Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Stormwater Control Measures Plan for PCBs and Mercury in the Santa Clara Valley

Version 3.0 (2016-2020)

Submitted in Compliance with NPDES Permit No. CAS612008 - Provisions C.11.a.iii(2)/C.12.a.iii(2) by the Santa Clara Valley Urban Runoff Pollution Prevention Program on behalf of all Co-permittees in Santa Clara County

September 2018

This report is submitted by the agencies participating in the

Santa Clara Valley
Urban Runoff
Pollution Prevention Program

City of Campbell	City of Milpitas	City of Santa Clara
City of Cupertino	City of Monte Sereno	City of Saratoga
City of Los Altos	City of Mountain View	City of Sunnyvale
Town of Los Altos Hills	City of Palo Alto	County of Santa Clara
Town of Los Gatos	City of San José	Santa Clara Valley Water District

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BASMAA	BAY AREA STORMWATER MANAGEMENT AGENCIES ASSOCIATION
BMP	BEST MANAGEMENT PRACTICE
CW4CB	CLEAN WATERSHEDS FOR A CLEAN BAY
CWA	CLEAN WATER ACT
FY	FISCAL YEAR
GE	GENERAL ELECTRIC
GIS	GEOGRAPHIC INFORMATION SYSTEM
GSI	GREEN STORMWATER INFRASTRUCTURE
HDS	HYDRODYNAMIC SEPARATOR UNIT
HHW	HOUSEHOLD HAZARDOUS WASTE
LID	LOW IMPACT DEVELOPMENT
MIP	MODEL IMPLEMENTATION PROCESS
MRP	MUNICIPAL REGIONAL PERMIT
MS4	MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES	NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
O&M	OPERATION AND MAINTENANCE
PPM	PARTS PER MILLION
PCBS	POLYCHLORINATED BIPHENYLS
PG&E	PACIFIC GAS AND ELECTRIC
POC	POLLUTANT OF CONCERN
POTW	PUBLICLY OWNED TREATMENT WORKS
PROGRAM	SANTA CLARA VALLEY URBAN RUNOFF POLLUTION PREVENTION PROGRAM
RAA	REASONABLE ASSURANCE ANALYSIS
REGIONAL WATER BOARD	SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD
ROW	RIGHT-OF-WAY
SAP	SAMPLING AND ANALYSIS PLAN
SFEP	SAN FRANCISCO ESTUARY PARTNERSHIP
SCVURPPP	SANTA CLARA VALLEY URBAN RUNOFF POLLUTION PREVENTION PROGRAM
SCVWD	SANTA CLARA VALLEY WATER DISTRICT
TMDL	TOTAL MAXIMUM DAILY LOAD
USEPA	UNITED STATED ENVIRONMENTAL PROTECTION AGENCY
WMA	WATERSHED MANAGEMENT AREA

SECTION 1 - INTRODUCTION

Regulatory Background

Fish tissue monitoring in San Francisco Bay (Bay) has revealed the bioaccumulation of Polychlorinated Biphenyls (PCBs), mercury, and other pollutants in Bay sportfish. The levels found are thought to pose a health risk to people consuming these fish and as a result, an interim advisory has been issued on the consumption of sportfish 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 and mercury. 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 indicate that a 90% reduction in PCBs and 50% reduction in mercury 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 previous Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP 1.0; Order R2-2009-0074) required Co-permittees to implement pilot-scale control measures during the permit term to reduce PCBs and mercury discharges from Municipal Separate Storm Sewer Systems (MS4s). These pilot studies were intended to enhance our collective knowledge about the costs and benefits of different control measures to reduce the levels of PCBs and mercury in urban stormwater.

The reissued Municipal Regional Permit (MRP 2.0, Order R2-2015-0049), requires municipal agencies (i.e., Co-permittees) to move from pilot-scale work to focused implementation and the achievement of defined load reduction goals (e.g., 3 kg/year region wide for PCBs). The strategies and control measures that will be applied to meet the load reduction goals are anticipated, at a minimum, to include:

- Source property identification and referrals for further investigation and abatement;
- Green stormwater infrastructure/treatment controls; and
- Management of PCBs in building materials during demolition.

Although not specifically required by MRP 2.0, Co-permittees may also implement additional types of controls to address PCBs and mercury reduction goals. The methodology used to account for PCBs and mercury reductions associated with these controls is described in the *PCBs and Mercury Interim Load Reduction Accounting Method Report* (BASMAA 2017), approved by the Regional Water Board's Executive Officer in April 2017.

Purpose of Control Measures Plan

Provisions C.11.a.iii (2) and C.12.a.iii (2) of MRP 2.0 require Co-permittees to report on the development of a prioritized list of Watershed Management Areas (WMAs) as a way to more easily track control measures and load reductions on a watershed and stormwater catchment scale. The WMA selection process is a logical next step in the efforts of Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) Co-permittees taken to-date to identify sources of PCBs and mercury to the MS4s within the Santa Clara Basin. This control measures plan complies with MRP 2.0 provisions C.11/12.a.iii (2) by:

- Providing lists of WMAs where control measure are being implemented or will be implemented during the term of the Permit;
- Describing a preliminary implementation schedule for control measure implementation;
- Identifying the number, type and locations and/or frequency (if applicable) of control measures;
- Providing a cumulative listing of all potentially mercury or PCB-contaminated sites that Co-permittees have discovered and referred to the Water Board to-date, with a brief summary description of each site and where to obtain additional information;
- Describing the scope, start date, and interim implementation progress milestones for PCB/mercury control measures;
- Reporting the PCBs and mercury loads reduced for all control measures implemented to-date during the current permit term, and,
- Providing statements of the roles and responsibilities of each participating Permittee for the implementation of control measures.

This Plan (Version 3.0) is an update of the Version 2.0 Plan that was submitted in September 2017. The information contained with this Plan will continue to be updated annually during MRP 2.0 based on new or revised information regarding SCVURPPP Permittee implementation strategies, existing and planned control measures, and associated load reductions.

Approach to Identifying Management Areas and Control Measures

Watershed Management Areas

The selection and classification of Watershed Management Areas (WMAs) is a multi-year process designed to identify land areas that disproportionately contribute PCBs and mercury to MS4s in the Santa Clara Basin. The process is fully described in the Program's *Progress Report on Identifying WMAs* that was submitted to the Regional Water Board in April 2016 (SCVURPPP 2016). The intent of the WMA selection process is to identify WMAs that would provide the most benefit for PCBs and/or mercury reduction and therefore could be the focus of control measure implementation. The process being implemented by SCVURPPP Co-permittees is consistent with (and expands upon) the framework developed by BASMAA member agencies in consultation with Regional Water Board staff in preparation for MRP 2.0 PCBs and mercury load reduction requirements. Consistent with MRP 2.0, the selection of WMAs is primarily focused on PCBs, with ancillary/secondary benefits to mercury.

Stormwater catchments were chosen as the initial geographical scale at which WMAs are identified. This scale is consistent with the intention of MRP 2.0 provision C.11/12.a.ii and will allow Co-permittees to more easily track control measure implementation. Although stormwater catchments will form the basis for WMAs moving forward, adjustments may be made. Catchment areas are based on the Program's current understanding of the stormwater and runoff patterns and hydrology in the Basin, which may also assist with the eventual development of the model used to conduct a Reasonable Assurance Analysis (RAA) for PCBs and mercury, which is also required by MRP 2.0.

Table 1.1 provides the current categorization of WMAs in the Santa Clara Valley. WMAs are categorized based on evidence collected by SCVURPPP indicating that significant source(s) of PCBs or mercury are present. This evidence includes data indicating that PCBs in sediment collected from the MS4 in the WMA were observed at concentrations >0.5 mg/kg or in

stormwater at PCBs to sediment ratios >0.5 mg/kg).[1] For WMAs with observed concentrations above these thresholds, source property investigations have been conducted, are in process or are planned. If these investigations identify specific properties in a WMA as "source properties", then these WMAs are considered WMAs with confirmed sources. To-date, six WMAs (one in Santa Clara, four in San José and one in Sunnyvale) have been confirmed as containing source properties. Source investigations continue in five WMAs that were investigated previously because additional source properties are suspected. New source investigations are underway in four additional WMAs at the time version 3.0 of this Plan was completed.

Table 1.1. Current classification of 156 Watershed Management Areas (WMAs) that represent stormwater catchments in the Santa Clara Valley Basin.

Co-permittees within Catchments	Preliminary Classification			Total
	# WMAs with Confirmed Source Properties	# WMAs with Source Property Investigations Underway	Remaining # WMAs	
San José	4	6	60	68
Sunnyvale	1	-	21	22
Santa Clara	1	2	17	19
Mountain View	-	-	11	11
Cupertino	-	-	2	2
Milpitas	-	-	11	11
Palo Alto	-	1	8	9
County of Santa Clara	-	-	2	2
Los Altos	-	-	1	1
West Valley Communities	-	-	10	10
Los Altos Hills	-	-	1	1
Total	6	9	144	156

Selection of Control Measures

Co-permittees have implemented a variety of control measures since the development of PCBs and mercury urban stormwater loading estimates incorporated into the TMDLs (i.e., circa 2002). Control measures were implemented to reduce PCBs and/or mercury in stormwater or the overall impacts of stormwater. These control measures have a direct benefit towards reducing the impacts of PCBs and mercury on the Bay, and therefore are documented in this Plan.

Because these control measures can vary both in space and time, the geographical extent and implementation level of these control measures has been challenging to track in the past. Efforts are currently underway to develop a more refined PCBs and mercury control measure tracking system (PCBs and Mercury Tracking System) which will improve the overall management of information necessary to track load reductions associated with these controls. This Tracking Systems remains a work-in-progress. This Plan provides a summary of existing PCBs and mercury

[1] The threshold for determining "elevated" PCBs concentrations in stormwater are preliminary and may be adjusted in the future based on additional information.

control measures implemented to-date based on the information currently incorporated into the Program's Tracking System.

The selection of new or enhanced control measures that may assist Co-permittees in achieving load reduction goals in MRP 2.0 and in the TMDLs is ideally based on an understanding of PCBs and mercury sources within WMAs and of the costs and benefits of different control measures. As previously described, source investigations are currently being conducted by SCVURPPP in an attempt to identify WMAs where the most cost-effective and beneficial controls (i.e., source property referral and abatement) can be implemented.

Should the Program and Co-permittees be unable to identify specific source properties in a WMA where there is evidence that it contains significant PCBs or mercury sources, Co-permittees will evaluate the most cost-effective control measure strategies to reduce PCBs/mercury contributions from the WMA. This evaluation will include factors such as the magnitude and extent of PCB/mercury sources, the feasibility and costs of control measure implementation, the level of current control measure implementation, opportunities to leverage redevelopment or capital improvement projects, and the benefits of implementing different types of control measures. It is anticipated that these evaluations will mostly be conducted as part of the RAA development and control measure implementation during MRP 3.0 (post-2020) and as part of the implementation of Green Stormwater Infrastructure (GSI) plans being developed by each Permittee during MRP 2.0.

Approach to Reporting PCBs and Mercury Loads Reduced

Beginning with the 2017 Annual Reports, MRP 2.0 Co-permittees are required to report the annual PCBs and mercury load reductions achieved due to control measures implemented each year of the permit term. For each Permittee, the data needed to calculate the loads reduced by all currently implemented (i.e., existing) control measures, including the total acres (and associated land-uses) addressed by each type of control measure are provided in Section 3. The estimated loads reduced for control measures implemented during FYs 13-14 through 17-18 are reported in Section 4 for all information available to-date. The methods used to estimate the loads reduced are consistent with the methodologies and data collection programs that were developed by BASMAA member agencies in consultation with the Regional Water Board, and in accordance with MRP provisions C.11.B.iii(1) and C.12.B.iii(1). These methods are fully described in the *Interim Accounting Methodology for TMDL Loads Reduced* (BASMAA, 2017), which was approved by the Executive Officer of the Regional Water Board in May 2017.

Note: Due to the timing of MRP reporting, not all GSI facilities constructed or planned for future years are reported in this document. At a minimum, control measures implemented through FY 17-18 will be fully reported in the final version of this control measure plan, which will be submitted to the Water Board by September 30, 2020.

SECTION 2 - SUMMARY OF CONTROL MEASURE TYPES

Background

The types of control measures implemented to control PCBs and mercury in stormwater were previously described in the Program's Integrated Monitoring Report – Part B (BASMAA 2014) and Part C (SCVURPPP 2014). Controls 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 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 operation and maintenance, mercury device recycling, and the control of PCB-containing material during building demolition.

- 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, GSI, 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 Co-permittees based on continued evaluations of sources of these contaminants and load reduction benefits associated with control measures recently implemented. To the extent possible, control measures implemented to-date and those planned for implementation within each WMA during the term of MRP 2.0 are summarized in Section 3, consistent with MRP requirements. Descriptions of each control measure type that Co-permittees may implement or cause to be implemented by other responsible parties to control PCBs and/or mercury are provided below.

Control Measure Types

Source Property Referrals and Abatement

PCBs and mercury source properties are those that disproportionately contribute pollutants to MS4s. Identification and subsequent abatement of these properties and/or focused control measure implementation in the public right-of-way (ROW) around source properties to reduce pollutant release can provide an opportunity for meaningful PCBs and mercury stormwater load reductions. Reductions occur through the abatement of properties via referrals to the Water Board or through enforcement actions brought against property owners by Co-permittees.

SCVURPPP Co-permittees have identified and referred properties to the Water Board in the recent past, and continue to conduct source property investigations in high priority WMAs (see Section 3). These investigations typically include the following tasks:

1) Property Records and Aerial Photography Review;
2) Property Inspections and Public Right-of-Way (ROW) Surveys;
3) Private Property and Public ROW Soil/Sediment Sampling; and
4) Reporting and Planning/Identifying Control Measures (including referrals to regulatory agencies).

As source properties are identified and referred to the Regional Water Board, information regarding pollutant concentrations observed, evidence of transport to the MS4, property ownership, previous stormwater violations, and other pertinent information is entered into the PCBs and Mercury Tracking System. Additionally, the location and geographical extent of the referred property is delineated in GSIS to facilitate the calculation of PCBs and mercury load reductions.

To-date, SCVURPPP Co-permittees have referred two source control properties to the Regional Water Board. The first source property referral was the Union Pacific railroad track ROW in WMA 083CTC990 (Leo Avenue) in the City of San José. The property was discovered based on the Leo Avenue source investigation project, which provided evidence that high concentrations of PCBs and mercury originating from the Union Pacific railroad track ROW were entering the City's stormwater system. This evidence resulted in the City of San José, in collaboration with the Program, referring the property to the Regional Water Board for follow-up investigation and abatement. Additional details about the Leo Avenue project and the resulting referral can be found in the SCVURPPP FY 15-16 Annual Report – Section 11. The second source property referral was the former Westinghouse Superfund Site in Sunnyvale. Additional details about the Westinghouse property and the resulting referral are provided in the SCVURPPP FY17-18 Annual Report – Section 11.

Categorical Source Properties

One aspect of source property identification is the designation of a categorical source property. The categorical source property designation was developed specifically to address potential sources of PCBs that are widespread and distributed across multiple jurisdictions, such as electrical utility applications and rail lines. MRP Permittees, as a group, can refer an entire source category to the SF Bay Water Board in order to facilitate a regional approach to addressing PCBs from a categorical source.

Electrical utility applications are a potential source of PCBs to the MS4 that are particularly challenging for municipalities to control because of their quantity, dispersed nature, and municipalities general lack of authority over these sources. A categorical source property referral to the Regional Water Board is one possible approach to address this source. As a first step, in FY 17-18 the Program developed a report that summarizes Co-permittees current state of knowledge about electrical utility applications and PCBs titled *Potential Contributions of PCBs to Stormwater from Electrical Utilities in the San Francisco Bay Area*, included as Appendix 11-2 to the SCVURPPP FY 17-18 Annual Report. In FY 18-19, the Program will participate in a BASMAA regional project to further evaluate the extent and magnitude of electrical utilities as a categorical source of PCBs to urban stormwater runoff.

Green Stormwater Infrastructure and Other Stormwater Treatment Controls

In addition to source property abatement, the installations of green stormwater infrastructure (GSI) facilities on private property and on public property or rights-of-way has and will continue to provide significant benefits to stormwater quality and PCBs and mercury loads reduced over time in the Santa Clara Basin. GSI facilities include Infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. Examples of GSI include bioretention, low impact development (LID), green/complete streets, and other systems that generally use the natural filtration or infiltration of stormwater.

As described in Section 3, numerous GSI facilities treating thousands of acres of land in the Santa Clara Valley have been implemented on private properties as a result of new and redevelopment stormwater requirements. Co-permittees have little control over the pace and extent to which redevelopment occurs, however, as redevelopment projects are permitted, Co-permittees ensure that stormwater treatment controls are incorporated into those projects. Based on the level of recent redevelopment in the Santa Clara Valley and the "planned" projects listed in Section 3, the Program anticipates that the number of GSI facilities on private property will continue to grow during the remainder of MRP 2.0 and within the next decade. Co-permittees continue to track the installation of these GSI facilities to ensure proper maintenance and operation, and to assist with demonstrating pollutant load reductions.

Additionally, a number of GSI facilities (e.g., green streets or regional stormwater control retrofit projects) have been implemented by SCVURPPP Co-permittees on public property or rights-of-way. Many of these projects have served as demonstration projects and are also summarized in Section 3 for each applicable Permittee. As a result of Permittee GSI plans developed under MRP 2.0, however, the number of public GSI projects are anticipated to increase in the future. The identification and prioritization of public GSI projects in the Santa Clara Valley will occur as the result of the GSI Plan development process and RAA development scheduled for completion in the latter half of MRP 2.0. Project prioritization will likely be based on a number of factors (including PCBs and mercury contributions). Similar to GSI facilities on private property, Co-permittees will continue to track the installation of public GSI facilities to ensure proper maintenance and operation, and to assist with demonstrating pollutant load reductions.

Trash Capture Systems (Large and Small Devices)

Full trash 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. The State and Regional Water Boards have approved a variety of proprietary devices as achieving the full capture definition. These devices grouped into two general categories - "large devices", treating hundreds of acres, or "small devices", typically treating an acre or less of land. Examples of large devices include hydrodynamic separators, end-of-pipe netting systems, and in-line gross solid removal devices. Small devices are generally screens or baskets that are installed in storm drain inlets.

SCVURPPP Co-permittees have installed numerous full trash capture systems to-date, treating thousands of acres of land. In addition to trash/litter, these systems also remove sediment and associated pollutants (e.g., PCBs and mercury). The extent of land areas treated by full capture devices are included in Section 3 for each Co-permittee.

Please note: Because hydrodynamic separators are very effective at removing sediment-bound pollutants, these types of systems are described separately in Section 3 from other full capture systems, such as inlet-based screens.

MS4 Operation and Maintenance Practices

Street Sweeping and Flushing

All Co-permittees conduct street sweeping and have documented the amount of material removed via their street sweeping activities since the early 2000's. Additionally, sweeping frequencies and the level of parking enforcement (or equivalent actions) that Co-permittees conduct were documented in the Program's GSIS geodatabase in 2009 as part of trash/litter management strategy development. Existing street sweeping frequencies for each Permittee are summarized in Section 3, along with enhancements made by Co-permittees to-date to enhance stormwater pollutant (i.e., trash or other pollutants) reduction or for other non-pollutant reduction reasons.

In addition to traditional street sweeping, street flushing may also provide pollutant reduction benefits for stormwater. 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. Street flushing pilot projects have been conducted in the Bay Area, but street flushing has not occurred in the Santa Clara Valley to-date based on readily available information. Street flushing is therefore not discussed in Section 3. If street flushing projects are implemented by SCVURPPP Co-permittees in the future, 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 intended to convey stormwater (and associated sediments) effectively though the system. Based on readily available information, to-date one such opportunity associated with elevated PCBs or mercury concentrations has occurred in the Santa Clara Valley. The line flushing project that occurred in WMA 083CTC990 (Leo Avenue) in the City of San José was documented in the final report for the Clean Watersheds for a Clean Bay (CW4CB) project administered by BASMAA (BASMAA, 2017). Load reductions associated with the Leo Avenue line flushing project and future opportunistic line flushing projects will be documented by SCVURPPP and/or Co-permittees.

Storm Drain Inlet Cleaning

All Co-permittees periodically conduct storm drain inlet maintenance (i.e., cleaning). Through these efforts, sediment and organic material (and associated pollutants) are removed from the MS4. Based on readily available information, the majority of SCVURPPP Co-permittees inspect and maintain their inlets annually. In recent years, many SCVURPPP Co-permittees have increased cleaning frequencies due to additional maintenance requirements for newly installed inlet-based trash full trash capture devices. Current maintenance practices and enhancements are summarized in Section 3. Other potential enhancements will be evaluated as part of source property investigations and control measure prioritization planned to occur as part of RAA development. Enhancements will be tracked by the Program and/or Co-permittees to account for future PCBs and mercury reductions.

Channel Maintenance

In addition to Permittee maintenance and operation of MS4s (e.g., inlet cleaning and flushing), flood control agencies such as the Santa Clara Valley Water District (SCVWD) periodically remove sediment from facilities and stream channels as part of their stream/channel maintenance programs. As sediment and organic material is removed from channels, sediment-associated pollutants such as PCBs and mercury are also removed. A summary of the SCVWD's

existing stream maintenance program is included in Section 3. Enhancements in sediment removal will be tracked by the Program and/or the SCVWD in the future to account for increases in PCBs and mercury reductions associated with this control measure.

Managing PCBs in Building Materials

PCBs were used in many applications and materials in buildings constructed between 1950 and 1980. MRP 1.0 required the implementation of a pilot project to assist in developing management practices that address legacy caulks containing PCBs. Co-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 developed preliminary Best Management Practices (BMPs), a Model Implementation Process (MIP), 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 and the subsequent conveyance of the PCB-laden caulks by urban stormwater runoff to San Francisco Bay.

Building upon the requirements in MRP 1.0, MRP 2.0 provision C.12.f requires Co-permittees to develop and implement (or cause to be developed and implemented) an effective protocol for managing materials with PCBs concentrations of 50 ppm or greater in applicable structures at the time such structures undergo demolition so that PCBs do not enter municipal storm drain systems. Applicable structures include, at a minimum, commercial, public, institutional and industrial structures constructed or remodeled between the years 1950 and 1980 with building materials with PCBs concentrations of 50 ppm or greater. Single-family residential and wood frame structures are exempt.

SCVURPPP Co-permittees are currently participating in a BASMAA regional project that will develop model tools and guidance for Co-permittees and assist in developing regionally consistent protocols/programs to control PCBs in building materials. Co-permittees plan to develop and implement the protocol required by MRP 2.0 by July 1, 2019.

Managing PCBs in Storm Drain or Roadway Infrastructure

Recent 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 Co-permittees to evaluate the presence of PCBs in caulks/sealants used in storm drain or roadway infrastructure in public rights-of-way by collecting samples of caulk and other sealants used in storm drains and between concrete curbs and street pavement. BASMAA conducted a regional project to address this permit requirement on behalf of Co-permittees. The final project report is provided in Appendix 11-3 of the FY 17-18 SCVURPPP Annual Report. The need for future enhanced controls to manage PCBs in storm drain and roadway infrastructure will be evaluated based on the results of the BASMAA project.

Diversions of Urban Runoff to Wastewater Treatment Facilities

The diversion of urban runoff (i.e., dry weather or stormwater) to wastewater treatment facilities can reduce PCBs and mercury loads in stormwater to the Bay. Currently, one structure is present in the Santa Clara Valley that diverts dry and wet weather flows from the MS4 to a wastewater treatment facility. The structure is located in the City of Palo Alto and was evaluated as part of a pilot project conducted during MRP 1.0. A summary of the diversion structure is included in Section 3. Although no additional diversions are currently planned, Co-permittees may choose to divert additional flows to wastewater treatment facilities in the future. Should diversions be implemented, pollutant load reductions from these control measures will be tracked by the Program and/or applicable Co-permittees.

Removal of Illegally Dumped or In-use PCB-containing Materials and Products

This source control measure category entails clean-up of construction and demolition debris from illegal dumping areas where it poses a risk to entering MS4s, and the removal of PCB-containing equipment currently in-use. Additionally, it includes the proper clean-up and disposal of stockpiles, spills, and/or improperly disposed quantities of PCBs. The measure would involve, for instance, a concentrated source of PCBs (e.g., a barrel) that is found and cleaned-up or properly disposed. The Program is currently evaluating whether this control measure is currently being implemented by Co-permittees and if there are opportunities to enhance this control measure for PCBs or mercury load reduction purposes.

Mercury Reduction via True Source Controls and Recycling

Many types of devices and equipment (e.g., thermometers, switches, and fluorescent lamps) contain substantial amounts of 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. Control measures currently implemented by Co-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 during the end-of-life of these devices and equipment.

SCVURPPP Co-permittees currently promote, facilitate and/or participate in the collection and recycling of mercury-containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's and City of Palo Alto's Household Hazardous Waste Program (HHW Programs). The HHW Programs offers residents the opportunity to drop-off mercury-containing devices and equipment and other hazardous wastes at designated drop-off points free of charge. The HHW Programs provide an inexpensive hazardous waste disposal option to eligible businesses. SCVURPPP Co-permittees promote the availability of the HHW Programs on their agency websites.

Roles and Responsibilities for Control Measure Implementation

SCVURPPP Co-permittees are responsible for the implementation of PCBs and mercury control measures, or causing control measures to be implemented by other parties. Depending on the size and complexity of the public agency and the type of control measure, implementation can occur via an array of Permittee departments and divisions.

The SCVURPPP (Program) provides assistance to Co-permittees by developing guidance on control measure implementation, assisting with the identification and prioritization of control measure types and locations, and tracking, monitoring and reporting on control measures and the resulting load reduction benefits. SCVURPPP does not directly implement PCBs and mercury control measures.

Similar to SCVURPPP, BASMAA does not directly implement control measures. BASMAA conducts projects of regional benefit that develop guidance and tools to assist Co-permittees with control measures implementation. Regional projects are typically conducted to reduce costs and/or to develop regional consistency.

SECTION 3 - EXISTING & PLANNED CONTROL MEASURES

Permittee PCBs and mercury stormwater control measures currently implemented by Co-permittees (i.e., existing) and the control measures under development (i.e., planned) are summarized in this section. Summaries for Co-permittees are organized by population (largest to smallest) and include information on control measures compiled by SCVURPPP to-date and may not include all existing or planned control measures. The inventory of control measures implemented or caused to be implemented by Co-permittees will continue to be updated and refined as additional information becomes available and as new or enhanced actions are implemented. To the extent possible, control measure summaries are geographically organized by Permittee and WMA. Specifically, generalized locations of GSI facilities and full trash capture systems are illustrated on preliminary control measure maps included as Attachment A.

CITY OF SAN JOSÉ

Watershed Management Areas

Table 3.1 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of San José. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.1 have been updated from the tables provided in Version 2.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 75 WMAs (or portions of WMAs[2]) have been identified in the City of San José. These WMAs include all land area (i.e., >96,000 acres) within the City's jurisdictional boundaries that is downstream of significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.1. City of San José preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
034AVS120	Alviso Slough	231	10%	51%	13%	26%	0%
129CNC165	Canoas Creek	1230	16%	73%	2%	10%	0%
130CNC022	Canoas Creek	2505	5%	50%	30%	15%	0%
050CTC100	Coyote Creek	105	38%	35%	25%	2%	0%
051CTC150	Coyote Creek	40	73%	27%	0%	0%	0%
051CTC275	Coyote Creek	443	56%	22%	15%	7%	0%
051CTC400	Coyote Creek	140	67%	31%	0%	2%	0%
051CTC450	Coyote Creek	244	11%	75%	0%	15%	0%
051CTC850	Coyote Creek	101	15%	83%	0%	2%	0%
051CTC950	Coyote Creek	22	25%	71%	0%	4%	0%
067CTC030	Coyote Creek	81	61%	36%	0%	3%	0%
067CTC150	Coyote Creek	64	61%	38%	0%	2%	0%
067CTC250	Coyote Creek	41	61%	39%	0%	0%	0%
067CTC350	Coyote Creek	99	28%	71%	0%	1%	0%
067CTC351	Coyote Creek	34	63%	37%	0%	0%	0%
067CTC750	Coyote Creek	73	12%	87%	0%	1%	0%
067CTC810	Coyote Creek	230	6%	93%	0%	1%	0%
083CTC350	Coyote Creek	426	12%	79%	0%	9%	0%
083CTC650	Coyote Creek	157	4%	87%	0%	10%	0%
083CTC990	Coyote Creek	454	65%	33%	0%	2%	0%

[2] Some WMAs overlap with multiple Co-permittees.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
084CTC625	Coyote Creek	205	32%	64%	0%	4%	0%
100CTC050	Coyote Creek	48	18%	80%	0%	2%	0%
100CTC190	Coyote Creek	139	0%	97%	0%	2%	0%
100CTC400	Coyote Creek	303	13%	75%	0%	12%	0%
100CTC500	Coyote Creek	586	9%	90%	0%	2%	0%
100CTC600	Coyote Creek	654	5%	86%	0%	9%	0%
Miguelita Creek	Coyote Creek	1222	3%	95%	0%	1%	0%
035GAC010	Guadalupe River	915	0%	14%	71%	15%	0%
035GAC015	Guadalupe River	529	14%	1%	80%	5%	0%
050GAC020	Guadalupe River	1382	26%	13%	54%	8%	0%
050GAC400	Guadalupe River	42	0%	97%	0%	0%	3%
050GAC580	Guadalupe River	31	3%	11%	0%	3%	83%
050GAC600	Guadalupe River	34	1%	12%	0%	1%	85%
066GAC110	Guadalupe River	283	15%	52%	29%	5%	0%
066GAC150	Guadalupe River	120	41%	2%	0%	1%	56%
066GAC152	Guadalupe River	379	20%	2%	0%	1%	78%
066GAC550	Guadalupe River	1495	16%	84%	0%	1%	0%
066GAC810	Guadalupe River	131	11%	85%	0%	4%	0%
066GAC850	Guadalupe River	137	38%	42%	0%	5%	15%
066GAC900	Guadalupe River	593	2%	94%	0%	2%	1%
067GAC010	Guadalupe River	527	3%	90%	0%	7%	0%
067GAC075	Guadalupe River	391	4%	88%	0%	7%	0%
067GAC150	Guadalupe River	298	17%	77%	0%	7%	0%
067GAC190	Guadalupe River	318	15%	85%	0%	0%	0%
083GAC240	Guadalupe River	275	26%	73%	0%	1%	0%
083GAC246	Guadalupe River	44	28%	71%	0%	1%	0%
083GAC300	Guadalupe River	27	29%	69%	0%	2%	0%
083GAC575	Guadalupe River	139	2%	96%	0%	1%	0%
083GAC800	Guadalupe River	221	7%	91%	0%	3%	0%
083GAC900	Guadalupe River	609	33%	39%	0%	28%	0%
099GAC240	Guadalupe River	298	44%	52%	0%	4%	0%
099GAC500	Guadalupe River	88	7%	87%	0%	6%	0%
128GAC490	Guadalupe River	60	13%	81%	1%	5%	0%
GAC-B	Guadalupe River	229	3%	71%	0%	26%	0%
083LGC090	Los Gatos Creek	41	66%	33%	0%	1%	0%
083LGC225	Los Gatos Creek	20	75%	25%	0%	0%	0%

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
083LGC430	Los Gatos Creek	59	28%	67%	0%	4%	0%
083LGC525	Los Gatos Creek	232	14%	86%	0%	0%	0%
083LGC686	Los Gatos Creek	39	76%	23%	0%	1%	0%
099LGC180	Los Gatos Creek	823	2%	98%	0%	1%	0%
113LGC010	Los Gatos Creek	627	0%	100%	0%	0%	0%
LGC-C3	Los Gatos Creek	173	24%	72%	0%	5%	0%
036PCL800	Lower Penitencia Creek	890	16%	80%	0%	4%	0%
036PCL810	Lower Penitencia Creek	184	30%	68%	0%	3%	0%
067SCL063	Lower Silver Creek	141	15%	84%	0%	1%	0%
067SCL066	Lower Silver Creek	1148	0%	96%	0%	2%	2%
067SCL080	Lower Silver Creek	42	75%	23%	0%	1%	0%
067SCL120	Lower Silver Creek	39	61%	38%	0%	1%	0%
068SCL150	Lower Silver Creek	100	2%	97%	0%	1%	0%
068SCL230	Lower Silver Creek	405	2%	95%	0%	4%	0%
068SCL270	Lower Silver Creek	25	5%	93%	0%	2%	0%
Other - San José	Multiple	72,135	1%	55%	15%	29%	1%
	Totals	*96,598*	*4%*	*57%*	*14%*	*23%*	*1%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of existing and planned control measures for the City of San José is listed in Table 3.2.

Table 3.2. Existing (E) and planned (P) PCBs and mercury control measures in City of San José WMAs.

WMA ID#	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure and Treatment Control Measures	Full trash capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCB-containing Materials and Products	Reduction/Recycling of Mercury-containing Devices & Products
034AVS120		P		P		E		E			E
035GAC010		E/P		P		E		E			E
035GAC015		E		P		E		E			E
036PCL800		E/P		P		E		E			E
036PCL810		P		P		E		E			E
050CTC100				P		E		E			E
050GAC020	P	E/P		P		E		E			E
050GAC401				P		E		E			E
050GAC300				P		E		E			E
050GAC600				P		E		E			E
051CTC150				P		E		E			E
051CTC275	E	E/P		P		E		E			E
051CTC400	E/P	E	E	P		E		E			E
051CTC450		E/P	E	P		E		E			E
051CTC850		E		P		E		E			E
051CTC950				P		E		E			E
066GAC110		E/P	E	P		E		E			E
066GAC151											
066GAC152		E/P		P		E		E			E
066GAC550		E/P		P		E		E			E
066GAC810				P		E		E			E
066GAC850		E	E	P		E		E			E
066GAC900		E/P		P		E		E			E
067CTC030		E		P		E		E			E

WMA ID#	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure and Treatment Control Measures	Full trash capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCB-containing Materials and Products	Reduction/Recycling of Mercury-containing Devices & Products
067CTC150				P		E		E			E
067CTC250	P			P		E		E			E
067CTC350		P	E	P		E		E			E
067CTC351				P		E		E			E
067CTC750			E	P		E		E			E
067CTC810		E/P	E	P		E		E			E
067GAC010			E	P		E		E			E
067GAC075		E		P		E		E			E
067GAC150		E/P		P		E		E			E
067GAC190		P	E	P		E		E			E
067SCL063		E		P		E		E			E
067SCL066		E	E	P		E		E			E
067SCL080	E/P	E	E	P		E		E			E
067SCL120	P	P	E	P		E		E			E
068SCL150		P	E	P		E		E			E
068SCL230		E	E	P		E		E			E
068SCL270		E	E	P		E		E			E
083CTC350		E/P	E	P		E		E			E
083CTC650		P		P		E		E			E
083CTC990 (Leo Avenue)	E	E/P	E	P		E	E	E			E
083GAC240		E/P		P		E		E			E
083GAC246		P		P		E		E			E
083GAC300				P		E		E			E
083GAC575		P		P		E		E			E
083GAC800		E/P	E	P		E		E			E
083GAC900	E/P	E/P	E	P		E		E			E
083LGC090		P		P		E		E			E
083LGC225		E		P		E		E			E
083LGC430		E/P		P		E		E			E

WMA ID#	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure and Treatment Control Measures	Full trash capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCB-containing Materials and Products	Reduction/Recycling of Mercury-containing Devices & Products
083LGC525		E/P	E	P		E		E			E
083LGC686		P		P		E		E			E
084CTC625		E	E	P		E		E			E
099GAC240		E/P		P		E		E			E
099GAC500		P		P		E		E			E
099LGC180		E/P	E	P		E		E			E
100CTC050		E	E	P		E		E			E
100CTC190		E/P		P		E		E			E
100CTC400		E		P		E		E			E
100CTC500		E/P	E	P		E		E			E
100CTC600		E	E	P		E		E			E
113LGC010		E	E	P		E		E			E
128GAC490				P		E		E			E
129CNC165		E/P		P		E		E			E
130CNC022		E/P	E	P		E		E			E
GAC-B		E		P		E		E			E
LGC-C3		P		P		E		E			E
Miguelita Creek		E/P	E	P		E		E			E
Other - San José		E/P	E	P		E		E			E

Source Property Identification and Abatement (including Referrals)

The following summaries describe the status of source property investigation projects completed or currently underway. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or Co-permittees, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

WMA 083CTC990 (Leo Avenue Watershed)

Source Investigation

During MRP 1.0, SCVURPPP Co-permittees focused on identifying source properties in the Leo Avenue watershed (WMA 083CTC990) located in an older industrial area of San José. There, SCVURPPP and the City of San José in coordination with the CW4CB project conducted a source property identification project that was completed in FY 14-15. The goal of the Leo Avenue project was to help the City of San José identify source properties and provide information to support referrals of those properties to the Regional Water Board and other appropriate agencies for abatement. Alternatively, the City could take actions to require the property owner to effectively eliminate the contribution of pollutants from a property to the stormwater conveyance system.

Property Referral

The Leo Avenue project provided evidence that high concentrations of PCBs and mercury originating from the Union Pacific railroad track ROW were entering the City's stormwater system immediately downstream of the railroad track ROW. This evidence resulted in the City of San José, in collaboration with the Program, referring the Union Pacific Railroad ROW parcel to the Regional Water Board for follow-up investigation and abatement. The final project report and referral was included in the Leo Avenue Source Property Investigation Report, attached to the Program's FY 14-15 Annual Report.

On August 11, 2016 the Regional Water Board issued a request for monitoring data to Union Pacific Railroad based on the information provided by the City of San José and the Program in September 2015. The request was issued under California Water Code section 13267 and required Union Pacific to develop, submit and implement a Sampling and Analysis Plan (SAP) that would effectively characterize PCBs concentrations in sediment on the railroad ROW and in the public ROW adjacent to the rail line. The City and the Program provided comments on the proposed SAP in FY 16-17 and sampling was conducted in FY 16-17.

Union Pacific provided a remedial investigation report with the sampling results to the Regional Water Board in September 2017. PCBs concentrations on the railroad property were as high as 127 mg/kg. Following review of the investigation report by both City of San José and Program staff, the Regional Water Board directed Union Pacific to prepare a work plan to stabilize the soil on site and prevent off-site transport. Following evaluation of the flow patterns on site, Union Pacific installed filter rolls secured to the chain link fence along the ROW in February 2018, and agreed to evaluate the effectiveness during subsequent rain events. In March 2018, Water Board and EPA staff continued discussions with Union Pacific Railroad representatives about requirements for additional soil stabilization at the site. A final clean-up and soil stabilization work plan is expected in early FY 18-19. City and Program staff are prepared to review and provide comments on the work plan when it is available.

Enhanced Operation and Maintenance Activities

In an effort to reduce the on-going contribution of PCB-containing sediment to the City's stormwater conveyance system that originates from the Pacific Union ROW, three enhanced operation and maintenance measures have been implemented on Leo Avenue. First, as an interim measure, the City of San José required property owners along Leo Avenue to conduct

street sweeping on the Leo Avenue cul-de-sac daily. Second, Union Pacific installed a reinforced fence along their ROW to eliminate tracking of sediment from the railroad ROW to the street by vehicles. Lastly, the City installed a large Hydrodynamic Separator (HDS) unit in the stormwater conveyance system directly downstream of Leo Avenue that receives and treats runoff from the entire Leo Avenue cul-de-sac and adjacent properties.

WMA 051CTC275

Source Investigation

Based on elevated mercury and PCBs concentrations observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This WMA covers 443 acres in the City of San José northwest of the intersection of Highway 880 and Highway 101, and drains north into Coyote Creek. The businesses in the WMA include heavy metal recycling facilities, metal manufacturing, and auto repair businesses. The Program conducted a source property investigation in this WMA during FYs 16-17 and 17-18. As part of this investigation, the Program compiled information for 130 parcels and prioritized 62 parcels of high interest for PCBs or mercury. After review of aerial photos and further review of associated businesses, Program staff conducted right of way (ROW) surveys and visited businesses associated with 44 parcels in early Fall, 2016. During these visits, the Program identified potential sites for follow-up sampling. In spring 2017, the Program collected nine soil/sediment samples from public ROW locations in the WMA, including sediment migrating off suspect parcels and a sample collected from a roadway where an electrical transformer had released insulation oils in the week prior to the sampling event. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.01 mg/Kg to 12 mg/Kg. Total mercury concentrations ranged from 0.04 mg/Kg to 3.0 mg/Kg.

Based on these results, the Program identified two PCBs and Mercury source properties in this WMA. The City of San José is currently evaluating the information gathered during the investigation to determine if source property referrals will be submitted to the Regional Water Board in the future. The Program also identified two potential PCBs source properties and one potential mercury source property. In FY 18-19, the Program will continue to investigate these potential source properties. The full results of this source property investigation are provided in Attachment B to this Plan.

WMA 051CTC400

Source Investigation

Based on elevated mercury and PCBs concentrations observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This WMA covers 130 acres in the City of San José northeast of the intersection of Highway 880 and Highway 101, and drains north into Coyote Creek. The railroad, which comprises the eastern boundary of the WMA, transported scrap metal to and from Markovitis and Fox Metals, a site known to have had soils contaminated with PCBs. The Program conducted a source property investigation in this WMA during FY 16-17 and FY 17-18. As part of this investigation, the Program compiled information for 34 parcels and prioritized 28 parcels of high interest for PCBs or mercury. After review of aerial photos and further review of records for 200 associated businesses, Program staff conducted right of way (ROW) surveys and visited businesses at 28 parcels in early FY 16-17 and identified 16 sites for follow-up sampling. In spring 2017, the Program collected eight soil/sediment samples from public ROW locations in the WMA, including sediment migrating off suspect parcels. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.004 mg/Kg to 2.8 mg/Kg. Total mercury concentrations ranged from 0.06 mg/Kg to 0.38 mg/Kg.

Based on review of the sampling results and other information gained during the investigation, the Program identified one PCBs source property in this WMA. The City of San José is currently evaluating the investigation results to determine if a source property referral will be submitted to the Regional Water Board for this property in the future. The Program also identified two potential PCBs source properties and one potential mercury source property. In FY 18-19, the Program will continue to investigate these potential source properties. The full results of the FY 16-17 and FY 17-18 source property investigation in this WMA are detailed in a separate report provided in Attachment B.

WMA 067SCL080

Source Investigation

Based on elevated PCBs to sediment ratios observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This WMA covers 28 acres in the City of San José north of the intersection of Highway 101 and Lower Silver Creek. The WMA includes past railroad use and the DAP clean-up site for various chemicals associated with caulk and glazing compounds. Present businesses include mechanical engineering/construction, electrical construction, and asphalt/cement distributor. The Program conducted a source property investigation in this WMA during FY 16-17 and FY 17-18. As part of this investigation, the Program compiled information for 9 parcels and prioritized 7 parcels of high interest for PCBs. After review of aerial photos and the further review of associated businesses, the Program conducted public ROW surveys and visited businesses associated with 7 parcels in early FY 16-17. Follow-up sampling was conducted in spring, 2017, and seven soil/sediment samples were collected from public ROW locations. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.01 mg/Kg to 0.12 mg/Kg. Total mercury concentrations ranged from 0.03 mg/Kg to 0.26 mg/Kg.

Based on the sampling results and other information gained during the investigation, the Program did not identify any PCBs or mercury source properties in this WMA. However, the Program identified one high-interest property that requires additional investigation. In FY 18-19, the Program will further investigate this high-interest property. The full results of the FY16-17 and FY17-18 source property investigation in this WMA are detailed in a separate report provided in Attachment B.

WMA 083GAC900

Source Investigation

Based on elevated mercury and PCBs concentrations observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This WMA covers 611 acres in San José and is adjacent to WMA 083CTC990 (Leo Avenue). The WMA includes the largest metal recycling facility in Santa Clara County, railroad parcels with the same ownership as the known source of the PCBs in the Leo Avenue watershed, and the Tamien Park, PG&E and General Electric (GE) clean-up sites. The Program conducted a source property investigation in this WMA during FY 16-17 and FY 17-18. As part of this investigation, the Program compiled information for 114 parcels and prioritized 66 parcels of high interest for PCBs. After review of aerial photos and further review of associated businesses, the Program conducted right-of-way (ROW) surveys and visited businesses associated with 43 parcels in early FY 16-17. Follow-up sampling was conducted in spring, 2017, and seven soil/sediment samples were collected from public ROW locations. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.07 mg/Kg to 7.1 mg/Kg. Total mercury concentrations ranged from 0.32 mg/Kg to 1.95 mg/Kg.

Based on the sampling results and other information gained during the investigation, the Program identified one PCBs and Mercury source property in this WMA. The City of San José is currently evaluating the investigation results to determine if a source property referral for this property will be submitted to the Regional Water Board in the future. The Program also identified one potential PCBs and Mercury source property, as well as other areas within the WMA that require further investigation. In FY 18-19, the Program will continue to investigate the potential source property and these other high-interest areas within the WMA. The full results of the FY16-17 and FY17-18 source property investigation in this WMA are detailed in a separate report provided in Attachment B.

Green Stormwater Infrastructure and Treatment Controls[3]

Applicable public or private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, new and redevelopment project sites currently addressed by stormwater facilities treat over 1,949 acres of land to-date[4], including 454 acres of old industrial and 774 acres of old urban land uses that are distributed among the 75 WMAs in the City of San José (Attachment A). As listed in Table 3.3, a total of 878 acres are currently treated by GSI facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13-14 through FY16-17).

An additional 685 acres of new and redevelopment project sites currently under construction or planned for construction in the near future will also treat stormwater once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

The City has also constructed a green street project located in south Downtown San José and includes three blocks of alleys, running from the project terminus at Interstate 280 to Martha Street, between 2nd and 3rd Streets. The project replaced over 35,000 square feet of deteriorated asphalt and bare soil with new high-albedo recycled content "green" concrete along the edges of the alleyways, which drain to a 4-foot wide band of permeable pavers running the center length of the alleys. The pavers drain directly to underground infiltration trenches that store and infiltrate 80% of the annual runoff volume from the 2.3-acre tributary area.

The City also recently constructed additional green street projects that treat 4.15 acres of old urban, new urban and open space land uses. The City plans to complete the construction of two additional green street projects (Chenoweth and Park Avenue) in FY 17-18 that will treat additional acreage with a combination of permeable pavers and bioretention facilities. For more information please refer to the City's Fiscal Year FY 17-18 Annual Report.

[3] Acres reported in this section as addressed by green infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[4] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Table 3.3. Extent of land area in City of San José WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Other Stormwater Treatment Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel-based New & Redevelopment or Retrofit	035GAC010	48.38	-	0.08	48.22	-	0.08
	035GAC015	30.43	-	-	30.43	-	-
	036PCL800	1.73	-	1.73	-	-	-
	050GAC020	43.40	14.00	0.01	26.58	-	2.81
	051CTC400	20.46	20.46	-	-	-	-
	051CTC450	15.81	15.73	0.08	-	-	-
	066GAC110	5.37	4.43	0.94	-	-	-
	066GAC152	42.15	16.98	-	-	25.17	-
	066GAC550	16.08	8.49	7.05	-	-	0.54
	066GAC900	7.50	-	7.50	-	-	-
	067GAC150	2.58	-	2.38	-	-	0.20
	067SCL063	1.88	-	1.88	-	-	-
	067SCL066	0.49	-	0.49	-	-	-
	067SCL080	4.26	4.26	-	-	-	-
	068SCL150	31.47	-	31.47	-	-	-
	068SCL270	0.40	-	-	-	-	0.40
	083CTC350	3.61	-	3.61	-	-	-
	083CTC990	2.16	2.16	-	-	-	-
	083GAC240	6.66	4.44	2.22	-	-	-
	083GAC800	0.71	-	0.71	-	-	-
	083GAC900	26.14	20.22	3.61	-	-	2.31
	083LGC525	3.53	-	3.53	-	-	-
	084CTC625	5.48	5.48	-	-	-	-
	099GAC240	2.52	2.52	-	-	-	-
	099LGC180	5.16	-	5.16	-	-	-
	100CTC500	6.56	1.76	4.19	-	-	0.61
	100CTC600	0.55	-	0.55	-	-	-
	113LGC010	9.23	-	9.23	-	-	-
	129CNC165	89.67	16.28	0.01	0.93	-	72.45
	130CNC022	27.64	21.87	-	2.78	-	2.98
	GAC-B	0.86	-	0.86	-	-	-
	Miguelita Creek	9.90	-	9.90	-	-	-
	Other-San José	405.69	2.70	135.35	148.68	37.87	81.10
Parcel based New & Redevelopment or Retrofit Subtotal		*878.46*	*161.78*	*232.54*	*257.62*	*63.04*	*163.48*
Green-Street/Regional Retrofit	083GAC800	0.72	-	0.61	-	0.11	-
	Other – San José	4.15	-	2.95	0.61	0.59	-
Green-Streets/Regional Retrofit Subtotal		*4.87*	*-*	*3.56*	*0.61*	*0.70*	*-*

1 – Acres presented may not include all acres currently treated by GSI and other treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 GSI and treatment controls may include proprietary vault based systems.

Large Full Trash Capture Systems (Hydrodynamic Separators)

The City of San José has installed 22 large full trash capture treatment systems (i.e., public hydrodynamic separators). These devices and devices in neighboring municipalities treat over 9,500 acres of land, including 778 acres of old industrial and 8,272 acres of old urban land uses (Table 3.4). These systems are owned and operated by the City and are distributed over many WMAs.

In addition to the area currently treated by these systems, the City also plans to install additional large full trash capture systems to treat additional land areas during the term of MRP 2.0. Installation of these devices will not only assist the City in achieving its trash load reduction goals, but will also provide additional load reduction benefits for PCBs and mercury.

Managing PCBs during Building Demolition

The City of San José is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of San José's street sweeping program includes four routes with four different sweeping frequencies. The residential route (RSS) sweeping frequency is once a month and includes most residential streets. The arterial route (ACB) sweeping frequency is twice a month, and includes most arterial roads. The north business district route (NBD) sweeping frequency is once per week and includes many arterial roads and streets around the downtown area. The central business district route (CBD) sweeping frequency is twice a week and includes most of the downtown area. Parking enforcement signs for street sweeping are in place on many residential streets and some arterial roads. Parking is not allowed on approximately half of the CBD and NBD routes.

  In addition, the City requires certain property owners on Leo Avenue to sweep the street frequently between municipal sweeping events. This enhanced street sweeping serves as the operation and maintenance required by the MRP to claim reductions associated with source property referrals to the Water Board.

  The City also took part in a street sweeping pilot project as part of the CW4CB project, which was completed in FY 16-17. The primary goals of the pilot project were to conduct street sweeping studies in older industrial areas where PCBs may still be found in roadway sediments; assess the effectiveness of current actions; and predict the effectiveness of enhanced sweeping if it were to occur. The increased cumulative effectiveness of enhanced street sweeping practices, compared to baseline, will be a measure of the potential for enhanced street sweeping to reduce loads to the Bay. The final project report, including results, was incorporated in the CW4CB Final Project Report, which was completed in spring 2017 and is available on the BASMAA website (http://basmaa.org/Clean Watersheds for a Clean Bay Project).

  The City will continue to evaluate the benefits of more frequent street sweeping on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Table 3.4. Extent of land area in City of San José WMAs that is addressed by publicly owned Hydrodynamic Separators (i.e., Large Full Trash Capture Systems).[1,2,3]

WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
		Old Industrial	Old Urban	New Urban	Open Space	Other
050GAC400	0.02		0.02			
050GAC580	0.05		0.05			
051CTC275	0.10		0.10			
051CTC400	0.06	0.02	0.03			
051CTC850	0.62	0.23	0.39			
066GAC110	0.27		0.27			
066GAC550	1490.41	235.21	1244.32		10.88	
066GAC810	0.20		0.18		0.02	
067CTC030	0.24		0.24			
067CTC750	0.34		0.34			
067CTC810	227.64	13.86	211.86		1.92	
067GAC010	0.31		0.28		0.03	
067GAC075	0.38	0.03	0.34			
067GAC190	1.13	0.82	0.31			
067SCL063	17.96		17.94		0.01	
067SCL066	1147.90	1.33	1101.61		22.31	22.65
083CTC350	384.20	36.99	329.36		17.85	
083CTC650	156.24	5.97	135.38		14.89	
083CTC990 (Leo Avenue)	178.08	121.47	50.88		5.73	
083GAC800	220.01	14.60	199.55		5.86	
083GAC900	606.94	201.95	236.05		168.94	
083LGC430	0.20	0.02	0.16		0.02	
083LGC525	231.08	32.03	197.95		1.10	
083LGC686	0.08	0.08				
084CTC625	0.01		0.01			
099GAC240	0.54	0.04	0.51			
099LGC180	740.26	7.68	728.07		4.52	
100CTC050	47.01	8.47	37.69		0.85	
100CTC190	0.02		0.01			
100CTC400	49.60	7.40	33.77		8.43	
100CTC500	584.04	52.50	522.68		8.87	
100CTC600	653.39	33.73	559.71		59.94	
LGC C3	0.26	0.20	0.06			
Other San José	2847.99	3.11	2662.38	93.01	34.56	54.92
Totals	*9587.58*	*777.75*	*8272.52*	*93.01*	*366.73*	*77.57*

1 – Acres presented may not include all acres currently treated by trash full capture treatment systems.
2 – Trash systems only include hydrodynamic separators that are publicly owned. Inlet based full trash capture devices are described in the operation and maintenance practices section.
3 - Includes all existing full trash capture systems in the City of San José that were installed between January 2010 and June 2017.

- MS4 Line Flushing

  In 2004 and 2014, the storm drain line on Leo Avenue was cleaned out to remove contaminated sediments and improve the operation of the line. The cleanout was conducted as part of a CW4CB pilot project designed to evaluate the pollutant load reduction effectiveness and cost of the project, and inform the potential future implementation of similar project by the City and/or other Co-permittees. Although no additional cleanouts are currently planned, the City continues to evaluate the need/opportunity for additional cleanout events on the Leo Avenue line and other locations in the City.

- *Inlet Cleaning*

  The City currently inspects and maintains all storm drain inlets one time per year, with the exception of those with full trash capture systems, which are cleaned more often. The City has installed 139 inlet-based full trash capture devices since 2002 that treat 3 acres of old industrial and 109 acres of old urban land uses. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The City will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

CITY OF SUNNYVALE

Watershed Management Areas

Table 3.5 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Sunnyvale. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.5 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 26 WMAs (or portions of WMAs[5]) have been identified in the City. These WMAs include all land area (i.e., >12,000 acres) within the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.5. City of Sunnyvale preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
034CZC155	Calabazas Creek	487	22%	73%	5%	0%	0%
049CZC200	Calabazas Creek	710	49%	35%	14%	2%	0%
049CZC800	Calabazas Creek	199	58%	42%	0%	0%	0%
049CZC900	Calabazas Creek	68	49%	51%	0%	0%	0%
049CZC910	Calabazas Creek	33	94%	6%	0%	0%	0%
049ECS900	Calabazas Creek	88	35%	65%	0%	0%	0%
034BFL230A	San Francisco Bay	153	50%	38%	11%	1%	0%
034BFL230B	San Francisco Bay	213	51%	17%	28%	3%	0%
034BFL230C	San Francisco Bay	223	16%	15%	48%	21%	0%
049STA710	San Tomas Aquino Creek	2	56%	44%	0%	0%	0%
032SVC490	Stevens Creek	90	0%	8%	0%	92%	0%
047SVC150	Stevens Creek	20	0%	100%	0%	0%	0%
SVC A	Stevens Creek	4	8%	92%	0%	1%	0%
034SVE490	Sunnyvale East Channel	295	9%	88%	1%	2%	0%
048SVE395	Sunnyvale East Channel	12	55%	45%	0%	0%	0%
048SVE550	Sunnyvale East Channel	32	17%	83%	0%	0%	0%
049SVE410	Sunnyvale East Channel	54	22%	78%	0%	0%	0%
049SVE720	Sunnyvale East Channel	126	12%	88%	0%	0%	0%
049SVE900	Sunnyvale East Channel	480	17%	82%	0%	1%	0%
033SVW950	Sunnyvale West Channel	92	78%	18%	0%	4%	0%
033SVW955	Sunnyvale West Channel	259	34%	64%	0%	2%	0%
048SVW998	Sunnyvale West Channel	1554	6%	94%	0%	0%	0%
048SVW999	Sunnyvale West Channel	67	27%	70%	0%	3%	0%
SVW A	Sunnyvale West Channel	147	26%	42%	0%	32%	0%
SVW B	Sunnyvale West Channel	685	75%	15%	1%	8%	0%
Other Sunnyvale	Multiple	6188	1%	92%	4%	4%	0%
	Totals	*12,283*	*16%*	*76%*	*4%*	*4%*	*0%*

[5] Some WMAs overlap with multiple Co-permittees.

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Sunnyvale are listed in Table 3.6.

Table 3.6. Existing (E) and planned (P) PCBs and mercury control measures in City of Sunnyvale WMAs.

WMA ID#	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure and Treatment Control Measures	Full trash capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
034CZC155		E		P		E		E			E
049CZC200		E/P	E	P		E		E			E
049CZC800		E/P	E	P		E		E			E
049CZC900		E		P		E		E			E
049CZC910				P		E		E			E
049ECS900		E		P		E		E			E
034BFL230A		E/P		P		E		E			E
034BFL230B		E/P	E	P		E		E			E
034BFL230C		E/P	E	P		E		E			E
049STA711				P		E		E			E
032SVC491				P		E		E			E
047SVC151				P		E		E			E
SVC A				P		E		E			E
034SVE490		E		P		E		E			E
048SVE395				P		E		E			E
048SVE550		E		P		E		E			E
049SVE410			E	P		E		E			E
049SVE720		E/P		P		E		E			E
049SVE900 (Source Property)	E	E	E	P		E		E			E
033SVW950		E		P		E		E			E
033SVW955		E	E	P		E		E			E
048SVW998		E	E	P		E		E			E
048SVW999		E	E	P		E		E			E
SVW A		E		P		E		E			E
SVW B		E		P		E		E			E
Other Sunnyvale		E/P	E	P		E		E			E

Source Property Identification and Abatement (including Referrals)

The following summary describes the status of the source property investigation project completed to-date in the City of Sunnyvale and the referral to the appropriate regulatory agency that resulted from the project. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or Co-permittees that may result in additional source property referrals and/or actions by the City. The goal of referrals is to eliminate the discharge of PCBs and mercury into the MS4 by property owners.

WMA 049SVE900

Source Investigation

Elevated concentrations of PCBs in sediments and stormwater collected adjacent to and downstream of a property located in the Sunnyvale East Channel watershed in the City of Sunnyvale have been observed during source investigations conducted since the early 2000's. As recently as FY 15-16, the Program measured multiple sediment concentrations above 1 ppm in the MS4 adjacent to the property. Between 2011 and 2014, the San Francisco Bay Regional Monitoring Program (RMP) collected 45 stormwater samples in the Sunnyvale East Channel located downstream of the property. The PCBs in these samples averaged 97 ng/L, and the highest concentration was 980 ng/L. Based on a preliminary analysis conducted by the Program, the PCBs in these samples appear to have originated from the 74-acre former Westinghouse property located at 401 East Hendy Avenue. This property has a history of PCBs related contamination in soils and groundwater, and is currently a Superfund site overseen by the U.S. Environmental Protection Agency (USEPA).

The preliminary data analysis was forwarded to USEPA. Based on the results, the City and Program engaged in discussions with USEPA in FY 16-17 during the issuance of the Fourth Five-Year Review Report associated with the Consent Order between USEPA and the site owner (CAD001864081). The communications with USEPA were an attempt to incorporate follow up actions associated with stormwater monitoring and management into the permit. In response, USEPA requested that the property owner develop a Sampling and Analysis Plan (SAP) to characterize PCBs in stormwater being discharged from the site. Five stormwater sampling events were conducted by the property owner at multiple locations on and adjacent to the property, including two events during the 2016-17 wet weather season, and three events during the 2017-18 wet weather season. The PCBs concentrations of the stormwater samples ranged from 13 ng/L to 2,330 ng/L. Seven of these samples had some of the highest PCBs concentrations observed in stormwater in the Bay Area to-date.

Property Referral

The most recent stormwater data from the property provided confirmation that the former Westinghouse property is a source of PCBs to the City's stormwater system. In January 2018, the City of Sunnyvale, in collaboration with the Program, submitted a referral of this property to both the Regional Water Board and USEPA for follow-up investigation and abatement. The property is currently owned by Northrop Grumman Systems Corporation (Northrop Grumman).

Abatement Activities and Enhanced Operation and Maintenance

Under the oversight of US EPA, Northrop Grumman has implemented or plans to implement a number of actions to reduce PCBs in stormwater from the property, and reduce PCB-bound sediment in the adjacent public ROWs, including the following:

- Fitted stormdrain inlets with gravel bags, filtrexx-type socks with gravel bag anchors, or geotech filter fabric; these are inspected prior to the rainy season to remove

accumulated sediments;
- Installed fiber rolls near the facility boundary along Fair Oaks Avenue and California Avenue to slow the flow of stormwater off-site;
- Covered unpaved areas around the property with gravel to reduce erosion;
- Cleared sediment from the valley gutter next to building 41;
- Inspect areas around drains before forecasted rain events to verify BMPs are in place and functioning. BMPs will be repaired or replaced if not functioning.
- Weekly sweeping of all accessible areas of the property;
- Twice annual intensive area sweeping with a HEPA filter vacuum throughout the property;
- Biweekly street sweeping in the public streets on the property's perimeter to supplement the current biweekly sweeping conducted by the City of Sunnyvale; the property owner will conduct sweeping during the weeks the City does not sweep.

In addition, Northrup Grumman is currently conducting a survey of buried storm drain pipelines to confirm locations and connections, evaluate the integrity of the storm drain pipe, and identify accumulated sediment. Pipe locations and facility drawings will be updated. Pipelines requiring maintenance will be addressed by jetting out accumulated sediment and replacing selected storm drain piping. Completion of this work will support the overall evaluation of PCBs sources on the property that have a potential to impact stormwater.

The City and Program will continue to coordinate with USEPA throughout the property abatement process and identify additional next steps.

Green Stormwater Infrastructure and Other Stormwater Treatment Controls[6]

Applicable public or private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 1,040 acres of land to-date[7], including 710 acres of old industrial and 287 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities (Attachment A). As listed in Table 3.7, 212 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 26 WMAs in the City.

GSI projects currently under construction or planned for construction in the future will also treat approximately 84 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

[6] Acres reported in this section as addressed by green infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[7] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Table 3.7. Extent of land area in City of Sunnyvale WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Other Stormwater Treatment Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	032SVC490	3.06	-	0.30	-	2.76	-
	033SVW950	6.85	6.85	-	-	-	-
	033SVW955	15.14	11.22	3.92	-	-	-
	034BFL230A	2.08	2.08	-	-	-	-
	034BFL230B	5.23	5.23	-	-	-	-
	034CZC155	10.87	4.17	6.70	-	-	-
	034SVE490	11.39	5.97	5.42	-	-	-
	048SVE550	2.33	2.33	-	-	-	-
	048SVW998	16.54	1.68	14.86	-	-	-
	048SVW999	5.73	-	3.56	-	2.17	-
	049CZC200	49.02	21.48	26.62	0.91	-	-
	049CZC800	18.11	18.10	-	-	-	-
	049CZC900	1.11	-	1.11	-	-	-
	049SVE720	9.87	6.42	3.45	-	-	-
	049SVE900	25.79	-	25.79	-	-	-
	Other - Sunnyvale	23.80	2.53	12.14	-	9.13	-
	SVW-A	5.40	4.48	0.92	-	-	-
Parcel based New & Redevelopment or Retrofit Subtotal		*212.32*	*92.54*	*104.79*	*0.91*	*14.06*	-
Green Street & Regional Retrofit	034CZC115	tbd[5]	-	-	-	-	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 GSI and treatment controls may include proprietary vault based systems.
5 tbd=to be determined; This information was not available at the time of reporting, but will be updated in future Annual Reports.

The City has also recently constructed a green street project as part of the Calabazas Creek Bridge replacement at Old Mountain View Alviso Road. This project includes nearly 500 square feet of bioretention area that will treat runoff from impervious areas associated with the bridge. The City also has two additional green street/regional retrofit projects that are in progress. A summary of the status of these projects is included in the table below. Further, as part of the City's recent effort to screen capital projects for GSI potential, the City has identified up to 9 public projects that will be carried out over the Permit term that will be subject to the Permit's C3 requirements and will include stormwater treatment systems..

Project Name and Location	Project Description	Planning or Implementation Status
Caribbean Avenue Green Street (WMA 034BFL230A and WMA 034BFL203B)	This project will retrofit an existing arterial street to include bioretention areas to treat stormwater runoff from the north side of Caribbean Ave between Borregas Ave and Mathilda Ave in north Sunnyvale. Bioretention areas will be interspersed with parking for Bay Trail users. The project increases visibility and access to the San Francisco Bay Trail, and serves as an opportunity to educate Bay Trail users and high-tech company employees who often use the Bay Trail about the connection between urban landscapes and the Bay.	This project was included in San Francisco Estuary Institute's (SFEI) *Healthy Watersheds, Resilient Baylands* grant application for EPA's 2016 San Francisco Bay Water Quality Improvement Fund grant cycle. As part of the Healthy Watersheds, Resilient Baylands grant, the project is coordinating the design of the bioretention areas with the SFEI. The project partners are working together to draw on best available science to consider how the LID features can be designed to have ecological as well as water quality benefits. This is part of SFEI's effort to develop a larger strategy whereby urban LID can contribute to regional ecosystems and resiliency if species selection is guided with ecology in mind. A preliminary feasibility study has been completed and the project is currently undergoing 95% design review with anticipated construction in summer 2019.
Persian Drive Green Street (WMA 034SVE490)	As part of a proposed affordable housing development project, the City proposed the inclusion of a green street and new sidewalk along a portion of Persian Drive in north Sunnyvale. The new sidewalk will complete a missing link in the neighborhood's sidewalk network and connect the area to one of Sunnyvale's employment centers, and bioretention areas have been included in the design to treat road run off from a portion of Persian Drive between Morse Avenue and Borregas Avenue.	The concept for the green street and sidewalk was included as the sustainable transportation component of a larger affordable housing project, known as the Edwina Benner Plaza Project in Sunnyvale. The City has funded the construction of the new sidewalk through CDBG funding and funded the construction of the green street features through the City's stormwater program. The project is currently under design review with construction scheduled for FY 2018-2019.

Large Full Trash Capture Systems (Hydrodynamic Separators)

The City of Sunnyvale publicly owns and operates 3 large full trash capture treatment systems (i.e., public hydrodynamic separators). These systems and those operated by adjacent municipalities currently treat stormwater runoff from over 1,100 acres of land in the City, including 362 acres of old industrial and 620 acres of old urban land uses (Table 3.8).

Table 3.8. Extent of land area in City of Sunnyvale WMAs that is addressed by publicly owned Hydrodynamic Separators (i.e., Large Full trash capture Systems).[1,2,3]

WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
		Old Industrial	Old Urban	New Urban	Open Space	Other
033SVW955	14.37	2.10	11.99		0.29	
048SVW998	1.68		1.68			
048SVW999	2.00		2.00			
049CZC200	701.31	349.74	238.85	100.82	11.90	
049CZC800	2.15	1.54	0.61			
049SVE410	1.63	1.57	0.05			
049SVE900	41.27	4.17	37.09		0.01	
Other Sunnyvale	337.53	3.32	328.10	2.41	3.70	
Totals	*1101.93*	*362.45*	*620.36*	*103.23*	*15.89*	

1 – Acres presented may not include all acres currently treated by full trash capture treatment systems.
2 – Trash systems only include hydrodynamic separators that are publicly owned. Inlet based full trash capture devices are described in the operation and maintenance practices section.
3 - Includes all existing full trash capture systems in the City of Sunnyvale that were installed between January 2010 and June 2017.

Managing PCBs during Building Demolition

The City of Sunnyvale is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of Sunnyvale's current street sweeping program includes sweeping at a frequency of every other week for most of the City's streets and medians, with the exception of the downtown Murphy Street Business Improvement District (BID), where sweeping occurs three times per week.

  In addition, the City took part in a street sweeping pilot project as part of the CW4CB project that was completed in FY 16-17. The primary goals of the pilot project were to

conduct street sweeping studies in older industrial areas where PCBs may still be found in roadway sediments; assess the effectiveness of current actions; and predict the effectiveness of enhanced sweeping if it were to occur. The increased cumulative effectiveness of enhanced street sweeping practices, compared to baseline, will be a measure of the potential for enhanced street sweeping to reduce loads to the Bay. The final project report, including results, was incorporated in the CW4CB Final Project Report, which was completed in spring 2017 and is available on the BASMAA website (http://basmaa.org/Clean Watersheds for a Clean Bay Project).

The City will continue to evaluate the benefits of more frequent street sweeping on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets one time per year on average, with the exception of those with full capture systems, which are cleaned more often. The City has installed 175 inlet-based full trash capture devices since 2002 that treat 16 acres of old industrial and 297 acres of old urban land uses. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The City will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

CITY OF SANTA CLARA

Watershed Management Areas

Table 3.9 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Santa Clara. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.9 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 20 WMAs (or portions of WMAs[8]) have been identified in the City. These WMAs include all land area (i.e., >11,800 acres) within the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.9. City of Santa Clara preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
049CZC690	Calabazas Creek	29	28%	0%	68%	4%	0%
049CZC800	Calabazas Creek	152	65%	35%	0%	0%	0%
049CZC810	Calabazas Creek	65	31%	51%	17%	1%	0%
035GAC150	Guadalupe River	46	37%	0%	62%	2%	0%
050GAC030	Guadalupe River	535	35%	62%	2%	1%	0%
050GAC190	Guadalupe River	145	83%	16%	0%	0%	0%
050GAC400	Guadalupe River	718	41%	58%	0%	0%	0%
050GAC580	Guadalupe River	333	68%	19%	0%	0%	13%
050GAC600	Guadalupe River	688	18%	72%	0%	5%	5%
066GAC150	Guadalupe River	500	27%	57%	0%	3%	14%
066GAC900	Guadalupe River	83	0%	83%	0%	17%	0%
049STA050	San Tomas Aquino Creek	382	18%	47%	34%	1%	0%
049STA300	San Tomas Aquino Creek	154	46%	26%	27%	2%	0%
049STA500	San Tomas Aquino Creek	40	66%	29%	4%	1%	0%
049STA550	San Tomas Aquino Creek	247	72%	19%	9%	0%	0%
049STA600	San Tomas Aquino Creek	37	70%	30%	0%	1%	0%
049STA710	San Tomas Aquino Creek	281	33%	67%	0%	0%	0%
049STA800	San Tomas Aquino Creek	246	9%	91%	0%	0%	0%
081SRC530	Saratoga Creek	81	61%	39%	0%	0%	0%
Other Santa Clara	Multiple	7067	4%	75%	13%	8%	1%
	Totals	*11,828*	*13%*	*51%*	*8%*	*4%*	*1%*

[8] Some WMAs overlap with multiple Co-permittees.

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Santa Clara are listed in Table 3.10.

Table 3.10. Existing (E) and planned (P) PCBs and mercury control measures in City of Santa Clara WMAs.

WMA ID	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
035GAC150				P		E		E			E
049CZC690				P		E		E			E
049CZC800				P		E		E			E
049CZC810				P		E		E			E
049STA050		P		P		E		E			E
049STA300		E		P		E		E			E
049STA500		E		P		E		E			E
049STA550		E/P		P		E		E			E
049STA600		E		P		E		E			E
049STA710				P		E		E			E
049STA800		P		P		E		E			E
050GAC030		E/P		P		E		E			E
050GAC190				P		E		E			E
050GAC400	E/P	E		P		E		E			E
050GAC580		E		P		E		E			E
050GAC600		E/P		P		E		E			E
066GAC150	E/P	E/P		P		E		E			E
066GAC900				P		E		E			E
081SRC530		E		P		E		E			E
Other Santa Clara		E/P		P		E		E			E

Source Property Identification and Abatement (including Referrals)

The following summaries describe the status of source property investigation projects completed or currently underway. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or Co-permittees, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

WMA 050GAC400

Source Investigation
Based on elevated mercury and PCBs concentrations observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This WMA covers 759 acres mostly in Santa Clara with 41 acres located in the City of San José. It is located north and west of the San José Airport, and drains into the Guadalupe River at the Laurelwood Pump Station. The WMA contains both the Certainteed and Monsanto cleanup sites, both known for soil contamination by PCBs.

The Program conducted a source property investigation in this WMA during FY 16-17 and FY17-18. As part of this investigation, the Program compiled information for 335 parcels and prioritized 246 parcels of high interest for PCBs or mercury. After review of aerial photos and further evaluation of associated businesses, the Program prioritized 115 parcels for site visits or right of way (ROW) surveys, of which 76 sites visits/ROW surveys were conducted by the City of Santa Clara and Program staff in early FY 16-17. A total of 14 possible sample site locations were identified for further POC monitoring to confirm source property identification. In spring 2017, the Program collected 6 soil/sediment samples from public ROW areas, and an additional 8 samples of sediment migrating off suspect parcels in the WMA. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.004 mg/Kg to 0.29 mg/Kg. Total mercury concentrations ranged from 0.05 mg/Kg to 0.81 mg/Kg.

Based on the sampling results and other information gained during the investigation, the Program identified two potential PCBs source properties and two potential mercury source properties in this WMA. In FY 18-19, the Program will continue to investigate these potential source properties. The full results of the FY16-17 and FY17-18 source property investigation in this WMA are detailed in a separate report provided in Attachment B.

WMA 066GAC150

Source Investigation
Based on elevated mercury and PCBs concentrations observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This WMA covers 504 acres mostly in Santa Clara with 124 acres located in San José. It is located west of the San José Airport, and drains into the Guadalupe River on the east side of the Airport. It includes parcels that are part of the FMC clean up with known PCBs in soils and railroad properties with known mercury contamination of soils on the property.

The Program conducted a source property investigation in this WMA during FY 16-17 and FY 17-18. As part of this investigation project, the Program compiled information for 1,087 parcels and prioritized 51 parcels of high interest for PCBs or mercury. After review of aerial photos and further review, the Program ranked 44 parcels in the City of Santa Clara for site visits or ROW surveys, of which 35 site visits/ROW surveys were conducted by the City of Santa Clara and Program staff. A total of 11 possible sample site locations were identified for further POC monitoring to confirm source property identification. In spring 2017, the Program collected 3 soil/sediment samples from public ROW areas, and an additional 8 samples of sediment

migrating off suspect parcels in the WMA. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.006 mg/Kg to 3.8 mg/Kg. Total mercury concentrations ranged from 0.06 mg/Kg to 0.48 mg/Kg.

Based on the sampling results and other information gained during the investigation, the Program identified one PCBs source property in this WMA. The City of Santa Clara is currently evaluating the investigation results to determine if a source property referral will be submitted to the Regional Water Board in the future. The Program also identified one potential PCBs source property and one potential mercury source property. In FY 18-19, the Program will continue to investigate these potential source properties. The full results of the FY16-17 and FY17-18 source property investigation in this WMA are detailed in a separate report provided in Attachment B.

Green Stormwater Infrastructure and Other Stormwater Treatment Controls[9]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 598 acres of land to-date[10], including 148 acres of old industrial and 266 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities (Attachment A). Of this total, 334 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 20 WMAs in the City (Table 3.11).

GSI projects currently under construction or planned for construction in the near future will also treat approximately 118 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

The City is currently in the coordination and planning stages to construct GSI facilities on public lands or right of ways. Coordination is underway between the City's Engineering and Planning Departments, as well as with other impacted departments/agencies such as the Silicon Valley Power, Parks and Recreation, and the Public Works Streets Maintenance Division. The City's GSI framework to guide its GSI planning process was adopted in FY 16-17. The design and installation of additional GSI facilities should commence within the next few years.

[9] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[10] The acres treated to-date include all projects completed since the TMDL baseline was established in 2002.

Table 3.11. Extent of land area in City of Santa Clara WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Other Stormwater Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	049STA300	32.15	15.74	13.33	3.08	-	-
	049STA500	5.82	5.82	-	-	-	-
	049STA550	2.91	2.91	-	-	-	-
	049STA600	13.72	10.66	3.06	-	-	-
	050GAC600	0.83	-	0.51	-	0.32	-
	066GAC150	12.65	12.65	-	-	-	-
	081SRC530	5.39	-	5.39	-	-	-
	Other Santa Clara	260.51	34.18	133.47	37.49	55.37	-
Totals		*333.98*	*79.20*	*154.85*	*40.57*	*55.69*	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 GSI and treatment controls may include proprietary vault based systems.

Large Full trash capture Systems (Hydrodynamic Separators)

The City of Santa Clara has not installed hydrodynamic separators to-date. Should the City do so in the future, the installation of these systems will not only assist the City in achieving its trash load reduction goals, but may also provide load reduction benefits for PCBs and mercury.

Managing PCBs during Building Demolition

The City of Santa Clara is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of Santa Clara recently enhanced its street sweeping program, increasing the frequency from two to three times per month in all land areas. In the future, the City plans to continue to evaluate the benefits of increased sweeping or targeted sweeping in priority areas.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets one time per year, with the exception of those with full capture systems, which are cleaned more often. The City has installed 472 inlet-based full trash capture devices since 2002 that treat 52 acres of old industrial and 760 acres of old urban land uses. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The City will

continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

CITY OF MOUNTAIN VIEW

Watershed Management Areas

Table 3.12 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Mountain View. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.12 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 13 WMAs have been identified in the City. These WMAs include all land area (i.e., >7,200 acres) within the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.12. City of Mountain View preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
032PMC100	Permanente Creek	47	41%	57%	0%	2%	0%
032PMC130	Permanente Creek	15	2%	98%	0%	0%	0%
032PMC200	Permanente Creek	69	60%	40%	0%	0%	0%
017xxx010	San Francisco Bay	862	18%	73%	7%	2%	0%
032SVC490	Stevens Creek	513	39%	44%	0%	17%	0%
032SVC470	Stevens Creek	71	53%	46%	0%	1%	0%
032SVC550	Stevens Creek	36	6%	94%	0%	0%	0%
047SVC150	Stevens Creek	304	16%	84%	0%	0%	0%
047SVC200	Stevens Creek	26	43%	57%	0%	0%	0%
SVC A	Stevens Creek	453	31%	51%	5%	12%	2%
048SVW998	Sunnyvale West Channel	149	3%	97%	0%	1%	0%
SVW B	Sunnyvale West Channel	22	2%	82%	0%	13%	3%
Other Mountain View	Multiple	4,947	5%	79%	4%	12%	0%
	Totals	*7,227*	*9%*	*77%*	*4%*	*10%*	*0%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Mountain View are listed in Table 3.13.

Table 3.13. Existing (E) and planned (P) PCBs and mercury control measures in City of Mountain View WMAs.

WMA ID #	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
032PMC100		P		P		E		E			E
032PMC130		E/P		P		E		E			E
032PMC200		E		P		E		E			E
017xxx010		E/P	E	P		E		E			E
032SVC490		E/P		P		E		E			E
032SVC470		P		P		E		E			E
032SVC550				P		E		E			E
047SVC150		E/P		P		E		E			E
047SVC200				P		E		E			E
048SVW998		E/P									
049SVE900		E									
SVC A		P		P		E		E			E
048SVW998				P		E		E			E
SVW B				P		E		E			E
Other Mountain View		E/P	E	P		E		E			E

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the City of Mountain View. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the City, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Other Stormwater Treatment Controls[11]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 394 acres of land to-date[12], including 106 acres of old industrial and 244 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities (Attachment A). As listed in Table 3.14, of this total, 146 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 11 WMAs in the City.

GSI projects currently under construction or planned for construction in the future will also treat roughly an additional 118 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

Table 3.14. Extent of land area in City of Mountain View WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	017xxx010	37.72	29.62	6.14	-	1.96	-
	032PMC130	1.94	0.00	1.94	-	-	-
	032SVC490	42.36	37.48	4.88	-	-	-
	048SVW998	2.30	-	2.30	-	-	-
	Other Mountain View	61.75	8.88	30.03	5.52	17.33	-
Totals		*146.06*	*75.98*	*45.27*	*5.52*	*19.29*	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 GSI and treatment controls may include proprietary vault based systems.

[11] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[12] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Large Full trash capture Systems (Hydrodynamic Separators)

The City of Mountain View has treated over 300 acres of land to-date with 5 hydrodynamic separators owned and operated by the City (Table 3.15). The treatment areas are distributed over a number of WMAs, and are comprised of 1 acre of old industrial and 286 acres of old urban land uses. In addition to the areas currently treated by these systems, the City also plans to install additional large full capture devices in future years to treat additional areas during the term of MRP 2.0. Installation of these devices will not only assist the City in achieving its trash load reduction goals, but also provide load reduction benefits for PCBs and mercury.

Table 3.15. Extent of land area in City of Mountain View WMAs that is addressed by publicly owned Hydrodynamic Separators (i.e., Large Full trash capture Systems).[1,2,3]

WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
		Old Industrial	Old Urban	New Urban	Open Space	Other
017xxx010	291.93	0.94	285.56	-	5.43	-
Other Mountain View	0.23	0.22	0.01	-		-
Totals	292.16	1.16	285.56	-	5.43	-

1 – Acres presented may not include all acres currently treated by full trash capture treatment systems.
2 – Trash systems only include hydrodynamic separators that are publicly owned. Inlet based full trash capture devices are described in the operation and maintenance practices section.
3 - Includes all existing full trash capture systems in the City of Mountain View that were installed between January 2010 and June 2017.

Managing PCBs during Building Demolition

The City of Mountain View is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of Mountain View street sweeping program includes sweeping nearly all streets in the City twice per month. Parking enforcement signs for street sweeping are posted on some streets in high density residential neighborhoods, and parking enforcement that allows sweepers to sweep to the curb occurs on some arterial streets.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets one time per year, with the exception of those with full trash capture systems, which are maintained more often. The City has installed 4 inlet-based full trash capture devices since 2002 that treat 3 acres of old industrial and 2 acres of old urban land uses. Because of the additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The City will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

CITY OF MILPITAS

Watershed Management Areas

Table 3.16 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Milpitas. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.16 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 12 WMAs have been identified in the City. These WMAs include all land area (i.e., >8,600 acres) in the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.16. City of Milpitas preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
036BYC091	Berryessa Creek	121	76%	23%	1%	0%	0%
036BYC320	Berryessa Creek	37	43%	57%	0%	0%	0%
021CLA060	Calera Creek	33	55%	0%	45%	0%	0%
035CTC700	Coyote Creek	321	1%	3%	94%	2%	0%
036PCL576	Lower Penitencia Creek	61	29%	66%	0%	5%	0%
036PCL810	Lower Penitencia Creek	11	0%	100%	0%	0%	0%
036PEC800	Penitencia East Channel	38	37%	62%	0%	1%	0%
036PEC822	Penitencia East Channel	29	52%	46%	0%	2%	0%
021PIC060	Piedmont Creek	53	26%	10%	64%	0%	0%
Ford Creek	Wrigley Ford Creek	317	42%	54%	3%	1%	0%
Wrigley Creek	Wrigley Ford Creek	461	24%	7%	67%	2%	0%
Other Milpitas	Multiple	7181	1%	40%	29%	30%	0%
	Totals	*8,663*	*6%*	*37%*	*32%*	*25%*	*0%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Milpitas are listed in Table 3.17.

Table 3.17. Existing (E) and planned (P) PCBs and mercury control measures in City of Milpitas WMAs.

WMA ID #	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
036BYC091				P		E		E			E
036BYC320				P		E		E			E
021CLA060				P		E		E			E
035CTC700				P		E		E			E
036PCL576		E		P		E		E			E
036PCL810		E		P		E		E			E
036PEC800		P		P		E		E			E
036PEC822		E		P		E		E			E
021PIC060				P		E		E			E
Ford Creek				P		E		E			E
Wrigley Creek		E/P		P		E		E			E
Other Milpitas		E/P		P		E		E			E

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the City of Milpitas. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the City, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Other Stormwater Control Measures[13]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 301 acres of land to-date[14], including 78 acres of old industrial and 95 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities (Attachment A). As listed in Table 3.18, of this total, 156 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 12 WMAs in the City.

GSI projects currently under construction or planned for construction in the near future will also treat roughly an additional 53 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

Table 3.18. Extent of land area in City of Milpitas WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Other Stormwater Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	036PCL810	8.99	-	8.99	-	-	-
	Other - Milpitas	67.39	9.88	20.46	36.73	0.32	-
	036PCL576	2.69	-	2.69	-	-	-
	036PEC822	12.28	12.27	-	-	-	-
	Wrigley Creek	64.40	43.27	2.23	17.44	1.47	-
Totals		155.74	65.42	34.36	54.17	1.79	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 - Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 - GSI and treatment controls may include proprietary vault based systems.

[13] Acres reported in this section as treated by green stormwater infrastructure should be considered preliminary and may be revised in the future as additional information is available.
[14] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Large Full trash capture Systems (Hydrodynamic Separators)

The City current has no hydrodynamic separators (HDS) that are publicly owned and operated. In FY 16-17, the City evaluated the feasibility and costs of installing large full trash capture systems to treat additional areas during the term of MRP 2.0. Based on this analysis, the costs of installing a HDS unit was prohibitive and therefore the City installed nearly 100 inlet based full capture devices to address the trash reduction goals in the MRP. The City currently does not have plans to install HDS units in the future.

Managing PCBs during Building Demolition

The City of Milpitas is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

Operation and Maintenance Practices

- Street Sweeping

  The City of Milpitas's current street sweeping program includes sweeping streets in most residential areas and arterial roads twice per month, and most retail areas once per week. The City sweeps some residential areas once a week during the months of November and December. The City does not post parking enforcement signs for street sweeping, but parking enforcement occurs on many arterial roads and streets in industrial and commercial areas.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets once per year, on average, with the exception of those with full capture systems, which are maintained more often. The City has installed 94 inlet-based full trash capture devices since 2002 that treat 2 acres of old industrial and 100 acres of old urban land uses. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The City will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

CITY OF PALO ALTO

Watershed Management Areas

Table 3.19 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Palo Alto. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.16 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 11 WMAs have been identified in the City. These WMAs include all land area (i.e., >12,000 acres) within the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.19. City of Palo Alto preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
017ADC600	Adobe Creek	51	70%	27%	0%	2%	0%
017BCK200	Barron Creek	18	56%	44%	0%	0%	0%
SCH K	Matadero Creek	123	60%	40%	0%	0%	0%
016MTC910	Matadero Creek	301	12%	88%	0%	0%	0%
031MTC400	Matadero Creek	66	28%	59%	0%	14%	0%
031MTC410	Matadero Creek	80	67%	33%	0%	0%	0%
001SFC100	San Francisquito Creek	36	6%	94%	0%	0%	0%
031SCH250	Matadero Creek	68	73%	26%	0%	1%	0%
PMC D1	Permanente Creek	538	0%	0%	0%	100%	0%
017XXX010	San Francisco Bay	55	39%	59%	0%	1%	0%
Other Palo Alto	Multiple	10779	2%	56%	1%	40%	1%
	Totals	*12,114*	*5%*	*57%*	*1%*	*36%*	*1%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Palo Alto are listed in Table 3.20.

Table 3.20. Existing (E) and planned (P) PCBs and mercury control measures in City of Palo Alto WMAs.

WMA ID #	Control Measure Categories										
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices			Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
						Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning			
017ADC600		E		P		E		E			E
017BCK200		E		P		E		E			E
SCH K		E/P		P		E		E			E
016MTC910		E/P		P		E		E			E
031MTC400		E		P		E		E			E
031MTC410		E		P		E		E			E
001SFC100	E	E		P		E		E			E
031SCH250	P	E		P		E		E			E
PMC D1				P		E		E			E
017XXX010				P		E		E			E
Other Palo Alto		E/P	E	P		E		E			E

Source Property Identification and Abatement (including Referrals)

The following summaries describe the status of source property investigation projects currently underway. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or Co-permittees, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

WMA 001SFC100

Source Investigation

Based on elevated mercury and PCBs concentrations observed via the Program's Pollutant of Concern (POC) monitoring, this WMA was identified as likely containing a source property(s). This

WMA covers 35 acres in Palo Alto. The WMA is on the southern edge of downtown Palo Alto and drains to a structure that diverts a portion of storm flows into the sanitary sewer (see SCVURPPP FY 14-15 Annual Report for more information about the diversion structure).

The Program conducted a source property investigation in this WMA during FY 16-17 and FY 17-18. As part of this investigation, the Program compiled information for 247 parcels and prioritized 5 parcels of high interest for PCBs or mercury. Program staff conducted right of way (ROW) surveys and visited businesses associated with 7 parcels in early fall 2016. During these visits, the Program identified potential sites for follow up sampling. Palo Alto staff videotaped (CCTV) the MS4 upstream of a sample site with elevated PCBs to record breaks in the main pipe. The video identified a break in the pipe, a potential sub surface source of sediment.

In spring 2017, the Program also collected 7 soil/sediment samples from public ROW locations in the WMA, including sediment migrating off suspect parcels. Two additional samples were collected from the MS4 near or upstream of the previously identified subsurface source of sediment. All samples were sent to a laboratory for chemical analysis of PCBs and mercury concentrations. PCBs concentrations ranged from 0.006 mg/Kg to 0.17 mg/Kg. Total mercury concentrations ranged from 0.04 mg/Kg to 0.15 mg/Kg.

Based on the results of this investigation, the Program did not identify any PCBs or Mercury source properties in this WMA. Given the most recent PCBs and mercury concentrations were all below urban background (< 0.2 mg/Kg) and no other evidence of sources in the WMA were uncovered, the Program recommends no further action in this WMA at this time. The full results of the FY16-17 and FY17-18 source property investigation in this WMA are detailed in a separate report provided in Attachment B.

Green Stormwater Infrastructure and Treatment Controls[15]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 428 acres of land to-date[16], including 80 acres of old industrial and 176 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities (Attachment A). As listed in Table 3.21, of this total, 194 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 11 WMAs in the City.

GSI projects currently under construction or planned for construction in the future will also treat roughly an additional 137 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

The City has also recently constructed a GSI facility on public land that treat over 36 acres of mostly old urban land use (Table 3.21). The Southgate Neighborhood Green Streets Project is located within the Southgate neighborhood in the City of Palo Alto. The City decided to retrofit the neighborhood to improve surface drainage and incorporate green street elements to improve water quality. The treatment measures include bioretention and bioinfiltration areas, porous pavement crosswalks, and a porous pavement "paseo" (pedestrian walkway connecting two streets). The bioretention areas were incorporated into the street right-of-way

[15] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[16] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

and existing parkway strips (vegetated areas between the sidewalks and the streets). The project included installation of 16 bioretention areas. The bioretention areas were sited in locations that optimize the amount of tributary area draining to each system.

Table 3.21. Extent of land area in City of Palo Alto WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Other Stormwater Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	016MTC910	2.91	2.54	0.37	-	-	-
	017XXX010	0.60	-	0.60	-	-	-
	031MTC410	8.45	8.45	-	-	-	-
	031SCH250	15.47	15.43	0.04	-	-	-
	Other - Palo Alto	160.15	13.00	93.76	-	0.21	-
	SCH-K	5.44	3.42	2.02	-	-	-
	001SFC100A	0.60	-	0.60	-	-	-
Parcel based New & Redevelopment or Retrofit Subtotal		*193.62*	*42.84*	*97.40*	-	*0.21*	-
Green Street/ Regional Retrofit	Other Palo Alto	36.07	0.24	35.84	-	-	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 - Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 - GSI and treatment controls may include proprietary vault-based systems.

Large Full trash capture Systems (Hydrodynamic Separators)

The City of Palo Alto has treated over 168 acres of land to-date with 2 hydrodynamic separators owned and operated by the City (Table 3.22). These areas are distributed over a number of WMAs, and are comprised of 3 acres of old industrial and 164 acres of old urban land uses. The treatment areas are distributed over a number of WMAs, and are comprised of 3 acres of old industrial and 164 acres of old urban land uses. In addition to the area currently treated by these devices, the City may install additional devices if strategic locations are identified that are not currently being addressed by other actions. Should additional devices be installed, they will not only assist the City in achieving its trash load reduction goals, but will also provide load reduction benefits for PCBs and mercury.

Table 3.22. Extent of land area in City of Palo Alto WMAs that is addressed by publicly owned Hydrodynamic Separators (i.e., Large Full trash capture Systems).[1,2,3]

WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
		Old Industrial	Old Urban	New Urban	Open Space	Other
Other Palo Alto	167.97	2.65	164.23		1.09	

1 – Acres presented may not include all acres currently treated by full trash capture treatment systems.
2 – Trash systems only include hydrodynamic separators that are publicly owned. Inlet based full trash capture devices are described in the operation and maintenance practices section.

3 Includes all existing full trash capture systems in the City of Palo Alto that were installed between January 2010 and June 2017.

Managing PCBs during Building Demolition

The City of Palo Alto is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of Palo Alto's current street sweeping program includes sweeping three times per week in the two main commercial areas, weekly on El Camino Real, and every other week in the remaining areas during non "leaf season", when these areas are swept weekly. The City of Palo Alto uses multiple strategies to enhance the effectiveness of street sweeping, including staff walking ahead of sweepers with leaf blowers in the downtown area to address parked cars and tree wells, and enforcing parking restrictions in some areas to allow access to the curb during sweeping operations.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets one time per year, on average. The City will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently operates a Household Hazardous Waste Program that collects and recycles mercury containing devices and equipment via weekly drop off events. The City promotes the collection and recycling of these devices and equipment via their website. No enhancements associated with this control measure are currently planned.

CITY OF CUPERTINO

Watershed Management Areas

Table 3.23 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Cupertino. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.23 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 3 WMAs have been identified in the City. These WMAs include all land area (i.e., >7,000 acres) within the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.23. City of Cupertino preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
PMC D1	Permanente Creek	124	0%	0%	3%	97%	0%
080JSC600	Junipero Serra Channel	273	10%	90%	0%	1%	0%
Other Cupertino	Multiple	6,695	5%	68%	10%	18%	0%
	Totals	*7,091*	*5%*	*68%*	*9%*	*18%*	*0%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Cupertino are listed in Table 3.24.

Table 3.24. Existing (E) and planned (P) PCBs and mercury control measures in City of Cupertino WMAs.

WMA ID #	Control Measure Categories										
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Operation and Maintenance Practices			Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
						Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning			
PMC D1		E		P		E		E			E
080JSC600		E		P		E		E			E
Other Cupertino		E/P				E		E			

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the City of Cupertino. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the City, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Treatment Controls[17]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 253acres of land to-date[18], including 30 acres of old industrial and 140 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities. As listed in Table 3.25, 86 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 2 WMAs in the City as illustrated in Attachment A.

GSI projects currently under construction or planned for construction in the near future will also treat roughly an additional 173 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information

[17] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[18] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

Table 3.25. Extent of land area in City of Cupertino WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	049SVE900	23.57	0.00	23.57	-	-	-
	Other - Cupertino	62.85	6.73	37.18	-	18.94	-
Totals		*86.42*	*6.73*	*60.75*		*18.94*	

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 - Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 - GSI and treatment controls may include proprietary vault based systems.

Large Full trash capture Systems (Hydrodynamic Separators)

The City of Cupertino currently has no hydrodynamic separators (HDS) that are publicly owned and operated. The City has over installed 118 inlet based devices to treat land areas and will be evaluating the need for additional full capture systems, including HDS units, during the term of MRP 2.0. Should the City install HDSs, the Program will work with the City to document the area treated by these systems for inclusion in future reports. Installation of these systems will not only assist the City in achieving its trash load reduction goals, but also provide load reduction benefits for PCBs and mercury.

Managing PCBs during Building Demolition

The City of Cupertino is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

Operation and Maintenance Practices

- Street Sweeping

  The City of Cupertino's current street sweeping program includes sweeping streets in residential and retail areas, and arterial roads twice per month. Parking enforcement signs for street sweeping are posted in some residential areas, and parking enforcement that allows sweepers to sweep to the curb occurs on most arterial streets.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets once every other year, on average, with the exception of those with full capture systems, which are maintained more often. The City has installed 118 inlet-based full trash capture devices since 2002 that treat 101 acres of old urban land use. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The City will

continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

UNINCORPORATED SANTA CLARA COUNTY

Watershed Management Areas

Table 3.26 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the County of Santa Clara. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.26 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 15 WMAs have been identified in the County. These WMAs include all land area (i.e., >70,000 acres) within the County's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.26. County of Santa Clara preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
016MTC910	Matadero Creek	1188	0%	0%	77%	23%	0%
067GAC010	Guadalupe River	45	0%	0%	98%	2%	0%
068SCL230	Lower Silver Creek	115	0%	0%	100%	0%	0%
083LGC525	Los Gatos Creek	129	0%	0%	100%	0%	0%
099LGC180	Los Gatos Creek	265	0%	0%	99%	1%	0%
100CTC190	Coyote Creek	107	0%	0%	100%	0%	0%
100CTC400	Coyote Creek	43	0%	13%	86%	0%	0%
100CTC600	Coyote Creek	228	0%	8%	1%	91%	0%
113LGC010	Los Gatos Creek	115	0%	0%	100%	0%	0%
130CNC022	Canoas Creek	1142	0%	0%	0%	100%	0%
Miguelita Creek	Coyote Creek	993	13%	0%	38%	49%	0%
PMC-D1	Permanente Creek	1881	7%	2%	4%	87%	0%
SCH-K	Matadero Creek	448	0%	0%	74%	26%	0%
SVC-A	Stevens Creek	10	0%	0%	63%	36%	2%
Other - Santa Clara County	Multiple	68,686	4%	0%	7%	89%	0%
	Totals	*75,395*	*4%*	*0%*	*10%*	*86%*	*0%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the County of Santa Clara are listed in Table 3.27.

Table 3.27. Existing (E) and planned (P) PCBs and mercury control measures in County of Santa Clara WMAs.

WMA ID #	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
016MTC910		E/P		P		E		E			E
067GAC010				P		E		E			E
068SCL230		E		P		E		E			E
083LGC525				P		E		E			E
099LGC180		E		P		E		E			E
100CTC190				P		E		E			E
100CTC400				P		E		E			E
100CTC600				P		E		E			E
113LGC010				P		E		E			E
130CNC022				P		E		E			E
Miguelita Creek				P		E		E			E
Other Santa Clara County		E/P		P		E		E			E
PMC D1				P		E		E			E
SCH K				P		E		E			E
SVC A		E		P		E		E			E

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the County. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the County, resulting in additional source property referrals and/or actions by the County to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Treatment Controls[19]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 339 acres of land to-date[20], including 112 acres of old industrial and 113 acres of old urban land uses that are currently addressed by GSI and other stormwater treatment facilities. As listed in Table 3.28, 126 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 15 WMAs in the County as illustrated in Attachment A.

GSI projects currently under construction or planned for construction in the near future will also treat roughly an additional 12 acres of land, once the development/redevelopment is complete. The Program will continue working with the County to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

Table 3.28. Extent of land area in Santa Clara County WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	016MTC910	19.26	-	19.26	-	-	-
	068SCL230	0.98	-	0.98	-	-	-
	099LGC180	0.84	-	-	-	0.84	-
	Other - Santa Clara County	105.39	-	31.62	-	73.77	-
Parcel based New/Redevelopment or Retrofit Subtotal		*126.47*	-	*51.86*	-	*74.60*	-
Green Street/ Regional Retrofit	016MTC910	5.90	-	5.90	-	-	-
	Other Santa Clara County	1.99	-	1.99	-	-	-
Green Streets/Regional Retrofit Subtotal		*7.89*	-	*7.89*	-	-	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 GSI and treatment controls may include proprietary vault based systems.

[19] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[20] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Large Full trash capture Systems (Hydrodynamic Separators)

The County has treated over 71 acres of land to-date with 2 hydrodynamic separators (HDS) owned and operated by the County (Table 3.29). These areas are distributed over a number of WMAs, and are comprised of 10 acres of old industrial and 60 acres of old urban land uses. In addition to the area currently treated by these devices, the County may install additional HDS units in the future. Should additional devices be installed, they will not only assist the City in achieving its trash load reduction goals, but will also provide load reduction benefits for PCBs and mercury.

Table 3.29. Extent of land area in Santa Clara County WMAs that is addressed by existing Full trash capture Treatment Systems.[1,2,3]

WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
		Old Industrial	Old Urban	New Urban	Open Space	Other
049SVE900	59.36	6.28	52.79	0.30	-	-
050GAC400	11.44	3.82	7.62	-	-	-
Totals	70.80	10.09	60.41	0.30	-	-

1 – Acres presented may not include all acres currently treated by full trash capture treatment systems.
2 – Trash systems only include hydrodynamic separators that are publicly owned. Inlet based full trash capture devices are described in the operation and maintenance practices section.
3 Includes all existing full trash capture systems in Santa Clara County that were installed between January 2010 and June 2017.

Managing PCBs during Building Demolition

The County is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The County is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The County's current street sweeping program includes sweeping expressways once per month. Beginning in July 2014, the County increased the sweeping frequency on County Expressway to once per week and began sweeping the median curb. Parking enforcement signs for street sweeping are not posted in the County, but parking is not permitted on expressways.

- Inlet Cleaning

  The County currently inspects and maintains all storm drain inlets once per year, on average, with the exception of those with full capture systems, which are maintained more often. The County has installed 26 inlet-based full trash capture devices since 2002 that treat 9 acres of old urban land use. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The County will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis

during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The County currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

WEST VALLEY COMMUNITIES (CAMPBELL, LOS GATOS, SARATOGA AND MONTE SERENO)

Watershed Management Areas

The West Valley Communities include the cities of Campbell, Monte Sereno, and Saratoga, and the Town of Los Gatos. Table 3.30 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the West Valley Communities. Total land area in the WMAs and associated land uses are also included. WMAs presented in Table 3.30 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of 12 WMAs have been identified in the West Valley Communities. These WMAs include all land area (i.e., ~17,000 acres) within the jurisdictional boundaries of West Valley Communities that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.30. Preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses in West Valley communities (Campbell, Los Gatos, Saratoga and Monte Sereno).

Permittee	WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
Campbell	099LGC180	Los Gatos Creek	101	0%	100%	0%	0%	0%
Campbell	113LGC010	Los Gatos Creek	298	16%	81%	0%	3%	0%
Campbell	113LGC030	Los Gatos Creek	84	11%	89%	0%	0%	0%
Campbell	113LGC140	Los Gatos Creek	126	15%	85%	0%	0%	0%
Campbell	113LGC510	Los Gatos Creek	46	32%	68%	0%	0%	0%
Campbell	113LGC565	Los Gatos Creek	83	55%	44%	0%	1%	0%
Campbell	113LGC670	Los Gatos Creek	56	84%	16%	0%	0%	0%
Campbell	113LGC900	Los Gatos Creek	15	80%	20%	0%	0%	0%
Campbell	Other - Campbell	Multiple	3091	1%	95%	0%	4%	0%
Los Gatos	Other - Los Gatos	Multiple	4946	1%	51%	11%	37%	0%
Saratoga	Other - Saratoga	Multiple	7894	1%	77%	9%	14%	0%
Monte Sereno	Other - Monte Sereno	Multiple	496	0%	93%	0%	7%	0%
		Totals	*17,236*	*2%*	*73%*	*7%*	*18%*	*0%*

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the West Valley Communities are listed in Table 3.31.

Table 3.31. Existing (E) and Planned (P) PCBs and mercury control measures in in West Valley communities (Campbell, Los Gatos, Saratoga and Monte Sereno) WMAs.

Permittee	WMA ID #	Control Measure Categories										
							Operation and Maintenance Practices					
		Source Property Identification and Abatement	Green Stormwater Infrastructure	Large Full trash capture Systems (Hydrodynamic Separators)	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
Campbell	099LGC180				P		E		E			E
Campbell	113LGC010		E		P		E		E			E
Campbell	113LGC030		E		P		E		E			E
Campbell	113LGC140		E/P		P		E		E			E
Campbell	113LGC510				P		E		E			E
Campbell	113LGC565				P		E		E			E
Campbell	113LGC670		E		P		E		E			E
Campbell	113LGC900				P		E		E			E
Campbell	Other Campbell		E/P		P		E		E			E
Los Gatos	Other – Los Gatos		E/P		P		E		E			E
Saratoga	Other Saratoga		E/P		P		E		E			E
Monte Sereno	Other - Monte Sereno				P		E		E			E

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the West Valley Communities. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the County, resulting in additional source property referrals and/or actions by the cities/towns to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Treatment Controls[21]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 236 acres of land to-date[22], including 57 acres of old industrial and 140 acres of old urban land uses are currently addressed by GSI and other stormwater treatment facilities. As listed in Table 3.32, 125 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 12 WMAs in the communities as illustrated in Attachment A.

GSI projects currently under construction or planned for construction in the near future will also treat roughly an additional 30 acres of land, once the development/redevelopment is complete. The Program will continue working with the West Valley Communities to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

Large Full trash capture Systems (Hydrodynamic Separators)

The West Valley Communities do not currently have hydrodynamic separators (HDS) that are publicly owned and do not plan to install hydrodynamic separators during MRP 2.0. Should HDS units be installed, they will not only assist the communities in achieving their trash load reduction goals, but also provide load reduction benefits for PCBs and mercury.

[21] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[22] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Table 3.32. Extent of land area in West Valley Communities WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Other Stormwater Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	Co permittee	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
				Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	Campbell	113LGC010	0.37	-	0.37	-	-	-
	Campbell	113LGC030	3.11	-	3.11	-	-	-
	Campbell	113LGC140	0.81	-	0.81	-	-	-
	Campbell	Other - Campbell	25.97	2.01	23.96	-	-	-
	Campbell	113LGC670	1.50	1.50	-	-	-	-
	Los Gatos	Other - Los Gatos	42.79	9.34	20.38	13.07	-	-
	Los Gatos	Other - Los Gatos Above Vasona	15.55	-	12.60	-	2.95	-
Parcel based New/Redevelopment or Retrofit Subtotal			*90.10*	*12.85*	*61.23*	*13.07*	*2.95*	-
Green Street/ Regional Retrofit	Campbell	Other - Campbell	34.84	-	32.01	-	2.83	-
Green Streets/Regional Retrofit Subtotal			*34.84*	-	*32.01*	-	*2.83*	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 - Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 - GSI and treatment controls may include proprietary vault based systems.

Managing PCBs during Building Demolition

The West Valley Communities are currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The Cities/Towns are anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of Campbell's current street sweeping program that was enhanced in response to trash load reduction requirements includes sweeping streets in residential areas twice per month, the downtown area twice per week, and arterial/commercial/industrial areas weekly. Parking enforcement signs for street sweeping are not permanently posted in the City, however temporary signage is posted prior to sweeping events. Additionally, sweepers are able to sweep to the curb on arterial roads due to no parking on these streets.

  The City of Saratoga's current street sweeping program includes sweeping most streets within the City once per month and the downtown area once per week. Parking enforcement signs for street sweeping are not posted in the City, but cars generally do not park on City streets.

  The Town of Los Gatos's current street sweeping program includes sweeping industrial and residential areas once per month, commercial areas twice per month, and sweeping retail areas once per week. Parking enforcement signs are not posted in the Town.

  The City of Monte Sereno's current street sweeping program includes sweeping most streets four times per year. There are many streets within the City that are not swept. Parking enforcement signs for street sweeping are not posted, but cars generally do not park on City streets.

- Stormwater Inlet Cleaning

  The Cities/Towns currently inspect and maintain all storm drain inlets once every other year, on average, with the exception of those with full trash capture systems, which are maintained more often. The Cities/Towns have installed 66 inlet-based full trash capture devices since 2002 that treat 183 acres of old urban land use. Because of additional maintenance requirements for these devices, the Program is currently documenting enhanced cleaning frequencies and will provide that information in future reports. The Cities/Towns will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The West Valley Communities currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

CITY OF LOS ALTOS

Watershed Management Areas

Table 3.33 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the City of Los Altos. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.33 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of one WMA has been identified in the City. This WMA includes all land area (i.e., >4,100 acres) within the City's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.33. City of Los Altos preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
Other - Los Altos	Multiple	4,176	0%	97%	1%	2%	0%

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the City of Los Altos are listed in Table 3.34.

Table 3.34. Existing (E) and planned (P) PCBs and mercury control measures in City of Los Altos WMA.

WMA ID #	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Full trash capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
Other Los Altos		E/P	E	P		E		E			E

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the City of Los Altos. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the City, resulting in additional source property referrals and/or actions by the City to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Treatment Controls[23]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Based on the information compiled to-date, over 27 acres of land to-date[24], including 26 acres of old urban land areas. As listed in Table 3.35, 13 acres are associated with facilities that were completed between July 1, 2013 and June 30, 2017 (i.e., FY13 14 through FY 16-17). Treatment areas associated with these facilities are distributed among the 1 WMA in the City as illustrated in Attachment A.

GSI projects currently under construction or planned for construction in the near future will also treat roughly an additional 6 acres of land, once the development/redevelopment is complete. The Program will continue working with the City to update and refine the information on completed projects, and further document (to the extent possible) the schedule for completion of these planned projects.

The land area current addressed by GSI facilities includes the David and Lucile Packard Foundation Green Street facility constructed in 2012 as part of the Packard Foundation's development of its new office building at 343 Second Street. The green street portion of the project incorporates curbside flow-through rain gardens and corner bulb-outs to capture, treat and infiltrate runoff from adjacent impervious surfaces. (The runoff from the building and associated hardscape and parking lots is captured and treated by other stormwater treatment measures).

Table 3.35. Extent of land area in City of Los Altos WMAs that is addressed by Green Stormwater Infrastructure (GSI) and Treatment Control Measures completed between July 1, 2013 and June 30, 2017.[1,2,3,4]

Project Type	WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
			Old Industrial	Old Urban	New Urban	Open Space	Other
Parcel based New & Redevelopment or Retrofit	Other – Los Altos	13.19	-	12.66	-	0.53	-

1 – Acres presented may not include all acres currently treated by GSI and treatment controls.
2 – GSI and Treatment Control Measures include: (1) parcel based new development, redevelopment, or retrofit projects; and (2) green street projects or regional retrofit projects.
3 - Includes all projects completed during FY13 14 through FY 16-17 that were not reported in the 2014 IMR (BASMAA, 2014).
4 - GSI and treatment controls may include proprietary vault based systems.

[23] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.
[24] The acres treated to date include all projects completed since the TMDL baseline was established in 2002.

Large Full trash capture Systems (Hydrodynamic Separators)

The City of Los Altos has treated over 106 acres of land to-date with full trash capture treatment systems. The majority of this area is treated by one public hydrodynamic separator owned and operated by the City (Table 3.36). The area treated is comprised of 123 acres of old urban land use. Additional areas are also treated using inlet screening devices.

In addition to the area currently treated by this system, the City is currently evaluating the need install additional systems to treat additional areas during the term of MRP 2.0. Installation of these devices will not only assist the City in achieving its trash load reduction goals, but also provide load reduction benefits for PCBs and mercury.

Table 3.36. Extent of land area in City of Los Altos WMAs that is addressed by existing Full trash capture Treatment Systems.[1,2,3]

WMA ID	Total Area (Acres)	Area by Land Use Category (Acres)				
		Old Industrial	Old Urban	New Urban	Open Space	Other
Other –Los Altos	106.42	-	105.89	0.53	-	-

1 – Acres presented may not include all acres currently treated by full trash capture treatment systems.
2 – Trash systems only include hydrodynamic separators that are publicly owned. Inlet based full trash capture devices are described in the operation and maintenance practices section.
3 - Includes all existing full trash capture systems in Santa Clara County that were installed between January 2010 and June 2017.

Managing PCBs during Building Demolition

The City of Los Altos is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The City is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The City of Los Altos current street sweeping program includes sweeping industrial and residential areas once per month, commercial areas twice per month, and retail areas once per week. Parking enforcement signs are not posted in the City, but cars generally do not park on City streets and the downtown areas are swept before cars arrive.

- Inlet Cleaning

  The City currently inspects and maintains all storm drain inlets one time per year, on average. The City will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The City currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

TOWN OF LOS ALTOS HILLS

Watershed Management Areas

Table 3.37 provides a listing of all Watershed Management Areas (WMAs) identified to-date in the Town of Los Altos Hills. Total land area in the WMA and associated land uses are also included. WMAs presented in Table 3.37 have been updated from the tables provided in Version 1.0 of this report based on new information. That said, these WMAs should continue to be considered preliminary because they may be refined in the future based on data/information currently being evaluated and collected through source investigations and other activities.

A total of one WMA has been identified in the Town. This WMA includes all land area (i.e., >5,600 acres) within the Town's jurisdictional boundaries that is below significant water impoundments located on receiving water bodies (i.e., reservoirs). WMAs form the management units that are used to report control measure implementation in this section and PCBs and mercury load reductions reported in Section 4.

Table 3.37. Town of Los Altos Hills preliminary PCBs and mercury Watershed Management Areas (WMAs) and associated land uses.

WMA ID #	Outfall Water Body	Total Area (Acres)	% Old Industrial	% Old Urban	% New Urban	% Open Space	% Other
Other Los Altos Hills	Multiple	5,692	0%	74%	8%	18%	0%

Existing and Planned Control Measures

PCBs and mercury control measures currently in place or planned for future implementation are described in this section. A preliminary list of control measures for the Town of Los Altos Hills are listed in Table 3.38.

Table 3.38. Existing (E) and planned (P) PCBs and mercury control measures in Town of Los Altos Hills WMA.

WMA ID #	Control Measure Categories										
						Operation and Maintenance Practices					
	Source Property Identification and Abatement	Green Stormwater Infrastructure	Full trash capture Systems	Managing PCBs during Building Demolition	Managing PCBs in Stormwater Conveyance Infrastructure	Street Sweeping or Flushing	MS4 Line Flushing	Inlet Cleaning	Diversion to Wastewater Treatment Facilities	Removal of Illegally Dumped PCBs containing Materials and Products	Reduction/Recycling of Mercury containing Devices & Products
Other Los Altos Hills		E/P		P		E		E			E

Source Property Identification and Abatement (including Referrals)

No source property investigations are currently underway in the Town. Based on the results of future monitoring designed to identify WMAs that likely contain source properties, additional source property investigations may be conducted by the Program or the Town, resulting in additional source property referrals and/or actions by the Town to eliminate the discharge of PCBs of mercury into the MS4 by property owners.

Green Stormwater Infrastructure and Treatment Controls[25]

Applicable public and private properties undergoing new or redevelopment are subject to MRP requirements to treat stormwater via low impact development (LID) techniques or equivalent. Information on GSI and other stormwater facilities built in the Town of Los Altos Hills is currently being compiled. All new and redevelopment project sites currently under construction or planned for construction in the near future will treat stormwater once the development/redevelopment is complete. The Program will continue working with the Town to further document (to the extent possible) the schedule for completion of these planned projects.

Large Full trash capture Systems (Hydrodynamic Separators)

The Town does not currently have and has no plans to, install hydrodynamic separators during MRP 2.0. Should HDS units be installed, these units will not only assist the Town in achieving its trash load reduction goals, but also provide load reduction benefits for PCBs and mercury.

Managing PCBs during Building Demolition

The Town of Los Altos Hills is currently participating in the BASMAA regional project to develop tools and guidance for implementing a protocol for managing PCBs during building demolition. The Town is anticipating the implementation of a protocol/program to require the management of PCBs in building materials during demolition activities by July 1, 2019, consistent with MRP 2.0.

MS4 Operation and Maintenance Practices

- Street Sweeping

  The Town of Los Altos Hills's current street sweeping program includes sweeping residential areas twice per month during the wet season and every month and a half during the dry season. Parking enforcement signs are not posted in the Town, but cars generally do not park on Town streets.

- Inlet Cleaning

  The Town currently inspects and maintains all storm drain inlets one time per year, on average. The Town will continue to evaluate the benefits of more frequent inlet cleaning on a site-specific basis during MRP 2.0 and as part of its control measure prioritization process via the RAA development.

Reduction/Recycling of Mercury containing Devices & Products

The Town currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

[25] Acres reported in this section as addressed by green stormwater infrastructure and treatment controls should be considered preliminary and may be revised in the future as additional information is available.

SANTA CLARA VALLEY WATER DISTRICT

The Santa Clara Valley Water District (District) is an active and important participant in SCVURPPP. The District's significant financial commitment to SCVURPPP and BASMAA support many local and San Francisco Bay Area monitoring activities such as the Regional Monitoring Program and many other monitoring programs. Although the District does not generally have jurisdiction over land use planning decisions, it performs and assists other SCVURPPP Co-permittees in the implementation of control measures that have a PCBs and mercury reduction benefit. The District's primary PCBs and Mercury control measures are related to sediment removal activities and activities related to the implementation of the Guadalupe River Watershed Mercury TMDL.

Because watershed land areas draining to receiving waters are generally not owned by the District, no Watershed Management Areas (WMAs) are currently identified for the District. That said, the District owns and maintains roughly one third of the channels and creeks in the Santa Clara Valley. District led activities that have a PCBs and/or mercury reduction benefit are included in this section.

Existing and Planned Control Measures

Enhanced Operation and Maintenance Practices: Channel Maintenance and Cleaning

As part of its Stream Maintenance Program (SMP), the District conducts sediment removal activities in channels, creeks and percolation ponds for the purpose of alleviating the potential for local flooding problems and to meet the requirements of the Federal Emergency Management Agency for flood protection and water supply. The District follows a sediment characterization plan to determine chemical and physical properties of the sediments, including for total mercury, in order to effectively plan for disposal or beneficial reuse of the sediments and assist with determining the best management practices to implement in order to avoid and minimize impacts to water quality and aquatic life during sediment removal and disposal. Sediment removal from channels and creeks, as well as percolation ponds, allows for the opportunistic removal of sediments and associated pollutants before they reach the San Francisco Bay.

Stream Restoration Activities and Erosion Control Activities

The District has conducted stream restoration activities that included the removal of mercury containing mining waste in the Guadalupe Creek, Alamitos Creek and the Guadalupe River that have resulted in a significant amount of mercury being removed from the Guadalupe River system. In addition, the District has funded and or managed the removal of mercury containing sediment and stream stabilization activities for other governmental organizations. One example has been the rehabilitation of Jacques Gulch upstream of Almaden Reservoir for Santa Clara County.

Oxygenation System Activities

The District owns and operates three reservoirs (Almaden, Calero, and Guadalupe reservoirs) and one lake (Lake Almaden) within the Guadalupe River Watershed that were included in the Guadalupe River Watershed Mercury TMDL. The District operates four hypolimnetic oxygenation systems that reduce the production of methylmercury in Almaden, Guadalupe, Calero and Stevens Creek reservoirs during months of stratification. Hypolimnetic oxygenation also improves the quality of the water discharged from the reservoir, reducing downstream concentrations of

nutrients, metals, and bioavailable mercury. The District is required to provide periodic progress reports regarding its studies of methylmercury production and controls, and progress towards reducing the bioaccumulation of mercury in the watershed to the Regional Board. By reducing the amount of mercury and methylmercury in the watershed, implementation of the Guadalupe TMDL also supports the San Francisco Bay Mercury TMDL.

Reduction/Recycling of Mercury containing Devices & Products

The District currently promotes the collection and recycling of mercury containing devices and equipment at the consumer level via their participation in the Santa Clara County Environmental Health Department's Household Hazardous Waste Program (HHW Program). No enhancements associated with this control measure are currently planned.

SECTION 4 –PCBS AND MERCURY LOADS REDUCED

The PCBs and mercury loads reduced through stormwater control measures implemented or caused to be implemented by Co-permittees in the Santa Clara Valley during the current MRP term are reported in this section. The loads reduced were calculated only for those control measures and projects reported in Section 3 that were implemented and/or completed between July 1, 2013 and June 30, 2018, and may not include all existing control measures. The load reductions reported in this section do not account for operation and maintenance (O&M) enhancements implemented by Co-permittees during the permit term, including enhanced street sweeping and enhanced inlet cleaning implemented by Co-permittees as part of their operation and maintenance programs for inlet based full trash capture systems. The load reductions associated with O&M enhancements implemented by Co-permittees during MRP 2.0 will be provided in future iterations of this Control Measures Plan. The Program will continue to track control measures and update the associated load reductions as additional information becomes available and as new or enhanced actions are implemented by Co-permittees.

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 v.1.1 (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 are reported in Section 3 were used in the equations below to calculate the PCBs and mercury load reductions that are reported later in this section.

Source Property Identification and Abatement (including Referrals)

The pollutant of concern (POC) loads reduced through source property identification and abatement were calculated using the equation below:

$$Load\ of\ POC\ Reduced = SP_A \bullet (SP_Y - OU_Y)$$

Where:

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

Default inputs:

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

Fifty percent of the load reduced is reported here for each source property referral that was identified in Section 3. The remaining 50% will be credited upon completion of the abatement process, or at ten years, whichever occurs first.

Green Stormwater Infrastructure and Treatment Controls

Parcel Based New Development, Redevelopment and Retrofit

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

$$Load\ of\ POC\ Reduced = P_A \bullet (P_Y - NU_Y)$$

Where:

P_A	=	*New development/redevelopment/parcel based retrofit project area (ac)*
P_Y	=	*Existing PCBs or mercury yield (mg/ac/yr)*
NU_Y	=	*New Urban PCBs or mercury yield (mg/ac/yr)*

Default inputs:

PCBs New Urban land use yield = 3.5 mg/ac/yr
Mercury New Urban land use yield = 33 mg/ac/yr

Green Streets, Regional Retrofit Projects, and Full trash capture Systems

The POC loads reduced due to green streets, regional retrofit projects, and full trash capture devices (i.e., hydrodynamic separators (HDS) units) were calculated using the equation and inputs provided below:

$$Annual\ Mass\ of\ PCB\ Reduced = P_A \bullet P_Y \bullet E_f$$

Where:

P_A	=	*Tributary area treated by green stormwater infrastructure/retrofit treatment measure/HDS unit (acres)*
P_Y	=	*Area weighted PCBs or mercury yield (mg/acre year)*
E_f	=	*Efficiency factor for green stormwater infrastructure/retrofit treatment control measure (assumed to be 70%) or HDS units (assumed to be 20%)*

PCBs Loads Reduced

Co-permittees in the Santa Clara Valley have reduced PCBs by 291 g/year during the MRP 2.0 compliance period (i.e., FY 13-14 to present). The PCBs loads reduced by each Permittee are provided in Table 4.1.

Table 4.1. PCBs Loads Reduced by Co-permittees in the Santa Clara Valley (FY 13-14 through FY 17-18).

Permittee	PCBs Loads Reduced (g/yr)					
	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18[1]	Cumulative Load Reduced
Cupertino	1.80	0.13	0.24	0.05	-	2.21
Los Altos	0.06	0.16	0.11	0.01	-	0.34
Milpitas	0.00	0.40	1.22	4.74	-	6.36
Mountain View	2.20	3.16	0.51	2.64	-	8.52
Palo Alto	0.80	3.46	1.88	0.84	-	6.98
San José	2.94	7.29	20.32	53.08	-	83.63
Santa Clara	2.88	2.52	2.09	3.56	-	11.05
Santa Clara County Unincorporated	0.48	0.27	0.30	0.63	-	1.67
Sunnyvale	1.28	2.34	15.42	1.30	147.27	167.60
West Valley Communities	0.52	0.23	1.38	1.45	-	3.58
TOTAL - All Co-permittees	*12.96*	*19.96*	*43.48*	*68.30*	*147.27*	*291.96*

1- Due to the timing of the development of the Program's new GSI data management system, load reductions associated with GSI (and other control measures) implemented FY 17-18 are currently under development and will be included in future iterations of this control measures plan.

The total PCBs loads reduced by each control measure type are provided in Table 4.2. Figure 4.1 presents the distribution of PCBs load reductions achieved by control measure type for each Permittee, and across all Co-permittees.

Table 4.2. PCBs Loads Reduced within the Santa Clara Valley by Control Measure Category (FY 3-14 through FY 17-18).

Control Measure Category		PCBs Loads Reduced (g/yr)						MRP-Required Load Reductions (g/yr)	
		FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	Cumulative Load Reduced	2018	2020
Source Property Identification and Abatement	Leo Avenue (San José)	-	-	10.09		-	10.09		
	Sunnyvale East Channel Watershed (Sunnyvale)	-	-	-	-	147.27	147.27		
Green Stormwater Infrastructure and Other Stormwater Treatment Controls	Parcel Based Green Stormwater Infrastructure (i.e., New & Redevelopment Projects)	12.80	19.89	17.67	17.70	-[5]	68.06		37
	Green Streets and Regional Retrofits	0.16	-	1.89	0.16	-[5]	2.21		
	Large Full trash capture Systems (Hydrodynamic Separators)[3]	-	0.07	13.83	50.44	-	64.34		
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 Co-permittees & Controls		*12.96*	*19.96*	*43.48*	*68.30*	*147.27*	*291.96*	*160*	*940*

1. Load Reduced = (Source Property Area (ac)) x (4.065 – 0.0303 (g/ac/yr)). Acres associated with this control measure can be found in Section 3.
2. For parcel based GSI projects, Load Reduced = (Project Area (ac)) x (Existing Yield – 35 (g/ac/yr)). For green street or regional retrofit projects, Load Reduced = (Project Drainage Area (ac)) x (area weighted PCBs yield (g/ac/yr)) x 0.70. Acres associated with this control measure can be found in Section 3.
3. Load Reduced = (Project Drainage Area (ac)) x (area weighted PCBs yield (g/ac/yr)) x 0.20. Acres associated with this control measure can be found in Section 3.
4. Loads reduced for these control measures will be provided in future reports, as applicable.
5. Green Stormwater Infrastructure that became operational in FY 17-18 will be reported in future years. All information was not available at the time this Plan was developed.

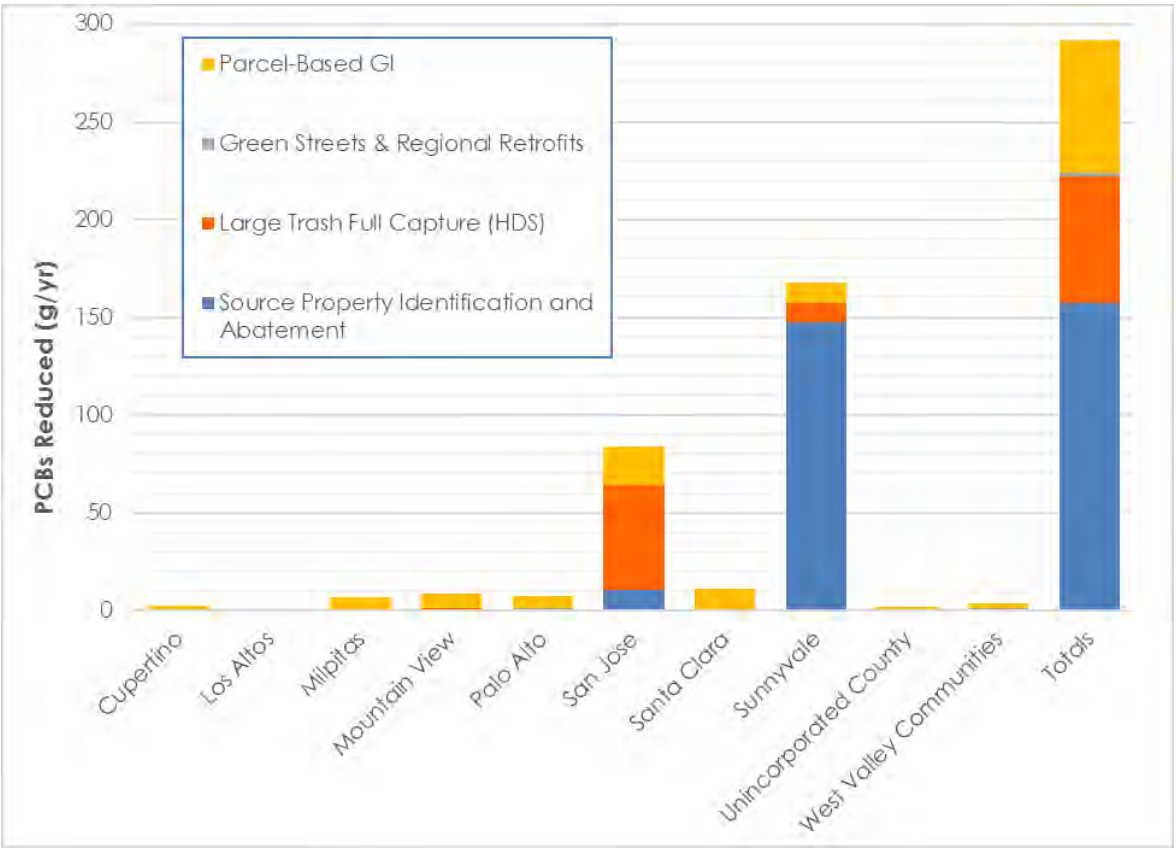

Figure 4.1. PCBs Loads Reduced by each Permittee within the Santa Clara Valley by Control Measure Category (FY 13-14 through FY 17-18).

Parcel-based GSI (i.e., re-development) projects have been and will continue to be important controls for reducing PCBs. Table 4.2 and Figure 4.1 demonstrate the importance of green stormwater infrastructure installation as part of parcel-based redevelopment projects in the Santa Clara Valley. Since FY 13-14, more than 2,250 acres have undergone new or redevelopment in the Santa Clara Valley and are currently treated by GSI facilities, including more than 550 acres of old industrial and 850 acres of old urban land uses. These projects currently account for 23% of the reported PCBs load reduction (Table 4.2).

By comparison, public green street and regional retrofit projects currently account for less than 1% of the PCBs loads reduced to-date (Table 4.2). With the development and implementation of Co-permittee GSI Implementation Plans that are required by the MRP, green street and regional projects are expected to increase over the next decade. With this increase in these projects, PCBs load reductions are expected to increase as well over time.

Large full trash capture systems (i.e., Hydrodynamic Separators) owned and operated by Co-permittees also play an important role in reducing PCBs reaching the Bay from the Santa Clara Valley. To-date, nearly 12,000 acres of land, including 1,777 acres of old industrial land use, have been treated by HDS units. The bulk of land treated by these systems are located in the cities of San José and Sunnyvale. Combined, these systems account for 22% of the PCBs load reductions from the Santa Clara Valley.

Lastly, 157 grams of PCBs have been reduced to-date through referrals of source properties to the Regional Water Board for abatement. These referrals account for 54% of the PCBs load

reductions from the Santa Clara Valley. Source property identification and abatement remains one of the most cost-effective control measures available for PCBs load reductions. The Program has identified a number of additional PCBs source properties through recently completed investigations, and continues to conduct additional investigations. Should the Program and Co-permittees refer these properties, or additional source properties identified through future investigations, to the Regional Water Board for abatement, additional PCBs load reductions will be reported in future annual reports, consistent with the MRP.

Figure 4.2 illustrates the load reductions achieved each fiscal year across all Co-permittees, clearly demonstrating the substantial progress that has been made in the Santa Clara Valley to reduce PCBs in stormwater. Co-permittees exceeded the 2018 PCBs load reduction target of 160 g/yr for the Santa Clara Valley. As noted previously, PCBs load reductions are not reported here for all controls that have been implemented to-date, including increases in the frequency of inlet cleaning associated with inlet-based full trash capture devices, green stormwater infrastructure built during FY17-18, and PCBs removed via the SCVWD's stream maintenance activities. Over the next fiscal year, efforts will be made to document the information required to account for these actions. In addition, Co-permittees continue to develop and implement appropriate methods to manage PCBs in building materials, control other potential sources (e.g., infrastructure, illegal dumping, etc.), and prevent or reduce the release of PCBs from these sources. As progress is made on implementing these control measures, the Program will document load reductions achieved in future reports.

Figure 4.2. PCBs Loads Reduced within the Santa Clara Valley by Control Measure Category (FY 2013/14 through FY 2017/18).

Mercury Loads Reduced

Co-permittees in the Santa Clara Valley have reduced mercury by 1,496 g/year during the MRP 2.0 compliance period (i.e., FY 13-14 to present). The mercury loads reduced by each Permittee are provided in Table 4.3.

Table 4.3. Mercury Loads Reduced by Co-permittees in the Santa Clara Valley (FY 13-14 through FY 17-18).

Permittee	Mercury Loads Reduced (g/yr)					
	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 1718[1]	Cumulative Load Reduced
Cupertino	16.89	0.75	1.60	0.34	-	19.58
Los Altos	0.39	1.10	0.76	0.06	-	2.30
Milpitas	0.00	2.74	15.17	71.23	-	89.14
Mountain View	32.19	44.63	4.72	29.89	-	111.43
Palo Alto	10.54	42.18	14.69	9.66	-	77.07
San José	24.28	91.50	112.24	487.29	-	715.30
Santa Clara	34.48	25.60	29.23	42.89	-	132.20
Santa Clara County Unincorporated	3.19	1.41	2.04	4.23	-	10.87
Sunnyvale	11.72	33.66	194.47	15.25	39.6	294.70
West Valley Communities	4.59	1.51	9.32	17.84	-	33.25
TOTAL - All Co-permittees	*138.28*	*245.07*	*384.24*	*678.67*	*39.6*	*1,485.85*

1- Due to the timing of the development of the Program's new GSI data management system, load reductions associated with GSI (and other control measures) implemented FY 17-18 are currently under development and will be included in future iterations of this control measures plan.

The mercury loads reduced by each control measure type are provided in Table 4.4. Figure 4.3 presents the distribution of PCBs load reductions achieved by control measure type for each Permittee, and across all Co-permittees.

Table 4.4. Mercury Loads Reduced within the Santa Clara Valley by Control Measure Category (FY 13-14 through FY 17-18).

Control Measure Category		Mercury Loads Reduced (g/yr)						MRP-Required Load Reductions (g/yr)	
		FY13 14	FY14 15	FY15 16	FY 16-17	FY17-18	Cumulative Load Reduced	2018	2020
Source Property Identification and Abatement	Leo Avenue (San José)	-	-	2.71	-	2.71	2.71		
	Sunnyvale East Channel Watershed (Sunnyvale)	-	-	-	-	-39.60	39.60		
Green Stormwater Infrastructure and Other Stormwater Treatment Controls	Parcel Based Green Stormwater Infrastructure (i.e., New & Redevelopment Projects)	136.9	244.6	221.5	235.1	-[5]	838.07		16
	Green Streets/Regional Retrofit	1.35	-	12.9	1.07	-[5]	15.32		
	Large Full trash capture Systems (Hydrodynamic Separators)[3]	-	0.51	147.1	442.5	-	590.15		
Enhanced O&M Measures[4]		-	-	-	-	-	-		
Diversion to POTW[4]		-	-	-	-	-	-		
Source Controls/Other[4]		-	-	-	-	-	-		
TOTAL - ALL CO-PERMITTEES & CONTROLS		*138.3*	*245.1*	*384.2*	*678.7*	*39.60*	*1485.85*	-	-

1. Load Reduced = (Source Property Area (ac)) x (1.033 – 0.215 (g/ac/yr)). Acres associated with this control measure can be found in Section 3.
2. For parcel based GSI projects, Load Reduced = (Project Area (ac)) x (Existing Yield – 0.033 (g/ac/yr)). For green street or regional retrofit projects, Load Reduced = (Project Drainage Area (ac)) x (area weighted mercury yield (g/ac/yr)) x 0.70. Acres associated with this control measure can be found in Section 3.
3. Load Reduced = (Project Drainage Area (ac)) x (area weighted mercury yield (g/ac/yr)) x 0.20. Acres associated with this control measure can be found in Section 3.
4. Loads reduced for these control measures will be provided in future reports.
5. Green Stormwater Infrastructure that became operational in FY 17-18 will be reported in future years. All information was not available at the time this Plan was developed.

Figure 4.3. Mercury Loads Reduced by each Permittee within the Santa Clara Valley by Control Measure Category (FY 2013/14 through FY 17-18).

The mercury loads reduced by each control measure are provided in Table 4.4. The largest single contributor to the mercury load reductions achieved to-date has been through parcel based new development and redevelopment projects where GSI has been installed (Table 4.4). Figure 4.3 presents the distribution of mercury load reductions achieved by control measure type for each Permittee, and across all Co-permittees, further demonstrating the importance of green stormwater infrastructure and treatment controls including full trash capture systems for mercury load reductions. Combined, these measures contribute 97% to the Program wide total mercury load reduction achieved to-date.

New and redevelopment projects have been and continue to be implemented across all Santa Clara Valley Co-permittees. Over the permit term to-date, more than 2,250 acres have undergone redevelopment, including more than 550 acres of old industrial and 850 acres of old urban land uses. These projects currently account for 56% of the mercury load reduction (Table 4.4). By comparison, Green Street and regional retrofit projects account for 1% of the total mercury loads reduced to-date (Table 4.4).

Full trash capture systems are also an important component of mercury load reductions, accounting for 40% of the Program-wide total to-date. The bulk of these systems treat land areas in the cities of San José and Sunnyvale. Combined, these systems currently treat nearly 12,000 acres of land, including 1,177 acres of old industrial and 9,804 acres of old urban land uses.

The remaining 3% load reduction results from the two source properties that were referred to the Regional Water Board, including the property on Leo Avenue in the City of San José and the Sunnyvale East Channel property in the City of Sunnyvale.

Figure 4.4 illustrates the load reductions achieved each fiscal year across all Co-permittees, clearly demonstrating the substantial progress Co-permittees in the Santa Clara Valley have made to-date. The interim mercury load reduction target of 16 g/yr through green stormwater infrastructure has already been achieved. Continued progress is expected from ongoing redevelopment and retrofit of treatment controls (including full trash capture systems) into existing old industrial and old urban land uses throughout the remainder of the permit term.

As noted previously, mercury load reductions are not reported here for all controls that have been implemented to-date, including increases in the frequency of inlet cleaning associated with inlet-based full trash capture devices, green stormwater infrastructure built during FY 17-18, and mercury removed via the SCVWD's stream maintenance activities. Over the next fiscal year, efforts will be made to document the information required to account for these actions. As progress is made on continued implementation of mercury control measures, the Program will document load reductions achieved in future reports.

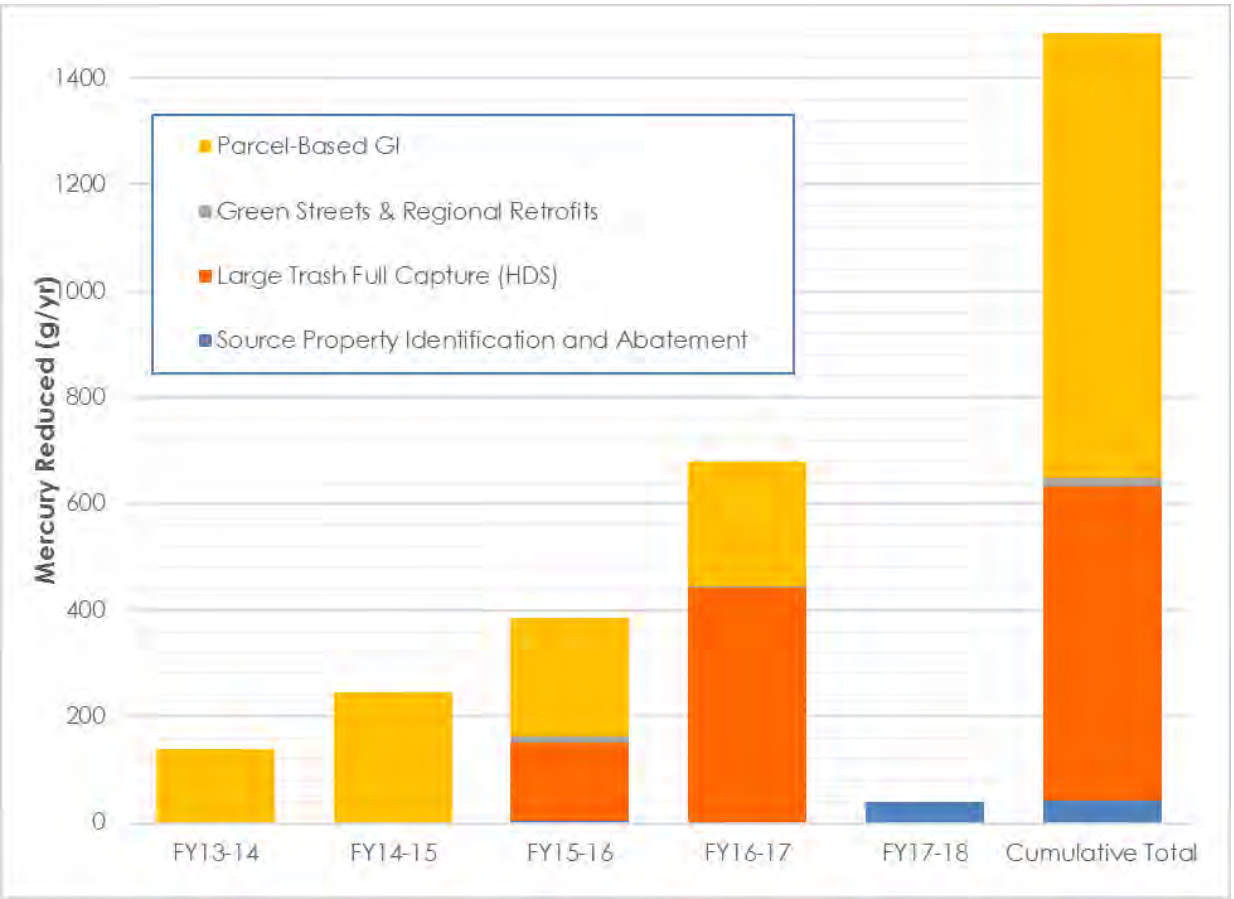

Figure 4.4. Mercury Loads Reduced within the Santa Clara Valley by Control Measure Category (FY 13-14 through FY 17-18).

SECTION 5 - IMPLEMENTATION SCHEDULE AND PLANNED NEAR TERM NEXT STEPS

Co-permittees in the Santa Clara Valley began implementing PCBs and mercury control measures with the adoption of the PCBs and Mercury TMDLs. Enhanced control measure implementation following the adoption of MRP 2.0 is underway and primarily focused on 1) conducting source property identification projects that will likely lead to referrals to the Water Board for further investigation and abatement; 2) tracking the implementation of green stormwater infrastructure/treatment controls on private property, and planning for public green stormwater infrastructure projects; and 3) developing a protocol to manage PCBs in building materials during demolition. These control measures will continue to be developed/implemented over the course of the MRP 2.0, consistent with the permit.

In addition to these focused areas, Co-permittees are also continuing to implement the following during the term of MRP 2.0:

Source Property Referrals and Abatement

- Continue to collect and evaluate information to identify WMAs with potential source properties using the framework developed by BASMAA member agencies and expanded upon by SCVURPPP, including the collection of stormwater monitoring data from many of the 160+ WMAs.
- Continue to work with the Regional Water Board on the referral of the railroad property on Leo Avenue in the City of San José (WMA 083CTC990) and assist in next steps as appropriate.
- Continue to work with the USEPA and the Regional Water Board on the referral of the Northrup Grumman property in the City of Sunnyvale (WMA 049SVE900) and assist in next steps as appropriate.
- Continue calculating PCBs and mercury load reduction benefits of source properties.

Green Stormwater Infrastructure

- With assistance and guidance from SCVURPPP, develop GSI Plans that integrate with the Santa Clara Valley Stormwater Resource Plan development that began in late 2016 and the RAA process designed to address PCBs and mercury TMDLs subsequent to MRP 2.0.
- Continue to develop a tracking mechanism for GSI and stormwater treatment in the Santa Clara Valley and update the associated database to assist Co-permittees in calculating PCBs and mercury load reductions.
- Continue calculating the PCBs and mercury load reduction benefits of existing GSI facilities.

Large Full Trash Capture Systems (HDS)

- Continue to track the implementation of full trash capture systems and calculate the PCBs and mercury load reduction benefits.

MS4 Operation and Maintenance Practices

- Look for opportunities to enhance existing O&M practices to optimize PCBs and mercury load reduction benefits.

- Continue to track the implementation of enhanced MS4 operation and maintenance practices, including increased cleaning frequencies of inlets with full trash capture systems, and calculate the PCBs and mercury load reduction benefits.

PCBs in Building Materials, Storm Drains and Roadway Infrastructure

- Consistent with Provision C.12.f, continue to participate in the ongoing BASMAA regional project to develop an implementation framework, guidelines and tools for managing materials and wastes containing PCBs during the demolition of buildings; and tailor these materials for SCVURPPP Co-permittees.

Mercury Reduction via True Source Controls and Recycling

- Continue to implement and track the benefits from mercury true source control and recycling programs, including HHW Programs.

Additional Activities

- Continue implementing a program to educate the public regarding potential human health risks from PCBs and mercury in Bay fish, including residents likely to consume locally caught fish. This includes working with the Alviso Education Center to utilize various education and outreach products.
- Continue developing an RAA for the Santa Clara Valley, consistent with the regional framework and guidance for conducting an RAA for mercury and PCBs.
- Prepare a plan and schedule for implementing technically and economically feasible PCBs and mercury control measures and evaluate the costs and benefits from their implementation.

Table 5.1. Preliminary list of PCBs and mercury control measure tasks, responsible party(s) and anticipated milestones during the term of MRP 2.0.

Task	Responsible Party(s)	Anticipated Milestone Completion Date	Notes
Source Property Referrals and Abatement			
Identify WMAs with potential source properties	Program & Applicable Co-permittees	December 2020	Anticipated date for categorizing all WMAs
Continue coordinating with the Regional Water Board on railroad property on Leo Avenue (San José WMA 083CTC990)	Program & City of San José	On-going	13267 letter issued by Regional Water Board to property owner. Initial sampling results indicate high concentrations on railroad ROW.
Continue coordinating with the USEPA and the Regional Water Board on the source property identified in the City of Sunnyvale (WMA 049SVE900).	Program and City of Sunnyvale	On-going	City shared with USEPA data collected adjacent to or downstream of property. USEPA required property owner to sample discharges from property. PCBs concentrations highly elevated. City submitted a referral to USEPA and Regional Water Board.
Continue source identification projects planned in 4 new WMAs. Prepare additional property referrals (as needed) to the Water Board based on completed source property investigations.	Program & Co-permittees	June 2019	Additional referrals anticipated to be included with 2019 Annual Report.
Continue calculating the PCBs and mercury load reduction benefits of other source property referral/abatement.	Program & Co-permittees	June 2019	Updated reporting of loads reduced in 2019 Annual Report
Green Stormwater Infrastructure			

Task	Responsible Party(s)	Anticipated Milestone Completion Date	Notes
With assistance and guidance from SCVURPPP, continue developing GSI Plans that integrate with the Santa Clara Valley Stormwater Resource Plan development that began in late 2016 and the RAA planning process designed to address PCBs and mercury TMDLs subsequent to MRP 2.0.	Co-permittees (with Program Assistance)	GSIGSI Plan – Sept 2019	
Continue to develop and implement a web-based database for tracking GSI and stormwater treatment in the Santa Clara Valley to assist Co-permittees in calculating PCBs and mercury load reductions.	Program & Co-permittees	June 2019	
Continue calculating the PCBs and mercury load reduction benefits of existing GSI facilities.	Program & Co-permittees	June 2019	Updated reporting of loads reduced in 2019 Annual Report
Large Full trash capture Systems (HDS)			
Continue to track the implementation of full trash capture systems and calculate the PCBs and mercury load reduction benefits.	Program & Co-permittees	On-going	Updated reporting of loads reduced in 2019 Annual Report
MS4 Operation and Maintenance Practices			
Look for opportunities to enhance existing O&M practices to optimize PCBs and mercury load reduction benefits.	Co-permittees & Program	On going	
Continue to track the implementation of MS4 operation and maintenance practices and calculate the PCBs and mercury load reduction benefits, specifically those associated with inlet-based full trash capture devices.	Program & Co-permittees	On going	Reporting of loads reduced in 2019 Annual Report
PCBs in Building Materials, Storm Drains and Roadway Infrastructure			
Tailor the BASMAA guidelines and tools developed for managing materials and wastes containing PCBs during the demolition of buildings for SCVURPPP Co-permittees; and begin implementation of a program/protocol.	Protocol Implementation Co-permittees	June 2019	

Task	Responsible Party(s)	Anticipated Milestone Completion Date	Notes
Through a BASMAA regional project, develop and refine the Interim Accounting Methodologies for source controls .	BASMAA & Program	June 2019	
Mercury Reduction via True Source Controls and Recycling			
Continue to implement and track the benefits from mercury true source control and recycling programs, including HHW Programs.	Program & Applicable Co-permittees	On going	Reporting of loads reduced in 2019 Annual Report
Additional Activities			
Implement the Program's work plan for outreach to residents likely to consume locally caught fish, including working with the Aviso Education Center to utilize various education and outreach products.	Program & Co-permittees	On going	
Develop an RAA for mercury and PCBs for the Santa Clara Valley, consistent with the regional framework and guidance for conducting an RAA for mercury and PCBs.	Program & Co-permittees	June 2020	
Prepare a plan and schedule for implementing technically and economically feasible PCBs and mercury control measures and evaluate the costs and benefits from their implementation.	Program & Co-permittees	June 2020	

SECTION 6 - REFERENCES

BASMAA (2014). Integrated Monitoring Report – Part B. Prepared by Geosyntec and EOA, Inc. Prepared for the Bay Area Stormwater Management Agencies Association. September.

BASMAA (2017). PCBs and Mercury Interim Accounting Methodology for TMDL Loads Reduced, Version 1.1. Prepared by Geosyntec and EOA, Inc. Prepared for the Bay Area Stormwater Management Agencies Association. March 23, 2017.

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Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). (2016). *Progress Report on Identifying Watershed Mangement Areas. Prepared by EOA, Inc. April.*

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). (2016). *Stormwater Control Measure Plan for PCBs and Mercury in the Santa Clara Valley, Version 1.0.* September, 2016.

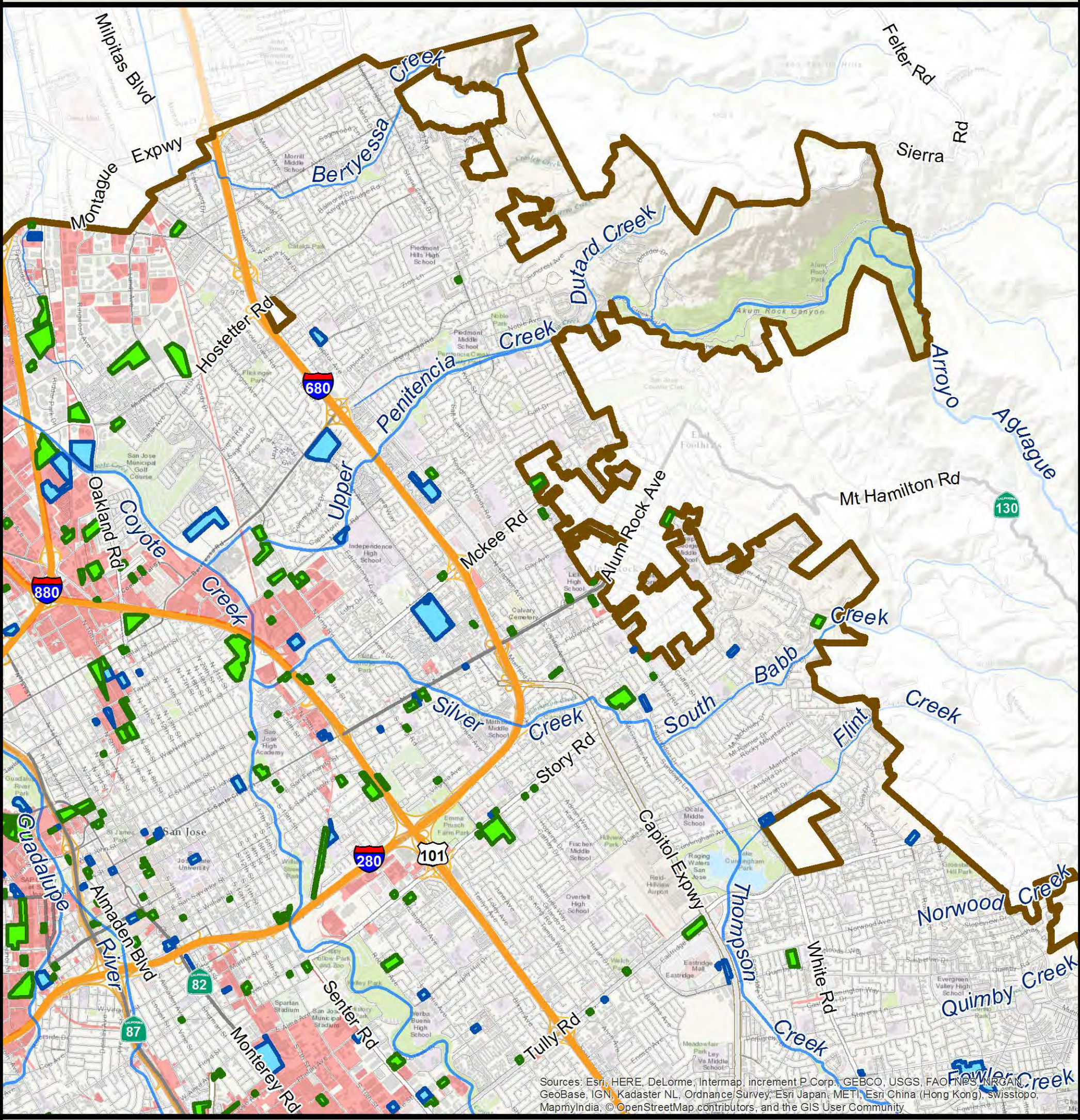
Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). (2017). *Stormwater Control Measure Plan for PCBs and Mercury in the Santa Clara Valley, Version 2.0.* September, 2017.

Attachment A

Locations of Existing Green Stormwater Infrastructure Facilities

City of San Jose

City of San Jose - Northeast - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:

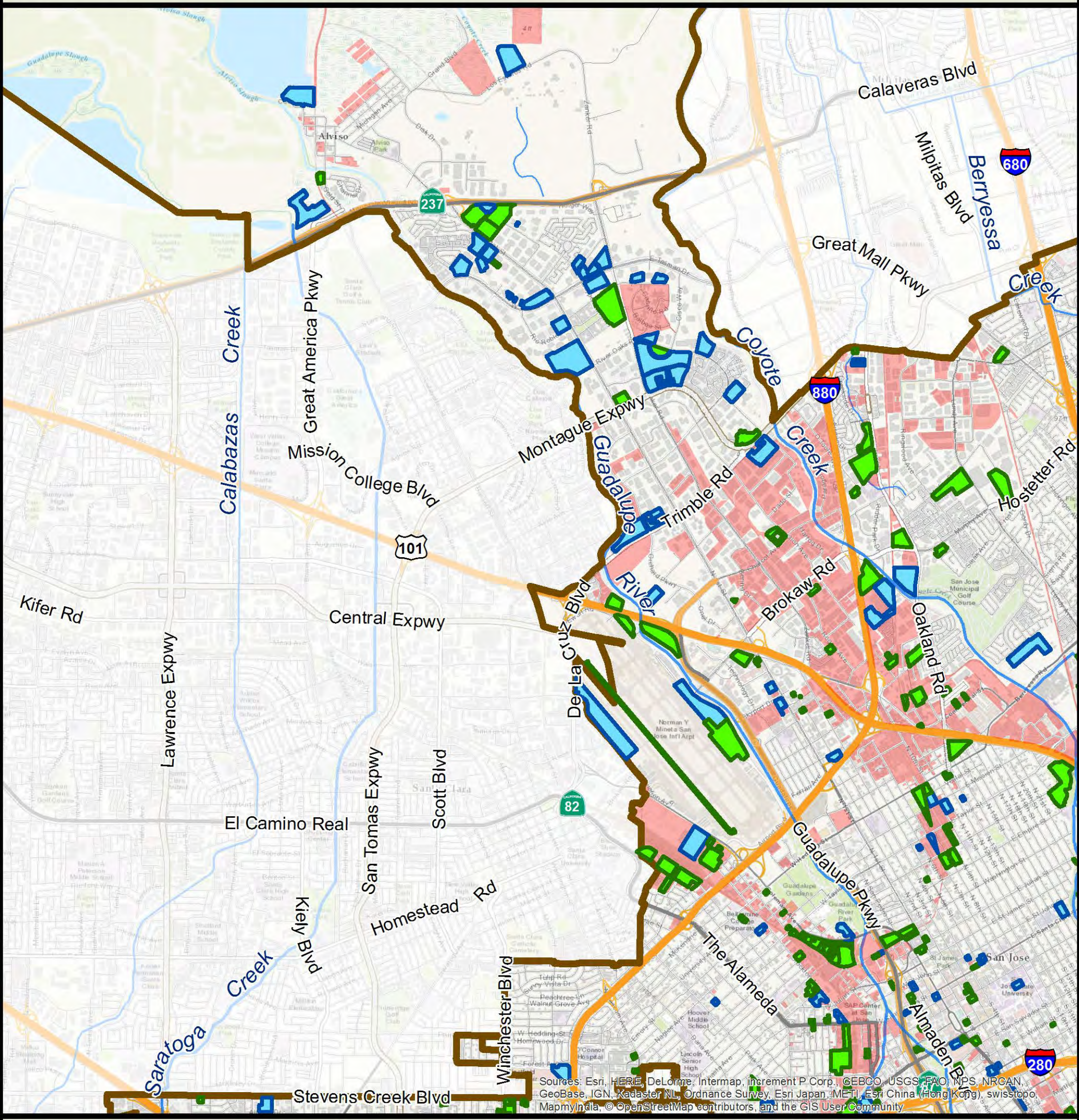
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.4 0.8 1.6 Miles

City of San Jose - Northwest - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

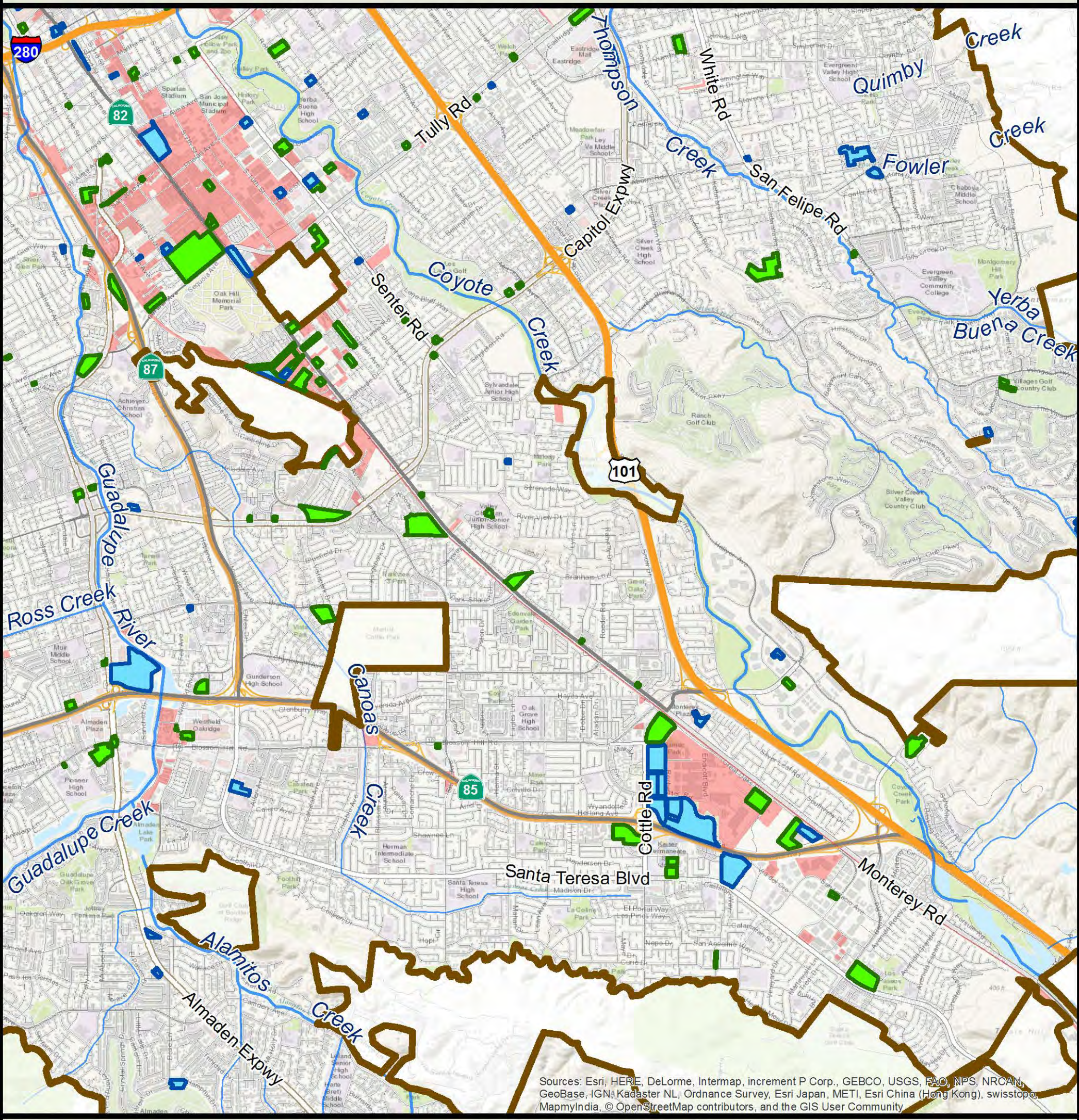
Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.4 0.8 1.6 Miles

City of San Jose - Southeast - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:

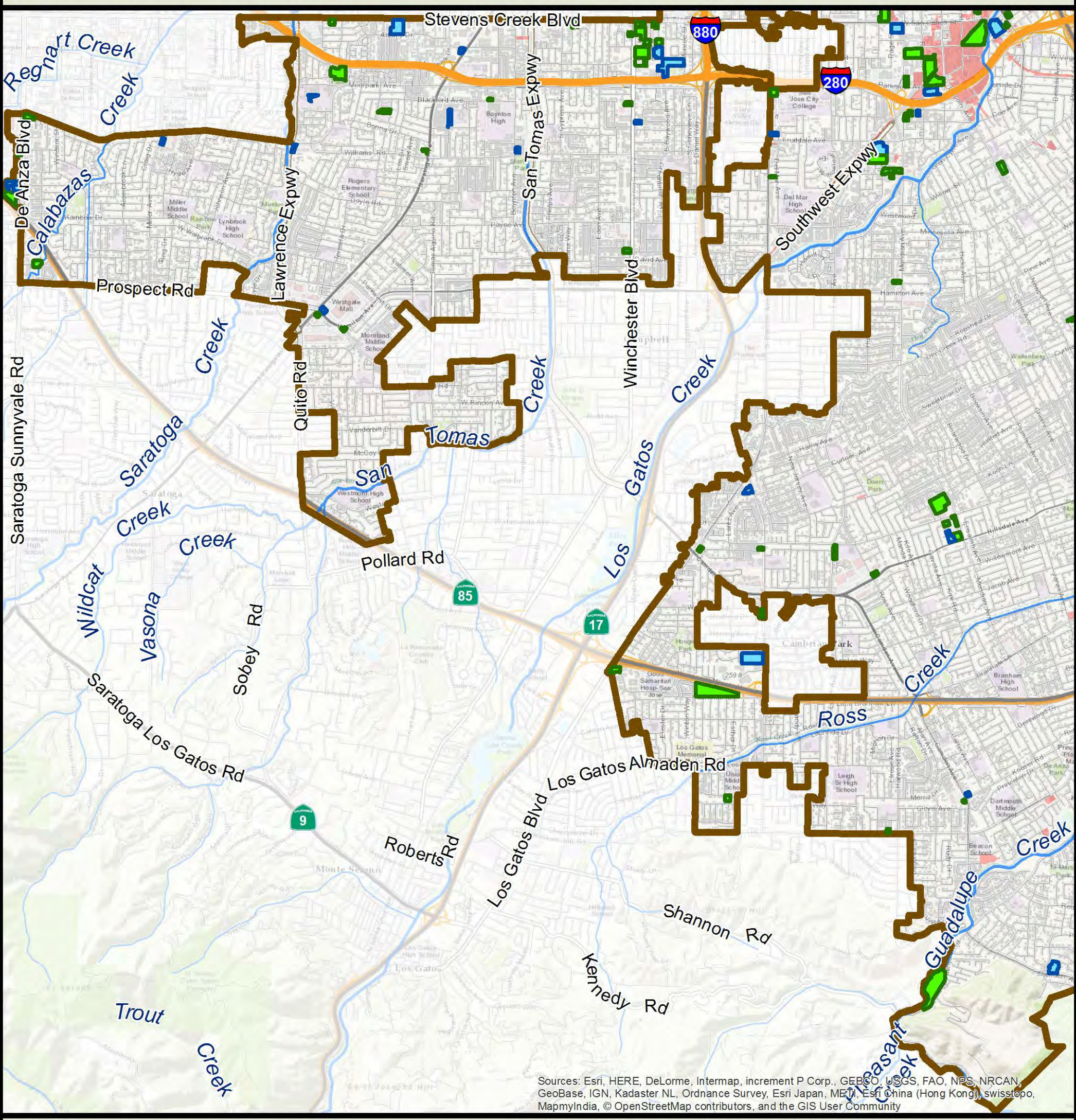
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.4 0.8 1.6 Miles

City of San Jose - Southwest - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

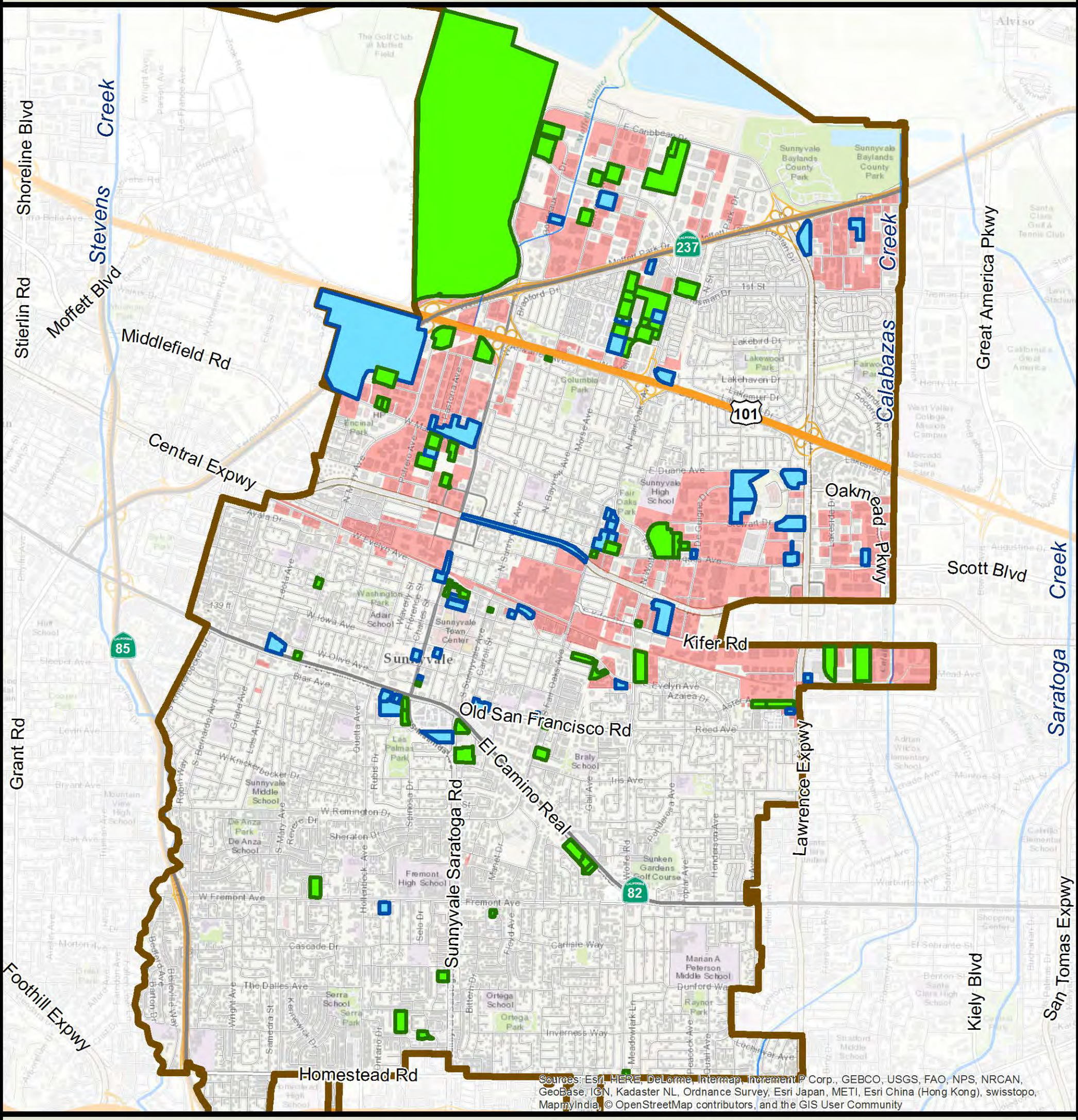
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.4 0.8 1.6 Miles

City of Sunnyvale

City of Sunnyvale - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:

City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

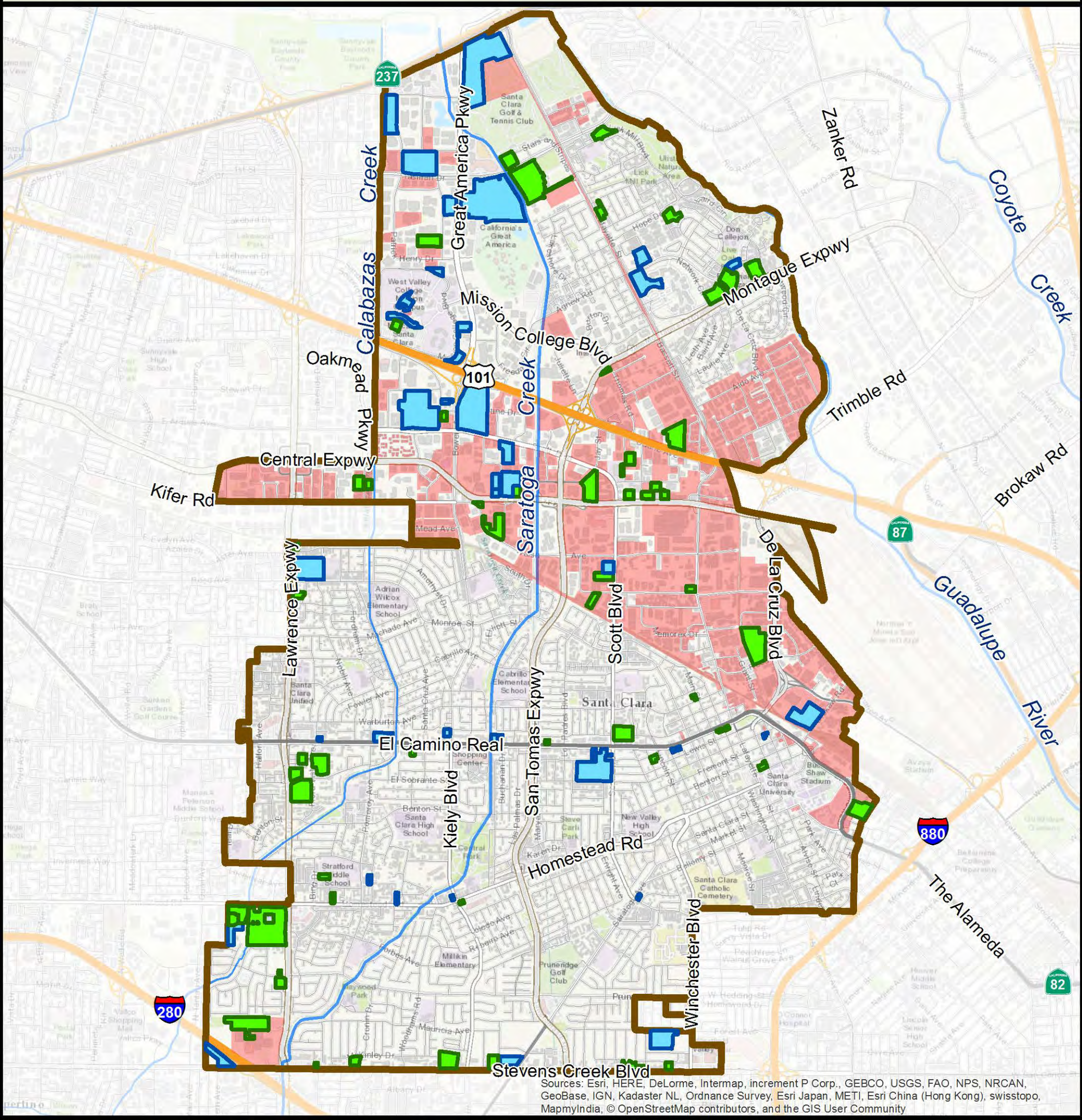
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.3 0.6 1.2 Miles

City of Santa Clara

City of Santa Clara - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:

City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

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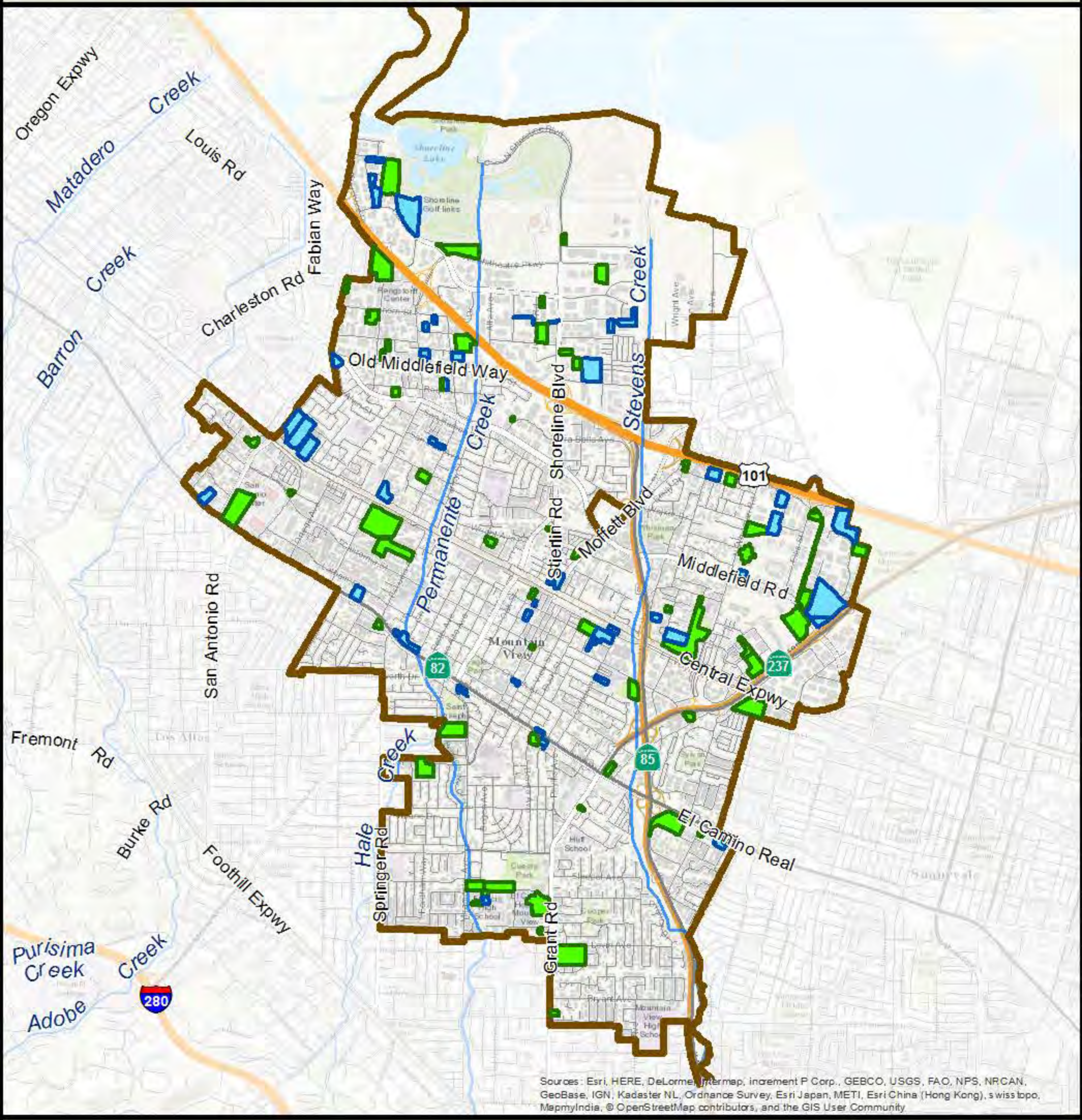
City of Mountain View

City of Mountain View - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

N

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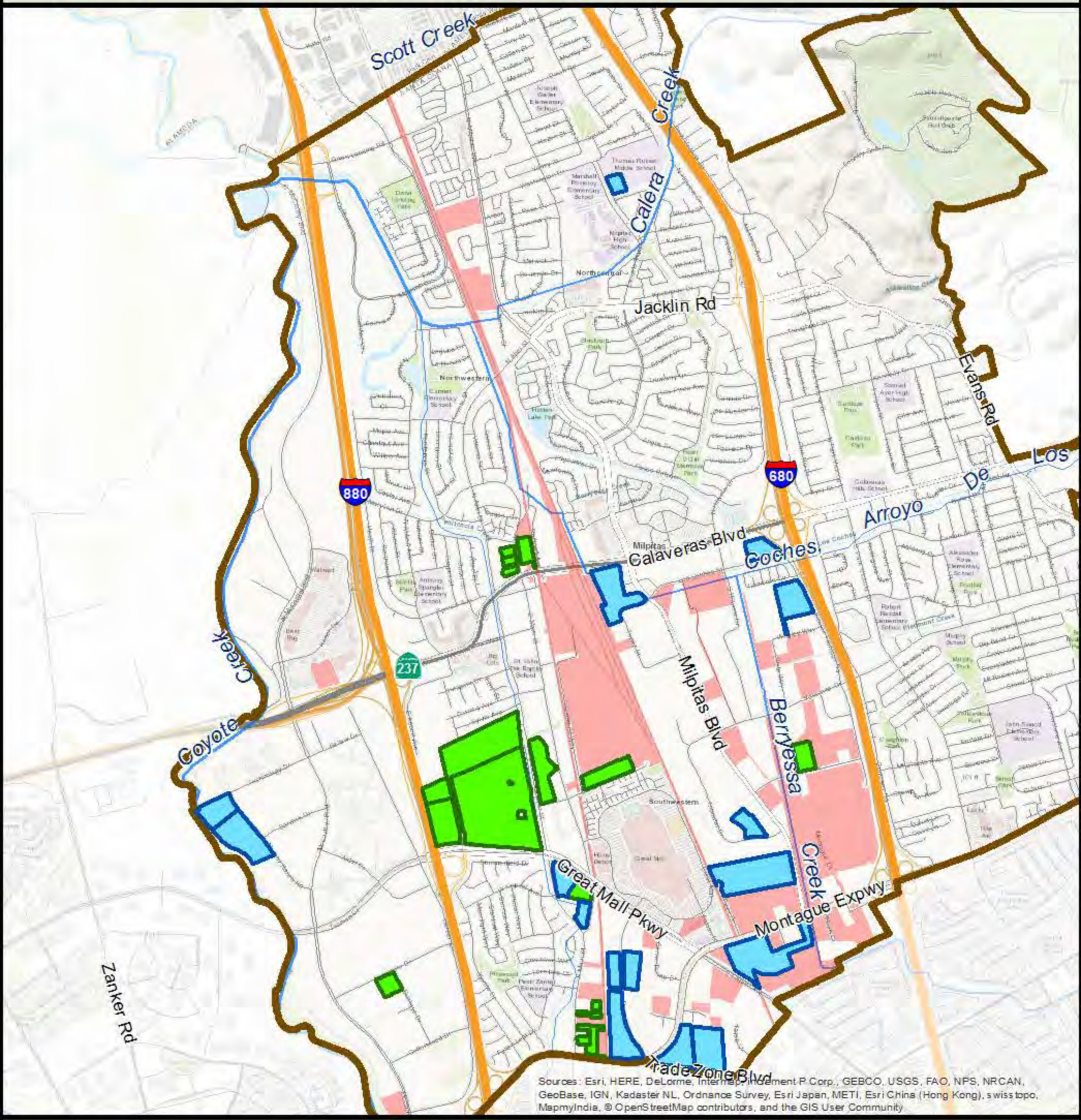
City of Milpitas

City of Milpitas - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

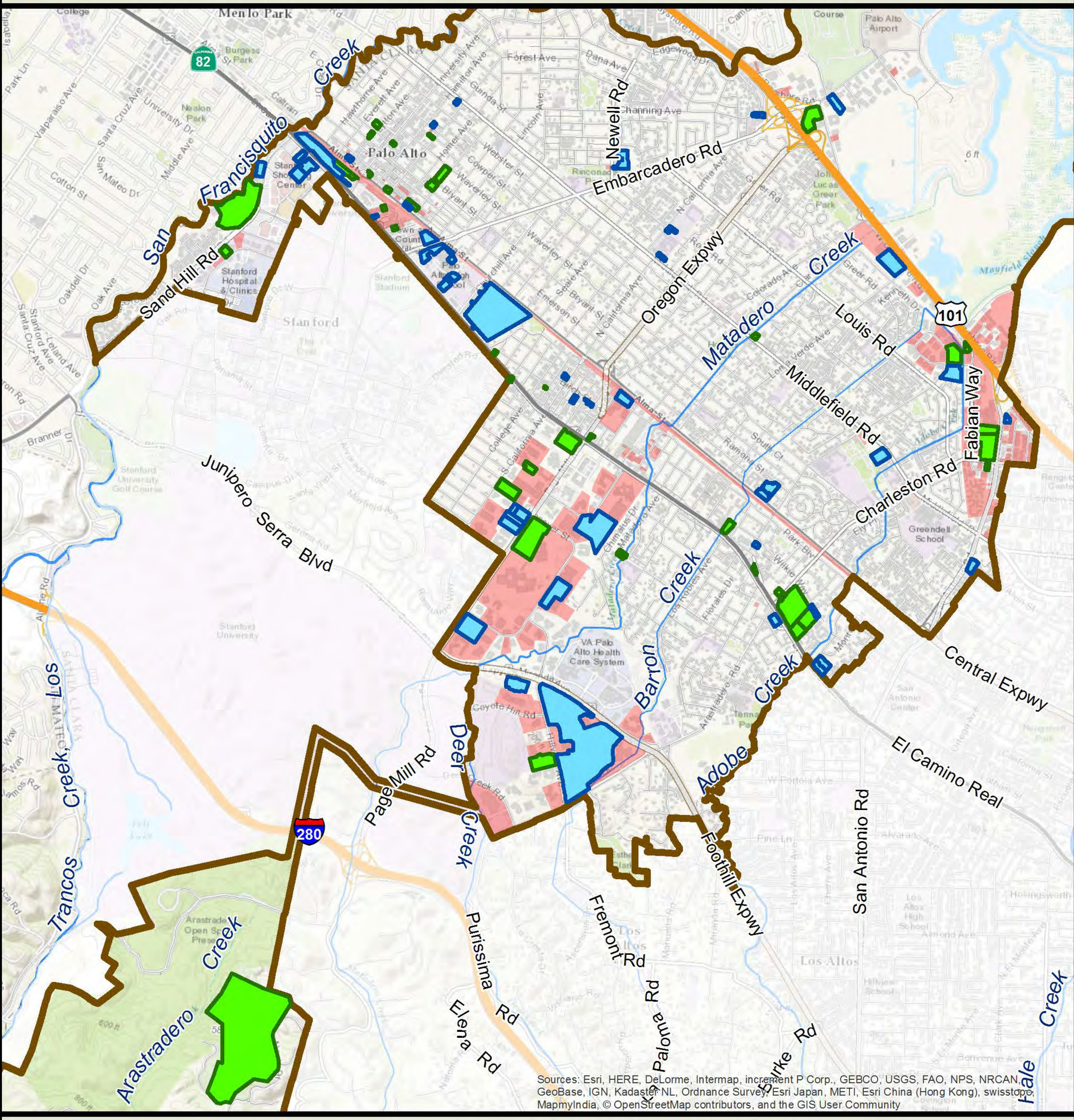
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.2 0.4 0.8 Miles

City of Palo Alto

City of Palo Alto - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

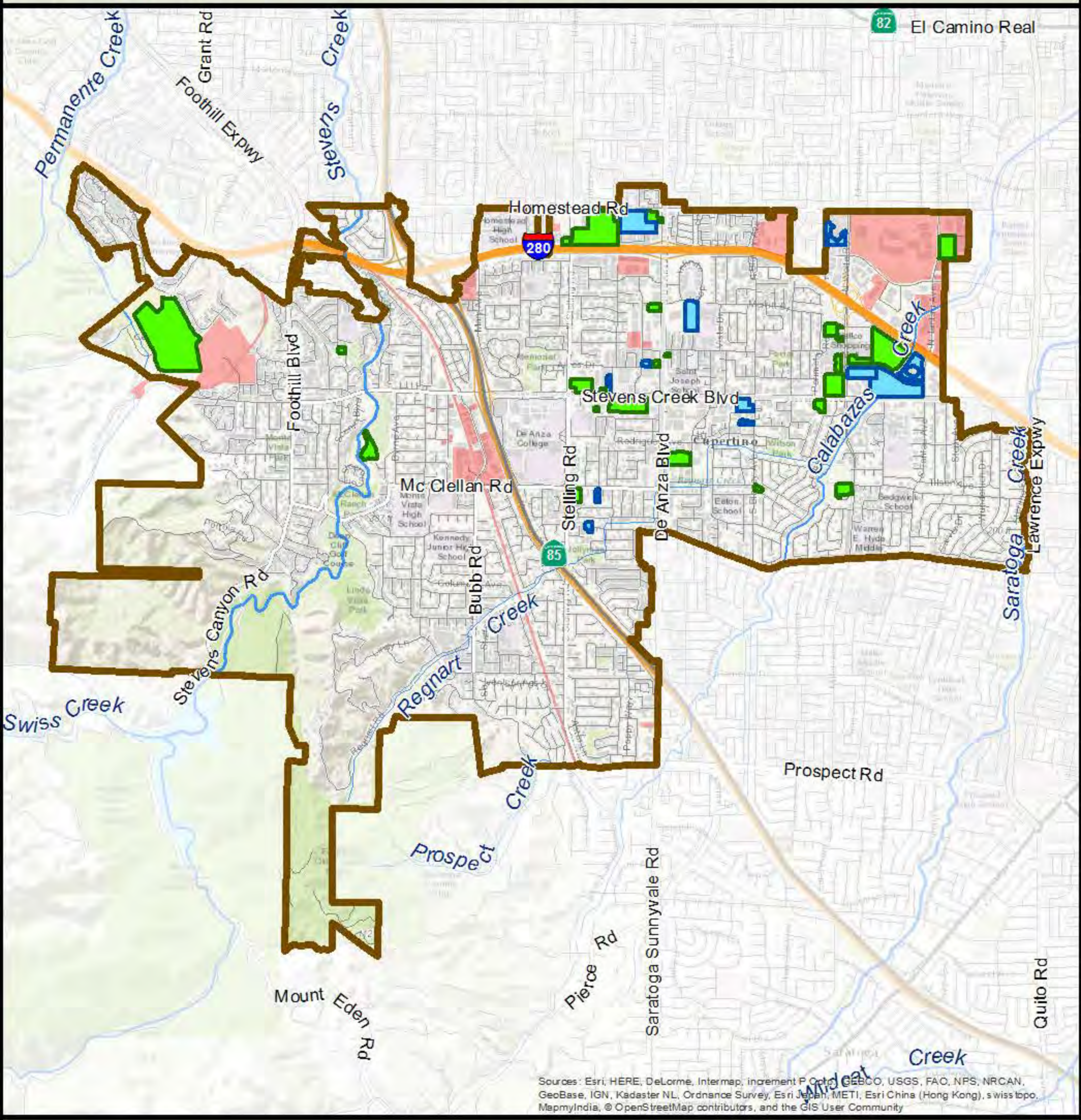
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.275 0.55 1.1 Miles

City of Cupertino

City of Cupertino - Green Infrastructure Projects



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

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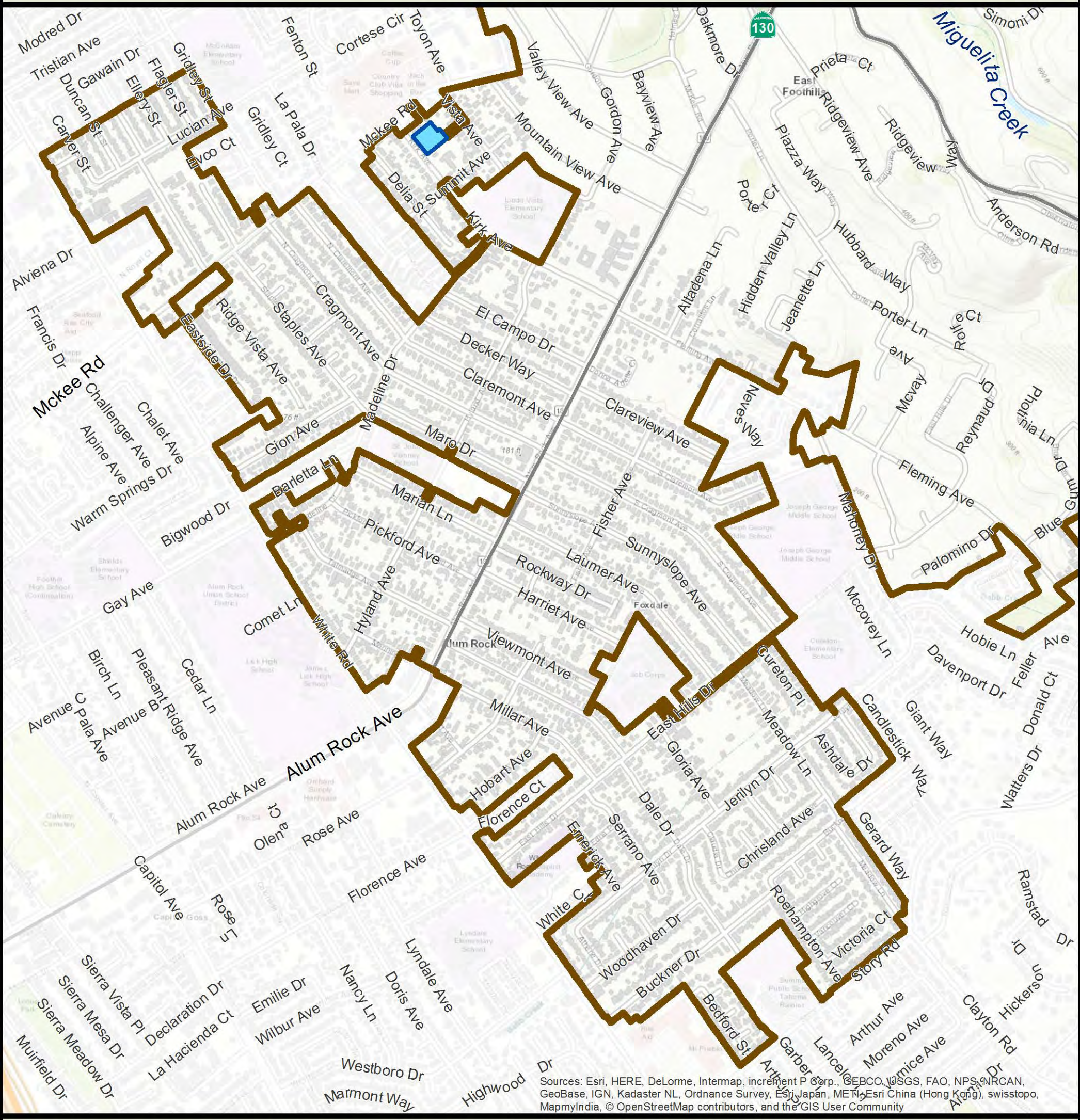
Unincorporated Santa Clara County

County of Santa Clara - Alum Rock - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

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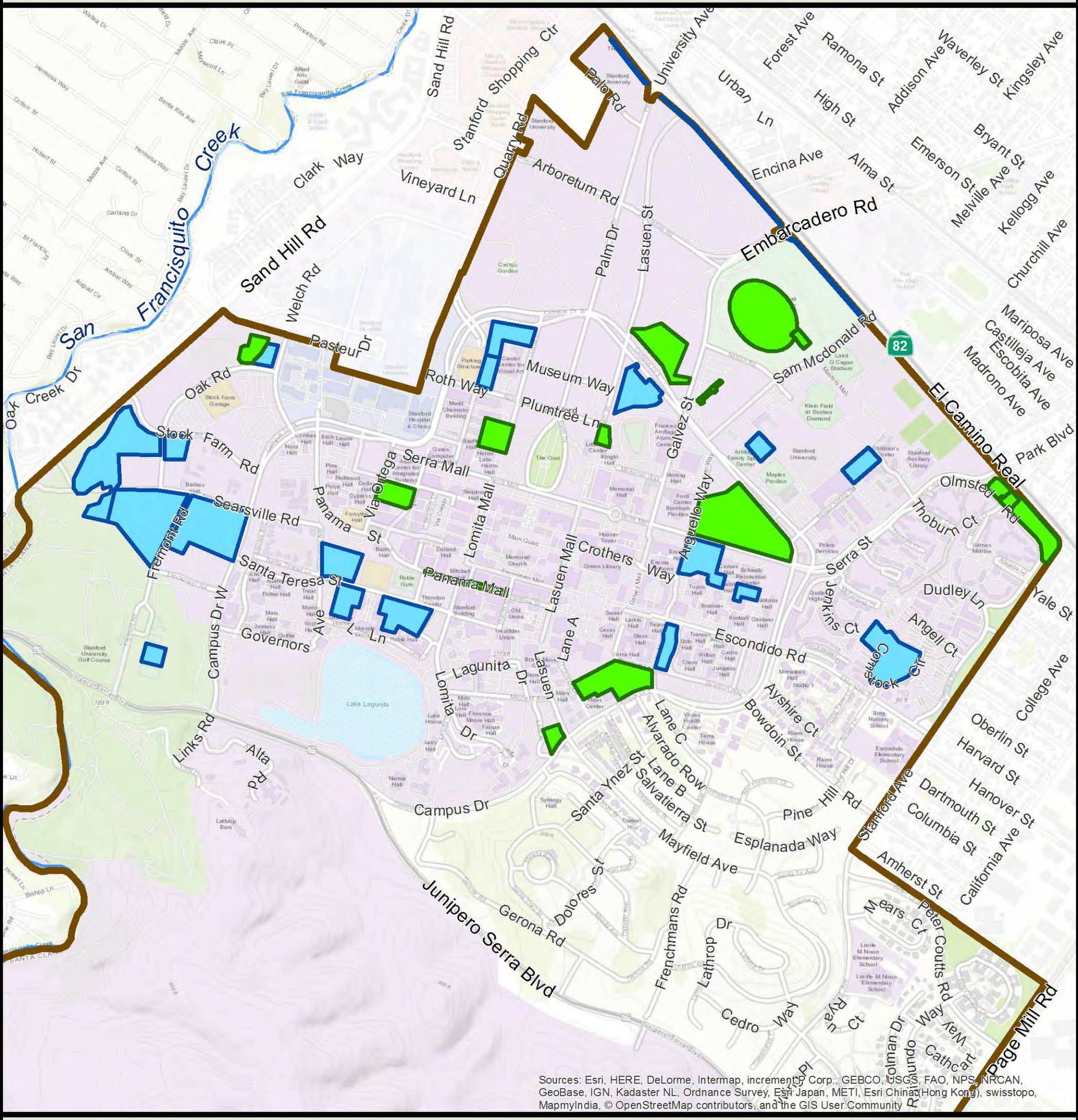
County of Santa Clara - Stanford - Green Infrastructure Projects



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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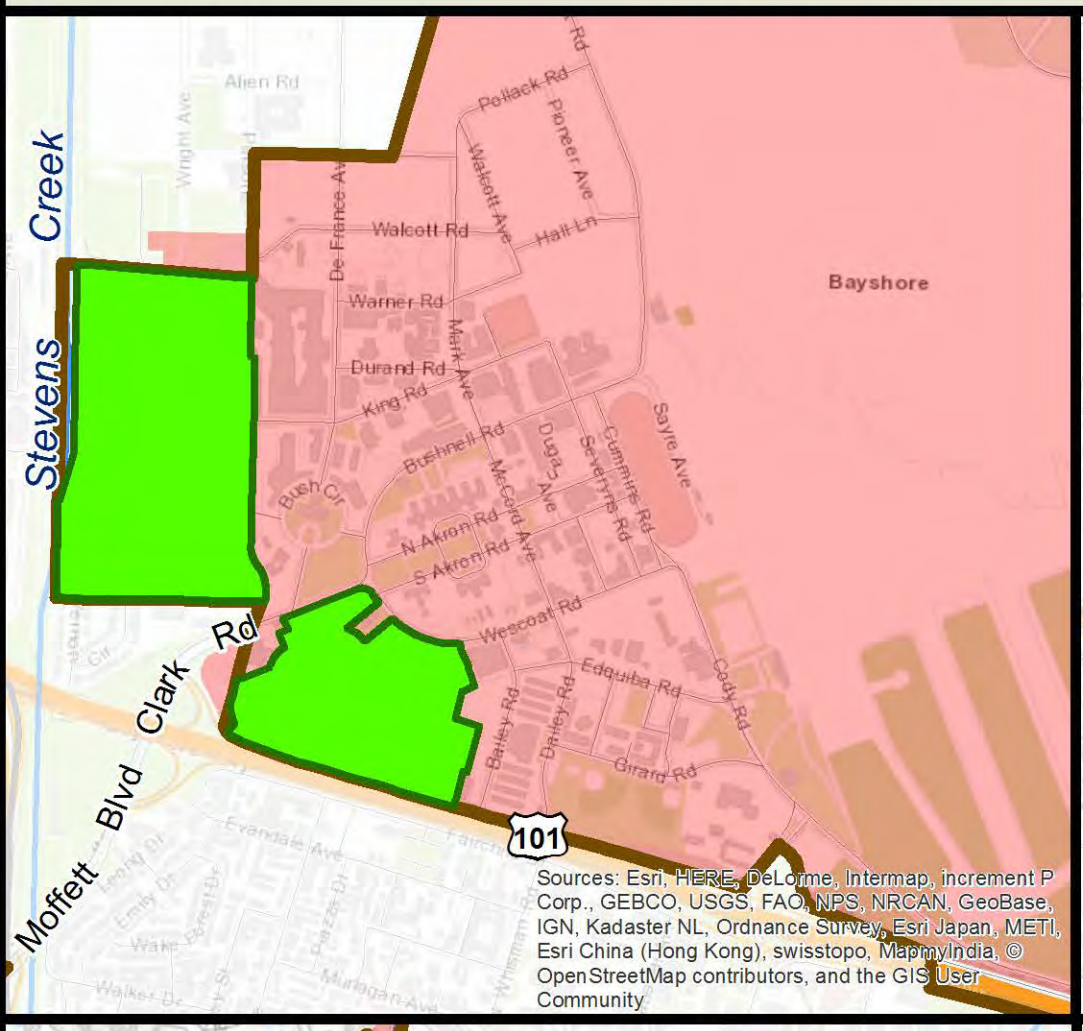
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

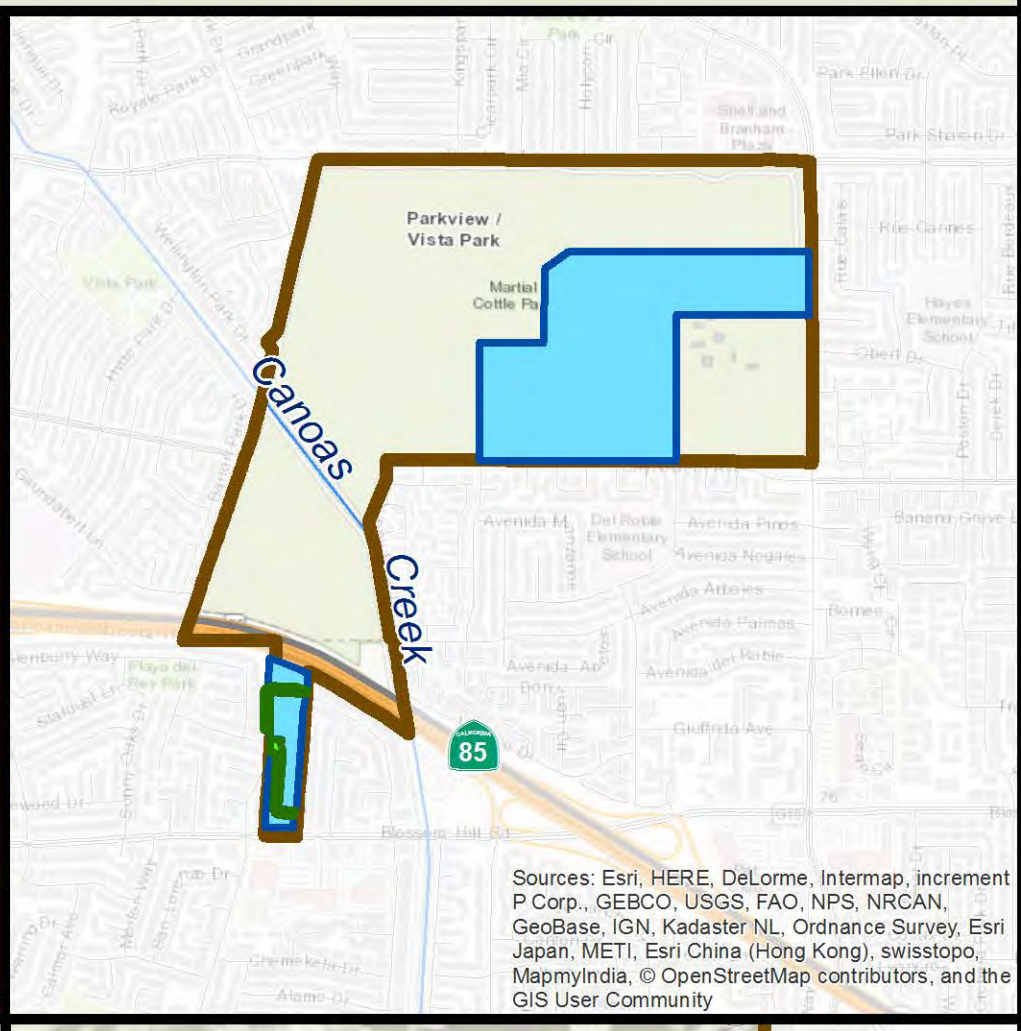
Map Created By: EOA, Inc.
Date: September 7, 2017

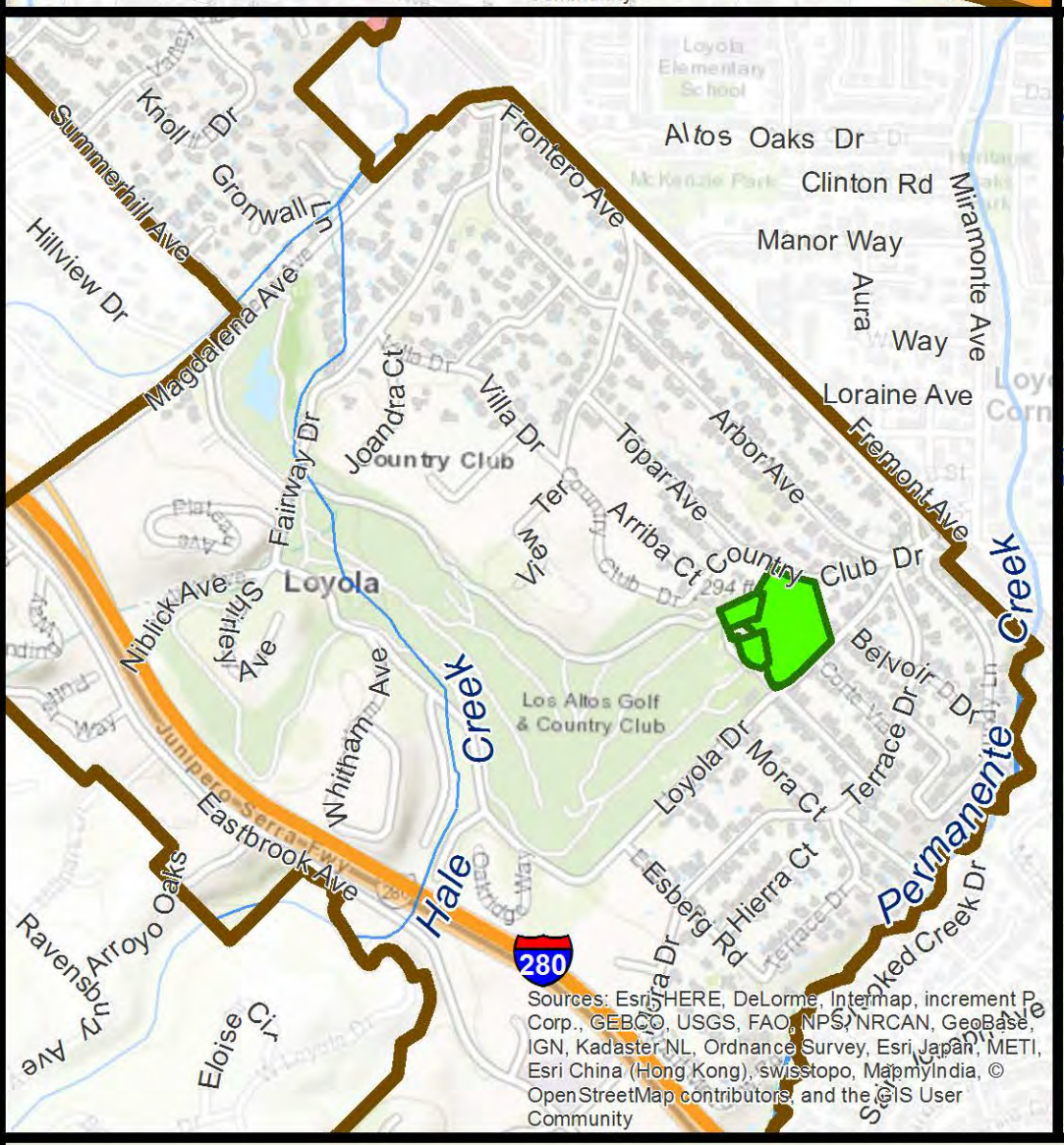
N

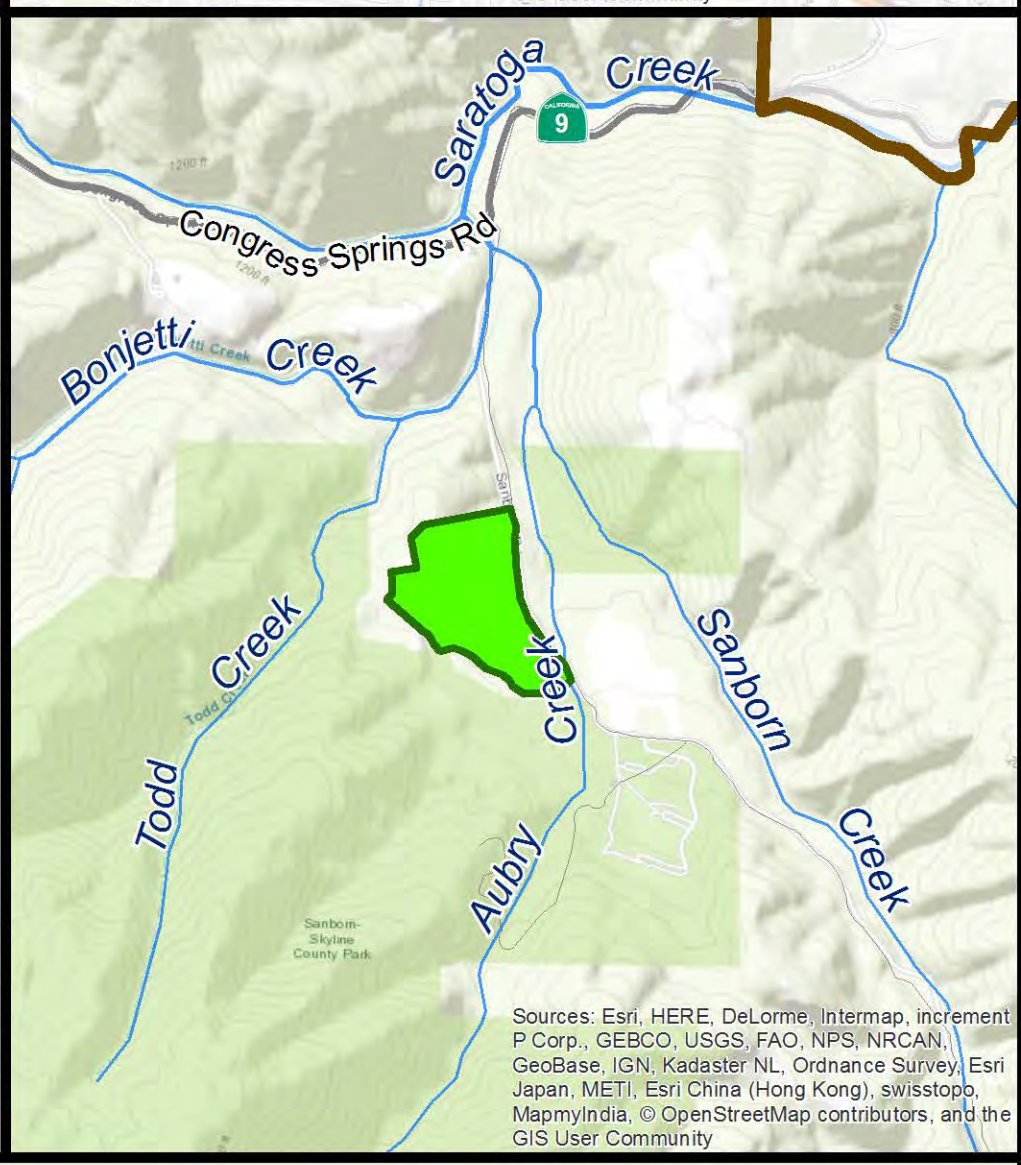
0 0.1 0.2 0.4 Miles

County of Santa Clara - Green Infrastructure Projects









Green Infrastructure Projects

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Data Sources:
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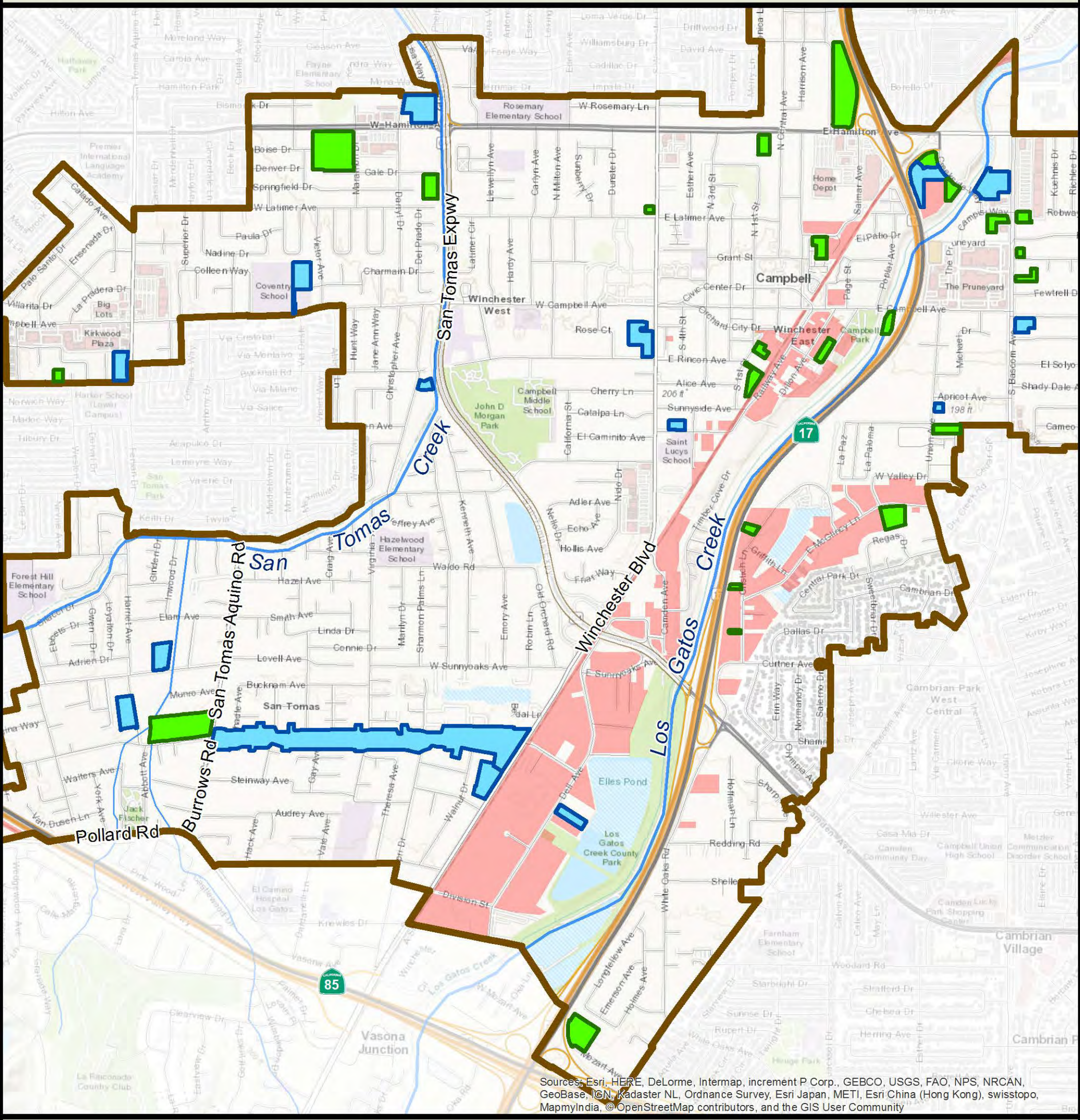
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.1 0.2 0.4 Miles

City of Campbell

City of Campbell - Green Infrastructure Projects



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Data Sources:

City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

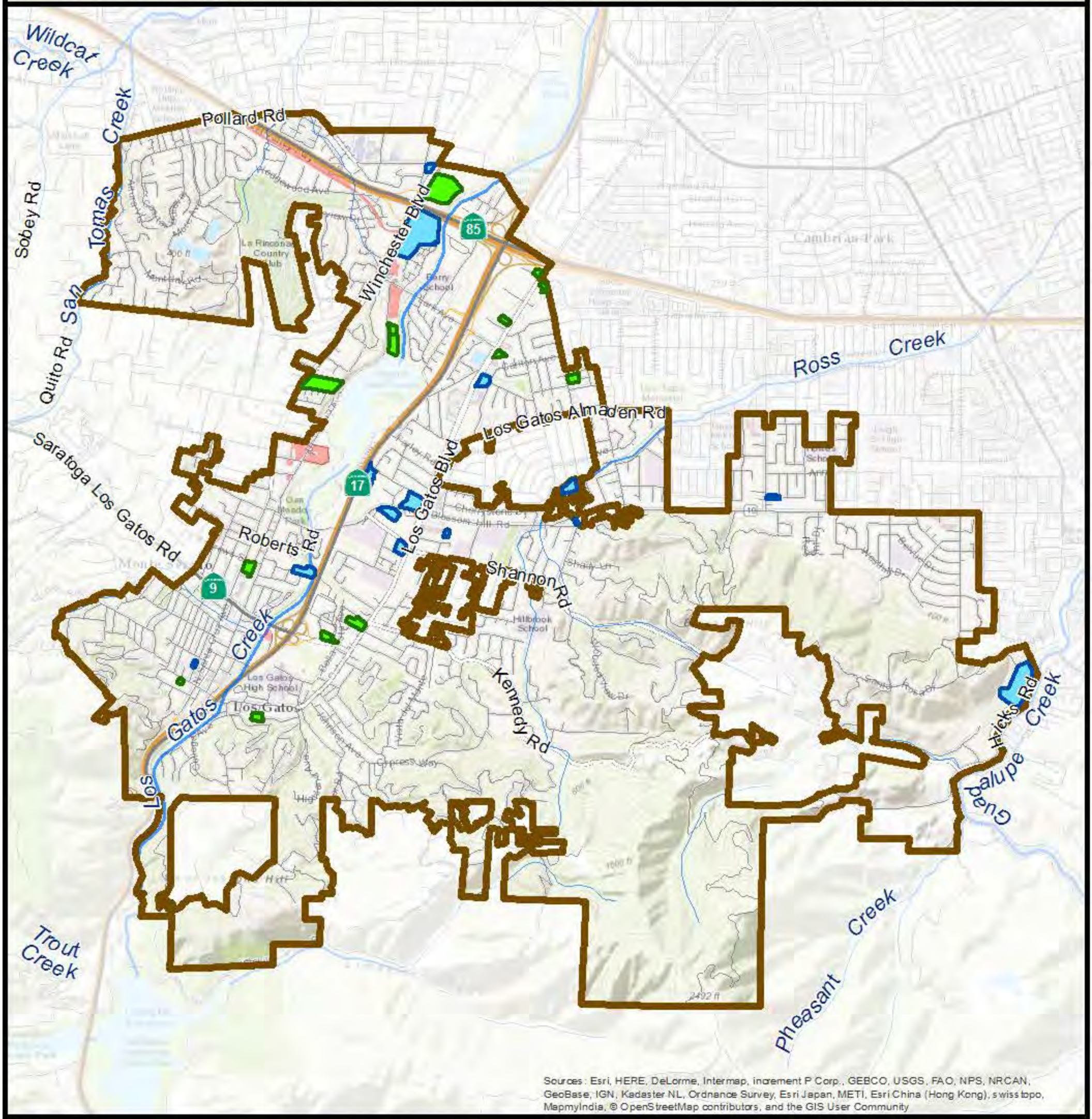
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.15 0.3 0.6 Miles

Town of Los Gatos

Town of Los Gatos - Green Infrastructure Projects



Green Infrastructure Projects

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- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

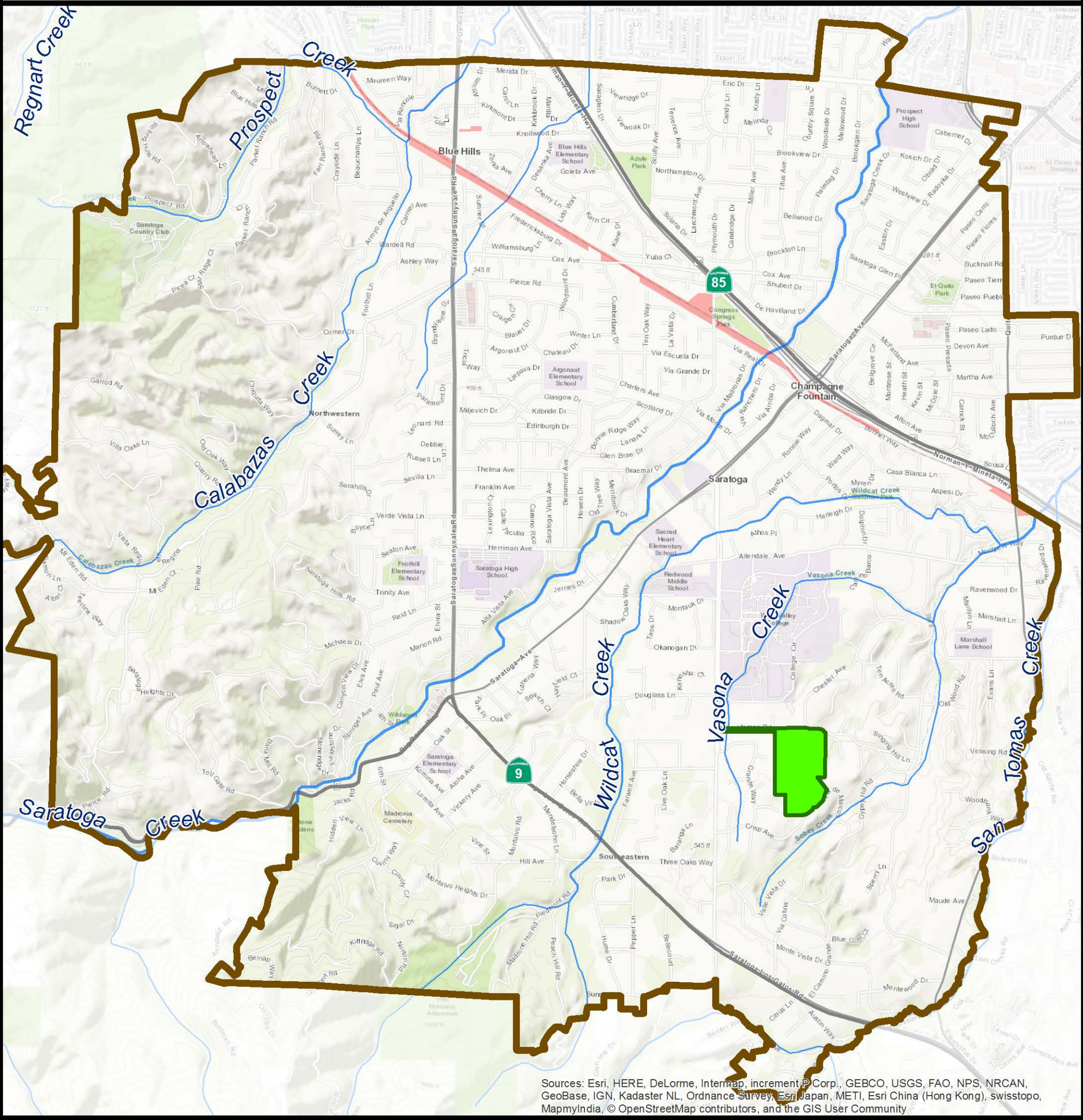
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.275 0.55 1.1 Miles

City of Saratoga

City of Saratoga - Green Infrastructure Projects



Green Infrastructure Projects

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- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

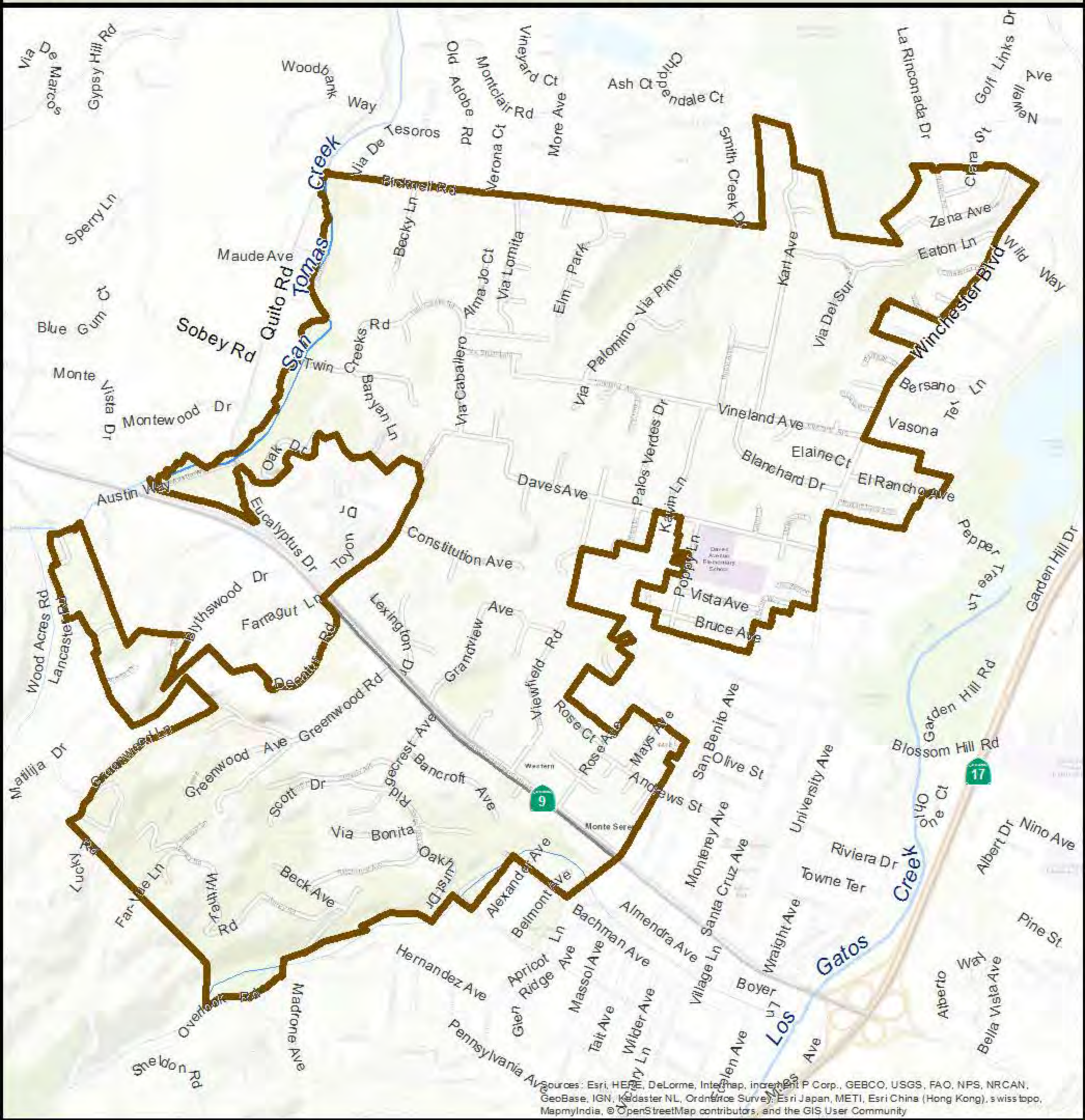
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.2 0.4 0.8 Miles

City of Monte Sereno

City of Monte Sereno - Green Infrastructure Projects



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Green Infrastructure Projects

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Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

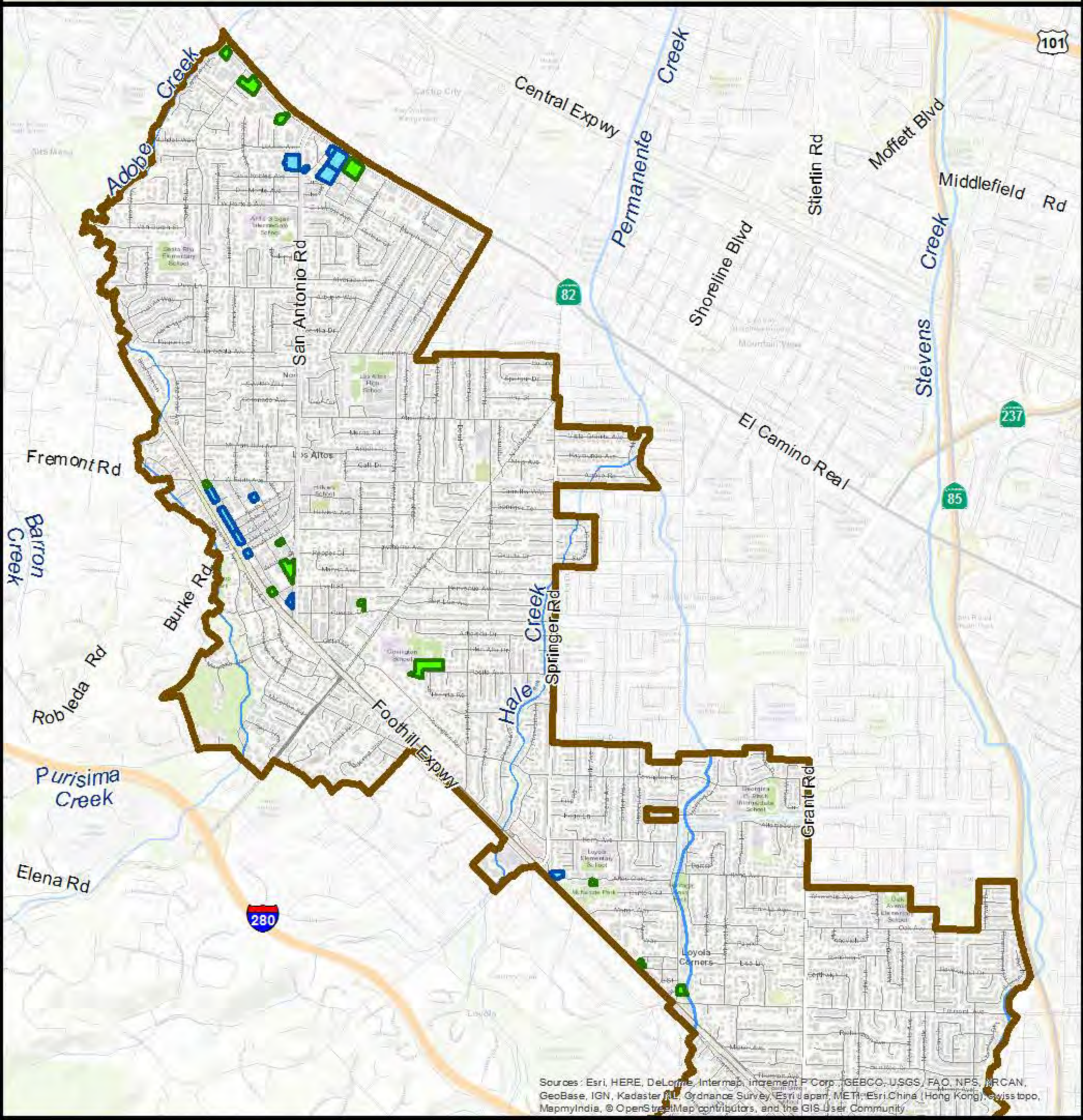
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.1 0.2 0.4 Miles

City of Los Altos

City of Los Altos - Green Infrastructure Projects



Green Infrastructure Projects

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- Completed Prior to FY 13-14
- Old Industrial
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Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

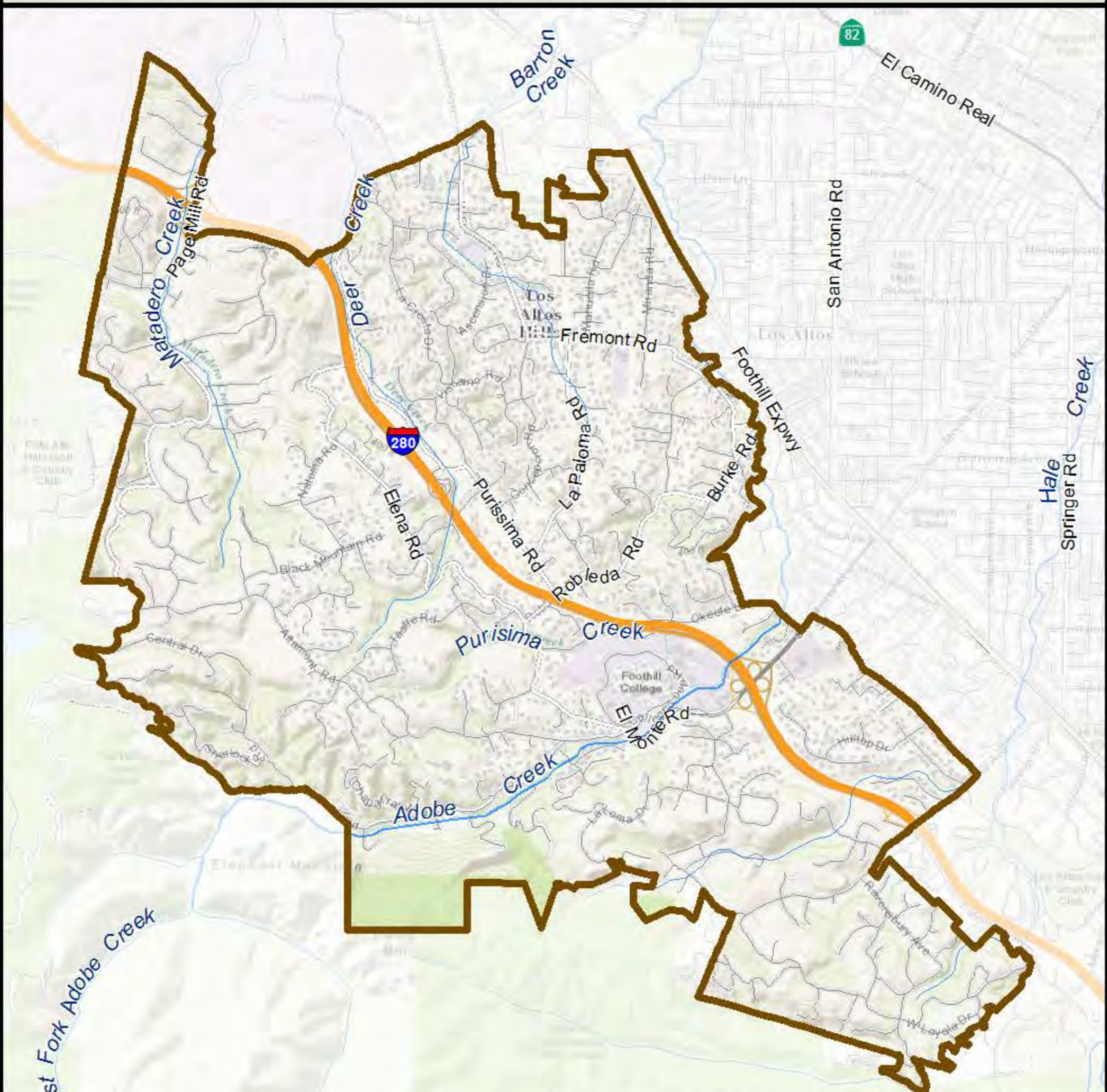
Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.2 0.4 0.8 Miles

Town of Los Altos Hills

Town of Los Altos Hills - Green Infrastructure Projects



Green Infrastructure Projects

- Completed FY 13-14 to FY 16-17
- Completed Prior to FY 13-14
- Old Industrial
- Permittee Boundary

Data Sources:
City Boundaries: Santa Clara County
Catchment Boundaries: Mattern/WLA
Background: ESRI World Topographic Map

Map Created By: EOA, Inc.
Date: September 7, 2017

N

0 0.225 0.45 0.9 Miles

Attachment B

Source Property Identification for PCBs and Mercury – Conducted in Santa Clara Valley Watersheds in Water Years 2016 and 2017

FINAL REPORT
September 2018

Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Source Property Identification for PCBs and Mercury

Conducted in Santa Clara Valley Watersheds in Water Years 2016 and 2017

September 2018

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

BART	Bay Area Rapid Transit
Bay	San Francisco Bay
BASMAA	Bay Area Stormwater Management Agencies Association
BMPS	Best Management Practices
CW4CB	Clean Watersheds for a Clean Bay
CWA	Clean Water Act
DTSC	Department of Toxic Substances Control
IGP	Industrial General Permit
mg/Kg	Milligrams per Kilogram
MRP	Municipal Regional Permit
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
PCBs	Polychlorinated Biphenyls
POC	Pollutant of Concern
QAPP	Quality Assurance Project Plan
RMP	Regional Monitoring Program
ROW	Right-Of-Way
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SF Bay Water Board	San Francisco Bay Regional Water Quality Control Board
SFEI	San Francisco Estuary Institute
TMDL	Total Maximum Daily Load
WY	Water Year
USEPA	United States Environmental Protection Agency
VTA	Santa Clara Valley Transportation Authority
WMA	Watershed Management Area

EXECUTIVE SUMMARY

Due to elevated levels of polychlorinated biphenyls (PCBs) and mercury observed in sportfish from the San Francisco Bay (Bay), the San Francisco Bay Regional Water Quality Control Board (SF Bay Water Board) instituted water quality restoration programs (e.g., Total Maximum Daily Loads or TMDLs) for these pollutants. The general goals of the TMDLs are to identify sources of PCBs and mercury to the Bay and implement actions to control these sources and protect the Bay's beneficial uses. The National Pollutant Discharge Elimination System (NPDES) permit for municipal stormwater discharges in the San Francisco Bay requires Bay Area cities and counties to implement strategies and control measures to reduce these pollutants. One strategy to reduce PCBs and mercury is to identify properties that disproportionately contribute these pollutants to Municipal Separate Storm Sewer Systems (MS4s) and refer these properties to appropriate agencies for abatement.

Seven Watershed Management Areas (WMAs) where elevated PCBs in sediment or stormwater were previously observed, were prioritized for source property investigations in the Santa Clara Valley. Investigations were conducted in two WMAs in the City of Santa Clara, four in San Jose, and one in Palo Alto (Figure ES-1). This report presents the results of source property investigations in these WMAs conducted by the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), in collaboration with these cities during Water Years (WY) 2016 and 2017.

The goal of these investigations was to identify properties with a high potential for releasing PCBs or mercury to the MS4 owned and operated by these municipalities, and to cause these source properties to be abated. Abatement may occur through referral to the appropriate regulatory agencies, or the City may choose to directly cause abatement by property owners. The investigation process included the review of property records and aerial photography, public right-of-way (ROW) surveys, and facility site visits to identify high-interest properties for follow-up sediment/soil sampling. Samples were collected on-site or at the parcel borders of these high-interest properties to identify properties associated with elevated PCBs or total mercury concentrations. SCVURPPP identifies any property associated with high concentrations of PCBs (≥ 1.0 mg/Kg) as source properties that require abatement. SCVURPPP identifies properties associated with PCBs concentrations > 0.2 mg/Kg but below 1 mg/Kg as potential source properties that likely require further investigation unless there is also other compelling evidence to confirm the property is a PCBs source. Any properties associated with samples at or below urban background concentrations (< 0.2 mg/Kg PCBs or < 0.3 mg/Kg mercury) are unlikely source properties, and no further actions are typically recommended.

Tables ES.1 and ES.2 present a summary of the investigation results and outcomes for each of the seven priority WMAs. During WY 2016, SCVURPPP collected information on parcels within each WMA that were industrialized prior to 1980 (i.e., old industrial), determined parcels of interest, and performed visual surveys from the public ROW to identify parcels that required a site visit. In the fall of 2016, Program staff, accompanied by municipal inspectors, conducted site visits at businesses associated with these parcels. Information gathered from these efforts was used to identify high-interest properties for follow-up sampling. During WY 2017, SCVURPPP collected 74 soil or sediment samples on or adjacent to high-interest properties in the WMAs and analyzed the samples for PCBs and mercury concentrations. PCBs concentrations ranged from 0.004 to 12 mg/Kg (dry weight). Total mercury concentrations ranged from 0.028 to 3.0 mg/Kg (dry weight). A total of 16 samples had elevated PCBs concentrations ≥ 0.2 mg/Kg and 15 samples had elevated total mercury concentrations ≥ 0.3 mg/Kg. Based on the combined investigation

and sampling results, SCVURPPP identified source properties and potential source properties in the Cities of San Jose and Santa Clara. There were five PCBs source properties, all of which were also mercury source properties or potential mercury source properties. The Cities are currently evaluating next steps for these source properties, including referral to the SF Bay Water Board or direct actions by the City to cause the property owners to conduct abatement activities. SCVURPPP also identified an additional 12 properties as potential PCBs sources. Eight of these properties were also identified as mercury sources or potential mercury sources).One other property was identified as a potential mercury source. All source properties and potential source properties identified during this investigation were located in the Cities of San Jose or Santa Clara. The Cities are currently evaluating next steps for these properties, including further investigation to determine if they are sources of POCs to the WMAs that require abatement. A total of 30 properties were identified as unlikely sources and no further investigation or controls are recommended at this time.

Further investigation and other follow-up actions the Cities are currently considering in the two priority WMAs in Santa Clara and the four priority WMAs in San Jose where source properties and potential source properties were identified may include: additional site visits and inspections to identify possible sources of PCBs or mercury and document potential transport pathways to the City's MS4; additional sampling on-site or at the parcel border; consideration of control measures that property owners can implement to reduce or eliminate sediment transport off the property to the MS4; and consideration of control measures the City can implement in adjacent public ROW areas to reduce PCBs and mercury in stormwater, such as enhanced Operation and Maintenance (O&M) activities or stormwater treatment to remove/treat polluted sediment released from source properties.

No source properties or potential source properties were identified in the Palo Alto WMA. Further, the WY 2017 sampling results found no elevated PCBs or mercury concentrations in this WMA, so SCVURPPP recommends no further investigation or follow-up actions are needed on properties in this WMA.

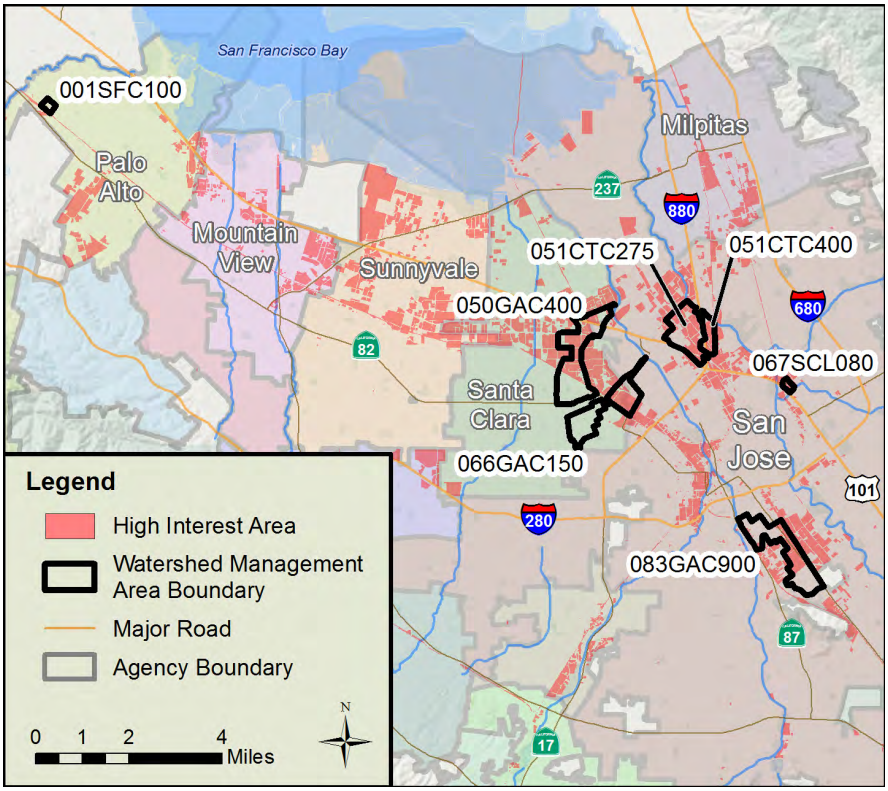


Figure ES. 1 Seven priority WMAs in the Santa Clara Valley where source property investigations were conducted in Water Years 2016 and 2017

Table ES.1. Summary characteristics of Watershed Management Areas and Source Properties in the Santa Clara Valley where PCBs and mercury source investigations were conducting in Water Years 2016 and 2017.

		City of Santa Clara		City of San Jose				City of Palo Alto	Totals
WMA ID		066GAC150	050GAC400	083GAC900	051CTC275	051CTC400	067SCL080	001SFC100	
Area of WMA (acres)		432	754	611	443	130	28	35	**2,433**
% Industrialized Prior to 1980		28%	41%	34%	56%	69%	84%	8%	-
# Industrial Parcels		60	289	146	140	33	13	5	**681**
Public ROW Surveys Completed		44	115	45	48	34	12	15	**313**
Business Site Visits Completed		35	76	23	30	62	4	9	**239**
High-Interest Properties Identified for Sampling		10	7	4	7	9	6	5	**48**
Samples Collected		11	14	7	10	16	7	9	**74**
PCBs (mg/Kg dry weight)	*Min*	0.006	0.004	0.074	0.012	0.004	0.013	0.006	**0.004**
	Max	3.8	0.29	7.1	12	2.8	0.12	0.17	**12**
Total Mercury (mg/Kg dry weight)	*Min*	0.064	0.053	0.32	0.040	0.058	0.028	0.038	**0.028**
	Max	0.48	0.81	2.0	3.0	0.38	0.26	0.15	**3.0**

Table ES.2. Summary of PCBs and mercury source investigations conducted in Water Years 2016 and 2017.

			City of Santa Clara		City of San Jose				City of Palo Alto	Totals
WMA ID			066GAC150	050GAC400	083GAC900	051CTC275	051CTC400	067SCL080	001SFC100	
PCBs	Source Properties Identified	Count	1	-	1	2	1	-	-	**5**
		Acres	12.25	-	12.97	1.59	3.23	-	-	**29.17**
	Potential Source Property or Undetermined	Count	2	3	2	2	2	1	-	**12**
		Acres	14.63	22.67	16.42	5.98	9.7	8.86	-	**78.26**
	Low-Interest Property	Count	7	4	1	3	5	6	5	**31**
		Acres	49.9	20.47	2.24	4.61	55.71	9	1.39	**143.32**
Mercury	Source Properties Identified	Count	-	-	2	3	-	-	-	**5**
		Acres	-	-	26.67	3.45	-	-	-	**30.12**
	Potential Source Property or Undetermined	Count	2	1	2	-	1	1	-	**7**
		Acres	24.97	6.78	4.96	-	2.36	8.86	-	**47.93**
	Low-Interest Property	Count	8	6	-	4	7	6	5	**36**
		Acres	51.81	36.36	-	8.73	65.41	9	1.39	**172.7**

1.0 INTRODUCTION

Fish tissue monitoring in San Francisco Bay (Bay) has revealed the bioaccumulation of Polychlorinated Biphenyls (PCBs), mercury, and other pollutants in Bay sportfish. The levels found are thought to pose a health risk to people consuming these fish. As a result, the State of California issued a sport fish consumption advisory in 1994 cautioning people to limit their consumption of fish caught in 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 pollutant levels. In response, the San Francisco Bay Regional Water Quality Control Board (SF Bay Water Board) adopted Total Maximum Daily Loads (TMDLs) water quality restoration programs targeting PCBs and mercury in the Bay.

The PCBs and mercury TMDLs indicate that a 90 percent reduction in PCBs and 50 percent 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 initial Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP 1.0; Order R2-2009-0074) required Permittees to implement pilot-scale control measures during the permit term (2010-2015) to reduce PCBs and mercury discharges from Municipal Separate Storm Sewer Systems (MS4s). The reissued Municipal Regional Permit (MRP 2.0, Order R2-2015-0049), requires municipal agencies to move from pilot-scale work to implementing focused strategies during the permit term (2016-2020) that are intended to reduce PCBs in urban stormwater runoff. One strategy to reduce the contaminants in the urban environment that was successfully pilot-tested under MRP 1.0 is to identify properties that disproportionately contribute PCBs and mercury to MS4s and abate these source properties via referrals to appropriate regulatory agencies. A “source property” is a property (sometimes composed of multiple parcels) that has been identified through source investigations as an elevated source of PCBs or mercury to a stormwater conveyance system or receiving water body. Abatement of source properties through regulatory actions imposed by the appropriate agencies provides an opportunity for PCBs and mercury load reductions.

Background

In recent years, SCVURPPP has conducted investigations in the Santa Clara Valley to facilitate the identification and subsequent abatement of properties identified as sources of PCBs to stormwater. SCVURPPP has identified source properties primarily based on elevated PCBs or mercury concentrations in samples collected on a parcel, at the border of a parcel, or from the underground drainage system connecting the parcel to a City or County’s MS4. PCBs or mercury concentrations that are elevated above urban background (i.e., > 0.2 mg/Kg for PCBs and > 0.3 mg/Kg for mercury) suggest proximity to a local source.

Over the past 15+ years, a number of studies have identified areas in the Santa Clara Valley with elevated PCBs or mercury concentrations in street dirt and storm drain sediments (KLI 2001, 2002; EOA 2002; Yee and McKee 2010; EOA 2011). Building on this information, SCVURPPP conducted source investigations in two locations where elevated PCBs were observed. These investigations have resulted in the identification of two PCBs source properties in the Santa Clara Valley to-date. The first investigation was conducted in the Leo Avenue area of San Jose as one of the pilot projects implemented under MRP 1.0. This investigation identified the 5.0-acre Union Pacific Railroad property at the end of Leo Avenue as a source of PCBs to the MS4. SCVURPPP referred this property to the SF Bay Water Board in 2015

(SCVURPPP 2015). The second investigation focused on the 73-acre former Westinghouse Electric Federal Superfund site in Sunnyvale, which is currently owned by Northrop Grumman Corporation. Elevated PCBs concentrations were found in both sediment and stormwater samples collected from MS4 infrastructure adjacent to the property, and in stormwater samples collected on the property. SCVURPPP has identified this property as a PCBs source to the MS4 and the City of Sunnyvale submitted a referral of this property to the SF Bay Water Board in early 2018. Additional information on these investigations is presented in SCVURPPP (2016a).

Beginning in Water Year (WY) 2015, SCVURPPP expanded the search for PCBs source properties by implementing a comprehensive, county-wide desktop screening and monitoring program (SCVURPPP 2016b). This program focused on identifying priority Watershed Management Areas (WMAs) for targeted source property investigations and potential control measure implementation. Priority WMAs were identified based on the extent of industrialization prior to 1980 (i.e., old industrial) and screening of aerial photography and other readily available documentation (e.g., property records and online pollutant cleanup site databases such as Geotracker and Envirostor) indicating a potential industrial property may be of interest. A total of 139 WMAs were identified as "high interest" for PCBs and/or mercury sources.

In WY 2015, SCVURPPP conducted sediment monitoring in these 139 WMAs, and stormwater monitoring in a sub-set of these catchments through a collaboration with the San Francisco Bay Regional Monitoring Program (RMP). High priority WMAs were identified where monitoring data indicated that PCBs or mercury in soil/sediment or stormwater collected from MS4 infrastructure in the public right-of-way (ROW) was elevated above urban background levels. Elevated concentrations suggest there is likely a source of PCBs or mercury within the WMA. As a result of the sediment and stormwater monitoring conducted in WY 2015, elevated PCBs concentrations were observed in 7 of the 139 WMAs. These catchments were designated as high priority WMAs for follow-up source property investigations. These 7 WMAs are the focus of the investigations described in this report.

Objective

The overall objective of source property investigations is to identify PCBs and/or mercury source properties for abatement. Abatement can be conducted through referral to the SF Bay Water Board, or other appropriate regulatory agency. Alternatively, the City may choose to directly cause the property owner to conduct abatement activities. To achieve this objective, SCVURPPP (in collaboration with participating Permittees) conducted targeted source property investigations during WY 2016 and WY 2017 in the 7 priority WMAs in the County that were identified during WY 2015 monitoring. This report presents the results of these source property investigations. Section 2.0 of this report details the methods used in each WMA to conduct targeted source property investigations. Section 3.0 presents the investigation results for each WMA, provides detailed discussion of the findings, and outlines potential follow-up actions for all source properties or potential source properties identified in each WMA. Section 4.0 summarizes the investigation outcomes and presents the conclusions and next steps for each WMA. Additional details on the monitoring data collected during these investigations, including the results of the data quality review, are presented in SCVURPPP (2018).

2.0 METHODS

WMAs Selected for Source Property Investigations

Figure 2.1 provides a map of the seven priority WMAs that SCVURPPP targeted for source property investigations in WYs 2016 and 2017, including two WMAs largely in the City of Santa Clara, four largely in the City of San Jose, and one in the City of Palo Alto. These WMAs were selected because one or more sediment or stormwater samples in the catchments had elevated PCBs concentrations. Sediment samples were collected from roadways or storm drain infrastructure and stormwater samples were collected in the MS4. Additional information about each priority WMA is provided in Section 3.0.

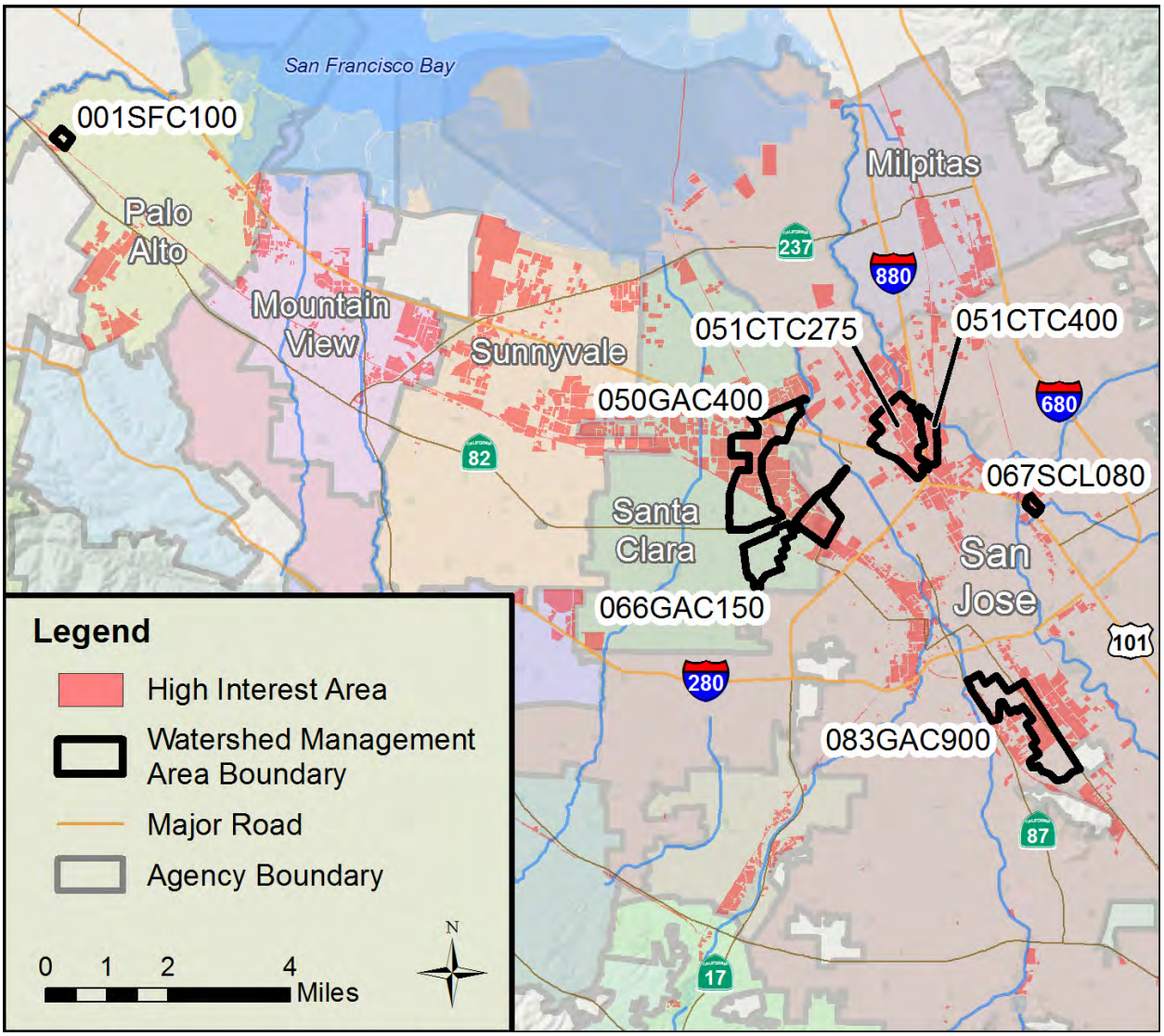


Figure 2.1. Seven priority WMAs in the Santa Clara Valley where source property investigations were conducted in Water Years 2016 and 2017.

Investigation Process Overview

The investigation process was modeled after the Clean Watersheds for a Clean Bay (CW4CB) Source Property Identification and Referral Pilot Project conducted in the Leo Avenue Watershed in San Jose, CA (SCVURPPP 2015). The overall process focused on categorizing all properties in the WMAs as high- or low-interest, and then conducting soil/sediment sampling of high-interest properties to identify elevated PCBs or mercury concentrations on (or adjacent to) a property of interest. Properties were initially categorized as high- or low-interest based on their potential for current or past use, release or storage of PCBs. Throughout each step in the process, the list of high-interest properties was refined based on the information gained during that step. SCVURPPP's targeted source property investigations consisted of the following five steps:

1. Records Review - to identify a preliminary list of high-interest properties based on current and historic land-use classifications, historic aerial photography, and review of other records (i.e., property records, online databases, etc.);
2. Public ROW Surveys – to observe sediment migration from high-interest properties to the public ROW, verify information obtained during records review, and refine the list of high-interest properties for follow-up site visits;
3. Facility Site Visits - to document possible sources, sediment migration, onsite flow patterns, existing stormwater control measures, identify potential sample locations, and further refine the list of high-interest properties for sampling;
4. Soil/Sediment Sampling - to find locations in the public ROW or on private properties where PCBs or mercury concentrations are elevated; sampling focused on high-interest properties;
5. Source Property Identification –to identify any source properties and potential source properties based on the combined results of the above four steps; to provide municipalities with recommendations for follow-up actions.

Additional details about each step in the process are provided below.

Step 1: Records Review

The purpose of this step was to gather and review all available information on parcels within each priority WMA and categorize each parcel as high- or low-interest for follow-up public ROW surveys and/or site visits. For each priority WMA, SCVURPPP (Program) staff reviewed the most current aerial photographs available in Google Earth, as well as any available historical aerial photographs from 1980 and prior to document current information about the area, as well as during the period of peak production and use of PCBs. Next, Program staff reviewed and compiled other available records and assigned preliminary interest categories to each parcel. Municipal stormwater inspectors from each WMA's jurisdiction then reviewed the information and provided their input based on prior inspections and general knowledge about businesses in the WMA. The available information that was gathered on each parcel included:

- Current and historic land-use classification;
- Site history, cleanup records, or monitoring data available through online databases (i.e., Geotracker and Envirostor);
- Cal OES records of PCBs releases from electrical utility equipment

- Facilities identified on the SF Bay Water Board's "Triage List of PCBs Clean Sites"[1]
- Changes in aerial photos from prior to 1980 and present condition;
- Historical outdoor storage, suspected waste areas or ponds;
- Inspection history available for each facility, including occurrence of PCBs, spills, and numerous stormwater violations on prior inspection reports;
- Inspector's comments on business facilities and activities;
- Well monitoring reports for PCBs at open remediation sites.
- Facilities subject to the Industrial General Permit (IGP)[2]

The parcels were then categorized as high- or low-interest properties for public ROW surveys and facility site visits based on their potential to be a source of PCBs and/or mercury to storm drains.

Step 2: Public Right-of-Way (ROW) Surveys

Public ROW surveys provided information to help identify potential source areas, to select businesses for follow-up facility site visits, to guide sample site selection, and to verify the information obtained from records review. These surveys focused on areas adjacent to high-interest properties. During visual roadway and sidewalk surveys, Program staff looked for evidence of sediment release from a given property into the public ROW, and identified any other indicators of pollutant use, including the following:

- Unpaved or other areas where sediment erosion may occur, especially when there is evidence of migration of soil or sediment from a property to the public ROW;
- Electrical equipment associated with PCBs (e.g., transformers and capacitors);
- Old equipment with hydraulic fluids;
- Outdoor hazardous material/waste storage areas (e.g., tanks, drums), especially with poor housekeeping;
- Signs related to hazardous materials and wastes;
- Recycling/scrap yards (e.g., for automobiles);
- Building demolition, renovation or window replacement sites;
- Unusually stressed vegetation;
- Unidentified puddles or stains;
- Flow patterns and storm drain structures;
- Existing and potential stormwater control measures;
- Sediment erosion from a property and migration to the street or storm drains;
- Properties that had been redeveloped or were under construction;

[1] In a parallel effort, the SF Bay Water Board has also reviewed online databases (Geotracker, Envirostor) to identify current or former PCBs cleanup sites in the SF Bay Area and identify the appropriate priority level for follow-up actions. The SF Bay Water Board has shared this list with Bay Area stormwater programs to facilitate cooperative actions. The triage list was reviewed to identify any POC cleanup sites on the list within any of the priority WMAs.

[2] A broad category of industrial facilities must obtain NPDES permit coverage for stormwater discharges associated with industrial activities. The California State Water Resources Control Board issues an Industrial General Permit (IGP) for stormwater discharges associated with industrial activities. The IGP is implemented and enforced by both the CA and SF Bay Water Boards. To receive coverage under the IGP, dischargers must register a Notice of Intent (NOI) on the Storm Water Multiple Application and Report Tracking System (SMARTS). The SMARTs database was reviewed to identify NOI facilities subject to the IGP within each WMA.

- Redeveloped areas where older exposed soils were available for tracking off site.

After conducting public ROW surveys, Program staff reviewed the information collected thus far with municipal stormwater inspectors from each participating WMA and refined the interest categories assigned to each parcel. They also removed properties from the high-interest category that had closed, relocated, or were 100% paved or remediated. Program staff then used the combined information from the records review, public ROW surveys and discussions with municipal stormwater inspectors to identify the high-interest properties for follow-up facility site visits.

Step 3: Facility Site Visits

Facility site visits provided additional information about current and past business practices on a site and documented any additional evidence that suggested the property may be a potential source of PCBs or mercury to the MS4. The municipal stormwater inspector(s) for each WMA provided access to the properties, introduced Program staff, explained the general purpose of the project, and facilitated information gathering at each site. Program staff documented the information gathered during facility visits on inspection forms (Appendix A). Facility site visits accomplished the following:

- Educated current business owner/property owner about PCBs and mercury in order to facilitate:
  - potential future sampling at the property;
  - conversations about past businesses or business activities on a property or in the area; and
  - implementation of future control measures on the property;
- Identified and documented features of each site including:
  - private storm drain infrastructure on the property;
  - the drainage flow pattern(s) from the property to the public ROW;
  - any obvious PCBs or mercury sources on the property;
  - evidence of pollutant use or release;
  - unpaved areas where soil/sediment may be released to the public ROW;
  - potential soil/sediment sample sites on the property;
  - current business facility activities;
  - general housekeeping on the property; and
  - stormwater control measures already in place.

Program Staff reviewed the combined results of the records reviews, public ROW surveys, and facility site visits and used the information gathered to refine the list of high-interest properties. A sampling plan that targeted high-interest properties was then developed for each WMA.

Step 4: Soil and Sediment Sampling

Samples of soil or sediment from properties and/or adjacent MS4 infrastructure were collected and analyzed for PCBs and mercury. The field methods and laboratory analysis procedures used in this project followed the detailed methods described in the CW4CB Quality Assurance Project Plan (QAPP) and CW4CB Task 3 Sampling and Analysis Plan (BASMAA 2012a,b). Program staff collected most of the samples in public ROWs adjacent to high-interest properties. If a property owner provided permission, SCVURPPP also collected samples onsite. All samples were analyzed for total mercury and for the 40 PCB

congeners designated by the SF Bay RMP as those most likely to be found in the Bay[3]. Total PCBs were calculated as the sum of these 40 congeners. The laboratory sieved all samples to 2 mm prior to analysis, consistent with previous BASMAA sediment studies (KLI 2001, 2002; SMSTOPP 2002, 2003; Yee and McKee 2010). Table 2.1 identifies the field sampling methods and analytical procedures used for each parameter.

Table 2.1. Analytes, Sampling and Analytical Methods.

Analyte	Field Sampling Method	Analytical Method	Units	Laboratory
Total Mercury	Grab	USEPA 7471B	mg/Kg	ALS Environmental
Total PCBs	Grab	USEPA 8082M	mg/Kg	ALS Environmental

Following QA/QC review of the field and laboratory data according to the CW4CB QAPP (BASMAA 2012a), Program staff reviewed the data to identify any sites that had PCBs or mercury concentrations elevated above urban background, suggesting proximity to a source.

In addition to the magnitude of PCBs concentrations, Program staff also reviewed PCBs homolog profiles to evaluate potential linkages to known Aroclors, similarities between samples collected on-site and in the adjacent MS4, and between sample sites across the catchment. Aroclors were the dominant commercial PCBs product manufactured and used in the United States. PCBs homolog profiles of samples compared with typical Aroclor homolog profiles, and with other samples in the catchment provided limited, but potentially important information about sources and transport of particle-associated PCBs through the catchment. PCBs homolog groups are comprised of PCB congeners with the same number of chlorine atoms (i.e., chloro-groups). PCB congeners with less than six chlorines atoms degrade and lose chlorine in aerobic conditions more quickly, whereas PCB congeners with 6-10 chlorine atoms are less likely to degrade in aerobic conditions but may degrade faster in anaerobic soil. Despite these generalities, there are no predictable degradation patterns that can be applied to a specific weathered Aroclor. However, weathered products from the same source may have similar PCBs homolog profiles (i.e., similar percent composition of each of the chloro-groups). Thus, similar PCBs homolog profiles for samples collected on a property and in the adjacent public ROW suggest a linkage between the sites.

Step 5: Source Property Identification

As the final step in this process, Program Staff reviewed the information gathered throughout the investigation process on all of the properties that remained on the high-interest list for sampling. Each property was categorized as one of the following: (1) Source property; (2) Potential source property; (3) Undetermined; or (4) Unlikely source property. Table 2.2 presents the criteria that were used to categorize each property. Elevated soil/sediment or stormwater concentrations from samples collected onsite, at the border of a parcel, or at the junction of an onsite underground drainage pipe (lateral) and the MS4 provide the best definitive evidence that a property is a source of PCBs or mercury to the MS4. Thus, pollutant concentrations provided the primary means of identifying source properties and potential source properties. For each property category identified in Table 2.2, site-specific options for follow-up actions include one or more of the following:

1. Referral to the appropriate regulatory agency for abatement;

[3] PCBs congeners 8, 18, 28, 31, 33, 44, 49, 52, 56, 60, 66, 70, 74, 87, 95, 97, 99, 101, l05, 110, 118, 128, 132, 138, 141, 149, 151, 153, 156, 158, 170, 174, 177, 180, 183, 187, 194, 195, 201, 203.

2. Direct abatement by the property owner (without referral);
3. Further investigation to determine if a source property or high-interest property is a PCBs and/or mercury source;
4. Other site-specific actions focused on more immediate reduction of pollutant release from a property (e.g., implementation of appropriate control measures or O&M actions);
5. Removal from the high-interest list - no follow-up action required.

Table 2.2. Criteria for PCBs and Mercury Source Property Identification and Follow-Up Actions

Level of Interest	Property Category	Sediment/Soil Concentration		Recommended Follow-up Actions
		Total PCBs[a] (mg/Kg dry wt.)	Total Mercury (mg/Kg dry wt.)	
High-Interest	Source Property	≥ 1		Referral to SF Bay Water Board or other appropriate agency; OR, cause property owner to abate.
	Potential Source Property	0.5 - < 1	0.3 – < 1.0	If there is corroborating evidence the property is a source, referral/abatement; otherwise, conduct further investigation and retain property on the high-interest list
		0.2 – < 0.5		Further Investigation – retain property on the high-interest list
	Undetermined	No Samples Collected on property or in adjacent MS4		Further Investigation – retain property on the high-interest list
Low-Interest	Unlikely Source Property (Urban Background)	<0.2	<0.3	No Further Investigation – remove property from the high-interest list

[a]Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners

The concentration ranges for the property categories in Table 2.2 were derived from a distribution of over 1,300 PCBs and mercury soil/sediment concentrations measured across the Bay Area over the past 20 years (Appendix B, Gunther et al. 2001; KLI and EOA Inc. 2002, EOA Inc. 2002, 2004, 2007a, b; City of San Jose and EOA Inc. 2003; SMSTOPPP 2002, 2003; Kleinfelder 2005, 2006; Salop et al., 2002a, b; Yee and McKee 2010). Areas associated with the highest pollutant concentrations (i.e., those ≥ 1.0 mg/Kg PCBs or mercury) represent approximately the top 10% of Bay Area measurements to-date and indicate a high likelihood of finding a source within the vicinity. Samples in the low category represent the bottom 75% of Bay Area concentrations (i.e., urban background) and indicate a low probability of finding a source property within the vicinity of the location where the sample was collected.

Generally, all high-interest properties originally identified as high-interest remained on the high-interest list unless there was sufficient evidence that a given property was not a source to stormwater. If sediment data were inconclusive, the property remained on the list of high-interest properties. If planned sampling was not completed because property owners did not provide permission, or because there was not adequate sediment available to collect at the time of sampling, those properties were also retained on the high-interest list. Properties were removed from the high-interest list if urban background

concentrations were observed and there was a lack of other evidence suggesting that the property contributes PCBs or mercury to stormwater.

3.0 RESULTS AND DISCUSSION

This section presents the source property investigation results for each of the seven WMAs. All PCBs and mercury concentrations measured in each WMA are provided in Appendix C. All PCBs and total mercury concentration units are presented in mg/Kg dry weight (dry wt.).

WMA 066GAC150 (Santa Clara & San Jose)

Description of WMA

WMA 066GAC150 covers 380 acres in the City of Santa Clara and 124 acres in the City of San Jose (Figure 2.1). This WMA is located west of the San Jose Airport and drains into the Guadalupe River on the eastern side of the Airport. The western half of the WMA drains a residential area in the City of Santa Clara. The eastern half of the WMA drains a predominantly industrial and commercial area between the Santa Clara train station and Mineta San Jose Airport.

Prior to 1980, the area west of the train station was residential with some commercial facilities along the arterial street routes. The area east of the train station was mostly industrial with some commercial and agriculture activities. There were 39 industrial parcels in the WMA at that time, comprising 28% of the total area within the WMA. Past industries in the WMA associated with the use, storage, or disposal of PCBs included Federal Pacific Electric (FPE), which manufactured circuit breakers, transformers and other electrical equipment containing PCBs until about 1968. The FMC Corporation purchased the FPE property and other adjacent parcels in 1968 to form a larger property that spanned 100 acres. The majority of this larger property lies on the southside of Brokaw Road, while the former FPE site is located on the northside of Brokaw Road. Geotracker identifies the former FMC property as a known PCBs cleanup site, with subsurface PCBs concentrations in the area originally occupied by FPE as high as 15,000 mg/Kg. After FMC sold the property, it was sub-divided into multiple parcels that were redeveloped during the 1990's. East of the former FMC property was a land disposal site. Geotracker identified this as a cleanup site with unknown contaminants. Adjacent parcels on Coleman, Brokaw and Martin Avenues may have been affected over the years by soils migrating from the land disposal site.

Currently, much of the WMA has been redeveloped and ongoing redevelopment continues throughout the WMA. There are now a number of commercial and retail businesses in the areas that were formerly industrial land uses. A redeveloped portion of the former FMC property where PCBs contamination was previously identified (i.e., the area of the former FPE site) currently houses a digital storage company and a Costco Warehouse. The majority of the former FMC property on the southside of Brokaw Road was under redevelopment again in WY 2017, and had demolished buildings and exposed soils on the property during construction.

The WMA also has a mostly unused railroad owned by the Santa Clara Valley Transportation Authority (VTA) and an electrical substation owned by the City of Santa Clara. Both properties are adjacent to the former FMC property, and both are predominantly unpaved. Google Earth images show vehicle tracking of sediment from the substation throughout the area of the former FMC property cleanup site. The VTA property was identified in Geotracker as a cleanup site with possible mercury contamination. This property is currently undergoing redevelopment as part of the Bay Area Rapid Transit (BART) extension project. Exposed soils were visible at the site during construction in WY 2017. The properties adjacent to

and including the former land disposal site have all been redeveloped into commercial office buildings and paved parking lots.

In WY 2015, a sediment sample with a PCBs concentration of 0.84 mg/Kg was found in a manhole in the main storm drain line on Brokaw Avenue that drains the FPE site on the northern portion of the former FMC property, and the VTA railroad parcels to the west. The source property investigation conducted in this WMA during WYs 2016 and 2017 focused on identifying the source(s) of this elevated concentration.

Investigation Results

Records Review: All 39 properties that were identified as industrial land uses prior to 1980 were initially identified as high or moderate interest prior to the investigation. Any properties adjacent to public ROW areas where elevated PCBs or mercury concentrations were observed during WY 2015 sampling were also considered moderate or high interest. Program and municipal staff compiled and reviewed available information on these high- and moderate- interest parcels. A total of 44 parcels and their associated business were prioritized for public ROW surveys and site visits. These properties included the known or suspected PCBs or mercury contaminated sites within the WMA.

Public ROW Surveys and Site Visits: In the summer of 2016, Program and municipal staff completed public ROW surveys adjacent to the 44 prioritized parcels and conducted follow-up site visits at 35 businesses on these parcels. Based on information gathered during these efforts, 10 properties were identified as high-interest for follow-up sampling. The 10 high-interest properties that were targeted for soil/sediment sampling are listed in Table 3.1. Three of these properties were adjacent to public ROW areas where high PCBs had been observed in 2015; two properties were selected because sediment was observed tracking off site to the public ROW from unpaved areas where older equipment was stored; and the remaining high-interest properties were selected for sampling because they were associated with a former PCBs cleanup site.

Table 3.1. Properties in WMA 066GAC150 (City of Santa Clara) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID #	APN(s)	Business Name(s)/ Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt.)	Total Mercury (mg/Kg dry wt.)
1	23006042	Data Storage Facility - Former FMC Cleanup Site	335 Brokaw Rd	12.25	3.8	0.48
2	23005058	Industrial Park - Misc. small operations	280 Martin Ave	1.91	0.64	0.065
3	23006033	Costco - Wholesale Retail Warehouse - Former FMC Cleanup Site	1609 Coleman Ave	12.72	No Samples Collected	
4	23006041	Transit Line ROW	Between De La Cruz Blvd & Brokaw Rd	6.42	0.035	0.064
5	23006030	Cool Box Portable Storage	480 Brokaw Rd	12.92	0.021	0.077
6	23046069	Under Redevelopment	1205 Coleman Ave	20.96	0.19	0.075
					0.088	0.14
7	23006035	Electrical Utility Substation	351 Brokaw Rd	5.48	0.022	0.11
					0.017	0.12
8	23005083	Industrial Park	276 Martin Ave	0.53	0.11	0.091
9	23005058	Industrial Park	286 Brokaw Rd	1.97	0.13	0.14
10	23007053	Storage Company	575 Benton St	1.62	0.006	0.12

[a]Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

Sample Collection: In the summer of 2017, 11 soil/sediment samples were collected on (or adjacent to) high-interest properties identified in Table 3.1. These samples were analyzed for PCBs and mercury. The results are presented in Table 3.1 and Figure 3.1 (PCBs) and Figure 3.2 (mercury). The majority of the samples were collected from soil/sediment in the public ROW that had migrated from a high interest property(s). No samples were collected for one high-interest property because of a lack of accumulated sediment present at the time of sampling. Total PCBs concentrations ranged from 0.006 mg/Kg to 3.8 mg/Kg in samples collected in 2017. Total mercury concentrations ranged from 0.06 mg/Kg to 0.48 mg/Kg. Two samples had elevated PCB concentrations above the 0.2 mg/Kg threshold. One of these samples also had an elevated mercury concentration (> 0.3 mg/Kg).

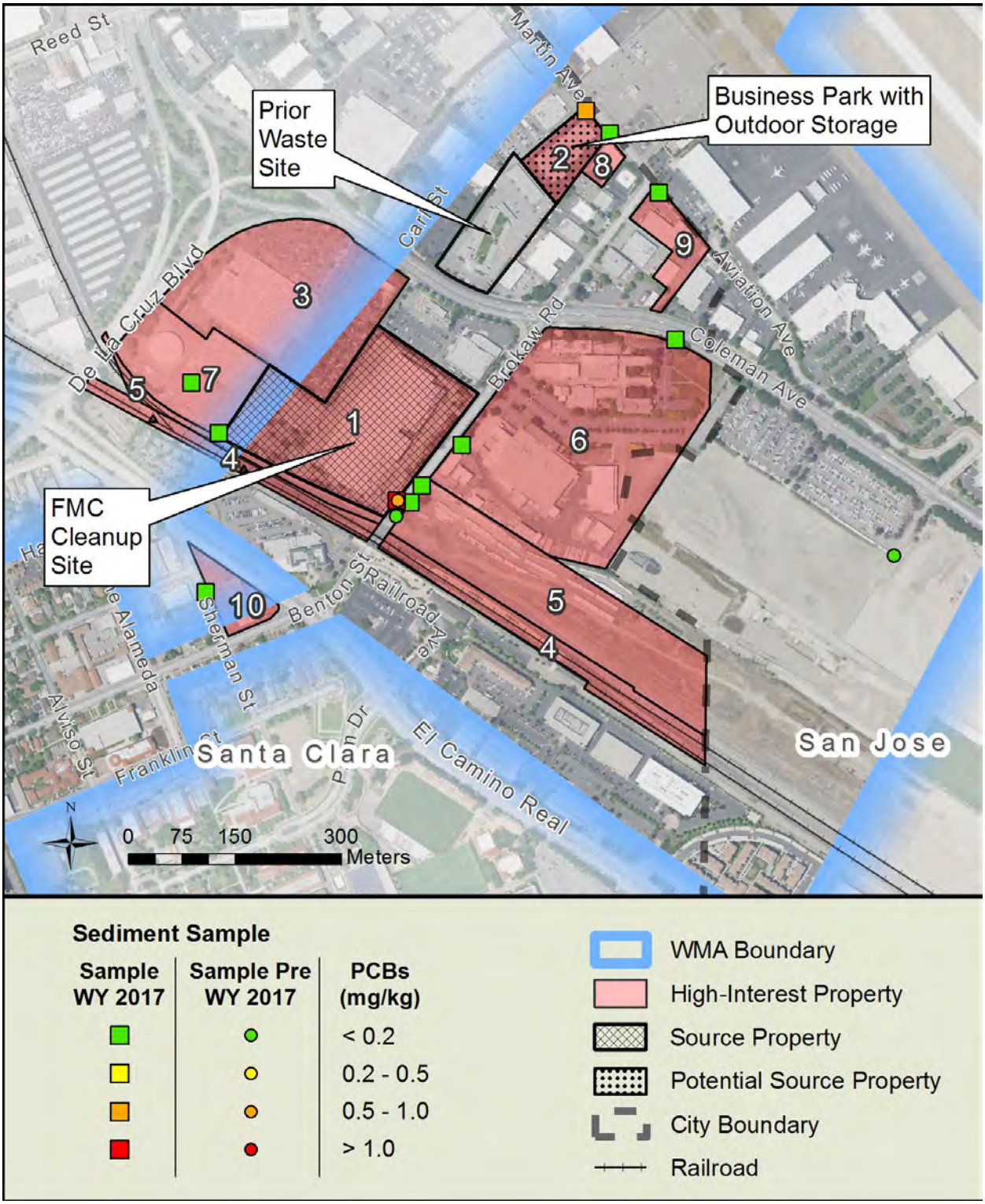


Figure 3.1. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within (or directly outside of) Watershed Management Area 066GAC150 (City of Santa Clara).

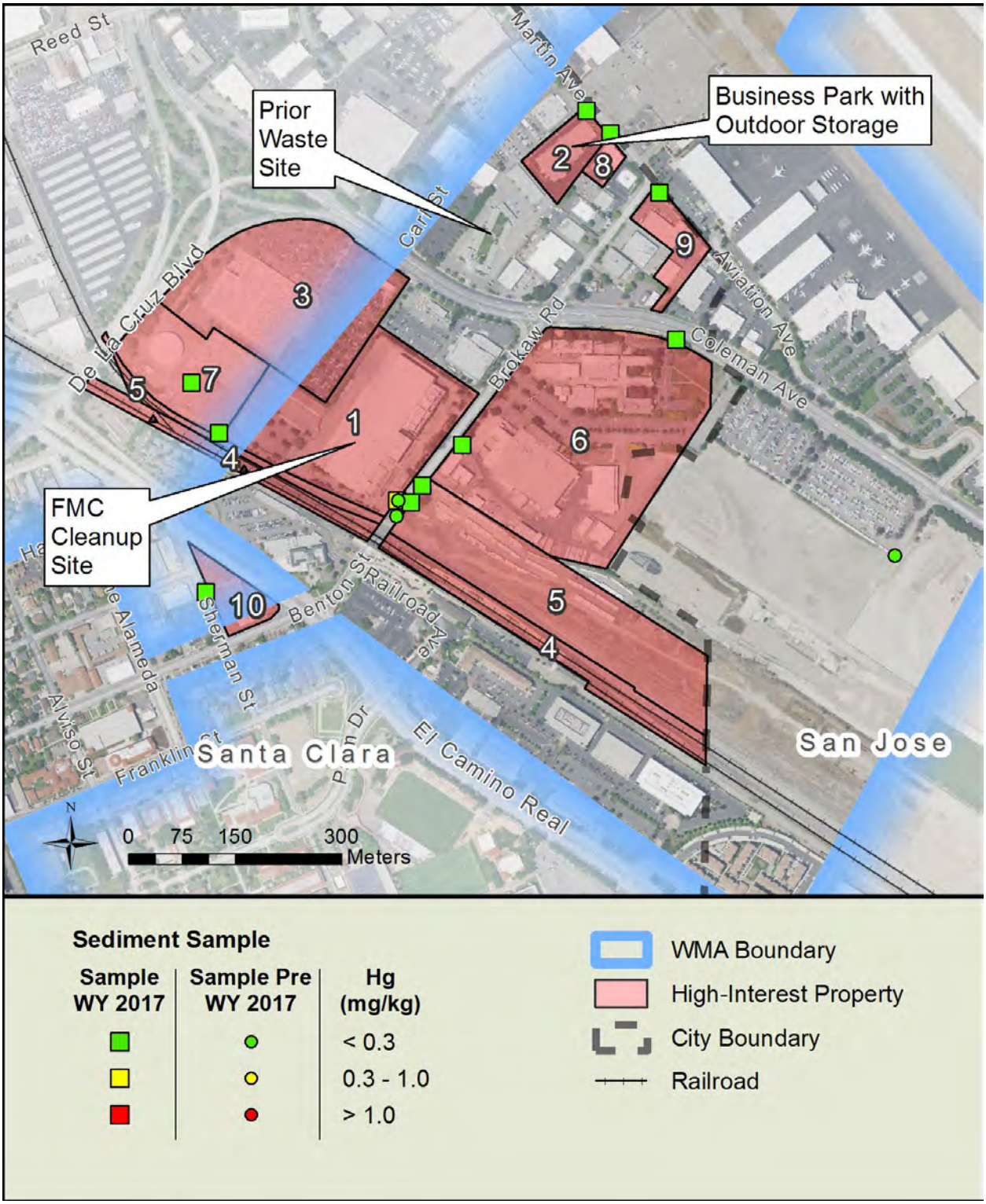


Figure 3.2. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within (or directly outside of) Watershed Management Area 066GAC150 (City of Santa Clara).

Figure 3.3 presents the PCBs homolog profiles for the 3 soil/sediment samples that had elevated PCBs concentrations (> 0.2 mg/Kg) during WYs 2015 and 2017. The PCBs homolog profiles for these three samples are similar. All three samples contain some percentage of penta-, hexta-, hepta-, and octa-chlorinated congeners, suggestive of weathered mixes of Aroclors that contain at least some heavier chlorinated formulations. The samples associated with Property #1 both have dominant hexa-chloro groups (~40%), suggestive of Aroclor 1260. However, the absence of the less chlorinated congeners may be due to weathering and does not rule out the possibility they may have been present in the original source mixture of Aroclors.

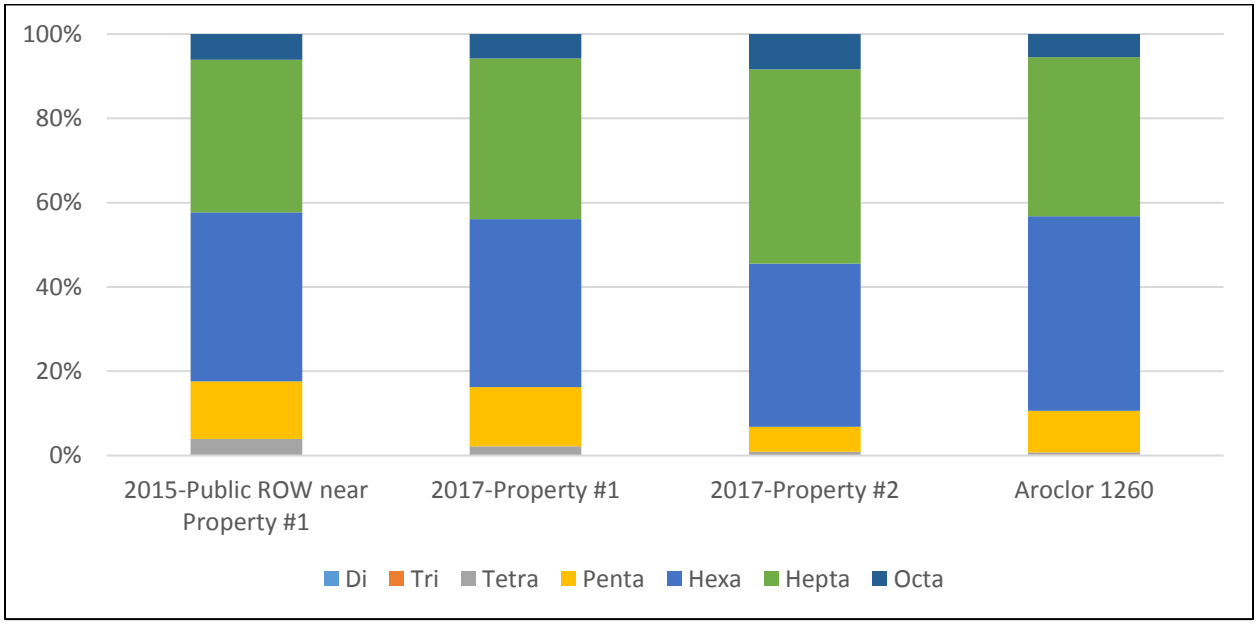


Figure 3.3 PCBs homolog profiles for soil/sediment samples with elevated concentrations of PCBs in observed in samples collected in Water Years 2015 and 2017 in Watershed Management Area 066GAC150 (City of Santa Clara).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation as the basis for identifying source properties or potential source properties, and properties that should be retained on the high-interest list for follow-up actions. Three properties in the WMA fit into these categories. Property # 1, which had elevated concentrations PCBs and total mercury, was identified as a PCBs source property and a potential mercury source property. Property #2, which had elevated concentrations of PCBs, was identified as a potential PCBs source property. Property #3 could not be sampled during WY 2017, but remained on the list of high-interest properties for further investigation based on the history of the site. Additional discussion about each of these properties and options for next steps are presented below. All other properties initially designated as high-interest for sampling in Table 3.1 had PCBs and mercury concentrations that were below urban background concentrations. Because of this result and the lack of other evidence suggestive of PCBs or mercury sources, these properties were re-categorized as low-interest properties and eliminated from further consideration at this time.

Discussion

Property #1 - PCBs Source Property and Potential Mercury Source Property

Property #1 is a 12.25-acre property located at 335 Brokaw Road in Santa Clara. Since 2015, this property has been used as a data storage facility by Apple Inc. From 1997 to 2015, the property housed a FedEx distribution center. Prior to that, the property was part of the former FMC property, and was a known PCBs cleanup site. Property #1 includes the section of the former FMC property where FPE manufactured electrical equipment from the early 1950's through 1968. The type of electrical equipment manufactured by FPE at the site included equipment that during the 1950's and 1960's, would typically have been associated with PCBs (e.g. air switches, circuit breakers and transformers). In 1968, FMC Corporation purchased this parcel along with a number of adjacent parcels that then comprised the 100-acre FMC property. Activities at FMC included manufacturing various products, such as military equipment. FMC sold the property in the 1990's, and the property was again divided into multiple parcels, with subsequent redevelopment. Demolition activities occurred on Property #1 in 1995 and 1996 as part of this redevelopment.

Previous site assessments reported on Geotracker indicate there have been a number of past PCBs cleanup efforts at this property. Soil samples collected in 1990 within the vicinity of the FPE buildings were as high as 15,000 mg/Kg at the surface, 1.5 mg/Kg at 5 feet below the surface, and 0.44 mg/Kg 30 feet below the surface. Remedial actions implemented in the 1990's included excavation and offsite disposal of PCB-contaminated soils from the site. However, the soil cleanup level used was 10 mg/Kg, which is well above the threshold for potential PCBs impacts on water quality. Ground water on the property was pumped and treated until 2015. One soil sample collected at 3.0 feet below the surface in 2015 was analyzed for Aroclor 1254 and had a concentration of 2.69 mg/Kg. This site is currently on the SF Bay Water Board's Triage list of PCBs Cleanup Sites, identified as a lower priority for follow-up actions.

On this property, stormwater from the former FPE operations area (i.e., the known PCBs contaminated site) drains to a private lateral that connects to the MS4 on Brokaw Road. The high PCBs concentration in WY 2015 (0.83 mg/Kg) was found in sediment collected from the storm drain manhole on Brokaw Road where the private lateral from Property #1 connects to the main storm drain line. In WY 2017, another sediment sample was collected from this same manhole. This time, however, the sample was collected exclusively from sediment that was contained inside the private lateral that drains Property #1, at the intersection with the public system (Figure 3.4). This sample contained elevated PCBs (3.81 mg/Kg). This concentration is substantially above SCVURPPP's threshold for identifying a PCBs source property (> 1 mg/Kg). The private lateral appears to drain the southern portion of the parcel, which is the same area where the former FPE building site (and associated PCBs contamination) was located.

The PCBs homolog profiles from both the WY 2015 and WY 2017 sediment samples collected from this manhole are very similar, suggesting a similar source, and providing an additional link between the PCBs migrating from Property #1 and PCBs observed downstream in the MS4. Both PCBs homolog profiles had a dominant hexa-chloro group, similar to Aroclor 1260. The main uses of Aroclor 1260 included transformers and hydraulic fluids, both uses that correlate with the electrical equipment manufactured by FPE at the site during the 1950's and 1960's.

Although the site was redeveloped in the mid 1990's, and ongoing redevelopment for this property is underway, the site assessment results reported in Geotracker combined with the sampling results from

SCVURPPP's investigations in WY 2015 and WY 2017 clearly demonstrate that elevated concentrations of PCBs and elevated concentrations of mercury continue to migrate from the underground drainage system on this property to the MS4.

Next Steps: City of Santa Clara is evaluating options, including referral of Property #1 to the SF Bay Water Board for abatement or other actions to directly cause the property owner to abate the property. Full abatement of the property for PCBs is expected to result in abatement of any mercury contamination on the property as well. Even though the property is under development again with plans to abandon the private drainage system on the property, this remains an active cleanup site. The high PCBs concentrations that were found in sediment collected from the lateral that drains the property confirm that the property continues to be a source of PCBs to the MS4. To ensure the old drainage system is part of the remediation, SCVURPPP recommends the City of Santa Clara document recent redevelopment activity and note any parts of the drainage system that are removed or capped.

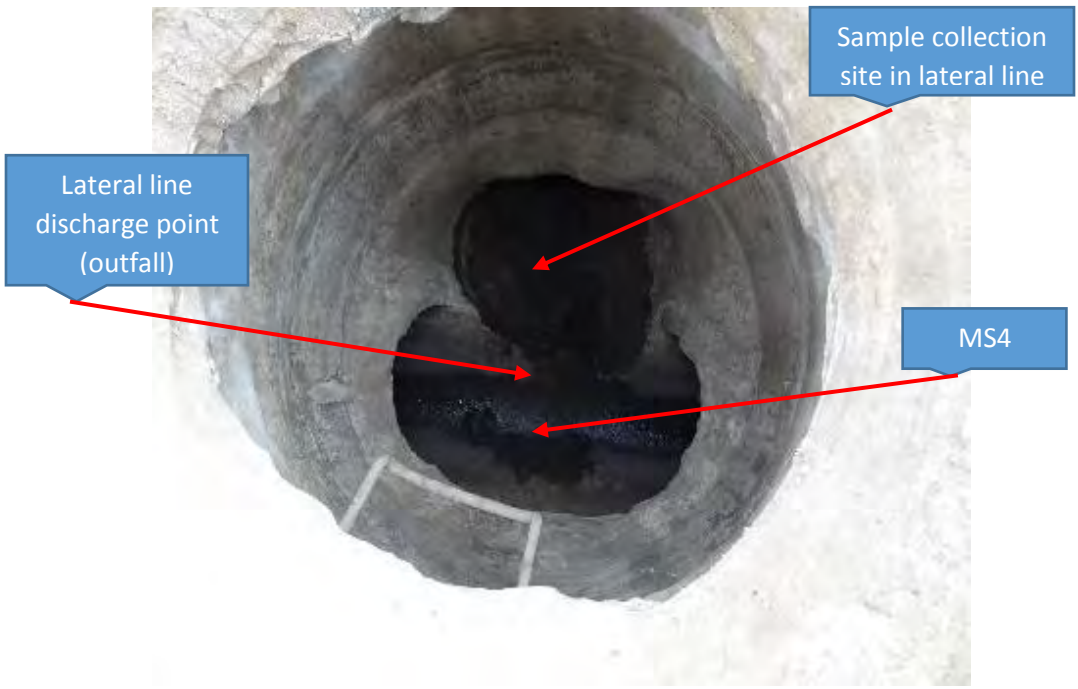


Figure 3.4. Photo of sample collection locations where the private lateral from Property #1 connects to the main public storm drain line on Brokaw Road, Santa Clara CA.

Property #2 – Potential PCBs Source Property

Property #2 is a 1.91-acre industrial parcel located at 280 Martin Avenue in Santa Clara. This property has housed a number of smaller businesses over the years, including most recently a print shop. During the site visit in 2016, most of the property had good housekeeping with current business activities conducted inside the building. However, old equipment was stored on a small section of unpaved soil in the northwest corner at the back of the property. Among the equipment stored there was an old compressor, which could contain hydraulic fluids with PCBs. The parcel adjacent to the exposed soil area was identified on Geotracker as a waste disposal cleanup site in the 1960's, although no information on the pollutants

found at the site was provided. The parcel was redeveloped prior to 1980. The sediment sample collected during WY 2017 at the border of the parcel in the public ROW where the property drains to the MS4 had a PCBs concentration of 0.68 mg/Kg. This concentration is well above urban background, suggesting proximity to a local source. The sample contained fine and coarse material which appeared to be associated with roofing structures, a possible source of PCBs. Even though the current building on the property was constructed in the late 1980's, roofing products containing PCBs may still have been in use at that time. The PCBs homolog profile of the WY 2017 sample had a dominant hepta-chloro group, and a high percentage of hexa-chloro congeners as well. Since congeners in these groups weather slowly, this suggests the original source was one of the heavier Aroclors or mixture of Aroclors, such as 1254, 1260, or 1262. All of the Aroclors manufactured with congeners in the hepta-chloro group provided some flame resistance and could have been used in roofing materials for that purpose.

Next Steps: City of Santa Clara is evaluating options for further investigation of this property. Samples collected on the property may be needed to confirm whether or not this is a source property and if a referral is warranted. A follow-up site visit to the small business complex may provide additional information on the age of the equipment stored at the back of the parcel and the age and type of roofing material used on the building. With a better understanding of possible sources of PCBs and their ability to migrate offsite, City inspectors can inform the property owners and managers of the control measures required to eliminate migration of roofing material and/or sediments from pervious areas onto public property and the MS4, and possibly avoid a referral to the SF Bay Water Board.

Property #3 –Undetermined

Property #3 is a 12.72-acre property located at 1601 Coleman Avenue. This property was formerly part of the larger FMC property (and PCBs cleanup site) described previously. FPE buildings were located on this site. Costco Wholesale Corporation (Costco) purchased and redeveloped this portion of the former FMC property in the mid-1990's. Currently, there is a Costco warehouse with associated parking lots and gasoline fueling station on the property. Information about this property in the Geotracker database identified a remediation site for petroleum products under the location of the current fueling station. Ground water was pumped and treated on the property from the 1990's through 2015. A 2016 post groundwater extraction and treatment report for the property documented soil tests conducted in November 2015 near the locations where the former FPE buildings had been found. Aroclor 1260 concentrations were as high as 2.7 mg/Kg, and Aroclor 1254 as high as 0.323 mg/Kg. This property was designated as a high-interest property for sampling during the current investigation. However, SCVURPPP was not able to collect soil or sediment samples from this property or the adjacent public ROW during WY 2017. No pervious areas that could be sampled were identified near the 2015 soil bore locations. The on-site storm drain inlets did not contain a sufficient volume of sediment to collect a sample. Because samples could not be collected on (or adjacent to) this property during the current investigation, SCVURPPP is not able to determine if this property is a source of PCBs to the MS4 at this time.

Next Steps: SCVURPPP recommends this property remain on the list of high-interest properties. Given the property's history of known PCBs contamination and cleanup actions, and the recent soil sample results reported in Geotracker that showed elevated Aroclor concentrations, the City of Santa Clara is evaluating if further investigation is warranted. Additional evidence, such as samples collected on the property, is needed to determine if this property is a PCBs or mercury source to the MS4 that requires abatement or other control measures.

WMA 050GAC400 (Santa Clara)

Description of WMA

WMA 050GAC400 is a 754-acre catchment almost entirely in the City of Santa Clara (718 acres), with a small portion in the City of San Jose (42 acres, Figure 2.1). The WMA is located northwest of the Mineta San Jose Airport and includes a portion of airport and Highway 101. The WMA drains into the Guadalupe River at the Laurelwood Pump Station. The land uses within the WMA are sharply divided by the Caltrain right-of-way (ROW), with the southern half mostly comprised of residential land uses and the northern half primarily industrial and commercial land uses.

Prior to 1980 the WMA was a mix of agricultural, industrial and commercial land uses. There were 197 industrial parcels in the WMA at that time, comprising 41% of the total WMA area. The northern quarter of the WMA was mostly agricultural. Only auto truck repair establishments and an electrical utility substation existed in that portion of the WMA in 1968. Much as they are today, the southern and central sections of the WMA were residential and industrial/commercial land uses, respectively. There were also three active railroad tracks that ran east-west across the WMA that have since been abandoned. Industrial activities in the WMA included a fiberglass manufacturing plant (Owens Corning) that was established in 1949 on the largest industrial property in the WMA (42 acres), asbestos-cement pipe manufacturing (CertainTeed), and plastics and resin manufacturing (Monsanto). Geotracker identified the CertainTeed and Monsanto properties as California Department of Toxic Substances Control (DTSC) cleanup sites with known PCBs contamination. Aerial photos from both 1968 and 1980 show the asbestos slurry waste pond on the CertainTeed property, and waste piles behind the buildings where Monsanto manufactured plastics and resins. During its operations from 1962 to 1983, CertainTeed stored transformers and conduits with PCBs from other companies on site. This equipment was removed as part of the cleanup, and DTSC considered the site remediated and required no further action. The former Monsanto site was also remediated, and currently has deed restrictions and a remedy approved by the SF Bay Water Board to pump and treat contaminated groundwater.

Currently, Owens Corning continues to manufacture fiberglass on the same property that they have occupied since 1949. Both the CertainTeed and Monsanto properties have been redeveloped into office buildings and parking lots. The two electrical utility substations that were present in the WMA prior to 1980 are both still active. These include the substation on the Owens Corning property, and the substation in the northern part of the WMA that is adjacent to the more recently constructed natural gas power plant owned by the City of Santa Clara. Other current activities in the WMA include construction and demolition operations, equipment rental, and vehicle repair facilities.

In WY 2015, elevated concentrations of PCBs (0.80 mg/Kg) were observed in a sediment sample collected from an inlet along Lafayette Street. This inlet drains an area along Lafayette Street south to Walsh Road, and includes a portion of an unpaved old industrial railroad track that runs between the Owens Corning Property and the former Monsanto cleanup site. The source property investigation conducted in this WMA during WY 2016 and WY 2017 focused on identifying the source(s) of PCBs observed in this sediment sample.

Investigation Results

Records Review: Of the 197 parcels in the WMA that were industrial prior to 1980, 188 parcels (all in the City of Santa Clara) were initially identified as high- or moderate-interest properties for further investigation. These included the parcels adjacent to public ROW areas where the elevated PCBs concentration was found during sediment sampling in WY 2015. Program and municipal staff compiled and reviewed available information on these properties. A total of 115 parcels were prioritized for public ROW surveys, and 246 businesses associated with these parcels were prioritized for site visits. All known or suspected PCBs or mercury contaminated sites in the WMA were included as prioritized parcels.

Public ROW Surveys and Site Visits: In the summer of 2016, Program and municipal staff completed public ROW surveys adjacent to 115 prioritized parcels and conducted follow-up site visits at 76 businesses associated with these parcels. Based on information gathered during these efforts, 7 properties were identified as high-interest for follow-up sampling. The seven properties that were targeted for soil/sediment sampling are list in Table 3.2.

Table 3.2. Properties in WMA 050GAC400 (City of Santa Clara) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID #	APN(s)	Business Name(s)/ Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt.)	Total Mercury (mg/Kg dry wt.)
11	22456001	Commercial/Industrial Park - Former Monsanto cleanup site	1135 Walsh Avenue	15.51	0.29	0.24
12	22407100	Owens Corning Electrical Utility Sub Station adjacent to Lafayette St.	960 Central Expressway	0.38	0.20	0.17
					0.15	0.092
13	22404094	Business Park - Former CertainTeed cleanup site	2805 Lafayette St	10.04	0.017	0.23
					0.010	0.50
					0.004	0.088
14	22404062	Commercial/Industrial Business Park; ROW Median; Abandoned Private Railroad Track	2705 - 2765 Lafayette St	6.61	0.071	0.18
					0.051	0.81
					0.048	0.26
					0.022	0.20
					0.021	0.10
		Public ROW	Near 1767 Parker		0.007	0.053
15	22408149	Power Plant & Electrical Utility Substation	Duane Avenue and Lafayette St	6.78	No Samples Collected	
16	22464002	Concrete Construction	1180 Richard Ave	1.91	0.017	0.085
17	22460003	Equipment Rental	2550 Lafayette St		0.065	0.21

[a]Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

Sample Collection: In the summer of 2017, 14 soil/sediment samples on (or adjacent to) the high-interest properties in Table 3.2 were collected and analyzed for PCBs and total mercury (Figures 3.5 - 3.6). The majority of the samples were collected from soil/sediment in the public ROW that had migrated from high-interest properties. PCBs concentrations ranged from 0.004 mg/Kg to 0.29 mg/Kg. Mercury concentrations ranged from 0.05 mg/Kg to 0.81 mg/Kg. Two samples had slightly elevated PCBs and 2 samples had elevated mercury concentrations.

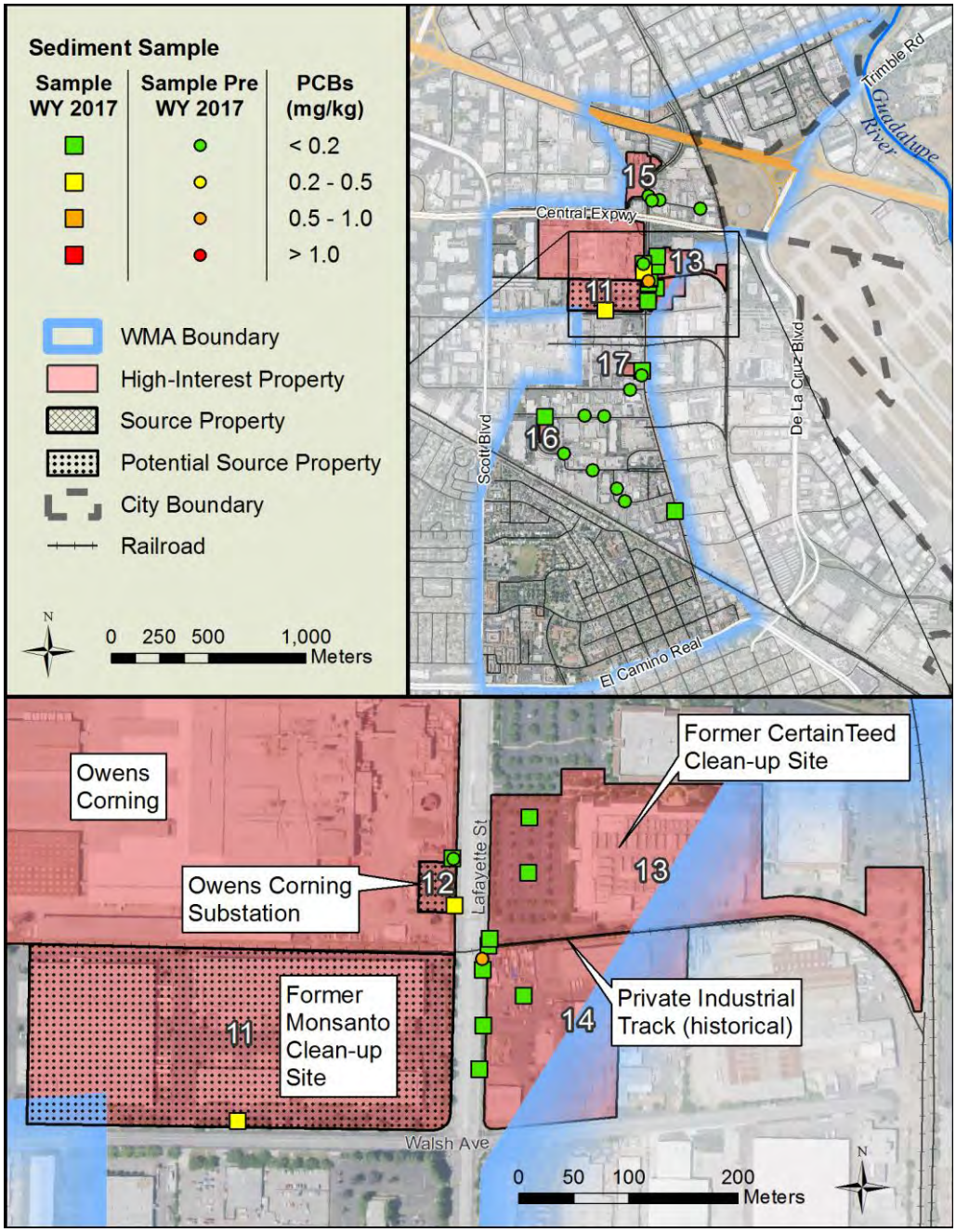


Figure 3.5. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 050GAC400 (City of Santa Clara).

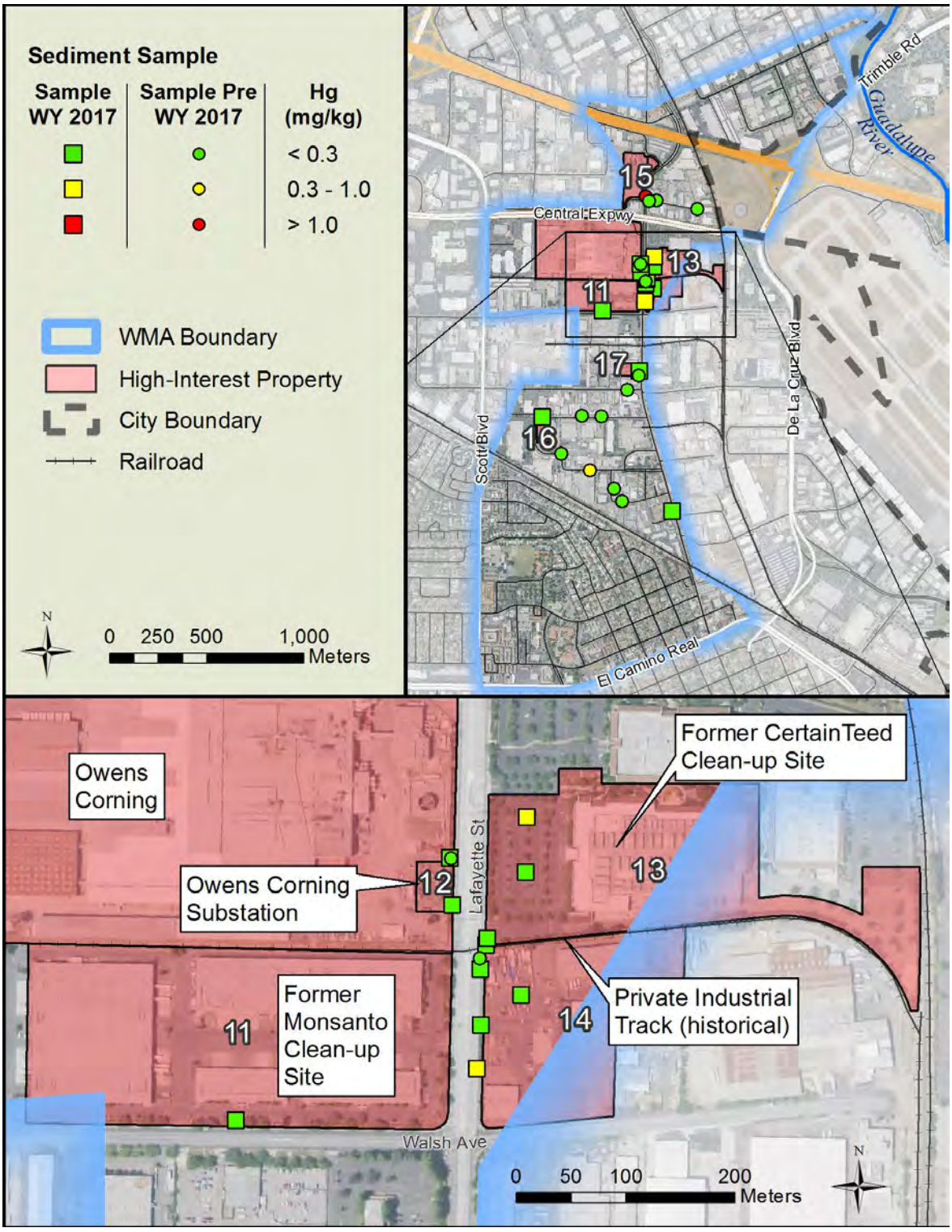


Figure 3.6. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 050GAC400 (City of Santa Clara).

Figure 3.7 presents the PCBs homolog profiles for the sediment samples with elevated PCBs, alongside selected Aroclor formulations. The PCBs homolog profile for the sample obtained at the border of the Owens Corning electrical utility substation (Property #12) is similar to the sediment sample with an elevated PCBs concentration collected in WY 2015 from the storm drain inlet across the street from the substation. Both profiles are dominated by hexa-chloro congeners, followed closely by hepta-chloro congeners, suggestive of heavier weight Aroclors, such as Aroclor 1260 or higher. The homolog profile for the sample collected in the public ROW adjacent to the former Monsanto cleanup site (Property #11) is dominated by tetra-chloro congeners, but also has a high percentage of penta-chloro congeners. This pattern suggests a weathered mix of mid-weight Aroclors, such as Aroclor 1254 and 1248.

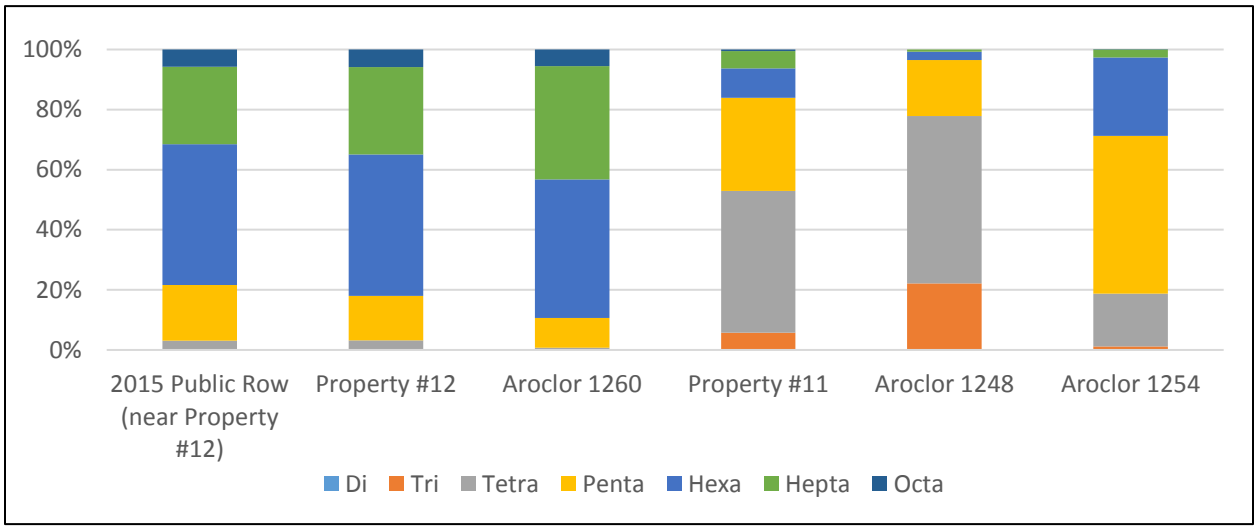


Figure 3.7 PCBs homolog profiles for soil/sediment samples with elevated concentrations of PCBs observed in samples collected in Water Years 2015 and 2017 in Watershed Management Area 050GAC400 (City of Santa Clara).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation as the basis for identifying source properties or potential source properties, and to identify properties that should be retained on the high-interest list for follow-up actions. Two properties in the WMA were identified as potential PCBs source properties: Property # 11 and Property #12. Slightly elevated PCBs concentrations (above urban background) were observed in samples associated with both properties. Two additional properties were identified as potential mercury source properties, Property #13 and Property #14, due to elevated mercury concentrations observed in samples. Property #15 could not be sampled during WY 2017, and remains on the list of high-interest properties for further investigation. Additional discussion about each of these properties and options for next steps are presented below. All other properties initially designated as high-interest for sampling (see Table 3.2) had PCBs and mercury concentrations that were below urban background levels. Because of this result and the lack of other evidence suggestive of PCBs or mercury sources, these properties are re-categorized as low-interest properties and eliminated from further consideration at this time.

Discussion

Property #11 – Potential PCBs Source Property

Property #11 is a 15.51-acre property located at 1135 Walsh Avenue in Santa Clara. This property is currently owned by PSB Northern Ca Industrial Portfolia, LLC and was redeveloped into the Lafayette Industrial Park by Spieker Properties in 1995. The Monsanto Company owned this property from about 1950 to 1983. The eastern portion of the property was developed and used by Monsanto for the manufacture of plastics and resins, both of which may have contained PCBs during this time period. Review of 1968 aerial photographs showed potential waste piles on the northwest portion of the site and the southwest portion of the Owens Corning site. Records on Geotracker document Monsanto discharged liquid wastes on a portion of the property from the mid-1960s to 1975 and buried solid waste in seven trenches elsewhere on the property. Monsanto also maintained one or more above-ground tanks that were removed in 1985, and an underground storage tank that was discovered in 1995. Other Geotracker records show PCBs from an unknown source were found on the site and remediated with a cap and deed restrictions were placed on the property. Although remediation has occurred on the site, this property remains an open remediation site with SF Bay Water Board. A cleanup order currently requires groundwater pumping and treatment with carbon filters to remove solvents and TCE. Presently, the site is paved with good housekeeping. All above ground drainage flows to storm drain inlets in parking lots and driveway areas on the property that subsequently connect to the MS4.

During the current investigation, a sediment sample collected from an inlet in the parking lot of the Lafayette Industrial Park had an elevated PCBs concentration (0.29 mg/Kg PCBs). Although this concentration is only slightly elevated above urban background, given the history of potential PCBs use, release and disposal at this site, additional follow-up investigation is warranted.

Next Steps: City of Santa Clara is evaluating options for further investigation of this property. Although sediment collected from the site during this investigation was just slightly above urban background PCBs concentrations, given the site history and ongoing open remediation, additional investigation is warranted. Since the former Monsanto site has a remedy approved by the SF Bay Water Board to pump and treat contaminated groundwater, the City of Santa Clara (or the Program on behalf of the City) may consider reporting that sediment samples collected in the underground collection system for the site are above urban background concentrations for PCBs. Also, because this property is currently an open ground water remediation site, the City/Program may also request that the SF Bay Water Board require the current property owner to video the underground collection system to determine if there are any breaks in the piping where potentially PCB-contaminated sediment could enter the storm drain. Other options for further investigation include the Program or property owner to conduct additional sampling on the property to better understand the manner in which PCBs migrate off the site into the MS4, which could lead to the identification of control measures that could be implemented to reduce or stop the offsite transport of PCBs.

Property #12 – Potential PCBs Source Property

Property #12 is a 0.38-acre electrical utility substation for the Owens Corning Fiberglass Manufacturing Plant. The substation is located near the southeast corner of the Owens Corning Plant and borders Lafayette Street. The substation property is owned by Owens Corning, but the equipment is maintained by Silicon Valley Power for the City of Santa Clara. The property is unpaved, with a thick layer of gravel

covering the surface. There is a storm drain inlet on the property in the southeast corner that drains directly to the MS4 via a subsurface connection that was not accessible for sampling. During the site visit, sediment accumulation was noted in a low spot at the southwest corner of the parcel that apparently does not drain to the onsite storm drain inlet. Although the substation does not drain directly to the storm drain inlet where high PCBs were found across the street in WY 2015, there are other feasible transport pathways (i.e., wind and vehicle tracking) between the substation and the storm drain inlet by which soil from the substation may be transported to that location. The sample in WY 2017 was collected from surface soils swept up from the two driveways to the substation on Lafayette Street. The PCBs homolog profiles for both the WY 2015 inlet sample collected across the street from the property, and the sample collected in WY 2017 from the substation driveway are very similar, suggesting the PCBs found at both locations may be from the same source.

Next Steps: City of Santa Clara is evaluating options for further investigation of this property. Because this site is and has been an electrical utility substation since the property was first developed (~1949), it is highly likely that equipment with PCBs were used on the property. PCBs may also still be contained within equipment currently in use on the property. Additional samples collected on and around the property may be needed to confirm if the substation is a source of PCBs to the MS4. A follow-up site visit may also provide additional information on any PCBs-containing equipment currently on the property, or areas where PCB-containing equipment were used in the past. Further, because the property remains mostly unpaved, the City of Santa Clara may want to require the use of additional control measures to reduce sediment transport off the property to the MS4.

Property #13 and Property #14 – Potential Mercury Source Properties

Property #13 and Property #14 are both commercial business parks next to each other on Lafayette Street. Property #13, a 10.04-acre site located at 2805 Lafayette Street, is the location of the former CertainTeed cleanup site that was redeveloped in the 1980's. This site is on the SF Bay Water Board's Triage list of PCBs Cleanup Sites, although no further action is currently planned. Property #14 is a 6.61-acre site located at 2715 - 2755 Lafayette Street. Multiple businesses currently use these properties, including a thrift store, tire shop, retail equipment, and other small operations. The properties are mostly paved, however, there are unpaved areas where an abandoned private railroad track runs along the northern portion of Property #14 at the border with Property #13.

Next Steps: City of Santa Clara is evaluating options for additional investigation of these properties. Follow-up actions may include site visits and additional on-site sampling to determine the sources of mercury and/or how mercury may be transported from these properties. Particular attention to the unpaved railroad tracks on Property #14, including sampling of the exposed soils on the tracks, may be warranted. With a better understanding of possible sources of mercury and their ability to migrate off-site, City inspectors and/or SF Bay Water Board staff should inform the property owners and managers of the control measures required to eliminate migration of mercury from the properties into the MS4.

Property #15 – Status Undetermined

Property #15 is a 6.78-acre property that currently houses the Donald Von Raesfeld Power Plant, a natural gas power plant that is operated by Silicon Valley Power and the City of Santa Clara. This power plant has operated on this property since 2005. In addition, this property houses a substation that reduces the high voltage generated by the power plant prior to distribution. Although the power plant

has only operated since 2005, the substation has been at this location since at least the 1960's, and was the primary target for proposed sampling at this property. However, although there were several potential sample locations in storm drain infrastructure on the property that were identified during the site visit, there was no sediment accumulation at these locations at the time of sample collection. Because samples could not be collected on or adjacent to this property during the current investigation, SCVURPPP is not able to determine if the substation at this property is a source of PCBs to the MS4 at this time.

Next Steps: SCVURPPP recommends this property remain on the list of high-interest properties. The City is evaluating options for further investigation. Additional evidence is needed to determine if this property is a PCBs or mercury source to the MS4 that requires abatement or other control measures. Follow-up actions may include site visits and on-site sampling.

WMA 083GAC900 (San Jose)

Description of WMA

WMA 083GAC900 is comprised of 611 acres and is entirely located in the City of San Jose (Figure 2.1). This WMA is located south of Highway 280 and east of Highway 87. Drainage flows to the center of the catchment and then the MS4 carries the flow west to the Guadalupe River. The WMA can be divided into three main sections. The northern section is residential land use with commercial land uses on the main arterial streets. The southern section is dominated by a large cemetery along Monterey Road that comprises more than one-quarter of the total WMA area. The central section of the WMA is predominantly industrial land use with a wide variety of commercial activities. Active rail lines run north-south along both the eastern and western borders of the WMA. Multiple railroad spurs run east-west across the WMA, although only one is currently active.

Prior to 1980, the WMA was a mix of industrial, commercial, agricultural, and residential land uses. There were 114 industrial parcels at that time, comprising 34% of the total WMA area. Industrial facilities included the largest metal recycling facility in Santa Clara County (Sims Metal Management, formerly Levin Metals Corporation), and the 55-acre General Electric Motor Plant that manufactured motors and electrical parts into the 1990's. Other industries in the WMA included electrical utility substations, electroformers (a metal forming process to produce metal equipment parts), canneries, a nut processing facility, various recycling facilities, vehicle salvage, vehicle repair, along with welding, tires and auto parts shops. Geotracker records identify three cleanup sites with known PCBs contamination in the WMA, including the General Electric Motor Plant, the San Jose Canning Company, and a PG&E substation. Each of these sites has been remediated.

Currently, Sims Metal Management continues to operate a scrap metal recycling facility in the WMA. The former San Jose Canning Company site was redeveloped into a child care center in 1995. The former General Electric Motor Plant property was redeveloped into a large shopping center (the Plant on Curtner Avenue and Monterey Road) in 2005. The now remediated PG&E substation is located next to the shopping center. The WMA also has active railroads and includes the Tamien station in the northern part of the WMA, which serves both Caltrain and VTA light rail.

In WY 2015, 3 soil/sediment samples collected from public ROW areas in the WMA had elevated PCBs and mercury concentrations. All three samples were collected on Monterey Road in the vicinity of Sims Metal Management and nearby industrial/commercial properties. The source property investigation conducted in this WMA focused on identifying the source(s) of elevated PCBs and mercury observed in these samples.

Investigation Results

Records Review: Of the 114 parcels in the WMA that were industrial prior to 1980, 95 properties were initially identified as high- or moderate-interest for further investigation, including all properties that are adjacent to public ROW areas where elevated PCBs or mercury concentrations were found in WY 2015. Program and municipal staff compiled and reviewed information on these high- and moderate-interest parcels. A total of 45 parcels were prioritized for public ROW surveys, and 66 businesses associated with these properties were prioritized for site visits.

Public ROW Surveys and Site Visits: In the summer of 2016, Program and municipal staff completed public ROW surveys adjacent to 45 prioritized parcels and conducted follow-up site visits at 23 businesses on these parcels. Based on information gathered during these efforts, four properties were identified as high-interest for follow-up sampling. These four high-interest properties are listed in Table 3.3. All four of these properties are currently registered as NOI facilities on the SMARTS database.

Table 3.3. Properties in WMA 083GAC900 (City of San Jose) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID#	APN(s)	Business Name(s)/Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt.)	Total Mercury (mg/Kg dry wt.)
18	45503003	P&S Industrial Park with various industrial & commercial businesses, including furniture stores, tires, recycling, packing & crating, granite & marble contractors, metal fabricators, auto parts, custom welding, etc.	1755, 1763, 1775, 1815 Monterey Rd	12.97	7.1	1.9
	45503004					
	45503005					
	45503006					
	45503008					
	45503009					
	45503010					
	45504003					
	45504004				0.074	0.42
19	47724043	Sims Metal Management - Metal Recycler	1720 - 1930 Monterey Rd	13.7	0.30	2.0
	47724042				0.25	0.77
	47724041				0.23	0.95
	47723011				0.12	0.32
20	45613003	Navarra Truck (parts supply); San Jose Rebar Inc. (steel fabricator)	1837 - 1855 Monterey Rd	2.24	0.078	0.42
21	45502042	Xstrata Recycling - General Recycling	1695 Monterey Rd	2.72	No Samples Collected	

[a] Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

Sample Collection: In the spring of 2017, seven samples were collected in the WMA on or near the high-interest properties in Table 3.3 and analyzed for PCBs (Figure 3.8) and total mercury (Figure 3.9). The majority of the samples were collected from soil or sediment in the public ROW at the border of high-interest properties. One sample was collected inside a private lateral line at the point where the lateral connected to the MS4. No samples were collected adjacent to Property #21 because of a lack of sediment at the time of sampling. PCBs concentrations ranged from 0.07 mg/Kg to 7.1 mg/Kg. Mercury concentrations ranged from 0.32 mg/Kg to 1.95 mg/Kg.

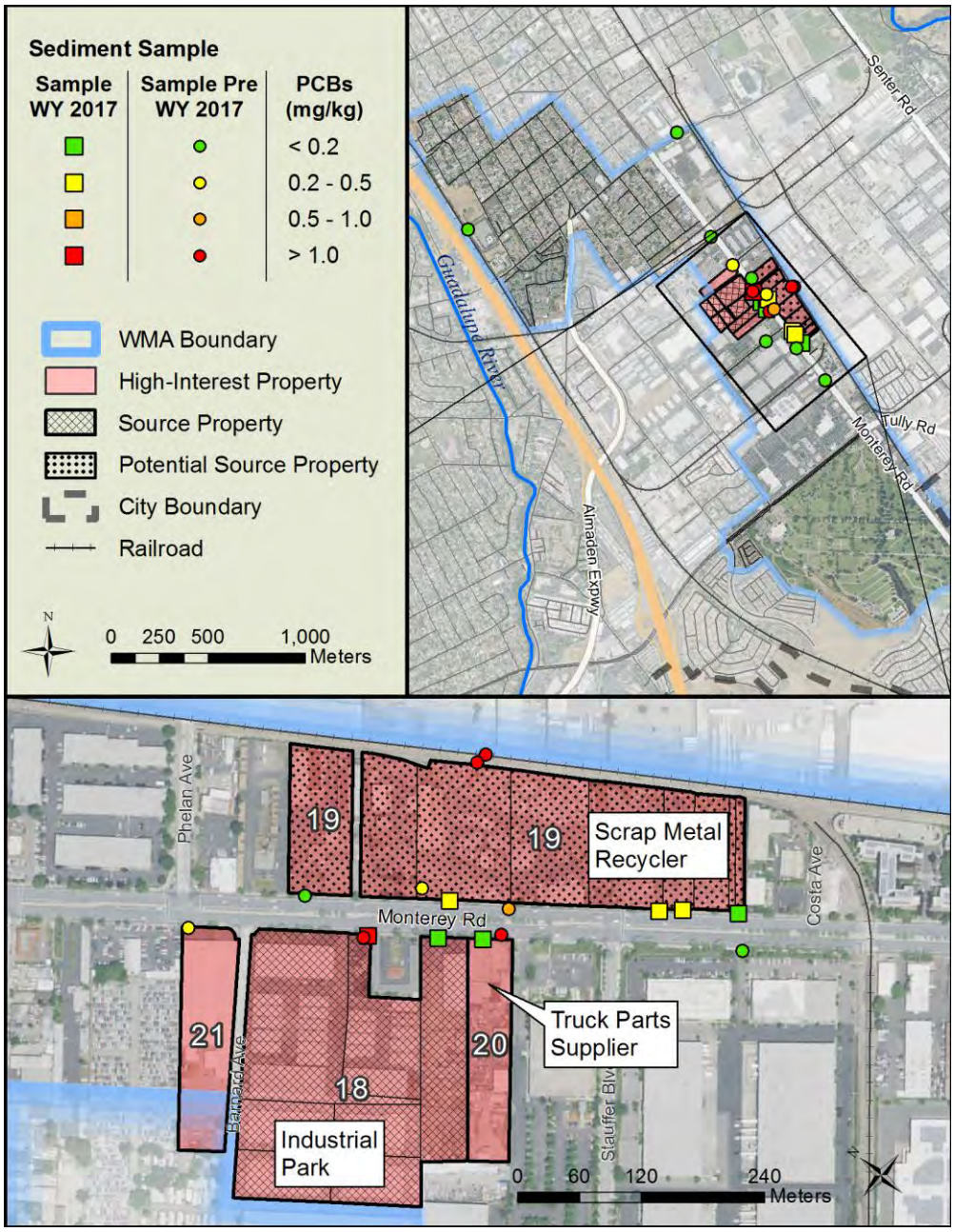


Figure 3.8. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 083GAC900 (City of San Jose).

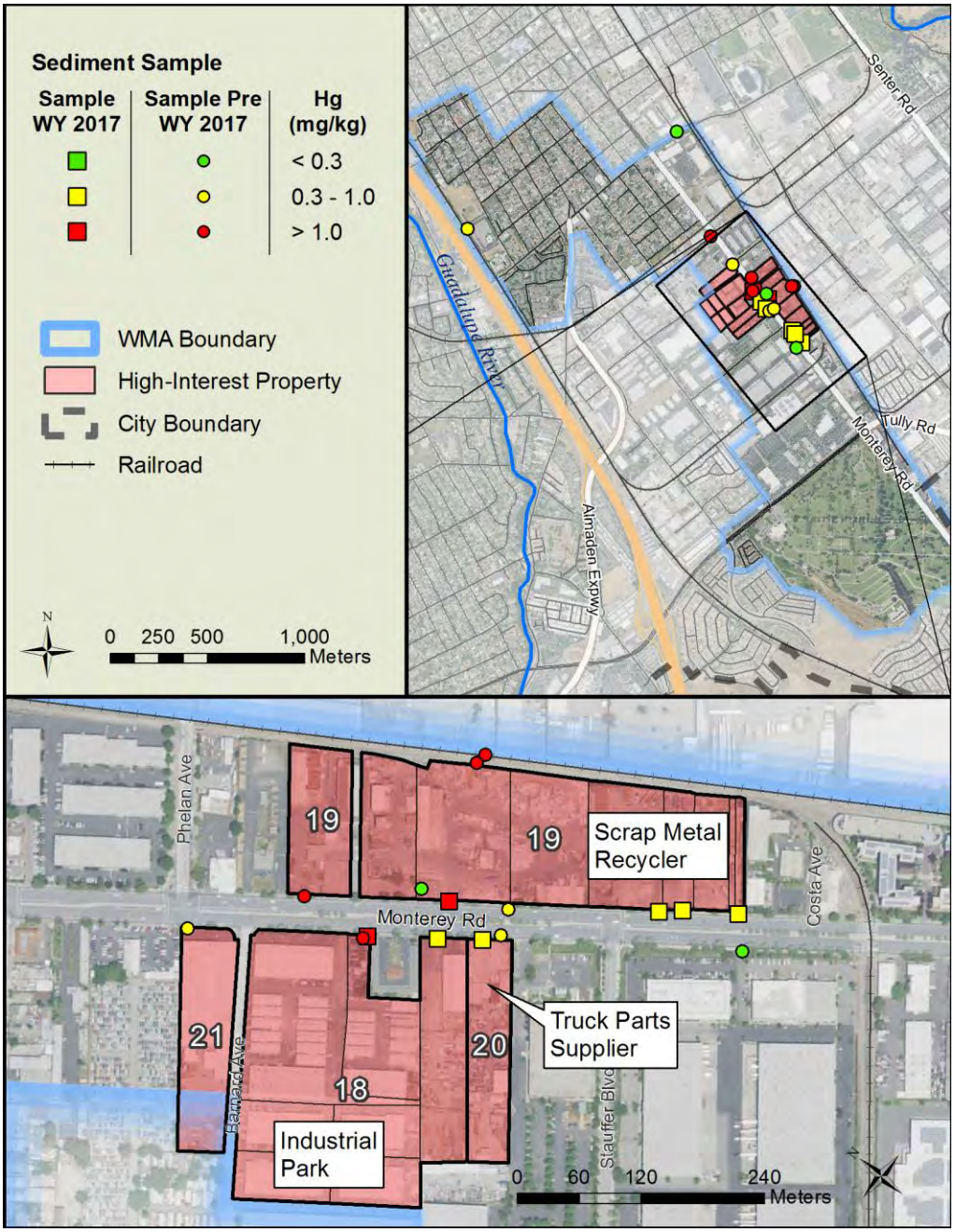


Figure 3.9. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 083GAC900 (City of San Jose).

Figure 3.10 presents the PCBs homolog profiles for each soil/sediment sample that had elevated PCBs concentrations (> 0.2 mg/Kg) during WY 2015 or WY 2017. A selection of common Aroclor formulations are also provided for comparison. The homolog profiles for samples collected near each property in WY 2015 and again in WY 2017 are similar. These samples most closely resemble Aroclor 1254, but likely represent a mix of weathered Aroclors.

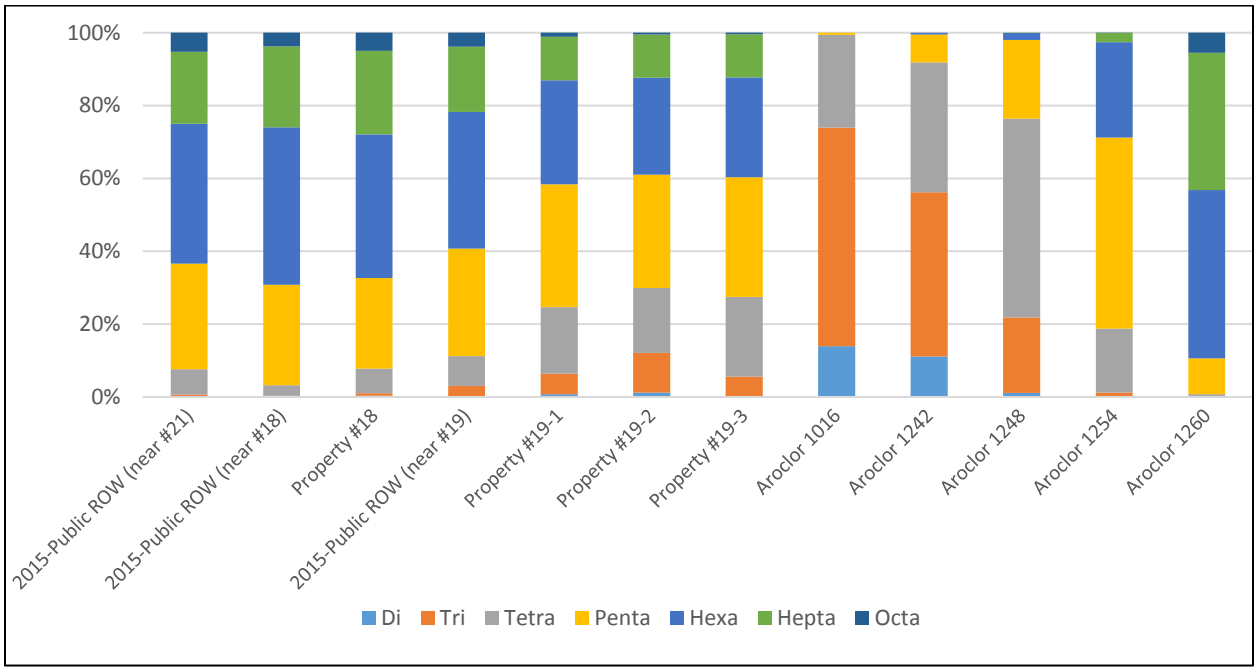


Figure 3.10. PCBs homolog profiles for soil/sediment samples with elevated concentrations of PCBs observed in samples collected in Water Years 2015 and 2017 in Watershed Management Area 083GAC900 (City of San Jose).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation as the basis for identifying source properties or potential source properties, and properties that should be retained on the high-interest list for follow-up actions. All 4 high-interest properties in Table 3.3 fit into one of these categories. Samples associated with Property #18 had both elevated PCBs and mercury concentrations and was therefore identified as a PCBs and mercury source property. Samples associated with Property #19 had slightly elevated PCBs concentrations in 3 of the 4 samples collected at the border of the parcel, and elevated mercury concentrations in all 4 samples collected. This property was identified as a potential PCBs and mercury source property. Samples collected near Property #20 had PCBs concentrations below urban background, but slightly elevated mercury concentrations. This property was re-categorized as a low-interest property for PCBs, but identified as a potential mercury source property. Property #21 could not be sampled during WY 2017 so it remains on the list of high-interest properties for further investigation. Additional discussion about each of these properties and potential next steps are presented below.

Discussion

Property #18 – PCBs and Mercury Source Property

Property #18 is a 12.97-acre, multi-parcel property located at 1815 - 1775 Monterey Road in the City of San Jose. The property is owned by Pollack Properties Limited LLC. There are many small businesses currently operating in this commercial and industrial business area, including furniture stores, used tire sales, freight services, metal fabricators, custom welding, and used auto parts shops. Many of these businesses operate out of warehouse-style buildings. All parcels appear to be predominantly paved, however, there are some unpaved areas at the back of parcels where vehicles may track soil/sediment onto adjacent parcels.

In WY 2015, SCVURPPP collected a sediment sample with a PCBs concentration of 1.97 mg/Kg from a manhole located on the sidewalk in front of the property, at the connection point between the property's private lateral and the public storm drain line. In 2016, a site visit to the property documented that drainage from several adjacent parcels owned by Pollack Properties Limited flows overland to a drop inlet in the driveway of the Industrial Park at 1775 Monterey Road. The 2016 site visit to several businesses in the complex also identified locations where current pole-mounted transformers are located on the property, and locations that had transformers on-site in the past. In 2017, SCVURPPP collected a sediment sample from inside the private lateral at the connection to the MS4 in the public ROW. The sample had highly elevated PCBs and mercury concentrations (7.1 mg/Kg and 1.9 mg/Kg, respectively). These high concentrations indicate close proximity of a local source. Additional evidence of transformers and former transformers on the site suggests these may be at least one possible source of PCBs on the property. Given where the WY 2017 samples were collected (i.e., from sediment that flowed from the property through the subsurface drainage to the MS4), this result confirms this property is the source of PCBs and mercury to the MS4 at this location.

Next Steps: The City of San Jose is evaluating options, including referral of Property #18 to the SF Bay Water Board for abatement or other actions to directly cause the property owner to abate the property. . Full abatement of the property for PCBs is expected to result in abatement of mercury migration from the property as well. The highly elevated PCBs concentrations in sediment found in the lateral that drains the property provides clear evidence that this property is a source of PCBs and mercury to the MS4. A practical next step may be to video the storm drain laterals on the property to determine if subsurface sediment is entering the lateral. Because this is a NOI facility subject to the IGP, the City should encourage the SF Bay Water Board to enforce provisions of the IGP to address stormwater concerns.

Property #19 – Potential PCBs Source Property and Mercury Source Property

Property #19 is a 13.7-acre property consisting of multiple parcels located at 1720 – 1930 Monterey Road in the City of San Jose. A scrap metal recycling facility owned and operated by Sims Metal Management is the sole industry located on the property. The PCBs concentration in a soil sample collected adjacent to the property in 2015 was 0.7 mg/Kg. In WY 2017, 3 of the 4 samples collected from the driveways to the property and along fence lines had slightly elevated PCBs concentrations (0.23 mg/Kg – 0.30 mg/Kg). Total mercury concentrations were elevated in all 4 WY 2017 samples (0.32 mg/Kg to 1.9 mg/Kg). The Sims Metal Management property shares its western border with the railroad parcel on Leo Avenue, a property that SCVURPPP referred to the SF Bay Water Board in 2015 as a PCBs source property. During the investigation into the Leo Avenue railroad parcels in 2013, the sample with the highest PCBs

concentration (25.6 mg/Kg) was collected from exposed surface soils near the fence line of the metal recycler. That said, there is a large fence and curb that currently prevents water from flowing from the railroad onto the Sims property. Other past sampling efforts in the area have consistently found elevated PCBs concentrations in public ROW areas adjacent to the Sims Metal Management property. However, no samples have yet been collected on the property to-date.

Next Steps: The City of San Jose is evaluating options for further investigation of this potential PCBs and mercury source property. Even though PCBs concentrations in front of the property were only slightly elevated, previous sampling efforts have found very high PCBs behind the property and at other times in the public ROW adjacent to the property. Given the type of operations that occur on the property, this property should be considered as a past and current potential source of PCBs and mercury to the City of San Jose's MS4. Samples collected on the property would provide additional evidence needed to determine if this is a source of PCBs and mercury to the MS4. Additional information from Sims Metal Management on activities conducted on the property could provide a better understanding of sediment transport from the site to the MS4. To date, Program and municipal staff have not collected samples on the property. The SF Bay Water Board's regulatory authority may be required to facilitate on-site sampling and information gathering from the property owner. The City of San Jose may also inform the property owners and managers about PCBs and mercury transport from the site and potentially require control measures that minimize or eliminate the migration of soil/sediments from the site into the MS4. Because this is a NOI facility subject to the IGP, the City should encourage the SF Bay Water Board to enforce provisions of the IGP to address stormwater concerns.

Property #20 – Potential Mercury Source Property

Property #20 is a 2.24-acre industrial/commercial business property located at 1837 – 1855 Monterey Road in the City of San Jose. Businesses on this property include Navarra Truck (truck and van parts supply) and San Jose Rebar, Inc. (metal fabricator). In WY 2017, mercury concentrations in samples collected from the driveways at the front of the property boundary were moderately elevated (0.42 mg/Kg).

Next Steps: The City of San Jose is evaluating options for further investigation of this potential mercury source property. A follow-up site visit to the businesses operating on the property may provide additional information on activities associated with the transport of sediment to the driveway and into the public ROW. City inspectors can inform the property owners and managers of the concern for mercury concentrations associated with the site and potentially require control measures that minimize or eliminate migration of soil/sediments onto public property and into the MS4. Because this is a NOI facility subject to the IGP, the City should encourage the SF Bay Water Board to enforce provisions of the IGP to address stormwater concerns.

Property #21 - Undetermined Status

This property is a 2.72-acre recycling facility located at 1695 Monterey Road in the City of San Jose. The current business, Xstrata Recycling Inc. (aka Glencore Recycling Inc.), has recycled electronic components and secondary precious metals (copper, gold, etc.) at this location since 1984. Prior to that, there was another recycling center on this property from the 1970's. Housekeeping on the property appears to be good, with all outdoor materials covered, and no obvious soil/sediment migration pathways from the property to the MS4. In WY 2002, a sample with elevated PCBs was collected from the adjacent public

ROW, and this property was designated as a high-interest property for sampling during the current investigation. However, SCVURPPP was not able to collect soil or sediment samples from this property or the adjacent public ROW during WY 2017. Because samples could not be collected on or adjacent to this property during the current investigation, SCVURPPP is not able to determine if this property is a source of PCBs in the adjacent MS4. This property remains listed as a high-interest property in the WMA.

Next Steps: The City of San Jose is evaluating options for further investigation. Samples collected on the property may be needed to confirm if this property is a pollutant source. A follow-up site visit to the recycling center may provide additional information on materials handling and storage, general housekeeping, and other activities on the site that may result in release of PCBs or mercury from the property. Based on a better understanding of possible pollutant sources and migration pathways from the property to the MS4, the City of San Jose may then consider informing the property owners and managers of the control measures that should be implemented to eliminate the transport of polluted sediment to the MS4. Because this is a NOI facility subject to the IGP, the City should encourage the SF Bay Water Board to enforce provisions of the IGP to address stormwater concerns.

Additional Next Steps for WMA 083GAC900

The City of San Jose is also evaluating additional next steps for this WMA, which may include collecting stormwater samples. There are a number of potential source properties that are difficult to isolate with the surface soil and sediment sampling that has been conducted in the WMA to-date. Properties like the former General Electric manufacturing plant have undergone substantial redevelopment in recent years, and are now covered with newly paved surfaces, which are unlikely to contribute PCBs and mercury to surface runoff. However, subsurface soils, especially at a known PCBs cleanup site like the former General Electric property, could have elevated PCBs concentrations. Contaminated subsurface soils that are mobilized during storm flows are a potential source of PCBs to the MS4. The underground drainage system in this WMA is not well defined, further complicating this situation. Stormwater monitoring could provide the information needed to better understand if subsurface soils are a source of PCBs or mercury to the MS4. Stormwater samples should be collected from locations selected to isolate specific areas or properties in the WMA.

WMA 051CTC275 (San Jose)

WMA 051CTC275 is comprised of 443 acres in the City of San Jose (Figure 2.1). This WMA is located northwest of the intersection of Hwy 880 and Hwy 101 and drains north into Coyote Creek. The WMA is a mix of industrial and commercial land uses. There is an active industrial railroad spur running down Rogers Avenue, a relatively busy street in the central part of the WMA.

Prior to 1980, land use in the WMA was primarily commercial and industrial. There were 130 industrial parcels during that time which comprised 56% of the total WMA area. Aerial photos from 1968 identified railroad spurs that have since been abandoned, as well as undeveloped areas with vehicle and equipment storage. Businesses in the WMA with the potential for PCBs or mercury use or release included metal recycling, metal manufacturing, cement manufacturing, a beverage plant, and vehicle repair facilities. Several properties that had businesses that closed in the late 1980's have been remediated for solvents.

Currently, the WMA is mostly comprised of commercial and industrial land uses. Many properties consist primarily of commercial businesses and impervious surfaces, with no activities conducted outside. There is also a relatively large vacant area in the WMA. Ongoing industrial activities in the WMA include metal manufacturing and recycling, cement manufacturing, meat packing, and vehicle repair.

In WY 2015, a stormwater sample with relatively elevated PCBs was collected from the WMA near the outfall as part of the RMP sampling conducted by the San Francisco Estuary Institute (SFEI). This stormwater sample had a PCBs concentration of 15 ng/L, which is ranked in the top 70th percentile for stormwater concentrations measured to date in the Bay Area (Gilbreath et al. 2018). The PCBs particle ratio (0.12 mg/Kg) was slightly above the median for the Bay Area (Appendix B). Sediment sampling conducted in WY 2015 also found elevated PCBs and mercury in the WMA. Two samples collected in different parts of the WMA had highly elevated PCBs (1.1-1.4 mg/Kg), while a third sample had slightly elevated PCBs (0.31 mg/Kg). The source property investigation conducted in this WMA during WYs 2016 and 2017 focused on identifying the source(s) of these elevated PCBs concentrations.

Investigation Results

Records Review: Of the 130 industrial parcels developed prior to 1980 in the WMA, 122 parcels were initially identified as high- or moderate-interest for further investigation. Any parcels adjacent to public ROW areas where elevated PCBs or mercury concentrations were found during WY 2015 monitoring were included in this list. Program and municipal staff compiled and reviewed available information on these parcels. A total of 48 parcels were then prioritized for public ROW surveys and site visits, including at least one property known from stormwater inspection documents to have PCBs on the premises in the recent past. Three properties are currently registered as NOI facilities on the SMARTS database (#23, #24, and #28).

Public ROW Surveys and Site Visits: In the spring of 2016, Program and municipal staff completed public ROW surveys adjacent to 48 prioritized parcels and conducted follow-up site visits at businesses located on 30 of the high interest parcels. Based on information gathered during these efforts, 7 properties were identified as high-interest for follow-up sampling. Table 3.4 lists these high-interest properties.

Table 3.4. Properties in WMA 051CTC275 (City of San Jose) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID#	APN(s)	Business Name(s)/Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt)	Total Mercury (mg/Kg dry wt)
22	23727033	Z Con Specialty Services Inc. - Environmental Abatement Company	1645 Old Bayshore Hwy	0.24	12	1.3
					2.0	0.25
23	23709128	Tung Tai Group - Waste Recycler	1726 Rogers Ave	1.35	0.57	3.0
24	23709129; 23709130	Multiple Businesses, including: Triad Manufacturing; Travertine U.S. Natural Stone	1750 Rogers Ave	4.12	0.28	0.12
25	23709133	Alco Iron and Metal - Iron & Steel Recycler	1788 Rogers Ave	1.86	0.24	1.6
26	23709115	Utility Equipment Explosion	1731 Rogers Ave	1.29	0.041	0.15
27	23721081	W.A. Call Manufacturing - Sheet Metal/Pipes	1710 Rogers Ave	2.05	0.032	0.15
					0.026	0.085
					0.012	0.040
28	23712098	Meat Packing Company	1660 Old Bayshore Hwy	1.27	0.032	0.22

[a] Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

Sample Collection: In the spring of 2017, 10 soil and sediment samples were collected from locations on (or adjacent to) the high-interest properties in Table 3.4 and analyzed for PCBs (Figure 3.11) and total mercury (Figure 3.12). A total of 4 samples were collected on private properties, including 2 samples from on-site drop-inlets, and 2 samples collected from surface soils. One of the private property samples, and 2 samples in the public ROW were collected in areas where property owners or tenants reported that transformers mounted on utility poles recently had fluid releases (e.g., explosions, leaks, etc.). The rest of the samples were collected from soil/sediment in public ROW areas that appeared to have migrated from high-interest properties. PCBs concentrations ranged from 0.01 mg/Kg to 12 mg/Kg. Total mercury concentrations ranged from 0.04 mg/Kg to 3.0 mg/Kg. A total of 5 samples had elevated PCBs concentrations. Three of these samples also had elevated mercury concentrations.

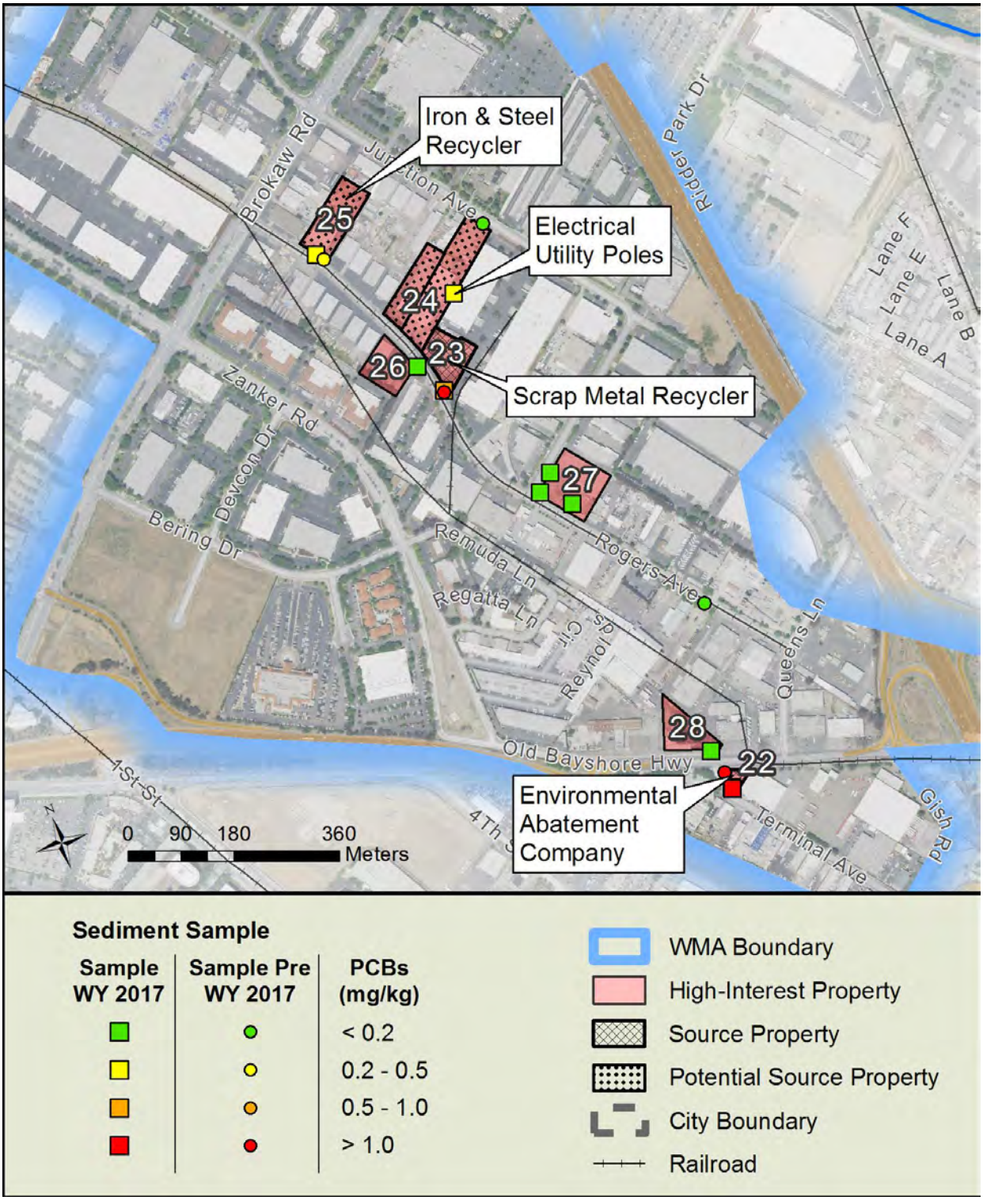


Figure 3.11. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 051CTC275 (City of San Jose).

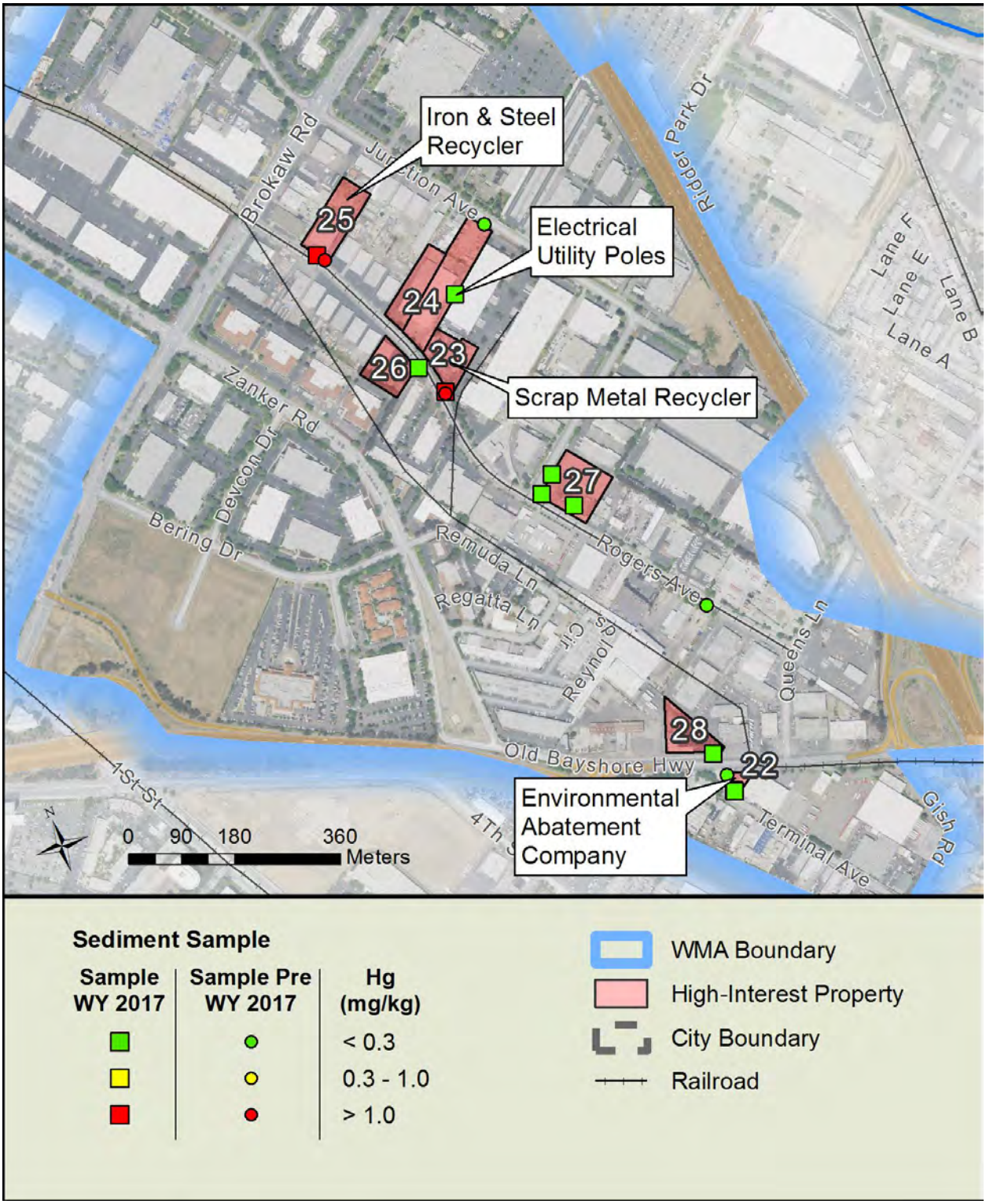


Figure 3.12. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 051CTC275 (City of San Jose).

Figure 3.13 presents the PCBs homolog profiles for each soil/sediment sample that had elevated PCBs concentrations (> 0.2 mg/Kg) during WY 2015 or WY 2017. Selected Aroclor formulations are also provided for comparison purposes. The three PCBs homolog profiles that were collected on or near Property #22 during both years are remarkably similar, with the contribution from each chloro-group within 3%. These samples are dominated by hexa- and hepta-chlorinated congeners, with much smaller amounts of penta- and octa- chlorinated congeners in each. This pattern is suggestive of more heavily chlorinated formulations such as Aroclor 1260. However, the absence of the lesser chlorinated congeners may be due to weathering and does not rule out the possibility they may have been present in the original Aroclor source mixture.

The two samples collected adjacent to Property #23 also show similar PCBs homolog patterns. Because different Aroclor formulations were typically generated with one dominant chloro-group, the lack of a dominant chloro-group in these samples suggests a mix of Aroclors, such as 1242, 1248, and 1254. With less than 1% octa-chloro groups present, the original sources were not likely Aroclor 1260 or 1262, since octa-chloro congeners are highly stable and in significant percentages in these Aroclor formulations. Similarly, the PCBs homolog profiles for the samples collected near Properties #24 and #25 also suggest a weathered mix of moderately chlorinated Aroclors such as 1242,1248, and 1254.

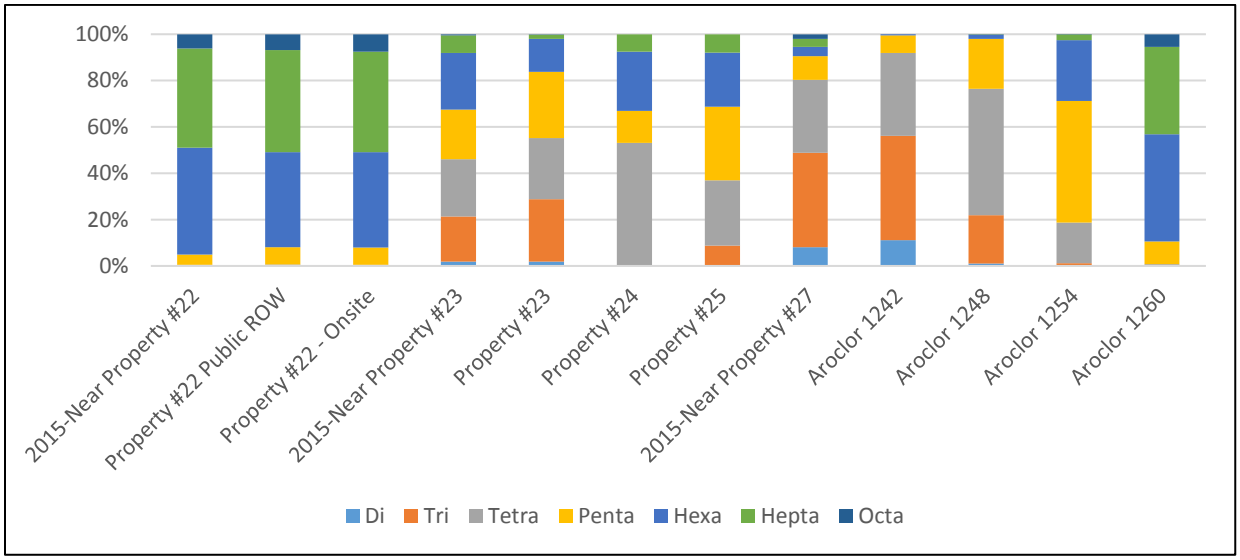


Figure 3.13. PCBs homolog profiles for soil/sediment samples with elevated concentrations of PCBs observed in samples collected in Water Years 2015 and 2017 in Watershed Management Area 051CTC275 (City of San Jose).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation to identify source properties, potential source properties, and properties that should be retained on the high-interest list for follow-up actions. Four properties in the WMA fit into these categories. Properties #22 and #23, which had both elevated PCBs and mercury concentrations were identified as PCBs and mercury source properties. Properties #24 and #25 both had elevated PCBs concentrations and were identified as potential PCBs source properties. Property #25 was also identified as a mercury source property. Additional discussion about each of these

properties and options for next steps are presented below. All other properties in the WMA that were initially designated as high-interest for sampling (see Table 3.4) had PCBs and mercury concentrations that were below urban background levels. Because of this result and the lack of other evidence suggestive of PCBs or mercury sources, these properties are re-categorized as low-interest properties and eliminated from further consideration at this time.

Discussion

Property #22 – PCBs and Mercury Source Property

Property #22 is a 0.24-acre property located at 1645 Old Bayshore Highway in the City of San Jose. The current business on this property is Z-Con Specialty Services Inc., an environmental abatement and hazardous materials remediation company that has been in business since 1994. The company conducts residential and commercial inspections and remediation for various environmental (e.g., lead, asbestos, PCBs) or structural building problems. The company periodically brings demolition materials from remediation jobs onto the property for temporary storage prior to disposal. A 2014 San Jose stormwater inspection of this property reported finding multiple drums of hazardous waste on the site, including lighting ballast material from a school-site demolition job that may have contained PCBs. The site visit revealed other possible PCBs sources that may be brought on-site, such as widow casings and materials containing sealants and caulks from old building demolition sites. During the site visit, Program staff and the City inspector also witnessed employees washing down an inside storage area and the wash water flowed to the outside pavement. Previous stormwater inspection reports indicated prior inspectors had informed the business owner of best management practices (BMPs) for wash water and hazardous waste storage.

Both sediment collected from a drop inlet on the property and soil collected at the parcel border during WY 2017 had elevated concentrations of PCBs (12 mg/Kg and 2.0 mg/Kg, respectively). These concentrations are significantly elevated above urban background levels, suggesting proximity to a local source. The high PCBs found in the drop inlet on the property provide the evidence required to confirm that this property is a source of PCBs to the MS4. The nearly identical PCBs homolog profiles for the sample collected on the property and the 2 samples collected in the adjacent public ROW in WY 2015 and WY 2017 further indicate this property is the major, if not the only, source of PCBs to the MS4 at this location. The PCBs homolog profiles of these samples suggests a pattern that may represent a mix of heavier Aroclors, which were commonly used in materials that may be brought to the property from offsite demolition activities. The high mercury concentrations found in the drop-inlet on the property (1.3 mg/Kg) confirm that this property is also a mercury source property.

Next Steps: The City of San Jose is evaluating options, including referral of Property #22 to the SF Bay Water Board for abatement or other actions to directly cause the property owner to abate the property.. Full abatement of the property for PCBs is expected to result in abatement of any mercury contamination on the property as well. In parallel, the City of San Jose is also evaluating options to implement (or cause to be implemented) appropriate control measures that will prevent the migration of sediment containing PCBs or mercury from the property into the public ROW. The City will also document in their inspection database the elevated PCBs and mercury concentrations found on the property during this investigation. This information will be used to ensure future business inspections verify ongoing implementation of control measures designed to prevent the contribution of PCBs and mercury from this property to the City's MS4. Although not currently registered as a NOI facility on the SMARTS database, the industrial

activities that are conducted at this site (environmental abatement/waste transport) may be subject to the IGP. The City is also considering discussing this issue with the facility owner and/or with the SF Bay Water Board.

Property #23 –PCBs and Mercury Source Property

Property #23 is a 1.35-acre property located at 1726 Rogers Avenue in the City of San Jose. The current business on the property is Tung Tai Group, an electronic and scrap metal recycler, which has operated at this location since 1982. At the time of the site visit, the property had poor housekeeping, with uncovered piles of recycling materials in multiple locations on the lot. There are four storm drain inlets on the property, which at the time of the site visit, were covered with recycling materials. Although samples were not collected on the property, elevated PCBs (0.57 mg/Kg) and mercury (3.0 mg/Kg) were found in soil collected in the public ROW near both driveways to the property. The soil sample collected in WY 2015 in front of this property also had elevated PCBs (1.4 mg/Kg) and mercury (9.9 mg/Kg). The PCBs homolog profiles of the soil samples collected in WY 2015 and WY 2017 both suggest a mix of weathered Aroclors.

Next steps: The City of San Jose is evaluating options, including referral of Property #23 to the SF Bay Water Board for abatement or other actions to directly cause the property owner to abate the property. . Because the elevated PCBs sample that was collected on Property #24, which is next to Property #23, was collected near the shared border between these properties, combined with the current business activities and poor housekeeping on Property #23, it is possible that this property is also the source of the elevated PCBs found on Property #24. In the near term, the City of San Jose is evaluating options to implement (or cause to be implemented) appropriate control measures that will prevent migration of PCBs or mercury off the property into the public ROW. The City will also document in their inspection database that high PCBs and mercury concentrations were found adjacent to the property during this investigation. Because this is a NOI facility subject to the IGP, the City may encourage the SF Bay Water Board to enforce provisions of the IGP to address stormwater concerns.

Property #24 – Potential PCBs Source Property

Property #24 is a 4.12-acre property located at 1750 Rogers Avenue. This property is comprised of 2 adjacent parcels with multiple businesses. There are large warehouse-style buildings on each parcel with paved parking lots. Businesses currently operating on this property include Triad Group Manufacturing (zinc and aluminum die casting, machine shop, plastic molding, etc.), Travertine U.S. Natural Stone, and LockPics (locksmith supplier). Travertine U.S. Natural Stone currently stores inventory in crates and boxes on the front parking lot. The second parcel has an unpaved lot at the back that comprises about 25% of the parcel. The lot is currently used for parking, vehicle and old equipment storage, and what appears to be large dumpsters containing waste materials. Slightly elevated PCBs were found in a soil sample collected on the property in an area underneath a pole-mounted transformer that had leaked in the past. Although only slightly elevated above urban background (0.28 mg/Kg), this still indicates proximity to a local PCBs source. Whether the source of these PCBs was the leaked transformer oil from the utility pole is unknown. The PCBs homolog profile of the sample had a pattern suggestive of a weathered Aroclor or mix of Aroclors, such as 1242, 1248, and 1254.

Next Steps: The City of San Jose is evaluating options for further investigation of this property. A follow-up site visit may provide additional information on the potential for transport of sediment from the area

of the transformer leak to the City's MS4. City stormwater inspectors may inform the property owners and managers of the concern for PCBs at the site and may choose to require the business to implement appropriate control measures to prevent the migration of PCBs from the property to the MS4. The City will also document the results of this investigation in their inspection database to ensure future business inspections verify ongoing implementation of control measures to prevent the release of PCBs from the property.

Property #25 – Potential PCBs Source Property and Mercury Source Property

Property #25 is a 1.86-acre property located at 1788 Rogers Avenue. The current business at this property is ALCO Iron and Metal Company, a metal recycler. This company operates a scrap metal yard on the property, which is a potential source of both PCBs and mercury. PCBs in the soil sample collected from the public ROW at the property border were slightly elevated above urban background (0.24 mg/Kg). The mercury concentration in the same soil sample was elevated (1.6 mg/Kg). The PCBs homolog profile of the sample has a pattern suggestive of a mix of Aroclors or weathered Aroclors, such as 1242, 1248, and 1254. These Aroclors were used in a variety of iron and steel equipment that may be present in metal materials brought to the property for processing.

Next Steps: The City of San Jose is evaluating options for further investigation of this property. A follow-up site visit to ALCO Iron and Metal may provide additional information on activities associated with the transport of soil or sediment to the driveway and into the public ROW. City stormwater inspectors should inform the property owners and managers of the concern for PCBs and mercury on the site. The City of San Jose may consider requiring the business to implement appropriate control measures to prevent the migration of sediment containing PCBs or mercury from the property to the MS4. The City should also document the results of this investigation in their inspection database to ensure future business inspections verify ongoing implementation of control measures designed to prevent the release of PCBs and mercury from the property into the public ROW. Although not currently registered as a NOI facility on the SMARTS database, the industrial activities that are conducted at this site (Metal Recycler) may be subject to the IGP. The City should consider discussing this issue with the facility owner and/or the SF Bay Water Board.

WMA 051CTC400 (San Jose)

Description of WMA

WMA 051CTC400 is comprised of 130 acres in the City of San Jose (Figure 2.1). This WMA is located northeast of the intersection of Highway 880 and Highway 101 and drains north into Coyote Creek. The northern half of the WMA is mostly commercial land use and the southern portion is a mix of industrial and commercial uses. A railroad runs north-south along the eastern border of the WMA.

Prior to 1980, the WMA was a mix of industrial, commercial and agricultural land uses. There were 33 industrial parcels during that time, comprising 69% of the total WMA area. The northern portion of the WMA was mostly agricultural until the 36-acre San Jose Mercury News publishing plant was built in 1967 on Ridder Park Drive. From the 1960's onward, the railroad running along the eastern border of the WMA was used to transport scrap metal to and from Markovitz and Fox Metals, a scrap metal recycling facility located just outside the WMA to the northwest. That facility was identified as a DTSC contaminated cleanup site with PCBs contamination and the property was remediated with a cap and deed restrictions imposed. Redevelopment of the site was completed in 2016.

Currently, the WMA is a mix of commercial and industrial land uses. The southern half of the WMA has various service-oriented industrial and commercial facilities, including vehicle and equipment repair facilities, vehicle parts suppliers and salvage operations, a towing company, a waste hauler, well drilling equipment, and a gravel and rock supplier. There are more than 200 different businesses associated with two parcels in the southern half of the WMA, and many of these businesses are partially or wholly unpaved. The northern half of the WMA has mostly commercial retail and business parks that occupy larger parcels. A 13.8-acre Lowes Home Improvement shopping center was constructed on the northern-most parcel in the WMA in 2008. The former 36-acre San Jose Mercury News property was partially redeveloped recently into commercial and business parks, and the rest of the property was in the construction phase of redevelopment in 2017. Exposed soils were visible on the property during ongoing construction in WY 2017.

In WY 2015, a stormwater sample with high PCBs was collected from the WMA as part of the RMP sampling conducted by SFEI. The sample was collected along Ridder Park Drive near the WMA's outlet to Coyote Creek. All parcels in the WMA drain to this location, with the exception of the Lowes Shopping Center. This sample had one of the highest PCBs concentrations measured in stormwater from Bay Area MS4s to-date (55.5 ng/L). Sediment sampling conducted in WY 2015 also found high PCBs and mercury in the WMA. One sample collected from a storm drain inlet in the public ROW on King's Row in the southern half of the WMA had 0.67 mg/Kg PCBs. A second sample collected in the public ROW outside a commercial property with numerous vehicle repair, equipment storage, and other service related small businesses had a highly elevated mercury concentration (9.3 mg/Kg). The source property investigation conducted in this WMA during WY 2016 and WY 2017 focused on identifying the source(s) of these elevated PCBs and mercury concentrations.

Investigation Results

Records Review: All of the 33 parcels in the WMA that were industrial prior to 1980 were initially identified as high- or moderate-interest for further investigation. Program and municipal staff compiled and reviewed available information on these high- and moderate-interest parcels. A total of 28 parcels

and their associated business were prioritized for public ROW surveys and site visits. These properties included any businesses adjacent to public ROW areas where elevated PCBs or mercury concentrations were found during WY 2015 sediment monitoring.

Public ROW Surveys and Site Visits: In the summer of 2016, Program and municipal staff completed public ROW surveys adjacent to all 34 properties in the WMA and conducted follow-up site visits at 62 businesses that were located on 20 high-interest properties. Based on information gathered during these efforts, 9 properties were identified as high-interest for follow-up sampling. These high-interest properties are listed in Table 3.5. Two of these properties are currently registered as NOI facilities on the SMARTS database (#30 and #36).

Table 3.5. Properties in WMA 051CTC400 (City of San Jose) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID#	APN(s)	Business Name(s)/Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt)	Total Mercury (mg/Kg dry wt)
29	23714090	Railroad parcel on Eastern border of WMA - Samples collected where railroad crosses Schallenberger Rd	Schallenberger Rd - North side	3.23	2.8	0.38
			Schallenberger Rd - South side		0.18	0.17
30	237300015	Specialty Truck Parts - Vehicle Supply and Repair	1605 Industrial Ave	5.67	0.28	0.062
31	23730009	Multiple Businesses, including vehicle repair, equipment storage, & metal works	701 Kings Row (Lane A, B, C)	4.03	0.21	0.14
					0.046	0.088
32	23730014	Multiple Businesses, including vehicle repair, body shops, equipment storage, & metal works	701 Kings Row (Lane D, E, F)	9.46	0.072	0.10
33	23730017	Misc. Industrial Warehouses on Industrial Rd	1545 - 1590 Industrial Ave	3.16	0.049	0.058
					0.027	0.20
	23730025				0.015	0.11
34	23730013	Diesel Electrical Repair - Pipe Construction Company	641 Kings Row	4.14	0.054	0.12
					0.025	0.13
					0.020	0.092
					0.016	0.061
35	23730016	Industrial Yard	Property behind 641 Kings Row (no address found)	2.85	0.028	0.072
36	23705063	Business Park - Partially under construction	750 Ridder Park Dr	36.1	0.005	0.060
					0.004	0.23

[a] Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

Sample Collection: In the spring of 2017, 16 soil/sediment samples were collected on (or adjacent to) the high-interest properties identified in Table 3.5 and analyzed for PCBs (Figure 3.14) and mercury (Figure 3.15). The majority of the samples were collected from soil/sediment in the public ROW that had migrated from high-interest properties. PCBs concentrations ranged from 0.004 mg/Kg to 2.8 mg/Kg. Mercury concentrations ranged from 0.06 mg/Kg to 0.38 mg/Kg. One sample had highly elevated PCBs concentrations, and two samples had slightly elevated PCBs concentrations. The highly elevated sample was collected from soils that appear to have migrated off the northern side of the railroad track that runs along the eastern border of the WMA (Property #29). This sample also had elevated mercury concentrations. The slightly elevated PCBs concentrations were observed in samples collected from the public ROW adjacent to industrial properties in the southern WMA (Properties #30-#31).

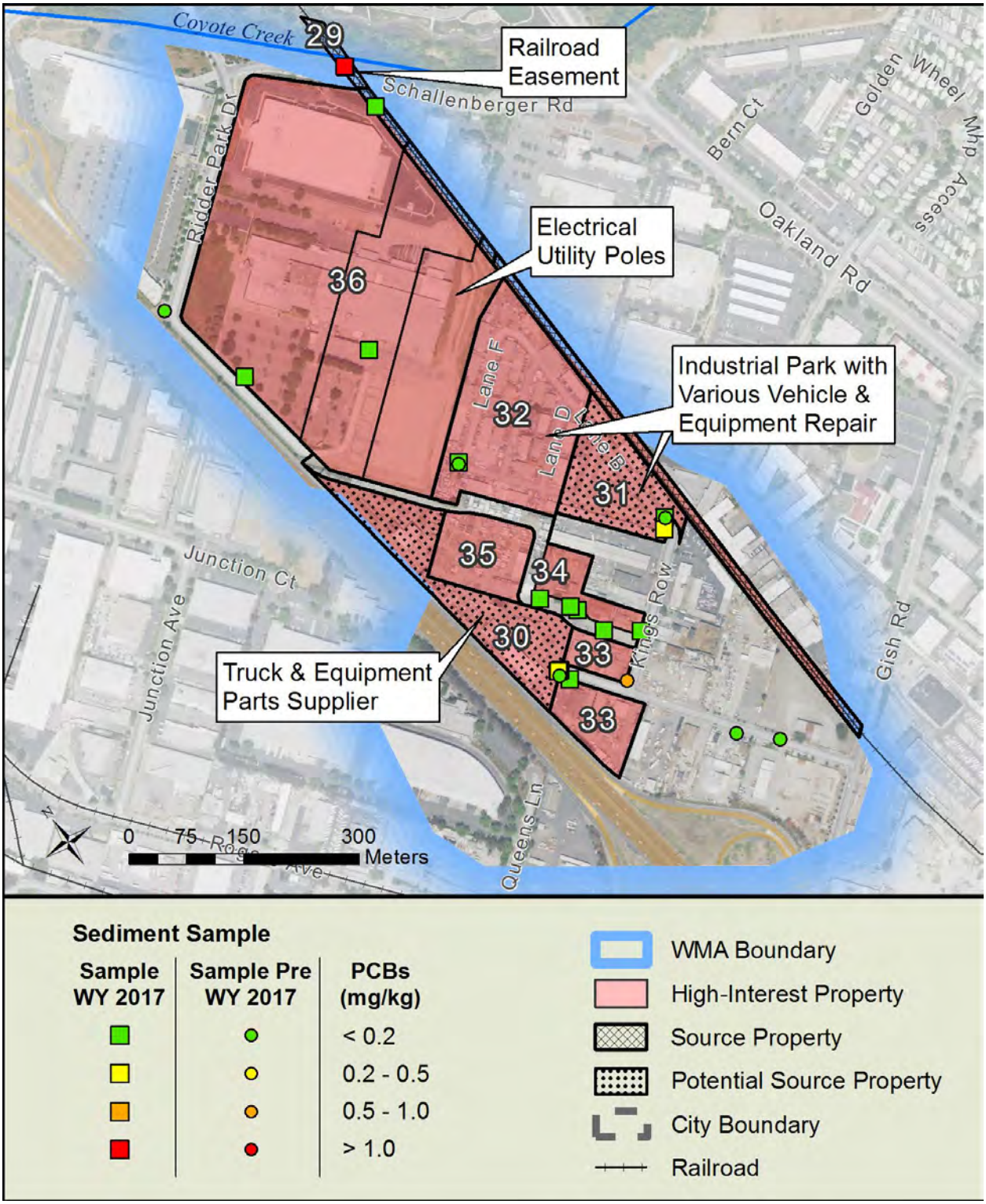


Figure 3.14. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 051CTC400 (City of San Jose).

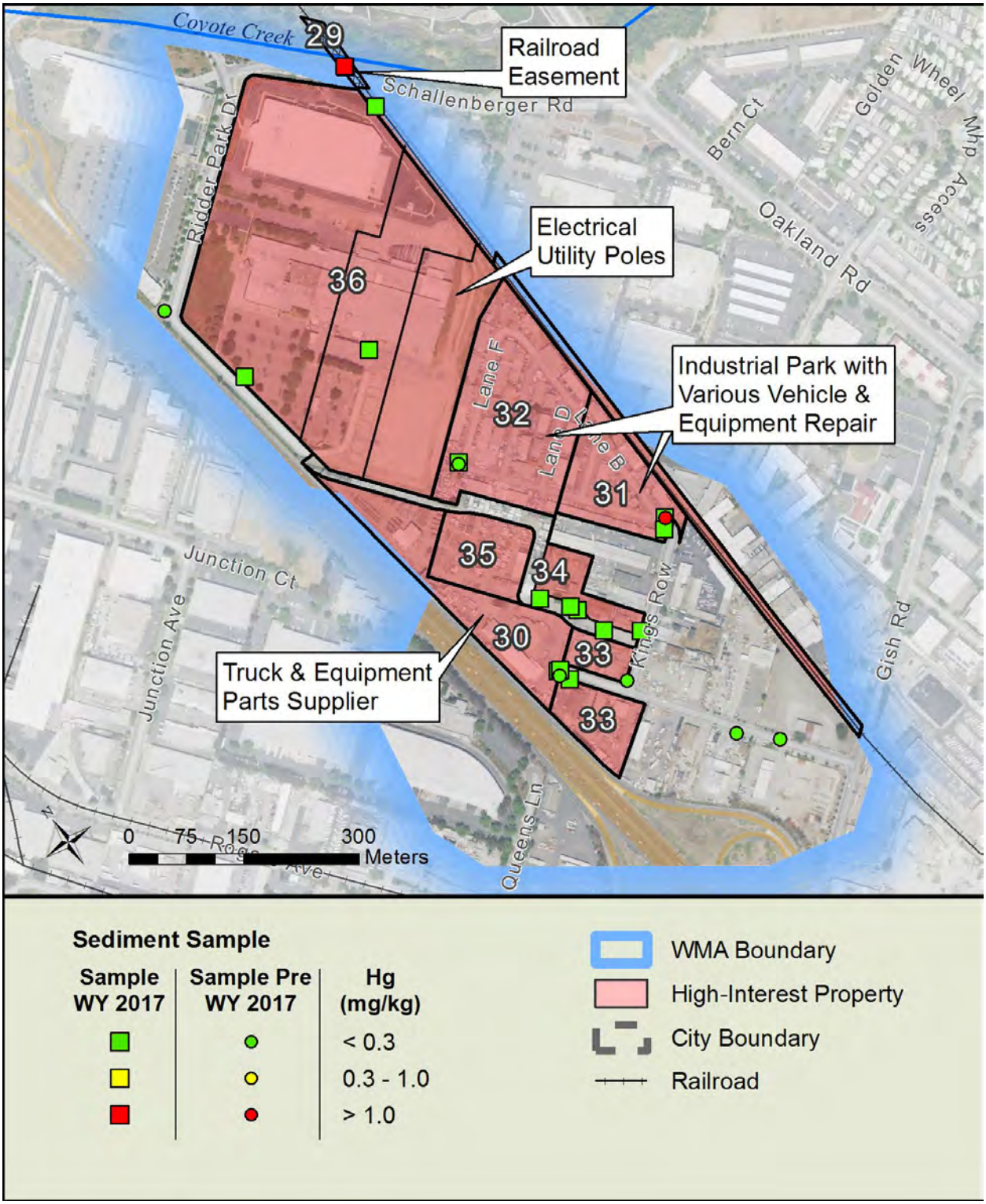


Figure 3.15. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 051CTC400 (City of San Jose).

The PCBs homolog profiles for the samples collected in this WMA are somewhat variable, and do not resemble a particular Aroclor formulation (Figure 3.16). All four samples contain some percentage of penta-, hexta-, hepta-, and octa-chlorinated congeners, suggestive of weathered mixes of Arolcors that contain at least some heavier chlorinated formulations. Three of the four samples have dominant hexa-chloro groups (38% - 43%), further suggestive of heavier weight Aroclors such as Aroclor 1260. However, the absence of the less chlorinated congeners may be due to weathering and does not rule out the possibility they may have been present in the original source mixture.

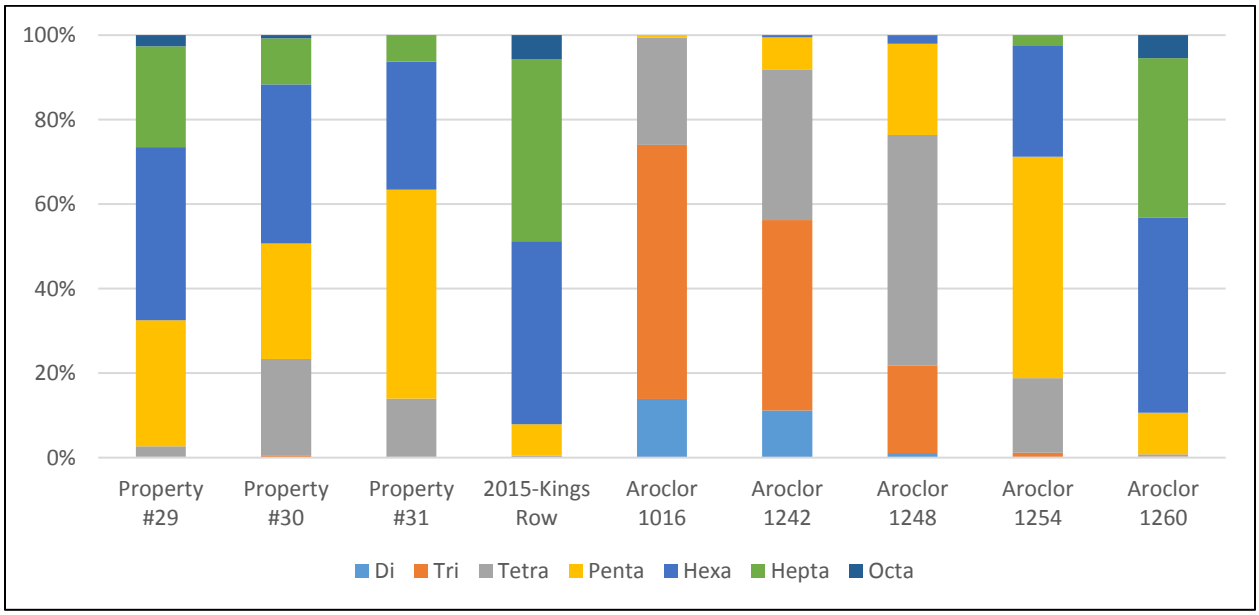


Figure 3.16. PCBs homolog profiles for soil/sediment samples with elevated concentrations of PCBs observed in samples collected in Water Years 2015 and 2017 in Watershed Management Area 051CTC400 (City of San Jose).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation as the basis for identifying source properties, potential source properties, and properties that should be retained on the high-interest list for follow-up actions. A total of 3 properties in the WMA fit into one of these categories. Property #29, which had highly elevated PCBs concentrations and elevated mercury concentrations, was identified as a PCBs source property and a potential mercury source property. Properties #30 and #31, which both had slightly elevated PCBs concentrations, were identified as potential PCBs source properties. Additional discussion about each of these properties and options for next step are presented below. All other properties initially designated as high-interest for sampling in Table 3.5 had PCBs and mercury concentrations that were below urban background levels. Because of this result and the lack of other evidence suggestive of PCBs or mercury sources, these properties are all re-categorized as low-interest properties and eliminated from further consideration at this time.

Discussion

Property #29 – PCBs Source Property and Potential Mercury Source Property

Property #29 is a 3.23-acre railroad property that runs the length of the eastern border of the WMA. The property is currently owned and operated by Union Pacific Railroad. This property has been an active railroad since at least the 1960's, and likely much earlier than that. From 1964 to the 1990's the railroad tracks were used to transport scrap materials to the Markovitz and Fox metal recycling facility that was located just outside the WMA to the northwest. The Markovitz and Fox property is a current DTSC cleanup site for various pollutants including PCBs, and is currently on the SF Bay Water Board's Triage list of PCBs Cleanup Sites, identified as medium priority for follow-up actions. The high PCBs concentrations (2.8 mg/Kg) and elevated mercury concentration (0.38 mg/Kg) measured in soil from the railroad track where it crosses Shallenberger Road may be a result of migration of pollutants from the nearby PCBs cleanup site prior to remediation. Another source of these PCBs could also be from spills/leaks that occurred over many years during the transport of PCBs-containing materials to and from the recycling facility. The PCBs homolog profile for this sample displays the same dominant chloro group as Aroclor 1260, used predominantly in transformers and hydraulic fluids, polyvinyl chloride and polyester resins, which would correspond to scrap materials transported along this railine and recycled on the Markovitz and Fox property.

Next Steps: The City of San Jose is evaluating options, including referral of Property #29 to the SF Bay Water Board for abatement or other actions to directly cause the property owner to abate the property. Full abatement of the property for PCBs is expected to result in abatement of mercury contamination on the property as well. The PCBs concentrations that were found in soils from the railroad tracks were elevated well above urban background levels. Given the unpaved surfaces of the railroad parcels, nearby local PCBs sources (i.e., the PCBs cleanup site at the former Markovitz and Fox Metals Recycling), past use of the railroad to transport materials that likely contained PCBs to and from the metal recycling facility, highly elevated PCBs in soils from the railroad property, and evidence of sediment transport off the site; this property appears to warrant follow-up abatement actions. In addition, the City of San Jose may visit the property and determine if appropriate controls can be implemented in the near-term to reduce sediment migration from the property to the public ROW.

Property #30 – Potential PCBs Source Property

Property #30 is a 5.67-acre property located at 1605 Industrial Avenue in the City of San Jose. This property is situated at the end of a cul-de-sac and is surrounded by small businesses with ongoing industrial activities. Property #30 has been used for storing, repairing, and selling a variety of vehicles and vehicle equipment for the past 70 years. The current business operating on the property is Specialty Truck Parts, which provides vehicle parts and repairs. The property has a paved parking lot and several buildings on the front of the parcel, while the back two-thirds of the property appears to be mostly unpaved. Vehicles, vehicle-parts, and other equipment are currently stored on this back unpaved area. The unpaved area includes lanes between stored equipment to allow cars and trucks to move around the area. Exposed soils in this area could easily be transported through wind or vehicle-tracking to the front driveway of the property, which is where the elevated PCBs concentrations were observed. Although the street dirt sample that was collected from the driveway had only slightly elevated PCBs (0.28 mg/Kg), this concentration still suggests proximity to a local source. Other samples collected from public ROW areas in front of other properties on the cul-de-sac, and in front of other properties on an adjacent street that

borders one side of Property #30, had PCBs concentrations that were an order-of-magnitude lower than the sample collected from the driveway of Property #30.

Next Steps: The City of San Jose is evaluating options for further investigation of this property. Samples collected on the property itself would help confirm if this property is the source of the elevated PCBs found in the public ROW. A follow-up site visit to the property may provide additional information about the types of current and past activities on the property that may be associated with PCBs, including the age and type of equipment on the property, and any indications of past spills or discharge of chemicals or waste products on the site. With a better understanding of possible sources of PCBs and their ability to migrate offsite, City inspectors may inform the property owners and managers of the control measures that should be implemented to eliminate the migration of soils/sediments from pervious areas onto the public ROW. Because this is a NOI facility subject to the IGP, the City may encourage the SF Bay Water Board to enforce provisions of the IGP to address stormwater concerns.

Property #31 – Potential PCBs Source Property

Property #31 is a 4.03-acre property located at 701 Kings Row in the City of San Jose. This property is one of two adjacent parcels next to the railroad tracks on the eastern edge of the WMA that between them, house more than 200 small businesses. A variety of industrial and commercial activities are conducted at these businesses, including vehicle repair, equipment storage, and metal works. The businesses are small operations, many of which are unpaved and contribute sediment to the public ROW via vehicle tracking or overland flow of stormwater. Elevated mercury concentrations were found in adjacent public ROW areas in WY 2015. A sample collected in WY 2017 from soil at the driveway bordering Property #31 had slightly elevated PCBs (0.21 mg/Kg). This concentration is high enough to indicate proximity to a local source, given that other nearby samples had PCBs concentrations that were an order-of-magnitude lower.

Next Steps: The City of San Jose is evaluating options for further investigation of this property. Samples collected on the property itself would help determine if this property is the source of the elevated PCBs found in the public ROW. A follow-up visit to the property may provide additional information about the types of current and past activities at the many businesses on the property that may be associated with PCBs, including the age and type of equipment used or stored on-site, and any indications of past spills or discharge of chemicals or waste products. With a better understanding of possible sources of PCBs and their ability to migrate offsite, City inspectors may inform the property owners and managers of the control measures required to eliminate the migration of soils/sediments from pervious areas onto public ROW.

Alternatively, given the difficulties in stormwater management at the industrial park at the end of Kings Row (for example: the number of businesses, turnover rate of tenants, and several business owners that store old equipment and are not present on site,) the City of San Jose may want to consider installing control measures in the public ROW to reduce stormwater concentrations of PCBs and mercury that may be migrating from this property to the public ROW. For example, the installation of an activated carbon cell in the storm drain inlets adjacent to the property could be used to address elevated PCBs and mercury in stormwater runoff from the property.

Additional Follow-Up Actions in the WMA

In addition to the options for next steps listed above, the City of San Jose is currently considering additional investigation and sampling in the industrial southern section of this WMA. Although 2 properties in this part of the WMA were identified as potential sources through the current investigation, questions remain as to whether other sources have yet to be found. Soil/sediment samples collected in the same part of the WMA in WY 2017 and WY 2015 had variable PCBs homolog profiles, potentially pointing to multiple sources. A sample collected in WY 2015 from an inlet on the northern corner of Kings Row and Industrial Avenue had a PCBs concentration of 0.66 mg/Kg. However, drainage off the driveway of Property #30, which is the closer of the two potential PCBs sources identified to date, does not enter that storm drain inlet. This suggests there may yet be other nearby sources. The other WY 2017 sediment samples collected close to this storm drain inlet were all below background concentrations. Additional sampling, however, may be needed to identify other PCBs source properties. Given the high PCBs from soil migrating from the railroad track in the northern part of the WMA, additional sampling on the southern portion of this same railroad line may be warranted.

WMA 067SCL080 (San Jose)

Description of WMA

WMA 067SCL080 is comprised of 28 acres of industrial and commercial properties in the City of San Jose (Figure 2.1). The catchment borders Highway 101 and Lower Silver Creek. Stormwater in the WMA drains to the main storm drain line that runs down Nipper Avenue, through the private property located at the end of Nipper Avenue, and discharges on the other side of the property into Lower Silver Creek.

Prior to 1980 the WMA was almost entirely industrial (84%). Active railroad lines ran down the west side of the WMA. There were 13 industrial parcels in the WMA at that time. These industrial facilities included a plastic bag manufacturer, an e-waste recycler, and a caulking and glazing manufacturer (DAP, Inc.). The Geotracker database identified these facilities as cleanup sites for solvents and/or petroleum products. DAP, Inc. (the caulking and glazing manufacturer) operated from 1963 to 1993. Because PCBs were commonly used in caulking materials produced during much of this time period, the former DAP, Inc. property could be a source of PCBs in this WMA. Chemical transport to and from the property was ongoing during the company's operations via a now inactive railroad spur. According to a site assessment report on Geotracker, DAP Inc. had four transformers on the property, and continued to store chemicals that likely contained PCBs until at least 1997. The property was remediated for a fuel spill and redeveloped by Marburg Place Development in 2005.

Currently the WMA is 62% industrial and includes a former railroad corridor on the western border of the WMA that is under construction for a future BART extension. During WY 2017, there were exposed soils at the railroad corridor construction site. Businesses in the WMA include Therma Corporation, a mechanical engineering and construction company that comprises nearly half of the WMA. Other businesses include the San Jose Environmental Innovation Center, an asphalt and cement company, and a newly constructed electrical utility substation. The former DAP, Inc. site was divided and redeveloped into multiple parcels, which currently house Signal Electric Construction Inc. and TransPak, a six-acre packaging industry. The TransPak facility is next to Silver Creek. The main public storm drain line on Nipper runs under the TransPak property to reach the Lower Silver Creek outfall.

A stormwater sample collected in WY 2015 from the Lower Silver Creek outfall adjacent to the TransPak property had highly elevated PCBs concentrations (45 ng/L) and a high PCBs-to-sediment mass ratio (0.78 mg/Kg). Compared to all stormwater samples collected to date in the Bay Area, this sample ranks just under the top 90th percentile for PCBs concentrations. Although a single sediment sample collected in the WMA in WY 2015 was low (0.01 mg/Kg PCBs), the high stormwater concentration observed that year clearly indicated there was a PCBs source in this WMA. The source property investigation conducted in this WMA during WY 2016 and WY 2017 focused on identifying the source or sources of the elevated PCBs stormwater concentration.

Investigation Results

Records Review: Twelve parcels developed prior to 1980 in the WMA were initially identified as high- or moderate-interest for further investigation. Program and municipal staff compiled and reviewed information on these parcels, and all 12 parcels were prioritized for public ROW surveys and site visits. One property is currently registered as a NOI facility subject to the IGP on the SMARTs database (Property #43).

Public ROW Surveys and Site Visits: In the summer of 2016, Program and municipal staff completed public ROW surveys adjacent to each of the 12 prioritized parcels in the WMA and conducted follow-up site visits at 4 businesses. Based on information gathered during these efforts, 6 properties were categorized as high-interest for follow-up sampling. These properties are listed in Table 3.6.

Table 3.6. Properties in WMA 067SCL080 (City of San Jose) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID#	APN(s)	Business Name(s)/Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt)	Total Mercury (mg/Kg dry wt)
37	25402014	Former Railroad	Railroad Corridor - North side of Las Plumas Ave	2.23	0.013	0.14
38	25403027		Railroad Corridor - South side of Las Plumas Ave	0.46	0.027	0.12
39	25403026	Signal Electric Construction Inc.	530 Marburg Wy	0.65	0.040	0.26
40	25403007	Bay Area Asphalt and Cement - Road and Pavement Construction Company	545 Nipper Ave	1.27	0.053	0.11
41	25403024	Former Railroad	West side of Nipper Ave	0.13	0.12	0.028
	25403010	SDI - multiple Nipper Ave Properties			0.093	0.087
42	25403044	San Jose Environmental Innovation Center - Household Hazardous waste drop-off site	1608 Las Plumas Avenue - Property extends full length of Nipper Ave	4.26	0.032	0.12
43	25403046; 25403010	TransPak - Packaging Company	520 Marburg Wy	8.86	No Samples Collected	

[a] Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

Sample Collection: In the spring of 2017, 7 soil/sediment samples were collected adjacent to the high-interest properties listed in Table 3.6 and analyzed for PCBs (Figure 3.17) and mercury (Figure 3.18). A total of 6 samples were collected in the public ROW from surface soil at the parcel borders of the high-interest properties. One sediment sample was collected from a manhole on Nipper Avenue, adjacent to the TransPak property. This location is immediately upstream of the point where the storm drain line extends underneath the TransPak property. This location does not actually drain the TransPak property, but rather, everything in the WMA upstream of TransPak. PCBs concentrations ranged from 0.01 mg/Kg to 0.12 mg/Kg. Mercury concentrations ranged from 0.03 mg/Kg to 0.26 mg/Kg. None of these samples had elevated PCBs or mercury concentrations.

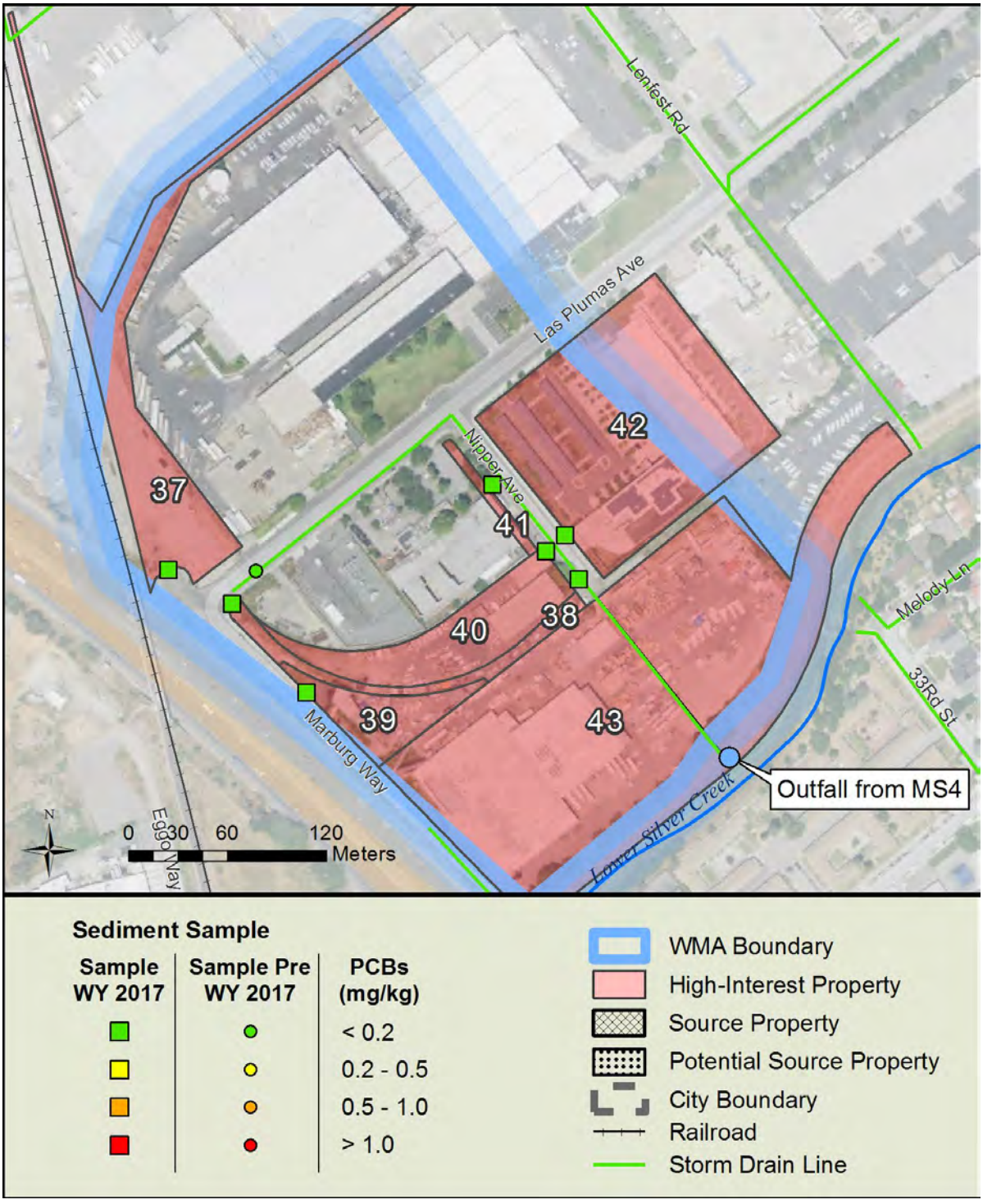


Figure 3.17. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 067SCL080 (City of San Jose).

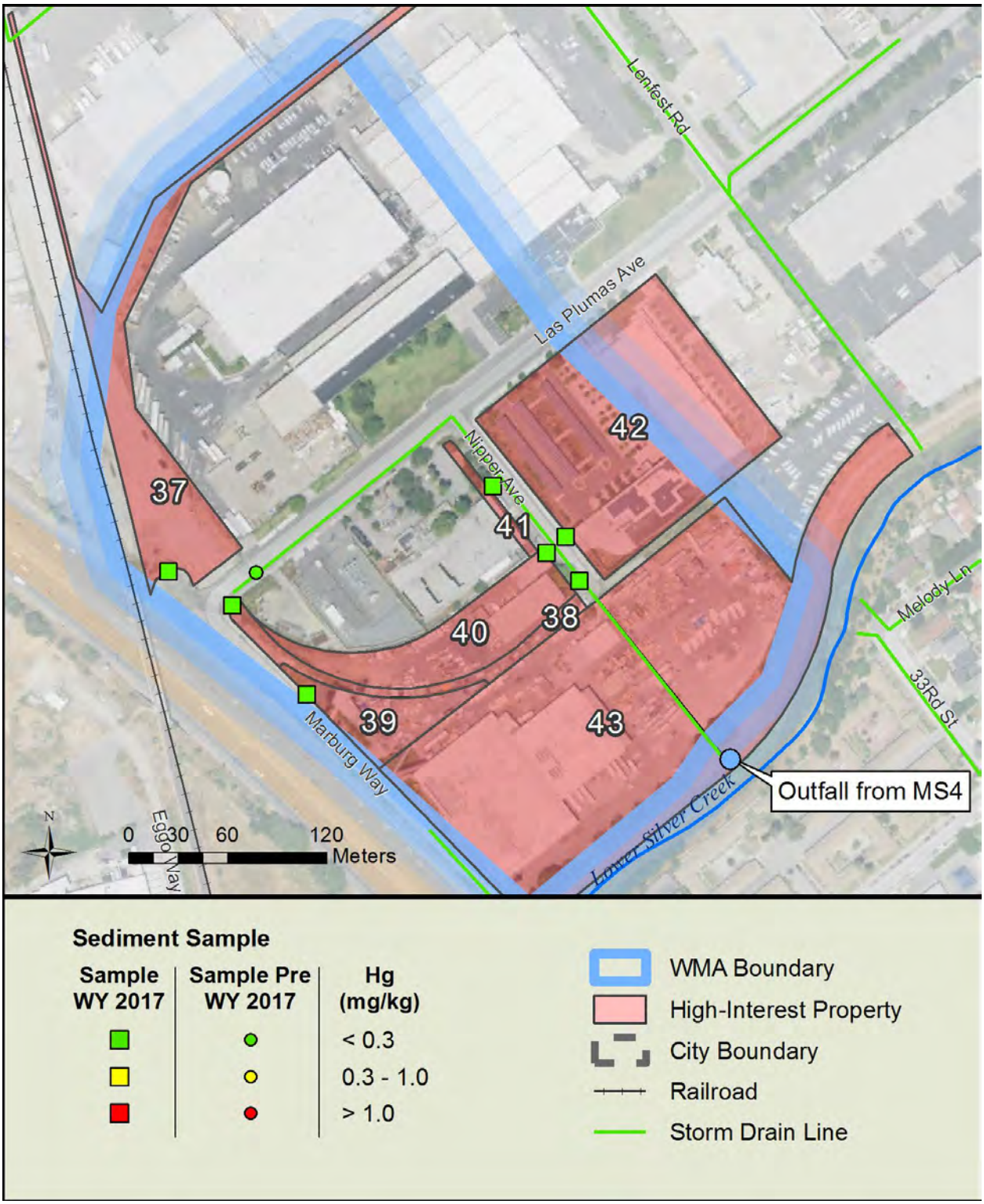


Figure 3.18. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 067SCL080 (City of San Jose).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation as the basis for identifying source properties, potential source properties, and properties that should be retained on the high-interest list for follow-up actions. Because all samples were below urban background concentrations, SCVURPPP did not identify any source properties or potential source properties in this WMA. However, Property #43, the TransPak property, was retained on the high-interest list for follow-up actions due to highly elevated concentrations observed during previous monitoring. Additional discussion of this property and options for next steps in this WMA are presented below. With the except of the TransPak property, all properties in this WMA that were initially designated as high-interest for sampling are re-categorized as low-interest properties and eliminated from further consideration at this time.

Discussion

Because the source(s) of the highly elevated PCBs concentrations observed in WY 2015 was not identified through this investigation, this WMA will remain on SCVURPPP's list of priority WMAs. Further investigation, including additional stormwater sampling and/or private property sampling may be required to pinpoint the PCBs source(s) in this catchment. However, the results of the investigation suggest Property #43, an 8.86 acre property currently occupied by TransPak, could be the source of PCBs observed in stormwater. This is the only property in the WMA that is situated between the manhole location where low concentrations of PCBs were observed in sediment in WY 2017, and the outfall location where highly elevated concentrations of PCBs were previously found in stormwater. Past business activities on this property (i.e., glazing manufacturing by DAP Inc.) are potentially associated with PCBs use, storage or release. So, although the property has been redeveloped and paved since the phase-out of PCBs, subsurface soils could contain elevated concentrations of this pollutant. If sub-surface soils enter the storm drain line underneath the property through cracks or breaks in the pipe line, this could be the source of PCBs measured at the outfall downstream of the property.

Next Steps: The City of San Jose is evaluating options for additional investigation of Property #43 to determine if subsurface soils on the property are the source of PCBs measured in stormwater at the outfall to Lower Silver Creek in WY 2015. The City of San Jose may want to (or request that the property owner) video the main storm drain line where it runs underneath Property #43 (currently occupied by TransPak) to identify any cracks or breaks in the line where sub-surface soils could enter the system. The City may also request TransPak video any private lateral lines that connect to the main line underneath the property for the City to review as well. Additionally, the City can revisit to TransPak to investigate whether it is possible to sample sediments from the three private storm drain inlets located on the property. If additional sediment sampling does not identify Property #43 as the PCBs source in the WMA, another option is to collect stormwater samples in the public ROW both upstream and downstream of Property #43 during the same storm event. This sampling method would help isolate stormwater from Property #43 to determine if it is the source of PCBs to the MS4, or if there is a source further upstream. The presence or absence of PCBs in these stormwater samples will facilitate identification of the source and focus further investigation efforts.

Alternatively, because this is a NOI facility subject to the IGP, the City may consider asking the SF Bay Water Board to use their authority under the IGP and compel the property owner to perform the actions identified above, including conducting video surveillance of the subsurface storm drain system and

providing sampling data from sediments collected within subsurface storm drain infrastructure on the property.

WMA 001SFC100 (Palo Alto)

Description of WMA

WMA 001SFC100 is comprised of 35 acres in downtown Palo Alto (Figure 2.1). The WMA drains to a structure at the intersection of Bryant Street and Channing Avenue that diverts a portion of storm flows into the sanitary sewer. There are two branches of the MS4 that flow to the stormwater diversion. The eastern branch drains an area that is mostly multi- and single-family residential, but also contains some commercial areas. The western branch drains an area predominantly commercial with some residential. There are 247 parcels in the WMA, with 45 parcels draining to the eastern branch.

Prior to 1980, the eastern part of the WMA had 5 industrial parcels comprising 8% of the WMA. Industrial facilities included a dairy processing plant, an electrical substation, and a number of auto repair facilities. Most of these old industrial parcels (including the electrical substation and a large auto repair facility) were redeveloped prior to 2015. The two that remain are small (< 1 acre), unpaved lots, currently used for equipment storage or parking. These are scheduled for future redevelopment. Currently, more than half of the WMA is composed of retail or commercial businesses.

During monitoring conducted at the diversion structure in WY 2013 and WY 2014, stormwater samples contained high PCBs concentrations ranging from 9.8 ng/L to 180 ng/L, with an average particle ratio > 1 mg/Kg (SCVURPPP 2015). During WY 2015 monitoring, a sediment sample collected from a storm drain manhole just upstream of the diversion structure also had a high concentration of PCBs (1.5 mg/Kg) and mercury (0.82 mg/Kg). This manhole is located on Channing Avenue at Ramona Street, and drains the non-residential eastern branch of the WMA. A second sediment sample collected upstream of the diversion structure from a portion of the MS4 that drains the western residential section of the WMA was below urban background for both PCBs and mercury. The source property investigation conducted in this WMA during WY 2016 and WY 2017 focused on identifying the source or sources of elevated PCBs and mercury concentrations found in the eastern branch of the WMA.

Investigation Results

Records Review: Program and municipal staff compiled and reviewed information on the 45 parcels in the eastern portion of the WMA. A total of 15 parcels were designated as high-interest for public ROW surveys and/or site visits. These properties drain to the location where the WY 2015 sediment sample with elevated PCBs was found.

Public ROW Surveys and Site Visits: In the summer of 2016, Program and municipal staff completed public ROW surveys adjacent to 15 prioritized parcels and conducted follow-up site visits at 9 businesses located on these parcels. Based on information gathered during these efforts, 5 properties were identified as high-interest for follow-up sampling. These properties are listed in Table 3.7. Four additional public ROW sites that drain multiple properties were also identified for follow-up sampling.

Sample Collection: In the spring of 2017, 9 soil/sediment samples were collected on (or adjacent to) the high-interest properties in Table 3.7 and analyzed for PCBs (Figure 3.19) and mercury (Figure 3.20). PCBs concentrations ranged from 0.006 mg/Kg to 0.17 mg/Kg. Mercury concentrations ranged from 0.038 mg/Kg to 0.15 mg/Kg. None of the samples had elevated PCBs or mercury concentrations.

Table 3.7. Properties in WMA 001SFC100 (City of Palo Alto) that were identified as high-interest for soil/sediment monitoring during WY 2017.

Property Map ID#	APN(s)	Business Name(s)/Business Type(s)	Business Address(es)	Acres	Sediment/Soil Concentration	
					Total PCBs[a] (mg/Kg dry wt)	Total Mercury (mg/Kg dry wt)
44	12028114	Former Utility Substation & Vehicle Repair Facility - Re-developed into multi-family residential building	801 Alma St	0.6	0.027	0.081
					0.017	0.073
45	12028050	Unpaved Lot - Parking/Vehicle Storage	901 High St	0.32	0.015	0.15
					0.006	0.051
46	12028086	Redeveloped Lot - Storage Facility	925 High St	0.26	0.060	0.038
47	12028093	Heinichen's Garage - Vehicle Repair Facility	960 High St	0.13	0.17	0.12
48	12028084	Unpaved - Open lot with Vehicle Storage	918 Emerson St	0.08	0.011	0.054
Public ROW	Maintenance hole (# 25-5-03)	Public Row on Channing	Near 904 B Ramona St (on Channing Ave)		0.008	0.080
	Maintenance hole (# 18-2-17)		Channing Avenue & Ramona St		0.021	0.11

[a] Total PCBs were calculated as the sum of the SF Bay RMP 40 congeners.

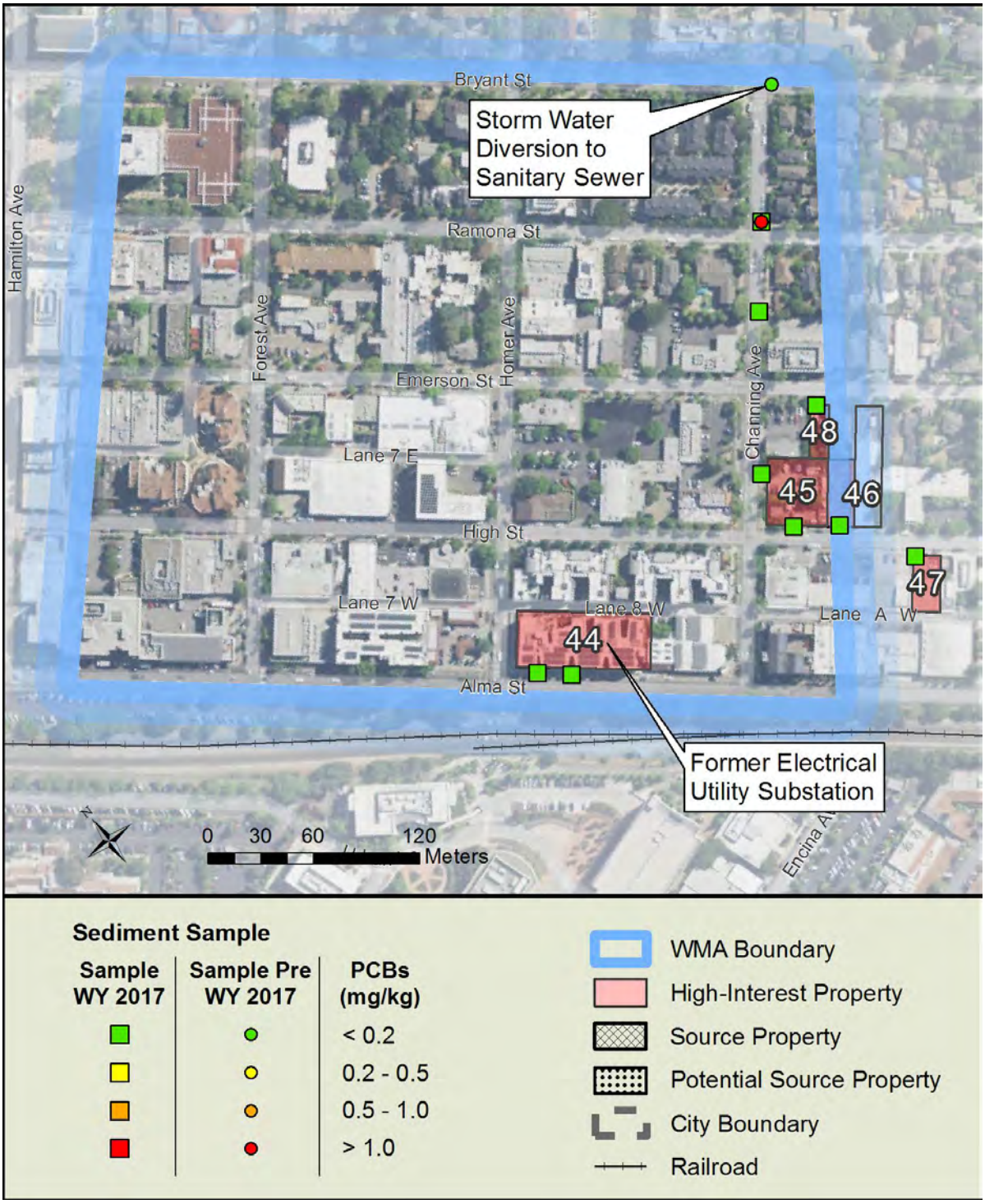


Figure 3.19. Concentrations of PCBs observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 001SFC100 (City of Palo Alto).

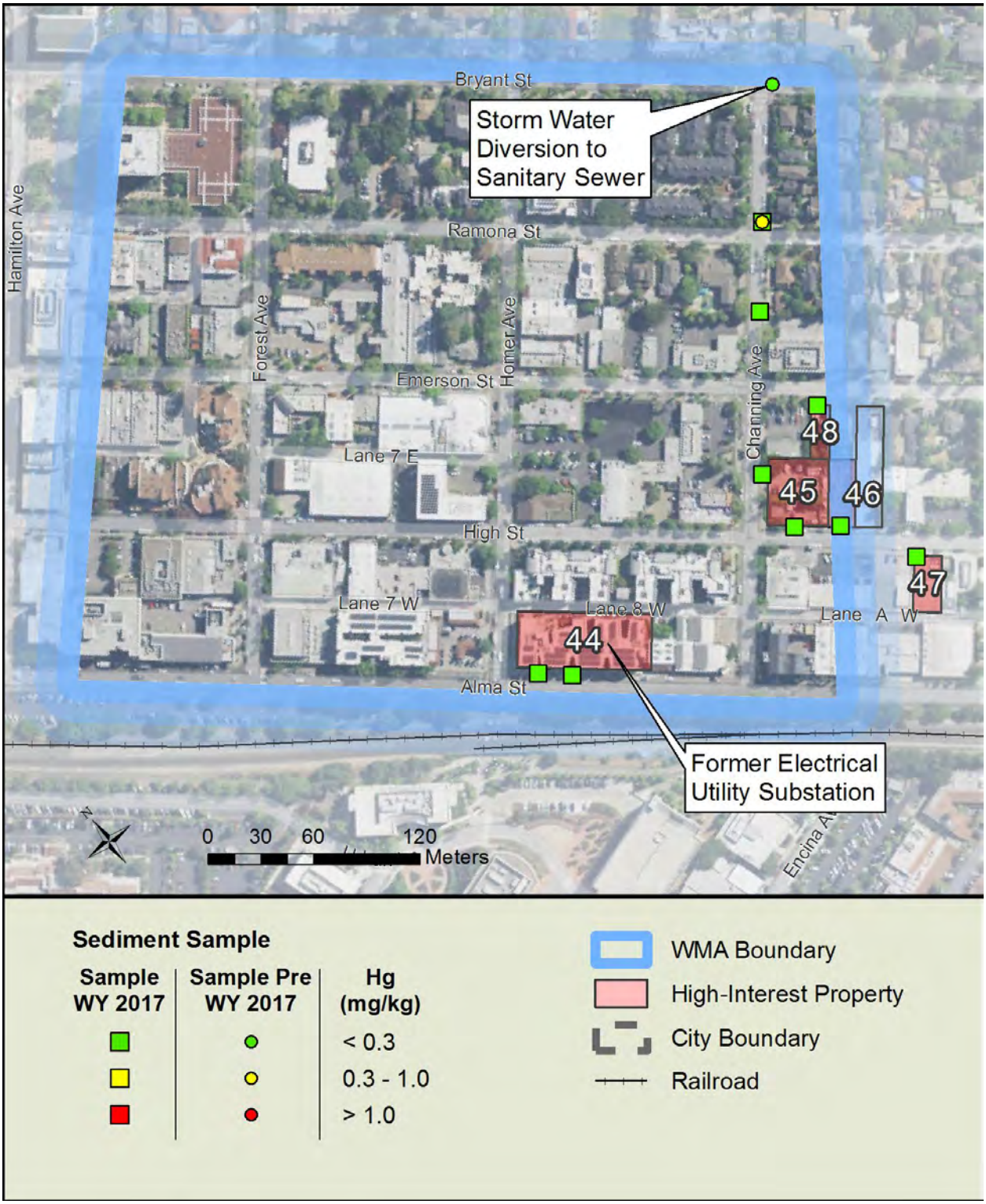


Figure 3.20. Concentrations of total mercury observed in soil/sediment samples collected on or adjacent to high-interest properties within Watershed Management Area 001SFC100 (City of Palo Alto).

Identification of Source Properties: The WY 2017 sampling results were used in combination with other information gained during the current investigation as the basis for identifying source properties, potential source properties, and properties that should be retained on the high-interest list for follow-up actions. Because all samples were below urban background levels, SCVURPPP did not identify any source properties or potential source properties in the WMA during this investigation. Properties initially designated as high-interest for sampling in Table 3.7 are re-categorized as low-interest properties and eliminated from further consideration at this time.

Discussion

The soil and sediment samples collected in the spring of 2017 at the edge of high-interest parcels and in 2 storm drain manholes in the MS4 (one at the site where high PCBs concentration were measured in WY 2015, and one upstream of that location) had PCBs below urban background concentrations (< 0.2 mg/Kg). These results indicate there is not a source in the nearby vicinity. In September 2016, a video inspection of the collection system found root mats in the MS4 upstream of the Channing/Ramona manhole where the high PCBs were found in WY 2015. One possibility is that sediment caught in the mats may have harbored PCBs from recent redevelopment projects that occurred prior to the 2015 sample collection in the MS4. SCVURPPP suspects the source of the PCBs that produced the elevated PCBs concentration in prior samples may no longer be present in the WMA. The substantial rain events in the winter of 2017, prior to the follow-up sampling, may have flushed all high concentration PCBs sediments that had been retained in the system down the line.

Next Steps: Given the most recent sediment samples from the WMA were all below urban background concentrations, and no other evidence of sources in the WMA were uncovered during the investigation, SCVURPPP recommends no further action in this WMA at this time.

4.0 CONCLUSIONS AND NEXT STEPS

During WYs 2016 and 2017, SCVURPPP and participating Permittee staff completed PCBs and mercury source property investigations in 7 WMAs, within 3 cities (Santa Clara, San Jose and Palo Alto) in the Santa Clara Valley. This section summarizes the results and outcomes of these investigations, and identifies next steps.

WMAs in City of Santa Clara

Investigation Outcomes

Source property investigations were conducted in two Santa Clara WMAs (066GAC150 and 050GAC400). These WMAs comprise nearly 1,200 acres of land area and contain 349 parcels that were industrialized prior to 1980. Program and municipal staff conducted public ROW surveys adjacent to 159 parcels and completed site visits at 111 businesses on these parcels. Following the surveys and site visits, 17 parcels were identified as high-interest for follow-up soil/sediment sampling. A total of 25 soil/sediment samples were collected on (or adjacent to) these parcels and analyzed for PCBs and total mercury. PCBs concentrations ranged from 0.004 to 3.8 mg/Kg. Mercury concentrations ranged from 0.05 to 0.81 mg/Kg.

These investigations resulted in the following:

- Identification of 1 PCBs and Mercury source property:
  - Property #1 located at 335 Brokaw Road (12.25 acres)
- Identification of 1 potential PCBs source property:
  - Property #2 located at 280 Martin Avenue (1.91 acres)
- Identification of 2 potential PCBs and Mercury source properties:
  - Property #11 located at 1135 Walsh Avenue (15.51 acres)
  - Property #12 located at 960 Central Expressway (0.38 acres)
- Identification of 2 high-interest properties where additional information/data is needed:
  - Property #3 located at 1609 Coleman Avenue (12.72 acres)
  - Property #15 located at 850 Duane Avenue (6.78 acres)
- The removal of 11 properties from SCVURPPP's high-interest list and re-categorization of these properties as low-interest for PCBs.

Next Steps

The next steps the City of Santa Clara is currently evaluating in these WMAs are presented below.

- For the 1 PCBs and mercury source property:
  - Referral to the SF Bay Water Board for abatement;
  - Directly cause the property owner to abate the property;
  - Conduct or cause to be conducted interim actions that will mitigate or prevent ongoing release of PCBs and mercury from the property into the adjacent public ROW;

  - Conduct or cause to be conducted enhanced operation and maintenance (O&M) actions in the adjacent public ROW to remove sediment-bound PCBs and mercury that have been released from the source property. Actions may include additional street sweeping, storm drain inlet or storm drain line cleanouts, or other sediment-removal activities.

- For the 5 properties identified as potential source properties or high-interest properties:
  - Conduct additional investigation. As needed, follow-up investigation may include more site visits, sampling (sediment and/or stormwater), and other actions the City and/or the Program determine are needed to identify all properties in each WMA that contribute to elevated stormwater concentrations at the WMA outfall.

All properties that were re-categorized as low-interest based on the results of this investigation are considered unlikely source properties and do not require further consideration at this time.

WMAs in City of San Jose

Investigation Outcomes

Source property investigations were conducted in four San Jose WMAs (083GAC900, 051CTC275, 051CTC400, and 067SCL080). These WMAs comprise over 1,200 acres and contain 332 parcels that were industrialized prior to 1980. Program and municipal staff conducted public ROW surveys adjacent to 139 parcels and completed site visits at 119 businesses on these parcels. Following the surveys and site visits, 26 parcels were identified as high-interest for follow-up soil/sediment sampling. A total of 40 soil/sediment samples were collected on (or adjacent to) these high-interest parcels and analyzed for PCBs and total mercury. PCBs concentrations ranged from 0.004 to 12 mg/Kg. Total mercury concentrations ranged from 0.03 to 3.0 mg/Kg.

These investigations resulted in the following:

- Identification of 3 PCBs and Mercury source properties:
  - Property #18 located at 1755 – 1775 Monterey Road (12.97 acres)
  - Property #22 located at 1645 Old Bayshore Hwy (0.24 acres)
  - Property #23 located at 1726 Rogers Avenue (1.35 acres)

- Identification of 1 PCBs source property:
  - Property #29 – railroad ROW near Schallenberger Road (3.23 acres)

- Identification of 3 potential PCBs source properties:
  - Property #24 located at 1750 Rogers (4.12 acres)
  - Property #30 located at 1605 Industrial Avenue (5.67 acres)
  - Property #31 located at 701 Kings Row, Lanes A, B, C (4.03 acres)

- Identification of 2 potential PCBs source properties and Mercury source properties:
  - Property #19 located at 1720 – 1930 Monterey Road (13.7 acres)
  - Property #25 located 1788 Rogers Avenue (1.86 acres)

- Identification of 1 potential Mercury source property:
  - Property #20 located at 1837 – 1855 Monterey Road (2.24 acres)

- Identification of 2 high-interest properties where additional information/data is needed:
  - Property #21 located at 1695 Monterey Road (2.72 acres)
  - Property #43 located at 520 Marburg Way (8.86 acres)
- The removal of 14 properties from SCVURPPP's high-interest list and re-categorization of these properties as low-interest for PCBs.

Next Steps

The next steps the City of San Jose is currently evaluating for the four San Jose WMAs are presented below.

- For the 4 PCBs and mercury source properties:
  - Referral to the SF Bay Water Board for abatement;
  - Directly cause the property owner to abate the property;
  - Conduct or cause to be conducted interim actions that will mitigate or prevent ongoing release of PCBs and mercury from the property into the adjacent public ROW;
  - Conduct or cause to be conducted enhanced operation and maintenance (O&M) actions in the adjacent public ROW to remove sediment-bound PCBs and mercury that have been released from the source property. Actions may include additional street sweeping, storm drain inlet or storm drain line cleanouts, or other sediment-removal activities.
- For the 8 properties identified as potential source properties and high-interest properties:
  - Conduct additional investigation. As needed, follow-up investigation may include more site visits, sampling (sediment and/or stormwater), and other actions the City and/or the Program determine are needed to identify all properties in each WMA that contribute to elevated stormwater concentrations at WMA outfalls.
- For all properties that were associated with elevated PCBs or mercury concentrations:
  - Flag the properties in the City of San Jose's Watershed Enforcement database as priority businesses that require a higher stormwater inspection frequency. Additional information on these properties can be added to the database to ensure stormwater inspectors are informed, prior to conducting inspections, that PCBs or mercury are potential pollutants of concern at these sites. During visits to these businesses, the inspectors should look for and document any activities or materials on site that may be associated with PCBs or mercury. Table 4.1 presents the information that Program staff recommend be added to San Jose's Watershed Enforcement database for each of the properties that had elevated PCBs or mercury during WY 2017 sampling.

All properties that were re-categorized as low-interest based on the results of this investigation are considered unlikely source properties and do not require further consideration at this time.

WMAs in City of Palo Alto

Investigation Outcomes

A source property investigation was conducted in one WMA located in the City of Palo Alto (WMA 001SFC100). This WMA is comprised of 35 acres and contained 45 parcels that drain to a location in the public ROW where high PCBs were observed in WY 2015. Program and municipal staff conducted public ROW surveys adjacent to 15 parcels and completed site visits at 9 businesses on these parcels. Following the surveys and site visits, 5 parcels were identified as high-interest for follow-up soil/sediment sampling.

A total of 9 soil or sediment samples were collected adjacent to the high-interest parcels or in public ROW areas that drained multiple parcels. The samples were analyzed for PCBs and total mercury. PCBs concentrations ranged from 0.02 to 0.19 mg/Kg. Total mercury concentrations ranged from 0.04 to 0.15 mg/Kg. Concentrations in these samples were all well below urban background levels, indicating there is not a local source of these contaminants in the WMA. Based on this result, SCVURPPP did not identify PCBs or mercury source properties or potential source properties in the WMA.

Next Steps

At this time, SCVURPPP does not recommend any follow-up in this WMA. All properties in the WMA are re-categorized as unlikely sources of PCBs and mercury based on the most recent sampling data. Although previous monitoring results suggested a local source, SCVURPPP suspects that the source(s) of PCBs is no longer present in the WMA. This is possibly due to redevelopment that has occurred in the WMA since 2015.

Table 4.1. Information on potential PCBs and mercury source properties that should be added to the City of San Jose's Watershed Enforcement database.

Business	Business Address	Facility Comments - WY 2017	Likely PCBs Source	Likely Mercury Source
Z Con Specialty Services Inc.	1645 Old Bayshore Hwy	PCBs & mercury found in sediment samples collected at parcel boundary & on the parcel in 2017. Prior inspection confirmed materials contaminated with PCBs stored in drums inside bays; employees were observed washing surfaces, with the wash water flowing to the outside pavement during site visit in 2016. Ensure best management practices (BMPs) in place to prevent migration of PCBs & mercury.	Yes - High 2.0 - 12 mg/Kg	Yes - High 0.25 - 1.3 mg/Kg
Pollack Properties Limited, LLC. - Industrial Park	1755, 1763, 1775, 1815 Monterey Rd	PCBs & mercury found in sediment sample collected from private lateral at the connection point with the public MS4. Prior inspections identified enclosed transformers, and former transformers sites in former electroforming facility. Additional sources of PCBs may exist in the industrial complex. Investigate for sources of mercury. Ensure BMPs in place to prevent migration of PCBs & mercury.	Yes - High 7.1 mg/Kg	Yes - High 1.9 mg/Kg
Tung Tai Group	1726 Rogers Ave	PCBs & mercury found in sediment samples collected at parcel boundary in 2017. Ensure BMPs in place to prevent migration of PCBs & mercury.	Yes - High 0.57 mg/Kg	Yes - High 3.0 mg/Kg
Sims Metal Management	1720 - 1930 Monterey Rd	PCBs & mercury found in sediment samples collected in driveways at parcel boundary in 2017. Investigate for source of mercury & possibly PCBs. Ensure BMPs in place to prevent migration of PCBs and mercury.	Yes -Elevated 0.3 mg/Kg	Yes - High 2.0 mg/Kg
TransPak	520 Marburg Way	PCBs found in stormwater at the outfall that drains this property in 2015; the MS4 runs through the property. Sediment samples obtained in 2017 in the MS4 upstream of TransPak were low for PCBs. This property is suspect - investigate for possible PCB sources on site, including sub-surface area; former business on this site likely used PCBs (DAP, Inc.).	Unknown	Unknown
Alco Iron and Metal	1788 Rogers Ave	PCBs & mercury found in sediment samples collected at parcel boundary in 2017. Investigate for source of mercury. Ensure BMPs in place to prevent migration of PCBs and mercury.	Yes - Elevated 0.24 mg/Kg	Yes - High 1.6 mg/Kg
Specialty Truck Parts	1605 Industrial Ave	PCBs found in sediment samples collected at parcel boundary in 2017. Ensure BMPs in place to prevent migration of PCBs to onsite collection system (City's MS4 runs thru the property)	Yes - Elevated 0.28 mg/Kg	No
Navarra Truck; San Jose Rebar Inc.	1837 - 1855 Monterey Rd	Mercury found in sediment sample collected at parcel boundary in 2017. Investigate for sources of mercury. Ensure BMPs in place to prevent migration of mercury.	No	Yes - Elevated 0.42 mg/Kg
Xstrata Recycling	1695 Monterey Rd	PCBs & mercury found in sediment samples collected in adjacent MS4 in 2014. 2016 site visit noted no access to business activity at this location.	Unknown	Unknown
Multiple Businesses	1750 Rogers Ave	PCBs found in sediment samples collected at parcel boundary in 2017. Ensure BMPs in place to prevent migration of PCBs from property.	Yes - Elevated 0.28 mg/Kg	No
Multiple Businesses	701 Kings Row (Lane A, B, C)	PCBs found in sediment samples collected at the parcel boundary in 2017. High Mercury found in sediment samples collected in WY 2015. Ensure BMPs in place to prevent migration of PCBs from property.	Yes - Elevated 0.21 mg/Kg	Yes – High 9.3 mg/Kg

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Appendix A

Facility Site Visit Form Template

SITE VISIT FORM

WMA: _____ DATE: _____/_____/_____

APN: _____

Inspected By: _____ PHOTO ID.#: _____

SITE INFORMATION		
NAME OF CURRENT BUSINESS:	TYPE OF BUSINESS:	
NAME OF OWNER:	NOI if applicable	
ADDRESS:	Past Business if Applicable	
NAME AND TITLE OF ON-SITE CONTACT:	PHONE/E-MAIL:	

QUESTIONS FOR OWNER/CONTACT (include dates when possible)
1. What type of business(es) did the previous tenant(s)/owner(s) have, and when did they exist?
2. Are PCBs in use now or have they been in the past on this facility? Have there been any spills or leaks? If so, when?
3. How are the ground surfaces maintained (hosed, swept)? How is the material disposed of afterwards?

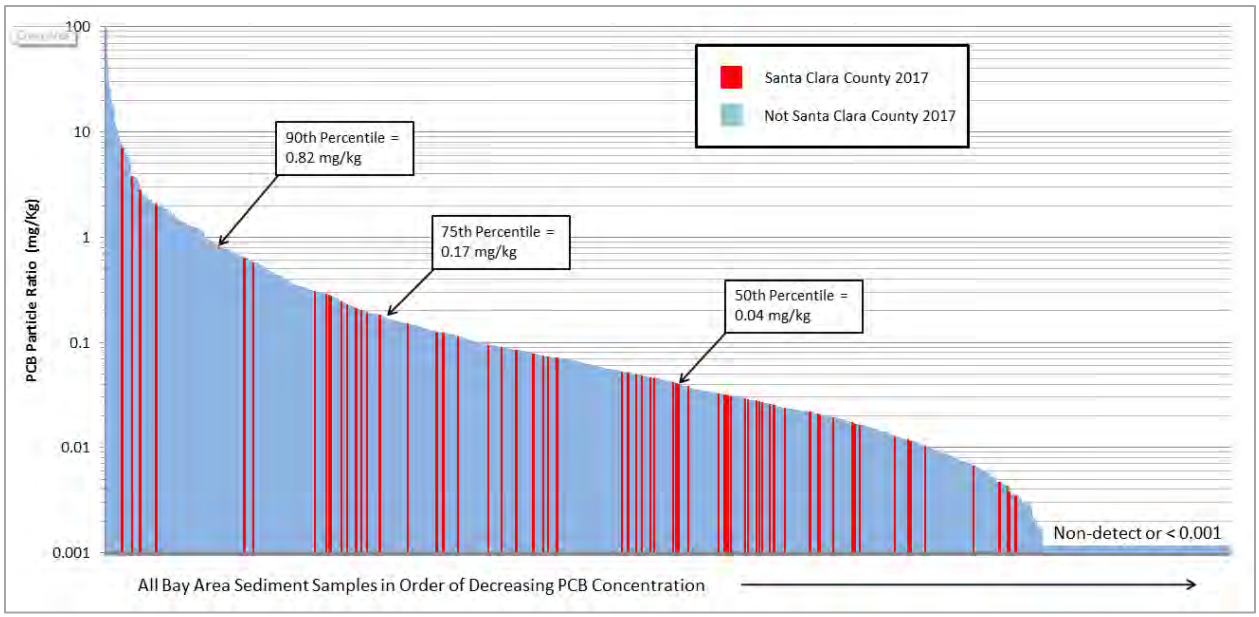
TYPE OF POTENTIAL PCB SOURCE (consider current and past use; check box below, mark on map, and describe)	
P1 Electrical applications/utilities (transformers, capacitors, appliances, motors, etc.)	
P2 Hydraulic fluids (lifts, die-casting machinery) Plasticizers (sealants, caulk,)	
P3 Evidence of outdoor hazardous material/waste storage areas (tanks, drums, scrap materials, e-waste)	
P4 Recycling/scrap yards (auto dismantlers)	
P5 Building demolition, renovation or window replacement site/recycler	
P6 Rail road lines/spurs	
P7 Other	

POTENTIAL FOR SEDIMENT TRANSPORT FROM SITE (check all that apply, describe in space given and mark on map)	
(S1) Unpaved areas, areas with sediment accumulation, soil stockpiled, or driveways with trackout present (circle any which applies)	
(S2) Vehicle activity to site from unpaved areas or transporting sediment/soils	
(S4) Property borders streets without curbs?	
(S4) Sediment accumulation at curbs, or catch basins?	

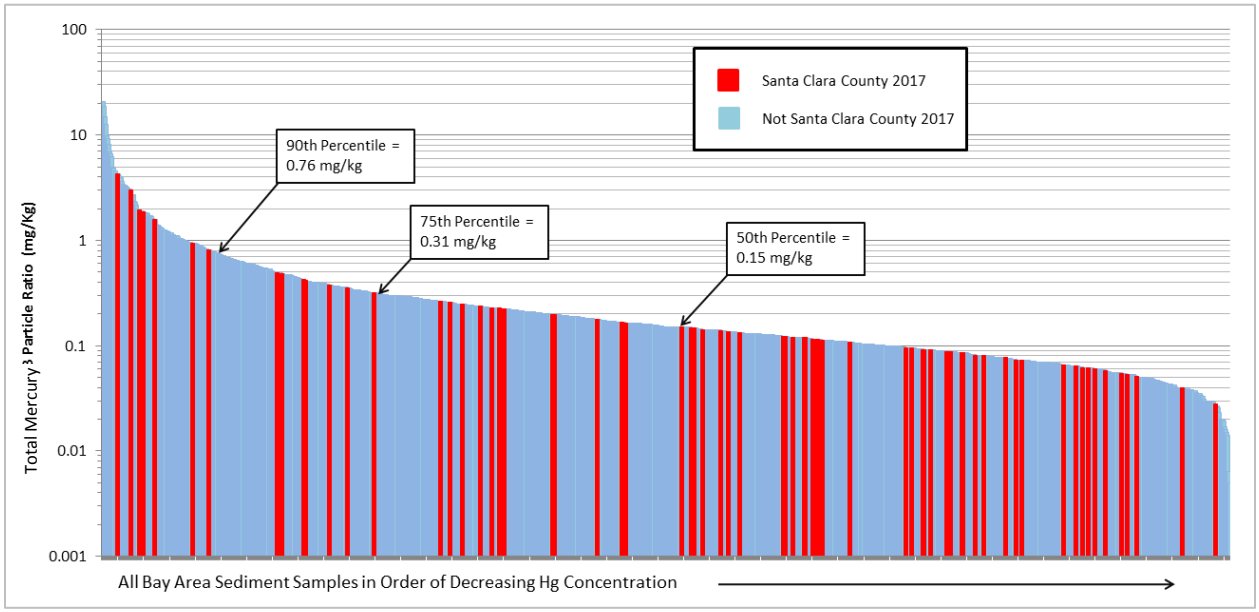
STORMWATER INFRASTRUCTURE AND HYDROLOGY (if any of the below apply to this site, mark on map)	
(T) Stormwater treatment practices present? Describe:	
(D)Storm drains or inlets on the parcel?	
Map Include potential sources and pathways to storm drain inlets and on-site and ROW sampling locations.	

Appendix B

Distribution of PCBs and Total Mercury Concentrations Measured in Street Dirt and Storm Drain Infrastructure Sediment Across the Bay Area



PCBs concentrations in 74 soil/sediment samples collected in the Santa Clara Valley during WY 2017 compared to the full Bay Area dataset.



Total mercury concentrations in 74 soil/sediment samples collected in the Santa Clara Valley during WY 2017 compared to the full Bay Area dataset.

Appendix C

Total Mercury and PCBs Concentrations Observed during the Water Years 2016 and 2017 Source Property Investigations

Sample ID	City	WMA	Date	Latitude	Longitude	Total Mercury (mg/Kg dry wt)	Total PCBs [a] (mg/Kg dry wt)
SC-SCL-02-F	Santa Clara	050GAC400	6.12.17	37.37103	-121.94970	0.257	0.04829
SC-SCL-02-G	Santa Clara	050GAC400	6.12.17	37.37042	-121.95014	0.805	0.05106
SC-SCL-02-H	Santa Clara	050GAC400	6.12.17	37.37078	-121.95011	0.0962	0.0207
SC-SCL-02-I	Santa Clara	050GAC400	6.12.17	37.37124	-121.95012	0.177	0.07081
SC-SCL-02-J	Santa Clara	050GAC400	6.12.17	37.37144	-121.95007	0.199	0.02169
SC-SCL-02-K	Santa Clara	050GAC400	6.12.17	37.37150	-121.95005	0.229	0.0167
SC-SCL-02-L	Santa Clara	050GAC400	6.13.17	37.36068	-121.94839	0.0532	0.00662
SC-SCL-03-E	Santa Clara	050GAC400	6.13.17	37.36497	-121.95602	0.0853	0.01725
SC-SCL-04-D	Santa Clara	050GAC400	6.12.17	37.36717	-121.95043	0.209	0.06517
SC-SCL-04-E	Santa Clara	050GAC400	6.12.17	37.37205	-121.94967	0.0881	0.0035
SC-SCL-04-F	Santa Clara	050GAC400	6.12.17	37.37250	-121.94967	0.495	0.01024
SC-SCL-05-C	Santa Clara	050GAC400	6.12.17	37.36996	-121.95262	0.236	0.28653
SC-SCL-05-D	Santa Clara	050GAC400	6.12.17	37.37176	-121.95042	0.165	0.2002
SC-SCL-05-E	Santa Clara	050GAC400	6.12.17	37.37215	-121.95045	0.0922	0.14956
SC-SCL-01-C	Santa Clara	066GAC150	6.12.17	37.35447	-121.93710	0.482	3.8058
SC-SCL-01-E	Santa Clara	066GAC150	6.13.17	37.35445	-121.93688	0.064	0.035
SC-SCL-01-F	Santa Clara	066GAC150	6.13.17	37.35466	-121.93670	0.077	0.021
SC-SCL-01-G	Santa Clara	066GAC150	6.13.17	37.35519	-121.93608	0.075	0.194
SC-SCL-01-H	Santa Clara	066GAC150	6.13.17	37.35656	-121.93269	0.142	0.088
SC-SCL-23-B	Santa Clara	066GAC150	6.12.17	37.35593	-121.94040	0.119	0.01705
SC-SCL-23-C	Santa Clara	066GAC150	6.12.17	37.35529	-121.93995	0.114	0.02181
SC-SCL-23-D	Santa Clara	066GAC150	6.13.17	37.35946	-121.93418	0.0652	0.63651
SC-SCL-23-E	Santa Clara	066GAC150	6.13.17	37.35917	-121.93379	0.0911	0.11486
SC-SCL-23-F	Santa Clara	066GAC150	6.13.17	37.35843	-121.93300	0.142	0.129
SC-SCL-26-A	Santa Clara	066GAC150	6.12.17	37.35327	-121.94012	0.115	0.006
SC-SJY-10-G	San Jose	051CTC275	5.22.17	37.36864	-121.90599	0.224	0.03242
SC-SJY-10-H	San Jose	051CTC275	5.22.17	37.36798	-121.90583	0.247	2.04354
SC-SJY-10-I	San Jose	051CTC275	5.22.17	37.36800	-121.90584	1.32	11.9119
SC-SJY-10-J	San Jose	051CTC275	5.23.17	37.37349	-121.90716	0.085	0.0259
SC-SJY-10-K	San Jose	051CTC275	5.23.17	37.37325	-121.90746	0.15	0.03157
SC-SJY-10-L	San Jose	051CTC275	5.23.17	37.37292	-121.90695	0.04	0.01152
SC-SJY-10-N	San Jose	051CTC275	5.23.17	37.37521	-121.90857	3.01	0.5696
SC-SJY-10-O	San Jose	051CTC275	5.23.17	37.37657	-121.90778	0.121	0.2764
SC-SJY-10-P	San Jose	051CTC275	5.23.17	37.37783	-121.91004	1.57	0.2448
SC-SJY-10-Q	San Jose	051CTC275	5.23.17	37.37569	-121.90890	0.146	0.04082
SC-SJY-07-A	San Jose	051CTC400	5.22.17	37.37903	-121.89875	0.378	2.7991
SC-SJY-08-H	San Jose	051CTC400	5.22.17	37.37844	-121.89870	0.166	0.18109
SC-SJY-08-I	San Jose	051CTC400	5.22.17	37.37668	-121.90253	0.06	0.00465
SC-SJY-08-J	San Jose	051CTC400	5.22.17	37.37612	-121.90079	0.226	0.00427
SC-SJY-08-K	San Jose	051CTC400	5.22.17	37.37444	-121.90063	0.095	0.07202
SC-SJY-08-L	San Jose	051CTC400	5.22.17	37.37255	-121.89857	0.088	0.04632
SC-SJY-08-M	San Jose	051CTC400	5.22.17	37.37243	-121.89868	0.136	0.21032
SC-SJY-08-N	San Jose	051CTC400	5.22.17	37.37160	-121.89980	0.092	0.02026
SC-SJY-08-O	San Jose	051CTC400	5.22.17	37.37185	-121.90025	0.117	0.05398
SC-SJY-08-P	San Jose	051CTC400	5.22.17	37.37222	-121.90040	0.061	0.01636
SC-SJY-08-Q	San Jose	051CTC400	5.22.17	37.37231	-121.90045	0.132	0.02524
SC-SJY-08-R	San Jose	051CTC400	5.22.17	37.37258	-121.90076	0.072	0.02761
SC-SJY-08-T	San Jose	051CTC400	5.22.17	37.37176	-121.90114	0.062	0.28211
SC-SJY-08-U	San Jose	051CTC400	5.22.17	37.37176	-121.90114	0.058	0.04885
SC-SJY-08-V	San Jose	051CTC400	5.22.17	37.37175	-121.90110	0.198	0.02708
SC-SJY-08-W	San Jose	051CTC400	5.22.17	37.37160	-121.90106	0.114	0.0152
SC-SJY-17-B	San Jose	067SCL080	5.23.17	37.35887	-121.87121	0.139	0.01269
SC-SJY-17-C	San Jose	067SCL080	5.23.17	37.35936	-121.86900	0.028	0.12274

Sample ID	City	WMA	Date	Latitude	Longitude	Total Mercury (mg/Kg dry wt)	Total PCBs [a] (mg/Kg dry wt)
SC-SJY-17-D	San Jose	067SCL080	5.23.17	37.35900	-121.86863	0.108	0.05251
SC-SJY-17-E	San Jose	067SCL080	5.23.17	37.35909	-121.86850	0.122	0.03164
SC-SJY-17-F	San Jose	067SCL080	5.23.17	37.35869	-121.87077	0.119	0.0268
SC-SJY-17-G	San Jose	067SCL080	5.23.17	37.35821	-121.87025	0.264	0.03968
SC-SJY-17-H	San Jose	067SCL080	5.23.17	37.35885	-121.86840	0.087	0.09328
SC-SJY-47-E	San Jose	083GAC900	5.24.17	37.30763	-121.86494	0.317	0.12447
SC-SJY-47-F	San Jose	083GAC900	5.24.17	37.30802	-121.86531	0.945	0.22631
SC-SJY-47-G	San Jose	083GAC900	5.24.17	37.30817	-121.86549	0.765	0.2466
SC-SJY-47-H	San Jose	083GAC900	5.24.17	37.30962	-121.86691	1.95	0.304
SC-SJY-47-J	San Jose	083GAC900	5.24.17	37.30996	-121.86778	1.88	7.062
SC-SJY-47-K	San Jose	083GAC900	5.24.17	37.30948	-121.86730	0.419	0.07382
SC-SJY-47-L	San Jose	083GAC900	5.24.17	37.30918	-121.86699	0.423	0.07763
SC-PAO-18-C	Palo Alto	001SFC100	6.13.17	37.44105	-122.16002	0.073	0.017
SC-PAO-18-D	Palo Alto	001SFC100	6.13.17	37.44094	-122.15985	0.081	0.027
SC-PAO-18-G	Palo Alto	001SFC100	5.15.17	37.44036	-122.15763	0.120	0.174
SC-PAO-18-H	Palo Alto	001SFC100	5.15.17	37.44072	-122.15790	0.038	0.060
SC-PAO-18-I	Palo Alto	001SFC100	5.15.17	37.44086	-122.15814	0.147	0.015
SC-PAO-18-J	Palo Alto	001SFC100	5.15.17	37.44117	-122.15810	0.051	0.006
SC-PAO-18-K	Palo Alto	001SFC100	5.15.17	37.44128	-122.15756	0.054	0.011
SC-PAO-18-L	Palo Alto	001SFC100	5.15.17	37.44184	-122.15749	0.080	0.008
SC-PAO-18-M	Palo Alto	001SFC100	5.15.17	37.44219	-122.15168	0.113	0.021

[a] Total PCBs are the sum of the 40 RMP congeners.