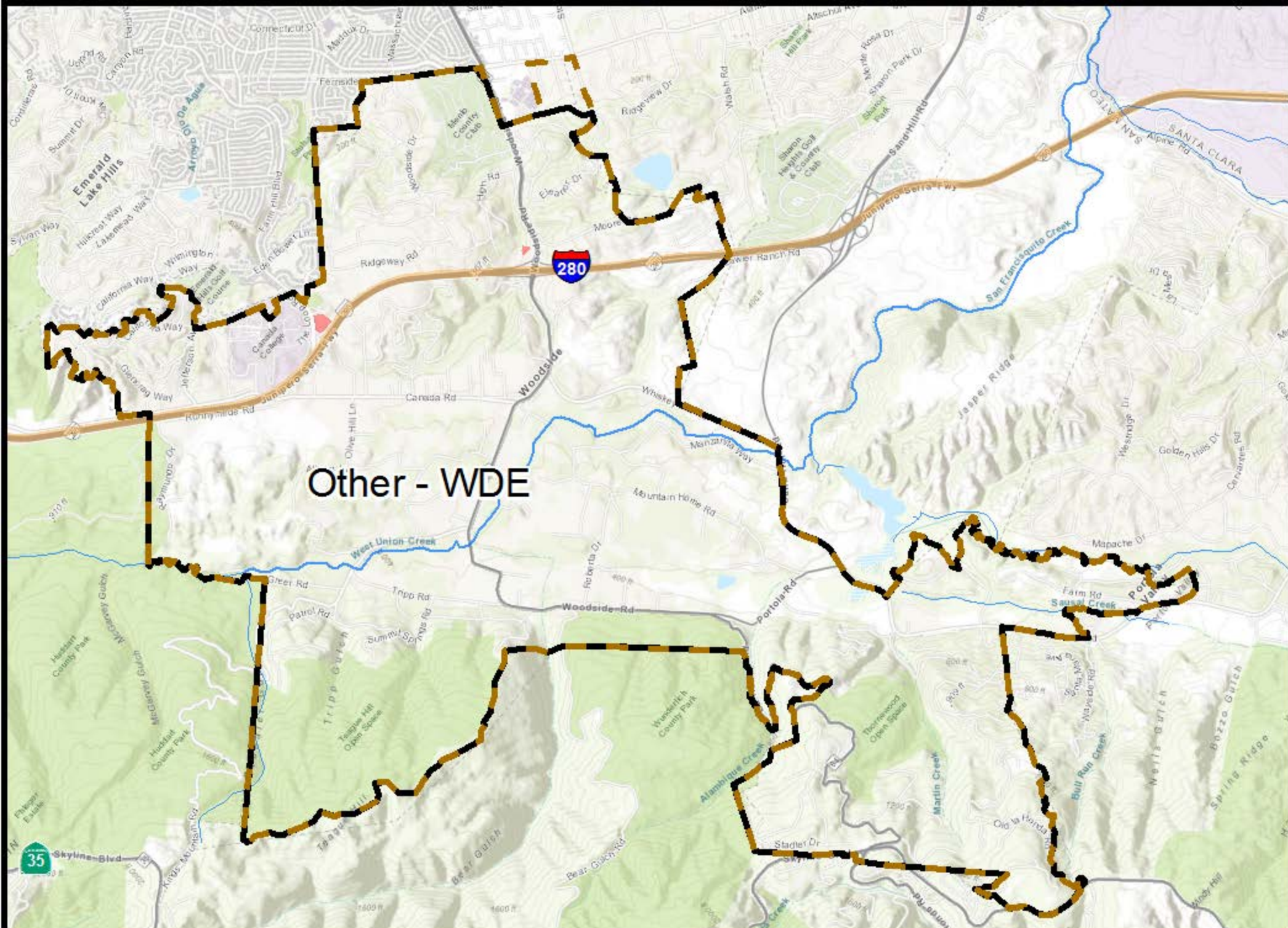


Figure A-19. WMAs and GI/LID in Woodside
Woodside Watershed Management Area Map

- GI/LID Location
- High Interest Areas
- Watershed Management Area (WMA)
- Permittee Boundary



Appendix B

Descriptions of Land Uses Referenced in this Report

Descriptions of Land Uses Referenced in this Report

Old industrial: Area developed as an industrial land use before 1980 and not redeveloped before 2002, including railroads.

Old urban: Area developed before 1980 as any land use other than industrial or airport.

New urban: Area developed or redeveloped after 1980.

Open space: Area that is not developed or mostly pervious including large urban parks, channels, golf courses, and cemeteries.

Other: Airports.