POLLUTION PREVENTION PLAN

CLEAN BAY PLAN 2020
FOR MORE INFORMATION
Additional program information is available at the City of Palo Alto Public Works–Watershed Protection Group website: www.cleanbay.org.

Questions about this document or requests for specific reports mentioned in this document should be directed to the Regional Water Quality Control Plant, 2501 Embarcadero Way, Palo Alto, CA 94303, (650) 329-2122, cleanbay@cityofpaloalto.org.

ACKNOWLEDGEMENTS
The Clean Bay Plan is produced by the City of Palo Alto Public Works–Watershed Protection and describes its pollution prevention accomplishments.
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The City of Palo Alto owns and operates the Regional Water Quality Control Plant (RWQCP), which treats wastewater from the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford University prior to discharging it to the San Francisco Bay. The RWQCP has operated a comprehensive Pollution Prevention Program since 1989 and maintains six permits associated with preventing water and air pollution:

1. RWQCP Main NPDES Permit (Order No. R2-2019-0015, NPDES No. CA0037834);
2. Mercury & PCB Watershed NPDES Permit (Order No. R2-2017-0041, NPDES No. CA0038849);
3. Nutrient Watershed NPDES Permit (Order No. R2-2019-0017, NPDES No. CA0038873);
4. RWQCP’s Recycled Water NPDES Permit (Order No. 93-160);
5. RWQCP’s Air Permit; and

The 2020 Clean Bay Plan is organized by the RWQCP’s permit requirements. Each section of this report describes permit details, environmental concerns related to the permit, RWQCP program updates for the past year, and key goals and priorities for the program in the future. In addition, Sections IV and V of this report discuss outreach and additional sustainability initiatives that support or exceed permit requirements.

Table 1 presents an overview of the City of Palo Alto’s Pollution Prevention Plan, describing pollutant sources, program priorities, pollution prevention progress made in 2019, and plans for the coming year.
# TABLE 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS

This table is not comprehensive of all pollution prevention or sustainability programs that the RWQCP leads. See report sections for more information.

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<thead>
<tr>
<th>Pollutant of Concern</th>
<th>Source(s)</th>
<th>2019 Highlights</th>
<th>2019 Outreach Highlights</th>
<th>2020 Main Goals</th>
<th>Program Evaluation Metrics</th>
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<tbody>
<tr>
<td><strong>Mercury and PCB Watershed NPDES Permit</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>Scrap amalgam, chairside trap waste, filter waste, and amalgam sludge from dental offices</td>
<td>RWQCP Staff received amalgam self-certification forms from 140 dental offices</td>
<td>Public</td>
<td>BAPPG educates 172 dental assistant and hygienist students/instructors in 7 different classes at 5 different colleges throughout the Bay Area on mercury pollution prevention</td>
<td>• Continue to track new dental offices and annually inspect approximately 20% of offices in the RWQCP service area</td>
</tr>
<tr>
<td></td>
<td>Fluorescent lights</td>
<td>Continued implementing dental amalgam program, including annual self-certification forms and inspecting dental offices to confirm proper amalgam separator maintenance and BMP compliance</td>
<td></td>
<td>• Update Sewer Use Ordinance to maintain consistency with newly promulgated pretreatment standards for dental offices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mercury-containing thermostats and thermometers</td>
<td>The City continued to recycle spent bulbs and purchase low mercury replacement bulbs and LED lights when available</td>
<td></td>
<td>• Continue to educate dental assistant and hygienist students on mercury pollution prevention via BAPPG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Legacy pollution from gold-mining</td>
<td>Collected and recycled thermometers and thermostats and accepted fluorescent lamps through the Household Hazardous Waste Station</td>
<td></td>
<td>• Continue to collect mercury-containing waste (e.g., thermometers) through the City of Palo Alto’s Household Hazardous Waste Station</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• Continue to provide Mercury: Past and Present Schools Program in RWQCP service area</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Percentage of dental offices in compliance with amalgam separator maintenance and best management practices</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• Receipt of annual self-certification forms, confirmation of amalgam separator maintenance and BMP compliance through inspections. Continued tracking of treatment plant mercury data</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td>• Number of students reached through BAPPG mercury trainings</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td>• Quantity of thermostats, thermostats, fluorescent lights, and other mercury-containing products collected at HHW events</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• Number of students taught and teacher ratings for Mercury: Past &amp; Present classroom program</td>
<td></td>
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<tr>
<td><strong>Nutrient Watershed NPDES Permit</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrients</td>
<td>Human and pet waste</td>
<td>Progressed Secondary Treatment Upgrade Project Preliminary Design</td>
<td>Public</td>
<td>Bay Day RWQCP tour</td>
<td>• Continue participation in San Francisco Bay Nutrient Management Strategy</td>
</tr>
<tr>
<td></td>
<td>Food waste</td>
<td>Participated in San Francisco Bay Nutrient Management Strategy</td>
<td></td>
<td>City Tabling Events: MSC Open House and The Great Race to Save Water</td>
<td>• Participate in the reconvened CASA Watershed Approach to Nutrients Focus Group</td>
</tr>
<tr>
<td></td>
<td>Industrial discharges</td>
<td></td>
<td></td>
<td></td>
<td>• Complete Preliminary Design for Secondary Treatment Upgrades Project</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>• Continue Microbes in Sewage 7th grade School Program in RWQCP service area</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Completion of evaluations and studies</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• Collection of data</td>
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<td></td>
<td></td>
<td></td>
<td>• Communication of results from evaluations and data collection to POTW community and regulators</td>
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<td></td>
<td></td>
<td></td>
<td>• Participation in regional collaboration efforts</td>
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<td></td>
<td></td>
<td></td>
<td>• Number of students taught and teacher ratings for Microbes in Sewage classroom programs</td>
</tr>
<tr>
<td>Pollutant of Concern</td>
<td>Source(s)</td>
<td>2019 Highlights</td>
<td>2019 Outreach Highlights</td>
<td>2020 Main Goals</td>
<td>Program Evaluation Metrics</td>
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<tr>
<td><strong>Recycled Water Permit</strong></td>
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<tr>
<td>Salinity</td>
<td>Human waste</td>
<td>Completed the Northwest County Recycled Water Strategic Plan</td>
<td>City Staff</td>
<td>Begin design of salt removal facility</td>
<td>Completion of evaluations and studies</td>
</tr>
<tr>
<td></td>
<td>Inflow and infiltration of saline groundwater into broken sewer pipelines</td>
<td>Completed the agreement between Valley Water, Mountain View, and Palo Alto for regional water reuse</td>
<td></td>
<td>Repair and test 72-inch Trunkline</td>
<td>Reduction of salinity (TDS) in recycled water</td>
</tr>
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<td></td>
<td></td>
<td>Conducted 11 inspections of recycled water users</td>
<td>Public</td>
<td></td>
<td>Increased use of recycled water</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Locate salt water inflow and infiltration into sewers</td>
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<td></td>
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<td></td>
<td>Completion of pipeline repairs</td>
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<tr>
<td><strong>Air Regulations</strong></td>
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</tr>
<tr>
<td>Ozone Precursors</td>
<td>Sewage sludge incinerators</td>
<td>Remained below limits for both NOx and NMOC</td>
<td>City Staff</td>
<td>Continue to operate equipment to remain below emission limits</td>
<td>Emissions below limits</td>
</tr>
<tr>
<td></td>
<td>Emergency generators</td>
<td>Decommissioned incinerators</td>
<td></td>
<td>Track generator usage</td>
<td></td>
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<tr>
<td></td>
<td>Landfill flare</td>
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<tr>
<td>Pollutant of Concern</td>
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</tbody>
</table>
| Federal Sewage Sludge Incinerator Regulated Pollutants | • Sewage sludge incinerators  
• Biosolids (sewage sludge) | • Decommissioned incinerators  
• Had zero reportable noncompliance events | Public  
• Incinerator Retirement Public Celebration | • Removal from the federal sewage sludge incineration regulations | • Emissions below limits for all regulated pollutants  
• Annual testing and training  
• Semi-annual and annual reporting of compliance status |
| Greenhouse Gases | • RWQCP sewage sludge incinerators  
• RWQCP office heating  
• RWQCP emergency generators  
• Wastewater treatment tanks | • Reduced anthropogenic emissions by >70% since 1990  
• Used 100% green (carbon neutral) natural gas that has fewer associated greenhouse gas emissions when combusted  
• Decommissioned incinerators | City Staff  
• Internal summary report of GHG inventory for previous year  
• “Clean Air Act §129 Operator Training” | • Track, calculate, and report the RWQCP’s emission inventory to numerous regulators  
• Evaluate energy use and GHG emission impacts from incinerator decommissioning | • Accurately quantify and report emission inventory  
• Annual factsheet updates |
| SF Bay Municipal Regional Stormwater NPDES Permit | | | | | |
| Pesticides | • Use on golf courses, parks, and municipal facilities  
• Application by hired pest control operators  
• Application in residential homes | • Continued regional outreach and regulatory tracking/lobbying efforts through participation in Our Water, Our World (OWOW) and BAPPG  
• Continued participation in OWOW partnership for residential IPM outreach, including point-of-sale educational materials at hardware stores and training program for store employees  
• Continued to maintain 21 pesticide-free parks and facilities within Palo Alto  
• Continued co-funding of consultant assistance in wastewater pesticide pollution sources and outreach (funding beyond contributions to BACWA)  
• Monitored glyphosate (RoundUp) Prop 65 issue and additional steps to reduce glyphosate use | City Staff  
• Developed further guidance and public outreach on City’s glyphosate use  
• Tabling events: Los Altos Hills Westwind Barn Earth Day Celebration, Stormwater rebate workshop  
• Print and electronic outreach about ant control rodent control, and OurWaterOurWorld.org program | • Continue participation in regional outreach and regulatory tracking/lobbying via BAPPG  
• Continue to provide outreach about IPM strategies and EcoWise Certified pest control companies  
• Supplemental/ supporting outreach about rodent baits and flea/tick products will be expanded  
• Finalize 2019 revisions to City of Palo Alto Integrated Pest Management Policy  
• Continue to include pesticide pollution as a topic in school program through 2nd grade Problem Pests and What’s Bugging You? classroom program | • Correspondence with regulatory agencies via BAPPG and associated regulation changes  
• Number of stores participating in OWOW program, and estimated impressions for IPM outreach  
• IPM Policy Adoption  
• Number of students taught and teacher ratings for Problem Pests and What’s Bugging You? classroom program |
TABLE 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS (continued)

<table>
<thead>
<tr>
<th>Pollutant of Concern</th>
<th>Source(s)</th>
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<th>2019 Outreach Highlights</th>
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</thead>
<tbody>
<tr>
<td>Trash</td>
<td>Plastic bags</td>
<td>Continued regional outreach efforts through participation in SCURVPPP and the Zero Litter Initiative</td>
<td>City Staff: City Tabling Events: MSC Open House, May Fete parade, and The Great Race to Save Water</td>
<td>Continue participation in regional outreach via Santa Clara Valley Urban Runoff Pollution Prevention Program and the Zero Litter Initiative</td>
<td>Participation in creek cleanup events and amount of trash/recyclables collected</td>
</tr>
<tr>
<td></td>
<td>Plastic bottles</td>
<td>Coordinated 2 creek cleanup events that removed 107 pounds of trash from Adobe Creek and 195 pounds from Matadero Creek</td>
<td></td>
<td>Coordinate creek cleanups for Creek Clean Up Day and Coastal Clean Up Day</td>
<td>Reduction of single-use plastics in creeks and retailer compliance with ordinance</td>
</tr>
<tr>
<td></td>
<td>Polystyrene</td>
<td>Trash booms were deployed and maintained in both Adobe and Matadero Creeks</td>
<td>Public: Creek Cleanup Events</td>
<td>Deploy and maintain trash booms in Adobe and Matadero Creeks</td>
<td>Deployment and maintenance of creek trash booms</td>
</tr>
<tr>
<td></td>
<td>Uncovered loads</td>
<td>ReThink Disposable contract is completed. Fourteen businesses certified and 1.1 million pieces of single-use foodware items eliminated annually</td>
<td>Corporate Earth Day events</td>
<td>Conduct restaurant and retailer compliance check with the City’s Single Use Plastic Bag Ordinance and Plastic Foam Ordinance</td>
<td>On-land visual assessment of the areas, trash profiled</td>
</tr>
<tr>
<td></td>
<td>Cigarette butts</td>
<td>Flavored tobacco ordinance restrictions become effective January 1, 2019. City begins process to further expand smoking restrictions to protect human health and reduce tobacco litter</td>
<td>Creek walk/monitoring event: San Francisquito Creek</td>
<td>Renew efforts with ReThink Disposable as part of Palo Alto’s expanded Single-use Plastics Ordinance</td>
<td>Number of anti-litter campaigns</td>
</tr>
<tr>
<td></td>
<td>Litter</td>
<td>The City receives the Volunteer Recognition Award from Valley Water for their participation in National River Cleanup Day and Coastal Cleanup Day</td>
<td>World Water Monitoring Challenge event</td>
<td>Attend corporate tabling events, neighborhood community events and school environmental programs</td>
<td>Number of students taught and teacher ratings for Problem Plastics, Who Dirtied the Bay?, and Watershed Warriors classroom programs</td>
</tr>
</tbody>
</table>

Fats, Oil, Grease (FOG)

<p>| Grease from food handling at residents and businesses | Reviewed 49 plan sets for compliance with FOG pollution prevention and best management practices | Participated in 63 radio spots on Univision coordinated by the Bay Area Pollution Prevention Group (BAPPG) | Inspect one-third of Palo Alto food service establishments (FSEs) | Number of restaurants inspected; percent compliance with ordinance requirements; number of plan checks |
| Conducted 253 inspections at 105 food service establishments for FOG requirements compliance | Utility bill inserts with FOG disposal information | Conduct plan checks for FSEs that are being built or remodeled to ensure grease control devices are installed and appropriate fixtures connected | Reduction in grease related sewer overflows in commercial areas |
| Public | | Distribute FOG utility bill inserts and other outreach materials | | Number of radio spots, ads and impressions |</p>
<table>
<thead>
<tr>
<th>Pollutant of Concern</th>
<th>Source(s)</th>
<th>2019 Highlights</th>
<th>2019 Outreach Highlights</th>
<th>2020 Main Goals</th>
<th>Program Evaluation Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF Bay Municipal Regional Stormwater NPDES Permit</td>
<td>• Caulk • Thermal insulation • Fiberglass insulation • Adhesive mastics • Rubber window gaskets • Commercial, public, institutional, and industrial structures constructed or remodeled between 1950 – 1980</td>
<td>• Finalized PCBs in Priority Building Materials applicant package for developers, consultants, and municipalities to utilize • City Council amended Chapter 16.11 to add section 16.11.060 Management of PCBs During Building Demolition • Implemented the PCBs in Priority Building Materials Demolition Program on July 1, 2019 for applicable whole building demolition projects</td>
<td>• Continue providing training and outreach materials to City staff, developers, and consultants regarding the PCBs in Priority Building Materials Program • Track submitted demolition packets and lab results for reporting</td>
<td>• Number of applicable complete demolition packets submitted • Lab results from PCBs sampling</td>
<td></td>
</tr>
<tr>
<td>Other Emerging Contaminants</td>
<td>• Over-the-counter and prescribed medicines • Hospitals and other medical facilities • Hand soaps, shampoo, body wash</td>
<td>• Participated in regional outreach, regulatory tracking/lobbying, and research via Bay Area Pollution Prevention Group • Retired City takeback program and supported Santa Clara County and MED-Project program launch, which provides pharmaceutical collection sites for the RWQCP service area</td>
<td>• Vi Sustainability Day • Corporate Earth Day events • Presentation at P3S Conference on Pharmaceuticals in Wastewater • “Are Your Unwanted Pills Piling Up?” Utility Bill Insert and tear sheets</td>
<td>• Continue participation in regional outreach, regulatory tracking/lobbying, and research via BAPPG and the SFEI • Educate residents about proper pharmaceutical disposal using Facebook advertisements, utility bill inserts, Cleanbay.org website, and RWQCP staff attendance at local business and community events • Continue to work closely with Santa Clara County and MED-Project program to maintain pharmaceutical collection sites for the RWQCP service area</td>
<td>• Number of disposal locations • Number of outreach pieces</td>
</tr>
</tbody>
</table>
The 2020 Clean Bay Plan describes permit requirements, program priorities for the coming year and summarizes 2019 efforts to reduce pollution from:

- wastewater sources associated with the RWQCP’s main NPDES Permit (Order No. R2-2019-0015, Section VI.C.3);
- mercury and PCBs (NPDES Permit Order No. R2-2017-0041, NPDES No. CA0038849);
- nutrients (NPDES Permit Order No. R2-2019-0017, NPDES No. CA0038873);
- stormwater pollutants (NPDES Permit Order No. R2-2015-0049, NPDES No. CA5612008); and
- air pollution associated with the RWQCP’s wastewater treatment.

The 2020 Clean Bay Plan also discusses progress on:

- recycled water generation and distribution (NPDES Permit Order No. 93-160);
- outreach and education to residents, industry and commercial businesses; and
- sustainability projects and programs which, while not regulated, support permit requirements and other environmental priorities.
A. CITY OF PALO ALTO: REGIONAL WATER QUALITY CONTROL PLANT

The City of Palo Alto operates the Regional Water Quality Control Plant (RWQCP), a wastewater treatment facility located on the shore of the San Francisco Bay in Palo Alto. The service area includes the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford University. The RWQCP treats wastewater from these communities prior to discharge to the Lower South San Francisco Bay (Figure I-1).

Approximately 236,000 people live in this service area. In 2019, the plant treated an average of 20 million gallons per day (MGD) of wastewater (Figure I-2).

The RWQCP uses physical, biological, and chemical treatment to remove about 99 percent of the solids and organic materials from influent wastewater. Despite the Plant’s excellent performance in
removing most pollutants from the wastewater, increasing scrutiny is given to the discharge of nutrients and contaminants of emerging concern. While the Plant’s treatment steps remove most of the metals found in wastewater prior to discharge, the RWQCP (like other municipal wastewater treatment plants) was not specifically designed to remove nutrients or contaminants of emerging concern from wastewater. Stormwater runoff in this service area, as well as in the Santa Clara Valley, flows untreated to the Bay. Runoff not absorbed through unpaved surfaces carries pollutants directly into the Bay.

B. CAPITAL IMPROVEMENT PROJECTS

The RWQCP has been in operation since 1934. Aging equipment, new regulatory requirements, and the movement to full sustainability requires rehabilitation, replacement, and new processes. These issues will be addressed through multiple capital improvement projects that will take place on the plant. Table I-1 summarizes the upcoming capital improvement projects, and locations of these projects can be found on the aerial map of the Plant in Figure I-3.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Description</th>
<th>Location Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Sedimentation Tank Rehabilitation</td>
<td>Structural / concrete repair for the primary sedimentation tank. Replace drive units, plastic chain and sludge scrapers, and scum skimmers.</td>
<td>1</td>
</tr>
<tr>
<td>New Outfall Line</td>
<td>Installation of new parallel pipeline and rehabilitation of existing line.</td>
<td>2</td>
</tr>
<tr>
<td>Lab/Environmental Services Building</td>
<td>Building that house the Operation Center with new laboratory and consolidating staff from four buildings.</td>
<td>3</td>
</tr>
<tr>
<td>Secondary Treatment Upgrades</td>
<td>Reconstruction of the activated sludge process and rehabilitation of the activated sludge aeration basins, allowing for the elimination of the fixed film reactors.</td>
<td>4</td>
</tr>
<tr>
<td>Secondary Clarifier #4 and #6 Replacement</td>
<td>Replace center column and rotating mechanism, piping, and effluent gate.</td>
<td>5</td>
</tr>
<tr>
<td>Gravity Thickener Mechanism Replacement</td>
<td>Replace center column and rotating mechanism with stainless steel.</td>
<td>6</td>
</tr>
<tr>
<td>Raw Sewage Headworks Replacement</td>
<td>Headworks facility will replace the New and Old Pumping Plant.</td>
<td>7</td>
</tr>
<tr>
<td>Recycled Water Reverse Osmosis Facility</td>
<td>An advanced water purification facility that blends advanced treated wastewater with existing tertiary-treated recycled water (Note: Funded by the Santa Clara Valley Water District).</td>
<td>8</td>
</tr>
</tbody>
</table>
C. REGULATIONS REQUIRING RWQCP WASTEWATER AND STORMWATER PERMITS

The City of Palo Alto treats wastewater and manages stormwater to meet the standards and requirements contained in six permits that reflect requirements of the Federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act, and the Clean Air Act:

1. RWQCP (main) NPDES Permit (Order No. R2-2019-0015, NPDES No. CA0037834)
   Summary: This permit governs the majority of the wastewater discharge limitations and other requirements for the RWQCP. The permit includes reporting and monitoring requirements as well as effluent limitations for conventional pollutants, effluent toxicity, and toxic pollutants.

2. Nutrient Watershed NPDES Permit (Order No. R2-2019-0017, NPDES No. CA0038873)
   Summary: The Nutrient Watershed Permit requires treatment plants discharging to the Bay to routinely monitor and report their effluent for key nutrient parameters, financially support scientific research into this topic, and conduct special studies evaluating the consequences of increased nutrient removal.

3. Mercury & PCB Watershed NPDES Permit (Order No. R2-2017-0041, NPDES No. CA0038849)
   Summary: The Mercury & PCB Watershed NPDES Permit covers industrial and municipal wastewater discharges of mercury and PCBs to the Bay. The Watershed Permit is an NPDES permit that implements the waste load allocations for these two source categories. It also implements other provisions of the TMDL requiring pollution prevention, special studies, and risk reduction actions to be conducted by the permittees.

4. San Francisco Bay Municipal Regional Stormwater NPDES Permit (Order No. R2-2015-0049, NPDES No. CAS612008)

FIGURE I-3. Aerial Map of Locations of RWQCP Capital Improvement Projects
Currently have a USEPA Title V Major Facility Review Permit (Title V Permit), but has an application for one pending finalization. The Title V Permit when finalized will include all of the local air limits currently in the PTO as well as state and federal air regulations such as greenhouse gas reporting. In 2019, the RWQCP will decommission the incinerator and withdraw its Title V permit application.

The RWQCP has led a comprehensive Pollution Prevention Program since 1989 to meet these strict regulatory requirements. A table that summarizes the historical highlights of the program can be found in Appendix-A.

**Summary:** The Municipal Regional Stormwater NPDES Permit covers the discharge of stormwater to the Bay. The Permit requires the RWQCP to carry out various activities and programs to prevent trash, pesticides, mercury, and other pollutants from entering local creeks, and ultimately the Bay.

**5. Recycled Water Permit (Order No. 93-160)**

**Summary:** The Recycled Water Permit ensures that the quality of recycled water produced by the RWQCP meets strict standards for reuse in non-potable applications. The permit also restricts the use of recycled water to appropriate applications such as landscape irrigation, industrial cooling water, decorative fountains, and toilet flushing.

**6. Air Permit**

**Summary:** The RWQCP maintains a Permit-to-Operate (PTO) that governs the operation, maintenance, and reporting of specific equipment to minimize air pollution that is emitted during its daily treatment of wastewater. The RWQCP does not currently have a USEPA Title V Major Facility Review Permit (Title V Permit), but has an application for one pending finalization. The Title V Permit when finalized will include all of the local air limits currently in the PTO as well as state and federal air regulations such as greenhouse gas reporting. In 2019, the RWQCP will decommission the incinerator and withdraw its Title V permit application.

The RWQCP has led a comprehensive Pollution Prevention Program since 1989 to meet these strict regulatory requirements. A table that summarizes the historical highlights of the program can be found in Appendix-A.

**HOW REGULATORY REQUIREMENTS ARE DEVELOPED**

The Regional Water Board adopts and implements water quality criteria that apply to both wastewater and stormwater for San Francisco Bay based on state and federal requirements. The water quality criteria are contained in the San Francisco Bay Water Quality

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Reason for Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>Effluent limitation; sludge management limits</td>
</tr>
<tr>
<td>Selenium</td>
<td>Proposed water quality criteria for South San Francisco Bay</td>
</tr>
<tr>
<td>Cyanide</td>
<td>Effluent limitation</td>
</tr>
<tr>
<td>Mercury</td>
<td>U.S. EPA 303(d) listing; effluent limitation; air emissions</td>
</tr>
<tr>
<td>Polychlorinated Biphenyls (PCBs)</td>
<td>U.S. EPA 303(d) listing</td>
</tr>
<tr>
<td>Nutrients</td>
<td>Progression of Nutrient Watershed NPDES permits</td>
</tr>
<tr>
<td>Salinity</td>
<td>Recycled water program expansion</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
<td>State &amp; Federal reporting regulations; climate change</td>
</tr>
<tr>
<td>Ozone Precursors</td>
<td>Bay Area in nonattainment for ozone; smog; respiratory and cardiopulmonary problems</td>
</tr>
<tr>
<td>Federal Sewage Sludge Incinerator Regulated Pollutants</td>
<td>Clean Air Act Section 129</td>
</tr>
<tr>
<td>Pesticides</td>
<td>U.S. EPA 303(d) listing</td>
</tr>
<tr>
<td>Trash</td>
<td>U.S. EPA 303(d) listing</td>
</tr>
<tr>
<td>Fats, Oils and Grease</td>
<td>Sanitary Sewer System Management Plan; sanitary sewer overflows</td>
</tr>
<tr>
<td>Contaminants of Emerging Concern</td>
<td>Contaminants of Emerging Concern</td>
</tr>
</tbody>
</table>
Control Plan (Basin Plan). Additional water quality criteria may be required by the U.S. Environmental Protection Agency (EPA) or the California Toxics Rule (May 18, 2000). Similarly, the Regional Air District adopts and implements air quality criteria for the San Francisco Bay Area based on state and federal requirements and the specific issues facing this region.

POLLUTANTS OF CONCERN
Section 303(d) of the CWA requires states to identify those water bodies that do not meet water quality standards. The states must rank these impaired water bodies by priority, taking into account the severity of the pollution and how the body of water is used. Lists of prioritized impaired water bodies are known as the “303(d)” lists and must be submitted to EPA every two years.

The San Francisco Bay is listed as impaired by several pollutants, therefore all dischargers to the Bay are required to obtain and adhere to NPDES permits that are issued by the Regional Water Quality Control Board. Table I-2 presents the 303(d) pollutants of concern for wastewater and stormwater in the RWQCP service area. While the list is primarily based on listings for Lower South San Francisco Bay and local urban creeks, the RWQCP has three additional reasons for prioritizing pollutants in wastewater:

- **Sludge Management Limits**—The pollutant is subject to limits for the land disposal of incinerated sludge ash;
- **Air Emissions**—The pollutant is a significant contributor to the air emissions from the RWQCP or is an air pollutant recognized by the U.S. EPA as impairing a local creek or the Bay;
- **Recycled Water**—The pollutant interferes with the use of or lowers the quality of the RWQCP’s recycled water.

D. SUSTAINABILITY PROGRAMS

The City of Palo Alto strives to go beyond permit compliance to be a leader in environmental protection and in so doing maintains an Office of Sustainability. The City has committed to reach Zero Waste by 2021, maintains a carbon neutral electric and natural gas portfolio for the public utilities it owns and operates, and green building requirements for municipal and residential buildings. Palo Alto is also a designated Tree City-USA, a League of American Bicyclists silver-ranked Bicycle Friendly Community, and has award-winning programs for the watershed protection services it provides to the RWQCP service area. The Office of Sustainability and RWQCP collaborate and support shared areas of concern. Current efforts include Climate Protection, Green Purchasing, Extended Producer Responsibility (discussed in Section IV) and Sea Level Rise (Section II-D).

E. REGIONAL COLLABORATIONS

The RWQCP strives to create and implement an effective pollution prevention program to target three communities: government agencies, residents, and industrial/commercial sectors. RWQCP staff acknowledges that collaborative working groups are often more effective at creating solutions for regional pollutants. RWQCP staff participate in a variety of state and regional workgroups, such as:

- Aquatic Science Center/San Francisco Estuary Institute Board (SFEI)
- Bay Area Clean Water Agencies (BACWA)
- Bay Area Biosolids to Energy Coalition
- Bay Area Stormwater Management Agencies Association (BASMAA)
- California Association of Sanitation Agencies (CASA)
- California Product Stewardship Council
- California Water Environment Association (CWEA)
- California Wastewater Climate Change Group
- Copper Brake Pad Partnership
- Creek Connection Action Group
- Integrated Pest Management Partnership Committee
- Product Stewardship Institute
- Regional Monitoring Program Steering Committee
- Regional Monitoring Program Working Group Committees
- ReNUWIt (Reinventing the Nation’s Urban Water Infrastructure)
- Silicon Valley Anti-Litter Group
- Santa Clara Water District: Salt and Nutrient Planning Stakeholders
CURRENT AND ANTICIPATED MANAGEMENT DECISIONS, POLICIES, AND ACTIONS BY THE REGULATORY AGENCIES THAT MANAGE BAY WATER QUALITY

<table>
<thead>
<tr>
<th>Decisions, Policies, and Actions</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BAYWATERSHED PERMITS (CURRENT &amp; NEXT RENEWAL)</strong></td>
<td></td>
</tr>
<tr>
<td>Municipal Regional Stormwater Permit</td>
<td>2015, 2020*</td>
</tr>
<tr>
<td>Mercury and PCBs Watershed Permit for Municipal and Industrial Wastewater</td>
<td>2017, 2022</td>
</tr>
<tr>
<td>Nutrient Watershed Permit for Municipal Wastewater</td>
<td>2019, 2024</td>
</tr>
<tr>
<td><strong>CURRENT DRIVERS BY TOPIC</strong></td>
<td></td>
</tr>
<tr>
<td>Determination of Wastewater Permit Limits</td>
<td>Ongoing</td>
</tr>
<tr>
<td>303(d) List and 305(b) Report</td>
<td>2017, 2022</td>
</tr>
<tr>
<td>Current listings and next cycle</td>
<td></td>
</tr>
<tr>
<td>Dredging Permits</td>
<td>2019</td>
</tr>
<tr>
<td>Bioaccumulation testing triggers and in-Bay disposal thresholds+</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>2018</td>
</tr>
<tr>
<td>Site specific objectives triggers+</td>
<td></td>
</tr>
<tr>
<td>Cyanide</td>
<td>2018</td>
</tr>
<tr>
<td>Site specific objectives triggers+</td>
<td></td>
</tr>
<tr>
<td>PCBs</td>
<td>2020</td>
</tr>
<tr>
<td>Review existing TMDL and establish plan to revise*</td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>2020</td>
</tr>
<tr>
<td>Review existing TMDL and establish plan to revise*</td>
<td></td>
</tr>
<tr>
<td>Selenium</td>
<td>2016</td>
</tr>
<tr>
<td>North Bay Selenium TMDL</td>
<td>2018</td>
</tr>
<tr>
<td>EPA Water Quality Criteria</td>
<td>~2020</td>
</tr>
<tr>
<td>South Bay Selenium TMDL</td>
<td></td>
</tr>
<tr>
<td>Nutrients</td>
<td></td>
</tr>
<tr>
<td>Nutrient Management Strategy</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Nutrient Monitoring Program</td>
<td>2019</td>
</tr>
<tr>
<td>Nutrient Water Quality Objective</td>
<td>2024</td>
</tr>
<tr>
<td>Chemicals of Emerging Concern</td>
<td></td>
</tr>
<tr>
<td>Updates to CEC Tiered Risk Framework</td>
<td>Annual</td>
</tr>
<tr>
<td>Opportunities to inform regional actions and state and federal regulations</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

Details of staff participation in these groups can be found in Appendix-B. Please refer to the 2019 BAPPG report, for regional coordination efforts on pollutants of concern.
## CURRENT AND ANTICIPATED MANAGEMENT DECISIONS, POLICIES, AND ACTIONS BY THE REGULATORY AGENCIES THAT MANAGE BAY WATER QUALITY

### CURRENT DRIVERS BY TOPIC

<table>
<thead>
<tr>
<th>Decisions, Policies, and Actions</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Use Pesticides</strong></td>
<td></td>
</tr>
<tr>
<td>EPA Registration Review of fipronil and imidacloprid</td>
<td>Ongoing</td>
</tr>
<tr>
<td>DPR fipronil mitigation measures</td>
<td></td>
</tr>
<tr>
<td><strong>Legacy Pesticides (DDT, Dieldrin, Chlordane)</strong></td>
<td></td>
</tr>
<tr>
<td>Monitoring recovery</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>Dioxins</strong></td>
<td></td>
</tr>
<tr>
<td>Review 303(d) listings and establish TMDL development plan or alternative</td>
<td>2018</td>
</tr>
<tr>
<td><strong>Toxicity</strong></td>
<td></td>
</tr>
<tr>
<td>New state plan on effluent and receiving water toxicity (schedule depends on State Water Board)</td>
<td>2019</td>
</tr>
<tr>
<td><strong>Sediment Hot Spots</strong></td>
<td></td>
</tr>
<tr>
<td>Review 303(d) listings and establish TMDL development plan or alternative Phase 2 Sediment Quality Objectives (Human Health)</td>
<td>2018, 2022</td>
</tr>
<tr>
<td><strong>Long-Term Management Strategy for Placement of Dredged Material</strong></td>
<td></td>
</tr>
<tr>
<td>Regional Sediment Management Strategy</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>Pathogens</strong></td>
<td></td>
</tr>
<tr>
<td>Bay Beaches Bacteria TMDL</td>
<td></td>
</tr>
<tr>
<td>Amend TMDL to add 2017 listings</td>
<td>2016, 2019, 2018</td>
</tr>
<tr>
<td>State Board Bacteria Objectives</td>
<td></td>
</tr>
<tr>
<td><strong>Suisun Marsh</strong></td>
<td></td>
</tr>
<tr>
<td>Establish TMDL for DO, mercury, nutrients, salinity</td>
<td>2018</td>
</tr>
</tbody>
</table>

### POTENTIAL FUTURE DRIVERS

<table>
<thead>
<tr>
<th>Decision, Policy, or Action</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wetland Restoration Permits</strong></td>
<td></td>
</tr>
<tr>
<td>Regional wetland monitoring (under development)</td>
<td>2020</td>
</tr>
<tr>
<td><strong>Trash and Microplastics</strong></td>
<td>TBD</td>
</tr>
<tr>
<td><strong>Effects of Reduced Wastewater and Stormwater Inputs to the Bay</strong></td>
<td>TBD</td>
</tr>
</tbody>
</table>

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2. Triggers will be updated on the RMP sampling frequency (every 4 years for sediment, every 2 years for water).
3. The dates for reviewing the Mercury and PCB TMDLs coincide with the schedule for reissuing the Municipal Regional Stormwater Permit.
SECTION II

POLLUTANTS WITH PERMIT REQUIREMENTS
A. RWQCP MAIN NPDES PERMIT

PERMIT DETAILS

In 2019, the San Francisco Bay Regional Water Quality Control Board (Regional Board) reissued the Regional Water Quality Control Plant’s (RWQCP) National Pollutant Discharge Elimination System (NPDES) permit (Order No. R2-2019-0015, NPDES No. CA0037834) which covers the discharge of treated wastewater to the Bay. The permit became effective on June 1, 2019 and is valid through May 31, 2024. The permit includes reporting and monitoring requirements as well as effluent limitations for conventional pollutants (e.g. biochemical oxygen demand, ammonia, suspended solids, chlorine residual, enterococci), effluent toxicity, and toxic pollutants (e.g., metals, cyanide, and dioxin). Appendix C lists the effluent limits in the permit.

The discharge of mercury, ammonia, and pesticides are regulated by this permit and also by regional watershed and municipal permits. Refer to Chapters II.B, II.C, and II.F for details on the RWQCP mercury, ammonia, and pesticide pollution prevention programs respectively.

The permit also requires a Pretreatment Program that reduces pollutants entering the sanitary sewer system by regulating industrial and commercial discharges within the RWQCP service area. Since its inception in 1981, the RWQCP Pretreatment Program has resulted in significant reductions in metals and other pollutants in the RWQCP influent, therefore making it easier for the RWQCP to meet the Permit effluent discharge limits. See the 2019 Pretreatment Program Annual Report for more information on this program.

ENVIRONMENTAL CONCERNS

In order to protect human health and the environment, the permit includes effluent limitations for RWQCP discharges to the San Francisco Bay. Each pollutant is limited for different environmental concerns. Heavy metals such as copper and silver can have detrimental effects to aquatic organisms, including but not limited to: reduced growth and reproduction rates, developmental abnormalities, bioaccumulation, paralysis and death. Inorganic pollutants such as selenium have been observed to cause neurological disorders, liver damage, reproductive failure, reduced growth rates, and bioaccumulate in aquatic organisms such as white sturgeon. San Francisco Bay is listed under section 303(d) of the Clean Water Act as impaired by selenium due to bioaccumulation in diving ducks, leading to health advisories on their consumption by hunters. Similarly, fish are extremely susceptible to cyanide toxicity in aquatic environments, exhibiting reduced reproductive capacity and mortality at low concentrations. Inorganic cyanides, which possess the polyatomic cyanide ion (CN-) such as sodium or potassium cyanide, are highly toxic. Industrial operations are the primary contributor of cyanide to the RWQCP.

2019 PROGRAM UPDATES

On June 22, 2017, Tetra Tech (a contractor for the USEPA) performed a Pretreatment Compliance Inspection (PCI) of the RWQCP Pretreatment Program. Details of the June 22, 2017 PCI can be found in the 2018 Clean Bay Plan. The RWQCP received the final PCI summary report and transmittal letter from the San Francisco Bay Regional Water Quality Control Board on February 20, 2018. The
PCI summary report included two requirements and four recommendations for improvement of the RWQCP Pretreatment Program. The RWQCP submitted its response to the Report on April 26, 2018.

1. COPPER

The Permit requires the RWQCP to have a Copper Contingency Plan and Control Program to reduce the amount of copper entering the Bay (Appendices D and E). RWQCP influent and effluent loadings are tracked to evaluate the overall success of the Copper Control Program. Estimated contributions of copper sources to the RWQCP and stormwater are presented in Figures II.A-1 and II.A-2. Figure II.A-3 presents the annual copper mass loadings in the RWQCP’s influent and effluent from 1989 through 2019. Influent and effluent copper mass loadings decreased steadily from 1989 until 1994 when copper mass loadings reached a low plateau and have remained relatively stable since. The decrease in copper effluent during this time period may be attributed to a decrease in copper coming into the Plant and/or an increase in Plant performance.

On March 9, 2019, the RWQCP retired its sewage sludge incinerators from service and transitioned to dewatering its sewage sludge and hauling it off-site for further processing. When the incinerators were in operation, approximately two million gallons per day (MGD) of scrubber return water was sent to the RWQCP headworks. This water contained fly ash and other contaminants, including copper, scrubbed from the incinerator exhaust. Once the scrubber return water ceased, the copper concentration in the Plant effluent decreased below prior levels.

Any ash generated from incinerator operations in 2019 was sent to a hazardous waste landfill as the copper levels remained too high for alternative disposal options.

Copper levels in stormwater are expected to decrease significantly beginning in 2021 when the newly adopted California Motor Vehicle Brake Friction Materials statute prohibits on copper content become effective.

Residential outreach for copper pollution prevention in pools, spas and fountains was posted on the City’s cleanbay.org website and baywise.org.

2. SILVER

The RWQCP Silver Hauling Program has regulated the disposal of used silver-bearing photoprocessing solutions since 1992. Businesses that collect their silver-bearing photoprocessing solutions for offsite disposal as hazardous waste are required to submit annual reports certifying that all such solutions were properly hauled offsite for disposal. Businesses that elect to treat their silver-bearing photoprocessing solutions and discharge them to the sanitary sewer are issued discharge permits and are required to conduct monthly sampling to verify that they meet silver discharge standards. In 2019, no businesses were treating their silver-bearing photoprocessing waste on-site and discharging to the sanitary sewer. Recent years have seen a shift toward digital imaging for photographic, medical, and dental operations, which does not involve the use of chemicals. In 2019, 27 businesses were signed up with the RWQCP Silver Hauling Program, eight less businesses than in 2018. This decline in the number of business’ that haul silver bearing waste is due to the switch to digital imaging and photo processing labs closing.
SECTION II: POLLUTANTS WITH PERMIT REQUIREMENTS

2010
- 1994 Sewer Use Ordinance is updated
- The Brake Pad Partnership sponsors California law SB 346 to implement programs for elimination of copper in brake pads
- RWQCP begins funding copper pollution prevention outreach through BAPPG
- RWQCP develops Copper Control Program per NPDES Permit (Appendix E)

2014
- The first requirement of SB 346, to label brake pad copper content and eliminate lead, asbestos and toxic metals from all brake pads, takes effect
- BAPPG re-evaluates plastic alternatives to copper piping and finds PEX as a pollution prevention alternative

2015
- BAPPG conducts four copper pollution prevention presentations to a total of 300 plumbers and apprentices

2016
- DTSC finalizes California Brake Pad Law requiring copper content reductions beginning in 2021
- BAPPG supports a presentation at Laney Community College about flux and flushing BMPs

2017
- BAPPG supports one presentation at Laney Community College, Oakland (15 students) about flux and flushing BMPs
- SEPA requires users to contact local agencies and follow their instructions for draining copper-treated swimming pools and spas to avoid copper pollution and collection system backups

2018
- Submitted Report of Waste Discharge for permit reissuance

2019
- Reissued NPDES Permit

*Refer to previous Clean Bay Plan reports for more information.
3. SELENIUM
In 2016, an evaluation was done by the RWQCP in response to a proposal from the USEPA for lower selenium water quality (WQ) criteria for the San Francisco Bay and Delta. The 2016 evaluation determined that the proposed lower WQ criteria would not be met in the Lower South San Francisco Bay despite no bioaccumulation in Lower South San Francisco Bay aquatic organisms. As such, it was suggested in October 2016 via comment letters to USEPA that the lower WQ criteria may not be appropriate for application to the Lower South San Francisco Bay. Since then USEPA asked the United States Geological Survey (USGS) to evaluate whether sufficient site-specific data exists for the South Bay that could be used to determine South Bay-specific WQ criteria. The USGS subsequently released a report in 2018 finding that there is sufficient data for this determination and that WQ criteria for the South Bay would be slightly higher than for the North Bay due to differences in the food web between the two Bay segments. Data used in this report included a dataset collected over a 20-year period by the USGS in partnership with the RWQCP to study metal concentrations in clams located in the Palo Alto mudflats. At this point it is uncertain how the Regional Water Quality Control Board will use this information. Consequently, the RWQCP continued to track influent and effluent selenium concentrations and in 2019 collected additional samples of creeks. Data is still be evaluated and will be compiled in a report finalized in 2020.

4. CYANIDE
The permit requires the RWQCP to have a Cyanide Action Plan and Control Program to reduce the amount of cyanide entering the Bay (Appendix F, G). The Cyanide Control Program requires that contributing sources be included in the control program, inspected at least annually, and provided with cyanide pollution prevention educational materials. During inspections, RWQCP staff stress the importance of proper cyanide control and confirm that appropriate cyanide control measures are being implemented. The RWQCP issues discharge permits with cyanide limits to contributing sources. These permits require contributing sources to properly store, segregate and pretreat all cyanide-bearing wastestreams prior to combination with other non-cyanide-bearing wastestreams before sanitary sewer discharge. The permits also require contributing sources to perform sampling of process wastestreams to verify compliance with cyanide discharge standards. The RWQCP performs monthly sampling of these wastestreams to verify compliance with cyanide discharge standards. Additional information about the industrial facilities that are listed as potential contributing sources in the Cyanide Control Program is available in the 2019 Pretreatment Program Annual Report.

LOOKING FORWARD
In 2020, the RWQCP will:
- complete evaluation of selenium loading from Palo Alto creeks and the RWQCP;
- continue to focus on copper pollution prevention activities;
- continue to research potential sources of selenium to the RWQCP, and
- work with the San Francisco Estuary Institute to evaluate selenium inputs and impacts on a regional scale.
B. MERCURY AND POLYCHLORINATED BIPHENYL (PCB) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

PERMIT DETAILS

In 2006, due to the high levels of mercury and PCBs in the Bay, the State identified the San Francisco Bay as “impaired” for both pollutants and listed it on the 303(d) List—California’s list of impaired waters per the Federal Clean Water Act (CWA). Per CWA requirements, the Regional Water Quality Control Board (Regional Board) developed total maximum daily load (TMDL) documents for both pollutants. A TMDL is the maximum amount of a pollutant that a body of water (e.g., San Francisco Bay) can receive while still meeting water quality standards. TMDLs generally describe what must be done by the permittee(s) in order to meet wasteload allocation (the pollutant load allocated to current and future point sources) requirements. TMDLs were adopted for both mercury and PCBs in 2006 and 2008, respectively. In turn, the Mercury and Polychlorinated Biphenyl (PCB) National Pollutant Discharge Elimination System (NPDES) Permit identifies the wasteload allocations and describes the implementation requirements of both TMDLs.

The City of Palo Alto, along with other municipal and industrial dischargers in the San Francisco Bay Area (e.g., wastewater treatment plants and particular industrial facilities) must adhere to the requirements of this permit, which regulates point source discharges of mercury and PCBs from dischargers’ facilities to surface waters (e.g., San Francisco Bay). Therefore, the Mercury and PCB Permit describes what actions the City must carry out in order to minimize discharges of these two pollutants, including source control and risk reduction programs (reducing risk to humans who may consume fish impacted by PCBs and mercury).

ENVIRONMENTAL CONCERNS

Mercury and PCBs are pollutants known to bioaccumulate. Contamination of these pollutants also affects existing beneficial uses of water bodies for things like sport fishing, preservation of rare and endangered species, and wildlife habitat. In addition, mercury concentrations in some bird eggs harvested from the Bay shores are high enough to account for abnormally high rates of eggs failing to hatch. Point sources for mercury discharged to the RWQCP include laboratory, hospital, and dental office wastewater; human and food waste; and stormwater inflow.

While PCB point sources are unknown, they may be associated with human waste and wastewater generated from old industrial equipment which may contain PCBs. Mercury is present in both wastewater and stormwater discharges to the Bay. Mercury in South Bay stormwater discharges comes from mobile combustion, stationary combustion, erosion (construction and naturally occurring), and abandoned mercury mine drainage. The estimated contributions of mercury to the San Francisco Bay are shown in Figure II.B-1.

2019 PROGRAM UPDATES

1. MERCURY

On July 14, 2017, the United States Environmental Protection Agency (USEPA) promulgated technology-based pretreatment standards to reduce discharges of mercury from dental dischargers into publicly owned treatment works (POTWs). The pretreatment standards require applicable dental dischargers to install and maintain one or more amalgam separators (or equivalent devices), prohibit the
discharge of amalgam wastes, and prohibit the use of oxidizing or acidic cleaners in dental unit water lines, chair-side traps, and vacuum lines that discharge amalgam process wastewater to the sanitary sewer system.

In 2019, the Palo Alto Regional Water Quality Control Plant (RWQCP) received amalgam self-certification forms from all participating dental offices. City staff inspected 27 dental offices and confirmed that the required best management practices (BMPs) were being implemented and that the self-certification forms accurately described operations. In 2019, the Bay Area Pollution Prevention Group (BAPPG), a committee of Bay Area Clean Water Agencies (BACWA), educated 172 dental assistant and hygienist students at five different colleges throughout the Bay Area on mercury pollution prevention.

2. POLYCHLORINATED BIPHENYLS (PCBs)
RWQCP staff is required to annually identify controllable sources of polychlorinated biphenyls (PCBs) to the RWQCB according to the Mercury and PCB Watershed Permit Order No. R2-2017-0041. The RWQCP Pretreatment Staff confirmed that there are no industrial sources of PCB-containing material that may enter the sanitary sewer. In addition, RWQCP Stromwater Staff participates in local and regional efforts to reduce PCBs from entering the storm drain system. For more information on PCBs in stormwater, see section II.F.5.

RWQCP MERCURY POLLUTION PREVENTION HISTORY*

1997
- Mercury loading evaluation is conducted using local sampling information, data from other wastewater treatment plants, and scientific literature to quantify the relative importance of sources

1998
- RWQCP begins thermometer and thermostat takeback program

2000
- RWQCP partners with the MidPeninsula Dental Society (MPDS) to educate dentists on preventing mercury contamination in San Francisco Bay
- The City starts the Residential Fluorescent Lamp Recycling Program (transferred to the county in 2004). The RWQCP continues to accept mercury containing lights from the entire service area at its Household Hazardous Waste Station

2002-03
- Conducts a thorough investigation of the uses of mercury at RWQCP
- Removes/Replaces 84 mercury switches (approximately 4 pounds) from the RWQCP

2004
- Adopts a new ordinance language requiring all owners and operators of dental vacuum suction systems to install ISO 11143 certified amalgam separators designed to remove at least 95% of amalgam by March 31, 2005

2006
- The Regional Water Quality Control Board adopts the mercury total maximum daily loads (TMDL) on August 9

2009
- RWQCP starts participating in the Bay Area Pollution Prevention Group (BAPPG) outreach efforts for mercury pollution prevention
LOOKING FORWARD

RWQCP staff will continue to carry out mercury and PCB projects to meet the Mercury and Polychlorinated Biphenyl (PCB) National Pollutant Discharge Elimination System (NPDES) Permit requirements. In 2020, the City will:

- continue to track new dental offices and annually inspect approximately 20% of offices in the RWQCP service area;
- amend the dental amalgam program to meet new requirements of the dental amalgam rule after promulgation by EPA;
- continue to educate dental assistant and hygienist students on mercury pollution prevention via BAPPG;
- continue to work with the City’s Development Services Staff to flag buildings within a certain age range that may have PCBs in various priority building materials;
- continue implementation of PCBs in Priority Building Materials Demolition Program following July 1, 2019 start date;
- continue to participate in stormwater regional sampling efforts to determine the amount of PCBs entering stormwater conveyance systems in Santa Clara County and surrounding counties; and
- participate in the regional efforts regarding PCB load reduction efforts.

2010
- The cities of Palo Alto, Los Altos, Mountain View, East Palo Alto and Stanford conduct a second mercury takeback campaign

2011
- City staff educates heating, ventilation, and air conditioning (HVAC) contractors and suppliers about the Thermostat Recycling Coalition, which collects mercury containing thermostats

2012
- RWQCP pilots the Clean Bay Business Program with dental offices

2014
- RWQCP staff confirms the majority of dentists comply with amalgam separator maintenance through a combination of annual reports and inspections
- Palo Alto educates two classes of dental hygienists at Foothill College about minimizing mercury pollution from dental offices
- BAPPG educates over 272 students throughout the Bay Area about mercury pollution prevention

2015
- BAPPG educates over 297 dental assistant and hygienist students at 7 different colleges throughout the Bay Area on mercury pollution prevention

2017
- RWQCP discontinued pilot dental office Clean Bay Business Program
- US Environmental Protection Agency promulgates technology-based pretreatment standard to reduce discharges of mercury from dental offices into publicly owned treatment works
- BAPPG educated 150 dental assistant and hygienist students at 4 different colleges throughout the Bay Area on mercury pollution prevention

2018
- BAPPG educated 160 dental assistant and hygienist students at 5 different colleges throughout the Bay Area on mercury pollution prevention

2019
- BAPPG educated 172 dental assistant and hygienist students at five different Bay Area colleges about mercury pollution prevention

*Refer to previous Clean Bay Plan reports for more information.
C. NUTRIENT WATERSHED NPDES PERMIT

PERMIT DETAILS
The San Francisco Bay Regional Water Quality Control Board (Regional Board) adopted the second Nutrient Watershed Permit on May 8, 2019 that covers discharge of nutrients from wastewater treatment plants, Order No. R2-2019-0017, National Pollutant Discharge Elimination System Permit (NPDES) No. CA0038873. The Nutrient Watershed Permit became effective July 1, 2019. It requires treatment plants discharging to the Bay to routinely monitor and report their effluent for key nutrient parameters, financially support scientific research on this topic, and conduct special studies that evaluate using Recycled Water Programs in natural systems to reduce nutrient discharges to the Bay. The Regional Water Quality Control Plant (RWQCP) actively participates in regional collaborations on this topic organized by the Bay Area Clean Water Agencies (BACWA) and led by the San Francisco Estuary Institute (SFEI). The RWQCP has a discharge limit for ammonia under the main RWQCP NPDES Permit due to toxicity concerns. It is expected that all future nutrient limits will fall under the Nutrient Watershed Permit.

Nutrient discharge limits may be in the 2024 permit reissuance, depending on the Nutrient Science Plan conclusions.

ENVIRONMENTAL CONCERNS
Nutrients, such as nitrogen and phosphorus, are essential elements for plant, animal, and microorganism growth. The San Francisco Bay is nutrient-enriched, and the Lower South San Francisco Bay in particular has had near constant or decreasing nutrient loads discharged from wastewater treatment plants since the 1990s.1 Despite this, the Bay has historically exhibited resistance to typical environmental problems associated with nutrient enrichment, specifically large algal (phytoplankton) blooms which can lead to low dissolved oxygen conditions and fish kills. A large part of the scientific research required under the current Nutrient Watershed Permit tries to identify why the Bay’s assimilative capacity for nutrients appears to be decreasing. Contributing factors may include: loss of the benthic bivalves (clams) that had previously regulated the phytoplankton biomass through grazing; decreased suspended sediment concentrations that have resulted in increased light penetration; new sources of phytoplankton to the Bay from exchange with the highly-productive, recently restored salt ponds in the South Bay; and/or mixing between low dissolved oxygen water from margin habitats (such as sloughs) with the open-Bay.1 Although recent studies indicate that nutrient loading is not the primary driver of the newly increased phytoplankton biomass, it is still unclear whether control of nutrient loading (specifically from wastewater treatment plants) could be used as a way of mitigating potential algal blooms and associated low dissolved oxygen conditions in the future.1 A 2014 study found that wastewater treatment plants are the major nutrient source to the Lower South San Francisco Bay and that stormwater does not substantially contribute nutrients to this subembayment on an annual scale.2 A previous study indicated that 80 – 98 percent of nitrogen and phosphorus in wastewater stems from human urine and feces, and 3 – 10 percent from food waste disposal. Other minor contributions include pet waste and industrial ammonia discharge.3

2019 PROGRAM UPDATES
The Nutrient Watershed Permit requires the RWQCP and other wastewater treatment plants to evaluate options for increased nutrient removal by optimization of current treatment processes. As part of this on-going effort, in 2019 RWQCP staff and Brown & Caldwell started the preliminary design for the Secondary Treatment Process Upgrades Project; a project that would significantly reduce nutrients in the RWQCP discharge.

The 2019 average total inorganic nitrogen influent and effluent concentrations were 33 and 28 milligrams per liter (mg/L) respectively (Figure II.C-1). The 2019 average total phosphorus influent and effluent concentrations were 6 and 5 mg/L respectively (Figure II.C-2).

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3Hughes, S., Source Reduction and Related Strategies to Reduce Nutrient Loading to San Francisco Bay, prepared for the Bay Area Pollution Prevention Group, 2014.
**RWQCP NUTRIENTS POLLUTION PREVENTION HISTORY***

**1980**
- RWQCP constructs nitrification processes to transform ammonia to nitrate prior to discharge

**2011**
- RWQCP completes Ammonia Characterization Study indicating receiving waters meet water quality objectives for ammonia

**2012**
- San Francisco Bay Regional Water Quality Control Board (Regional Board) implements Water Code Section 13267 Technical Report Order and requires municipal wastewater dischargers to collect and report nutrient concentrations and mass loadings
- RWQCP completes Long Range Facilities Plan

**2014**
- Regional Board adopts the Nutrient Watershed Permit
- RWQCP completes trunkline analysis of ammonia that found no significant industrial dischargers despite a 17% increase in ammonia load between 2005 and 2014
- RWQCP constructs magnesium hydroxide addition system to counter insufficient alkalinity in nitrification process and subsequent pH decreases
- BAPPG publishes Source Reduction and Related Strategies to Reduce Nutrient Loading to San Francisco Bay report

**2015**
- RWQCP completes optimization evaluation of belt press filtrate, septage, and Renzel Marsh for nutrient removal indicating that 21% of phosphorus and 40% of nitrogen incidentally removed in current process and Renzel Marsh may be optimized but needs further study
- RWQCP completes optimization evaluation of Recycled Water Program and Phase II of Renzel Marsh identifying the Recycled Water Program as possible optimization option over Renzel Marsh due to size and maintenance constraints
- BACWA begins publishing Group Annual Reports summarizing nutrient discharges to the Bay from the 34 wastewater treatment plants

**2016**
- RWQCP completes the Phosphorus Evaluation: Regional Comparison and Projections
- San Francisco Estuary Institute (SFEI) publishes the Lower South Bay Nutrient Synthesis summarizing known nutrient interactions within the subembayment

**2017**
- RWQCP completes the Total Nitrogen Removal Study indicating that the 43% total nitrogen removal through the plant is mainly from settling of particulate-bound organic nitrogen in the primary sedimentation tanks and the secondary clarifiers
- RWQCP completes the Nutrient Load Reduction Alternatives Cost Comparison suggesting that process upgrades is the most cost effective nutrient removal alternative when compared to expanded recycled water use and marsh expansion

**2018**
- RWQCP completes the Secondary Treatment Process Evaluation technical memorandum recommending reconfiguration to Modified Ludzack-Ettinger process
- BACWA publishes the Nutrient Reduction Study evaluating nutrient removal upgrades for all Bay Area wastewater treatment plants

**2019**
- Nutrient Watershed Permit reissued

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*Refer to previous Clean Bay Plan reports for more information.
LOOKING FORWARD
In 2020, the RWQCP will continue to work with BACWA, SFEI, and the Regional Board to continue research and fully inform the next versions of the Nutrient Watershed Permit. As part of this ongoing effort, the RWQCP will continue to:
• collect nutrient data;
• participate in the San Francisco Bay Nutrient Management Strategy;
• participate in the California Association of Sanitation Agencies Watershed Approach to Nutrients Focus Group;
• engage Stanford University and consultants in research partnership opportunities;
• evaluate renewed Nutrient Watershed Permit for compliance obligations;
• evaluate the Renzel Marsh for updated nutrient removal after maintenance activities; and
• design secondary process retrofits and improvements for nutrient removal.
D. RWQCP’S RECYCLED WATER NPDES PERMIT

PERMIT DETAILS

The San Francisco Bay Regional Water Quality Control Board (Regional Board) adopted the Water Reclamation Requirements for the Regional Water Quality Control Plant (RWQCP), Order No. 93-160, otherwise referred to as the Recycled Water Permit, in 1993. The Recycled Water Permit ensures that the quality of the recycled water produced by the RWQCP meets strict standards for biochemical oxygen demand, dissolved oxygen, dissolved sulfide, turbidity, total coliform bacteria and chlorine residual. The Recycled Water Permit also restricts the use of recycled water to appropriate applications such as landscape irrigation, industrial cooling water, decorative fountains, and toilet flushing. Applications for the use of recycled water are reviewed by the RWQCP, and sometimes by the State Water Resources Control Board Division of Drinking Water, for appropriateness.

In addition to the permit, the City of Palo Alto adopted a Recycled Water Salinity Reduction Policy in 2010 with the ultimate goal of reducing salinity below 600 milligrams per liter (mg/L) of total dissolved solids (TDS).

ENVIRONMENTAL CONCERNS

Recycled water is a safe, environmentally sustainable alternative to potable (drinking) water for non-potable applications. Recycled water contains salinity, for which TDS is a surrogate parameter. Salinity sources are mainly from human waste and from saline groundwater inflow and infiltration (I&I) into broken and aging sewer pipelines. At elevated levels, salinity can negatively impact salt-sensitive vegetation as well as limit the use of recycled water in industrial cooling towers. Recycled water also contains chlorine from the disinfection process which can be harmful to aquatic life if misapplied or accidentally spilled into a stormdrain or creek. As such, the application of recycled water is highly regulated and spills are reported immediately to regulators.

2019 PROGRAM UPDATES

1. RECYCLED WATER USE

In 2019, the RWQCP produced 229.8 million gallons of recycled water, a one percent decrease from the previous year (Figure II.D-1). RWQCP staff conducted 11 inspections of the current recycled water users and found no major enforcement issues. Refer to the 2019 Annual Recycled Water Report for further information.

Although not reflected in the current recycled water use statistics, RWQCP staff continued to make progress in Recycled Water Program expansion planning efforts in 2019. In particular, RWQCP worked closely with the City of Mountain View and Valley Water to complete the multi-year evaluation of regional expansion opportunities as part of the Northwest County Recycled Water Strategic Plan. Together the three agencies also signed an agreement which addresses regional

**FIGURE II.D-1:** Historical RWQCP Recycled Water Use.
water reuse opportunities and funding for a local salt removal facility to be built at the RWQCP.

2. SALINITY
Since 2010, the RWQCP and its partner cities have repaired and replaced sewer pipelines to decrease the amount of salts entering via I&I. Cumulatively, these efforts reduced recycled water salinity by roughly 15 percent (Figure II.D-2). Unfortunately, reductions from I&I repairs have not been sufficient to meet the City-wide goal of 600 mg/L. As such, in 2019 the RWQCP continued planning-level efforts for construction of salt removal facilities, secured Valley Water financial support, and submitted a Clean Water State Revolving Fund application for the remaining design and construction funds that are needed for the project.

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RWQCP RECYCLED WATER PROGRAM HISTORY*

1975
- Santa Clara Valley Water District builds recycled water facility at the RWQCP which produces highly treated water for groundwater recharge and lesser treated water for landscape irrigation

1986
- Beginning of Palo Alto’s Recycled Water Program
- Santa Clara Valley Water District decommissions advanced treatment system and sells recycled water treatment facility to Palo Alto; Palo Alto continues to operate recycling facilities for landscape irrigation in Mountain View

1990
- Recycled water extends to Greer Park (Phase 1)

1992
- Water Reclamation Master Plan is completed

1993
- Recycled water pipeline extends to the Palo Alto Golf Course and Palo Alto’s Municipal Services Center yard (Phase 1)

1995
- City Council certifies the Programmatic Environmental Impact Report for the Master Plan projects

1999
- Recycled Water Market Survey is completed

2005
- Facility Plan for Recycled Water Pipeline Expansion to Stanford Research Park (Phase 3) is completed

2008
- City of Palo Alto passes Recycled Water Ordinance
- Initial Study and Mitigated Negative Declaration for the Recycled Water Pipeline Expansion to Stanford Research Park (Phase 3) is completed

2009
- New recycled water pipeline to Mountain View is constructed (Phase 2)
- Redwood Tree Monitoring Study starts to monitor the effects of recycled water irrigation on redwood trees in the Mountain View Shoreline area
- Infiltration and Inflow Conductivity Study of the wastewater collection system is started

2010
- City of Palo Alto passes a Recycled Water Salinity Reduction Policy, with goal of lowering TDS to less than 600 ppm
- RWQCP completes 1st reverse osmosis pilot project that evaluates TDS reduction ability of reverse osmosis

2012
- Beginning of the California Drought

*Refer to previous Clean Bay Plan reports for more information.
LOOKING FORWARD

In 2020, the RWQCP will continue to plan for expansion of the Recycled Water Program and will:
• ask for City Council acceptance of the Northwest County Recycled Water Strategic Plan;
• prepare for the transition from Order 93-160 to the recently approved Statewide General Order;
• continue to collaborate with other municipalities and Valley Water on regional expansion opportunities;
• begin the design of the salt removal facility;
• continue to promote and run the Recycled Water Truck-Fill Station; and
• inspect recycled water permittees for appropriate use.

2013
• City of Mountain View Shoreline Sewer Rehabilitation Project repairs sewer lines with known infiltration of saline groundwater

2014
• City of Mountain View Landfill Barrier Extraction Well Removal Project removes two wells that previously discharged saline water into the sewer
• EPASD replaces sewer mains on several streets to address saline groundwater intrusion problem and repairs leak at the bottom of a manhole on their main trunkline, which was allowing saline groundwater to enter the sewer
• City of Los Altos Trunk 101 to Meter Station sewer rehabilitation
• RWQCP completes 2nd reverse osmosis pilot project that evaluates hydrogen peroxide as a biofouling control agent

2015
• RWQCP completes Environmental Impact Report for Recycled Water Pipeline Expansion to Stanford Research Park (Phase 3)

2016
• RWQCP completes analysis of 72” Trunkline conductivity testing and provides information to Engineering department to facilitate repair of identified infiltration
• Redwood Tree Monitoring Study is completed and indicates that redwood trees irrigated with recycled water show signs of salt damage
• RWQCP starts 3rd reverse osmosis pilot project to evaluate pretreatment options
• State Water Resources Control Board approved Statewide General Order for Non-potable Recycled Water (WQ 2016-0068-DDW)

2017
• End of prolonged California Drought
• RWQCP, in collaboration with the City of Mountain View and the Santa Clara Valley Water District, completes the following:
  › Advanced Water Purification System Feasibility Study that recommended reverse osmosis for TDS reduction
  › Advanced Water Purification System Preliminary/Conceptual Design Report for a 1 MGD facility expandable to 2 MGD
  › White Paper on future use of Site 4 (Measure E Site) for an Advanced Water Purification System

2018
• RWQCP completes the 3rd reverse osmosis pilot identifying ultrafiltration as recommended reverse osmosis pretreatment option
• RWQCP completes the Reverse Osmosis Concentrate Toxicity Study finding no toxicity for reverse osmosis facilities smaller than 3.9 MGD permeate capacity
• RWQCP in collaboration with the Santa Clara Valley Water District, completes the following:
  › Preliminary Design for Phase 3 Recycled Water Distribution System,
  › Business Plan for Phase 3 Expansion Project, and
  › Groundwater Assessment and Indirect Potable Reuse Feasibility Evaluation and Implementation Strategy

2019
• Signed deal with Valley Water & City of Mountain View for regional water reuse and local salt removal facility
• Completed Northwest County Recycled Water Strategic Plan
E. AIR REGULATIONS

PERMIT DETAILS

The Regional Water Quality Control Plant (RWQCP) requires the use of energy and equipment that emits air pollution in its daily treatment of wastewater. This equipment, also referred to as stationary sources of air pollution, includes emergency generators, the sewage sludge incinerators, and heating/cooling of office buildings. In addition, the wastewater itself can emit certain air pollutants during treatment. Consequently, the RWQCP has a Permit-to-Operate (PTO) issued by the Bay Area Air Quality Management District (BAAQMD). The PTO restricts equipment operation in such a manner as to limit the amount of air pollution emitted. In comparison to other industrial facilities, the RWQCP is a low air pollution emitter and does not qualify as a Major Source Facility per BAAQMD definitions. Despite this, the RWQCP had to apply for a United Stated Environmental Protection Agency (USEPA) Title V Major Facility Review Permit (Title V Permit) due to the new federal sewage sludge incinerator regulations. The new federal sewage sludge incinerator (SSI) regulations are not in the RWQCP PTO but will be once the Title V Permit is issued. The RWQCP submitted a Title V Permit Application in 2014 and has been working with the BAAQMD to finalize the permit. In the meantime, the RWQCP has complied with the SSI regulation that includes meeting strict new emission limits, annual testing, annual training, and many other documentation and reporting requirements.

Currently greenhouse gas (GHG) emissions are not covered by the RWQCP PTO; however, current federal and state GHG emissions reporting requirements will be included in the Title V Permit. Despite not being covered by the PTO, the RWQCP has been reporting its GHG emission inventory to both the federal and state governments since 2013 per the USEPA and California Air Resources Board (CARB) mandatory GHG reporting regulations. Since 2007, the City of Palo Alto has had progressive sustainability goals that have included significant decreases in GHG emissions both from the community and municipal operations.

ENVIRONMENTAL CONCERNS

Air pollution can take many forms and have different environmental impacts based on the specific pollutants that make up the air pollution in that area. Environmental impacts of air pollution include the formation of acid rain from sulfur dioxide and nitrogen oxides emissions; smog from ozone, sulfur dioxide, nitrogen oxides, and particulate matter emissions; as well as inducing man-made climate change and associated sea level rise from GHG emissions of carbon dioxide, nitrous oxide, and methane. In addition to environmental impacts, air pollution has been linked to many serious health conditions, including strokes, heart disease, lung cancer, and respiratory diseases such as asthma.¹

Air pollution can come from both human activities (anthropogenic) and natural sources (biogenic). Air pollutants of greatest concern for the Bay Area are ozone (and its precursors nitrogen oxides, carbon monoxide, and volatile organic compounds), fine particulate matter, toxic pollutants associated with diesel engine exhaust, and GHGs.²

2019 PROGRAM UPDATES

The sewage sludge incinerators were officially decommissioned and taken out of service in 2019. RWQCP staff began the process of notifying regulators and extracting the RWQCP from

numerous associated regulations. It is anticipated to take about 5 years to officially close out all regulatory compliance obligations for the incinerators. The most notable impact of incinerator decommissioning is the removal of the RWQCP from the Title V Major Facility Review Permit program. Refer to the Impacts of Decommissioning Sewage Sludge Incinerators on Regulatory Compliance report for more detailed information.

1. OZONE PRECURSORS
The RWQCP PTO requires annual emission testing for nitrogen oxides (NOx) and non-methane organic compounds (NMOC), which includes volatile organic compounds. NOx emissions from the sewage sludge incinerators are tested annually and then added to estimates of NOx emissions from the emergency generators. In 2019, the RWQCP total NOx inventory was 14 tons per year, well under the PTO limit of 35 tons per year. Incinerators were decommissioned prior to requiring additional NMOC testing.

2. FEDERAL SEWAGE SLUDGE INCINERATOR REGULATION
Clean Air Act, Section 129 (CAA 129) required the USEPA to develop and adopt emission limits for solid waste incineration units, including sewage sludge incinerators. The limits applicable to existing sewage sludge incinerators cover emissions of cadmium, carbon monoxide, hydrogen chloride, mercury, NOx, lead, dioxins, furans, particulate matter, sulfur dioxide, and fugitive ash. Testing conducted in 2015 – 2017 showed that emissions from the RWQCP incinerators were more than 75 percent below the limits for all parameters except for NOx. Consequently, the RWQCP qualified for a reduced testing frequency. As such, the RWQCP tested only NOx emissions from Sewage Sludge Incinerator No. 1 in September 2018. The incinerators were decommissioned prior to requiring additional emission testing for CAA 129 in 2019. Throughout the year, operating parameters, specifically wet scrubber flow, pH, and pressure drop as well as afterburner temperature, were continuously monitored in place of emissions to prove compliance. In 2019, the RWQCP had zero reportable noncompliance events under CAA 129. Refer to the CAA 129 Annual Compliance Report for further information. The 2019 CAA 129 Annual Compliance Report will be the last report required from the RWQCP under this regulation.

3. GREENHOUSE GASES
The RWQCP emitted approximately 19,000 metric tons (MT) of carbon dioxide equivalents (CO2e) in 2018 as calculated by the Local Government Operations Protocol, Version 1.1 (2010). 2019 emissions are expected to be significantly less than that of 2018; data required to calculate the

![FIGURE II.E-1: RWQCP Historical Anthropogenic Greenhouse Gas Emissions](image-url)
2019 emissions were not available at the time of this writing. Note that these values differ from that reported to CARB and USEPA due to the inclusion of different emission sources as well as the use of different emission factors, high heat values, and/or global warming potentials. Figure II.E-1 shows that RWQCP anthropogenic GHG emissions decreased by more than 70 percent since 1990. Figure II.E-2 shows that the conversion of nitrogen within the wastewater to nitrous oxide gas once it reaches the Baylands (or Baylands Conversion) was the major RWQCP anthropogenic GHG source.

![Figure II.E-2: 2018 RWQCP Anthropogenic Greenhouse Gas Emissions by Source](image)

**FIGURE II.E-2: 2018 RWQCP Anthropogenic Greenhouse Gas Emissions by Source**

- Incinerator 11%
- Comfort Heating 0%
- Electricity 0%
- Biological Treatment, 11%
- Baylands Conversion, 78%

### RWQCP AIR POLLUTION PREVENTION HISTORY*

**1972**
- RWQCP builds sewage sludge incinerators

**1985**
- Centrifuges are replaced with belt press filters for sludge dewatering prior to incineration

**1999**
- Incinerator Rehabilitation Project begins, which includes upgrades to air pollution control devices

**2005**
- Starts use of landfill gas (a biogenic fuel) in place of natural gas in the incinerator afterburner

**2006**
- RWQCP purchases green (carbon neutral) electricity

**2007**
- City of Palo Alto adopts Climate Protection Plan with greenhouse gas (GHG) reduction goals

**2009**
- RWQCP evaluates process emissions and equipment electricity usage (largest energy users were aeration basin blowers, trickling filter lift pumps, and raw sewage pumps)

**2010**
- Evaluation of wastewater flowrate on electricity demand
- RWQCP installs solar panels to offset increased energy demand from ultraviolet disinfection
- City of Palo Alto begins reporting its GHG emissions to the Climate Registry
- City of Palo Alto adopts updated Climate Protection Plan with new GHG reduction goals

**2011**
- RWQCP evaluates GHG emissions from disposal of household food waste
- Begins annual tuning of incinerators for efficient fuel usage
- New federal sewage sludge incinerator regulations are codified
LOOKING FORWARD

In 2020, the RWQCP will continue to strive for compliance with its many air regulations. In particular, the RWQCP will:

- continue extracting the RWQCP from incinerator regulatory obligations;
- evaluate incinerator decommissioning impact on energy usage and GHG emissions; and
- continue to track, report, and evaluate GHG emissions and energy usage for optimization opportunities.

2012
- Installs new aeration basin process control system
- City of Palo Alto meets initial GHG reduction goals

2013
- RWQCP begins reporting its GHG emissions to the California Air Resources Board
- Decommissions two old emergency generators

2014
- Installs individual power meters throughout the treatment process to identify efficiency opportunities
- Submitted Title V Permit Application due to new federal Sewage Sludge Incinerator regulations
- Replaces two old emergency generators with new ones

2015
- RWQCP begins reporting its GHG emissions to the U.S. Environmental Protection Agency
- RWQCP begins purchasing green (carbon neutral) natural gas
- Evaluates incinerator afterburner landfill gas use
- 41% decrease in the RWQCP total GHG emissions since 2005

2016
- City of Palo Alto adopts new GHG reduction goals under the Sustainability and Climate Action Plan and related sea level rise adaptation strategies
- Evaluation of RWQCP energy usage by treatment process
- Evaluation of new GHG baseline (1990) for emission comparisons
- New federal sewage sludge incinerator regulations becomes effective

2017
- City of Palo Alto approves 2018 – 2020 Sustainability Implementation Plan

2018
- RWQCP completes Impacts of Decommissioning Sewage Sludge Incinerators on Regulatory Compliance report

2019
- Decommissioned sewage sludge incinerators

*Refer to previous Clean Bay Plan reports for more information.
F. SAN FRANCISCO BAY MUNICIPAL REGIONAL STORMWATER NPDES PERMIT

PERMIT DETAILS

The City of Palo Alto must adhere to requirements addressed in the 2015 Municipal Regional Stormwater NPDES Permit (MRP) (Order No. R2-2015-0049, NPDES Permit No. CAS612008), a Bay Area-wide permit issued by the San Francisco Bay Regional Water Quality Control Board (Regional Board). The Regional Board has identified particular activities and pollutants in the MRP that the City must address in order to manage discharges into creeks, the Bay and other waterbodies. Activities that must be regulated and monitored by the City of Palo Alto include, but are not limited to:

- private and public development and construction;
- municipal infrastructure maintenance;
- industrial and commercial businesses (e.g., restaurants and auto servicing);
- illegal (illicit) dumping or discharges;
- creek/watershed monitoring; and
- pesticide application.

In addition, requirements are listed regarding the following pollutants and the amount of each that can be discharged to the Bay: trash; polychlorinated biphenyls (PCBs); mercury; copper; and pesticides. One of the ways in which the City supports the reduction of these pollutants is through the implementation of green stormwater infrastructure (GSI). GSI uses vegetation, soils, and natural processes to reduce, slow and detain stormwater runoff, promote infiltration and evapotranspiration, and treat runoff using biotreatment and other GSI practices. The City developed and submitted its Green Stormwater Infrastructure (GSI) Plan to the Water Board in September 2019 which described how the City will gradually integrate GSI measures into its facilities, public right-of-ways, and urban landscape. Ultimately, the overall intent of the Permit is to only allow rain to be discharged to the City’s creeks and storm drain system (also known as the municipal separate storm sewer system “MS4”).

Due to the high levels of particular pesticides, PCBs and trash in sections of the San Francisco Bay, the State has identified the Bay as “impaired” and placed it on the 303(d) List, California’s list of impaired waters. As a result, the Regional Board has identified restrictions for the amount of certain pesticides and PCBs that can be discharged to the Bay by adopting a total maximum daily load (TMDL) in 2005 and 2008, respectively. The Clean Water Act defines a TMDL as a value of the maximum amount of a pollutant (e.g., pesticide) that a body of water can receive while still meeting water quality standards. Thus, the MRP identifies activities that the City of Palo Alto must conduct to ensure that these two pollutants are minimized.

The State has also identified particular creeks that flow through the City as highly impacted. In 2009, the Regional Board listed Matadero and San Francisquito Creeks on the 303(d) list for trash, indicating the need for particular focus on these watersheds as well the southern section of the Bay to which they discharge. In November 2015, the Regional Board’s reissuance of the updated MRP included requirements to reduce trash loads from MS4s of all permittees (e.g., Santa Clara, San Mateo, Alameda, and Contra Costa Counties, as well as the Fairfield-Suisun and Vallejo areas). These municipalities must reduce trash loads to the Bay by 70% (as compared to their estimated baseline load) by 2017, 80% by 2019, and 100% (or no adverse impact) by 2022. The City’s trash reduction plan consists of various activities to reduce trash loads and meet these compliance goals. Activities include source control efforts such as product bans and outreach, trash removal from the MS4 and receiving water bodies such as litter booms and full trash capture devices, and staff and volunteer clean ups on-land and in creeks.

ENVIRONMENTAL CONCERNS

A watershed is an area of land that drains rain to a single point, such as a creek or other waterbody. In forested or unpaved areas, rain falls on trees and vegetation, traveling to creeks and replenishing groundwater aquifers by infiltrating into the soil. However, in urban watersheds, rain travels rapidly over paved roads, driveways, rooftops, and parking lots. Once on paved surfaces, this runoff flows to gutters, storm drain inlets and the MS4. The MS4 rapidly discharges stormwater runoff to receiving waters to avoid flooding. This runoff carries pollutants from...
paved residential, commercial and industrial sources throughout the City and enters local creeks and the Bay without any treatment.

Pollutants include (but are not limited to) trash, fertilizers, automotive fluids, pesticides, sediment, hazardous materials, cleaning supplies, and wash water. As a permittee, the City must enforce the MRP in order to minimize stormwater runoff impacts and prevent these pollutants from discharging into our local creeks and Bay.

2019 PROGRAM UPDATES

1. PESTICIDES
CITY OF PALO ALTO INTEGRATED PEST MANAGEMENT

The City of Palo Alto has maintained an IPM policy and program since 2001, tracked staff and contractor pesticide use at all City operations, and is compliant with the pesticide use requirements of the Municipal Regional Permit.

Palo Alto’s IPM Program strives to reduce pesticides used in large amounts and products that pose water quality and other environmental hazard issues. A tier system evaluates the chemical toxicity and considers: (1) acute human toxicity and chronic health risks; (2) the level of training required to use the product; (3) inclusion of Clean Water Act (303d) listed chemicals; (4) environmental toxicity; and (5) a chemical’s persistence and mobility in soil. Tier 1 chemicals are of highest concern, Tier 2 are of moderate concern, Tier 3 are of lowest concern, and Tier 4 are chemicals for which there is insufficient information to analyze their toxicity.

Palo Alto also maintains 21 pesticide-free parks and facilities, has eliminated neonicotinoid use and other systemic pesticides associated with pollinator decline, reduced both the total amount and toxicity of pesticides it uses and conducts a biennial IPM Pest Management Report for its operations. The City does not use spray insecticides for structural pest control on City property, which are the primary contributor to urban creek toxicity throughout the State. Palo Alto was the first agency to require EcoWise certification for structural pest control services in advance of MRP requirements and received the Department of Pesticide Regulation IPM Innovator Award in both 2003 and 2011.

In 2019, Palo Alto continued to modify its practices for glyphosate use given concerns about public safety. Glyphosate is now only used where weeds may pose a potential threat to public safety (e.g., poison oak, obstructed site lines), and the natural environment (e.g., invasive weeds that can overtake native terrestrial or aquatic plants).

Recommendations for Calendar Year 2020:
- Ensure that MRP provisions are met;
- Finalize the City’s IPM Policy and Procedures revisions;
- Continue to provide pest-specific public outreach (e.g., ticks/fleas and rodents) to address pollution prevention and local environmental issues related to secondary poisoning from rodent baits;
- Continue research and training for glyphosate alternatives;
- Simplify and document pesticide reporting and review process to weather future staff changes.

EcoWise Certified

EcoWise certified is an IPM certification for structural pest control operators that sets a rigorous standard to reduce environmental and human health toxicity. Since 2007, the City has required its structural pest control service provider to be EcoWise Certified, or to maintain a comparable certification with City approval. EcoWise Certified remains an active program with nine certified companies and almost 60 certified practitioners. Companies and practitioners are listed at EcoWiseCertified.org.

Eco Gardener and Green Gardener Programs

Eco Gardener is a project of the Santa Clara County Recycling and Waste Reduction Technical Advisory Council in collaboration with water quality agencies. Eco Gardener maintains the website bayareaecogardens.org to centralize numerous environmentally-friendly gardening efforts occurring throughout
RESIDENTIAL PESTICIDE OUTREACH
Regional participation in the Our Water, Our World program

The Our Water, Our World (OWOW) program is a consortium of local water pollution prevention agencies and the nine-member Bay Area Stormwater Management Agencies (BASMAA), working to protect local creeks and San Francisco Bay from pesticide pollution. Established in 1997, OWOW raises awareness about the connection between residential pesticide use and water quality. The program provides consumers with:

- Sixteen pest and gardening fact sheets in English and three in Spanish that are annually updated for product changes;
- A state-wide network of hardware and garden supply stores that carry pest management fact sheets, “shelf talker” tags that identify less-toxic products for sale, and OWOW-trained staff trained to answer common customer pest control questions; and

Santa Clara County. The website provides a cost effective public education tool that is flexible to the needs and budgets of public agencies.

The Green Gardener Program is a training and certification program for small commercial landscapers and maintenance workers. In 2019, 21 students completed the training. The program is coordinated by SCVURPPP and consists of ten classes that emphasize water conservation, integrated pest management, waste reduction, soil protection and business practices. Because pesticide reduction relies on establishing healthy landscapes as the first step in pest prevention, the integrated course work aids regional pesticide reduction efforts. Participants who attend 80% of the classes and successfully complete an exam will receive a certificate of completion and a Santa Clara Valley Green Gardener Card. Information is available at mywatershedwatch.org.

RWQCP PESTICIDE POLLUTION PREVENTION HISTORY*

1997
- Our Water Our World (OWOW) program is established. The City provides initial program funding, which provides consumers with information about less toxic pest control

2001
- Organophosphate pesticides are banned from retail sale. Palo Alto coordinates collection event from stores
- City of Palo Alto implements Integrated Pest Management (IPM) policy and program

2003
- City of Palo Alto receives the Department of Pesticide Regulation (DPR) IPM Innovator Award
- RWQCP offers IPM workshops to service area as an on-going program

2005
- The San Francisco Bay Regional Water Board adopts a TMDL addressing diazinon and pesticide toxicity in Bay Area urban creeks

2007
- Palo Alto requires EcoWise Certified standards for its structural pest control contractor

2009
- City of Palo Alto begins phasing in pesticide-free parks

2010
- Palo Alto adopts Bay-Friendly Landscaping requirements for City landscape maintenance companies

2011
- Ecotoxic pesticide use recorded at a historic low
- Poison rodent bait use discontinued
- City receives second DPR IPM Innovator Award
- The City of Palo Alto expands pesticide-free parks to include 12 parks and several facilities

2012
- RWQCP begins teaching the annual Green Gardener IPM class

2015
- The Environmental Protection Agency (EPA) prepares a joint risk assessment for pyrethroids
- A work group is formed to update the Our Water Our World (OWOW) program
- Palo Alto begins participation in Healthy Buildings, Healthy Families Pilot Program

2017
- Tier 1 and ecotoxic pesticide use has decreased by 84% and 93% respectively from 2001-2012 baseline use to the 2013-2016 due to significant changes to fungus and insect control
- City credit cards and petty cash processes were revised to prohibit retail purchase of pesticides
- Palo Alto completes its participation in the Healthy Building, Healthy Families IPM Pilot Program

2019
- Staff revises the City’s IPM Policy (anticipated to be approved in early 2020)
- Palo Alto further restricts its use of glyphosate and will only use it to protect public safety and the natural environment (e.g. poison oak, invasive plant species)

*Refer to previous Clean Bay Plan reports for more information.
• A comprehensive ourwaterourworld.org website and an Ask the Expert service, which allows residents to submit specific pest control questions to pest management experts at the Bio-Integral Resource Center.

OWOW is promoted by participating agencies at special events, workshops and participating stores.

Local participation in the Our Water, Our World program
Six stores within the RWQCP service area participate in the OWOW program. The RWQCP continues to contribute both monetary and staff support to OWOW. In 2019 staff also:
• Created one Utility Bill Insert with integrated pest management information;
• Distributed OWOW information at an Earth Day and stormwater rebate workshop event;
• Maintained Cleanbay.org with current OWOW program information; and
• Provided pest management advice to RWQCP residents.

2. TRASH
REGULATORY ACTION
The City of Palo Alto has adopted several ordinances and a City policy to reduce plastic litter and pollution:
• Single-use Bag Ordinance for restaurants and retailers which restricts the use of single-use plastic bags. The impact of this ordinance combined with those of surrounding communities, resulted in a 90% and 85% reduction of bag litter on streets and in Matadero Creek, respectively;
• Disposable Foodware Ordinance: In 2019, City Council expanded Palo Alto’s Plastic Foam Ordinance to address a broader array of disposable foodware items. Effective January 1, 2020, plastic straws, utensils, stirrer sticks, drink plugs, produce bags, and other disposable plastic items are no longer allowed in Palo Alto, and product bags used to hold produce, meat, bulk food, or other food items must be acceptable in the City’s compost collection program. Palo Alto’s long-term plan is to eliminate the use of all disposable foodware items.
• City policy prohibiting use or purchase of single-use plastic bags, bottled water and plastic foam foodware, beverage containers, and packaging. If plastic foam packaging is present, the vendor must take it back for disposal or recycling at no cost to the City, or pay City costs for disposal. In 2017, City credit cards and petty cash guidelines were updated to reflect the City’s policy requirements (Appendix H);
• Smoking Ordinances for public spaces, multi-family units and tobacco retailers. These ordinances may also reduce cigarette butt litter, which is made from plastic and is one of the most commonly found items during creek cleanups. In 2019, City Council directed staff to expand the City’s Tobacco Retail Permit Ordinance to prohibit sales of all electronic cigarette products and all flavored tobacco products. This will primarily impact “Adult Only” tobacco stores where 60% or more of product sales are tobacco products.

Ordinances are enforced by the RWQCP Restaurant Inspection Program (smoking ordinance are enforced separately by City and County staff).

RETHINK DISPOSABLE
In 2016, Palo Alto began a 3-year contract with Clean Water Action to provide the ReThink Disposable services to Palo Alto restaurants and other food-related businesses. ReThink Disposable (ReThink) is an award-winning program that helps businesses reduce single-use disposable foodware
and packaging items that cause marine litter and solid waste.

At the end of the contract in July 2019, ReThink Disposable had:

- Certified 12 new food businesses (14 total certified businesses including the County of Santa Clara ReThink Disposable Program)
- eliminated 1,123,443 single-use food ware items annually
- prevented 13,418 lbs of annual waste
- provided a combined total annual net-savings to the businesses of $32,023
- Completed 4 Case Studies
- Coordinated an Award Ceremony for Participating Businesses at a 2019 City Council Meeting.

Certified businesses included: Como Esta Taqueira, Krik’s Steakburgers, New York Pizza, Nourish Cafe, Palo Alto Baking Company, Sprout Cafe, all three Subway stores in Palo Alto, Taqueria El Grullense, Teaspoon, and The Counter (which also applied changes at their restaurants in other cities).

ReThink will also work with the City in a new three-year contract as Palo Alto’s Zero Waste Program rolls out new disposable foodware requirements for restaurants.

CITY TRASH CONTROL PROGRAMS

The City also operates the following trash control programs through various divisions:

- Street sweeping;
- Enforcement of litter laws;
- Trash, recycling, and organics collection and disposal;
- Trash removal and clean-up of City parking lots, parks, and other City property; and
- Inspections of trash management areas during food service establishment inspections.

STORMWATER TRASH MANAGEMENT PROGRAM

Participation in Creek Cleanups

The City of Palo Alto Environmental Services Watershed Protection Group is an active member of the Creek Connections Actions Group (CCAG), a collaborative group and partnership of multiple Santa Clara County municipalities. The CCAG coordinated two cleanup events: National River Cleanup Day on May 18 and Coastal Cleanup Day on September 21. The City participated on these days at Adobe and Matadero Creeks.

In 2019, National River Cleanup Day had a total of 26 volunteers (staff included) removing trash from both creeks; while Coastal Cleanup Day had a total of 50 volunteers (staff included) cleaning both creeks.

Trash and debris removed during the creek cleanups were separated, characterized, quantified, and weighed. At the completion of each event, trash and debris were bagged and picked up for disposal by Valley Water.

<table>
<thead>
<tr>
<th>Creek Name</th>
<th>River Cleanup Day (May)</th>
<th>Coastal Cleanup Day (Sept.)</th>
<th>2019 Total Trash (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe</td>
<td>Polystyrene pieces (65)</td>
<td>Paper napkins (124)</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>Paper napkins (31)</td>
<td>Cigarette butts (282)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food wrappers (50)</td>
<td>Food wrappers (203)</td>
<td></td>
</tr>
<tr>
<td>Matadero</td>
<td>Plastic film (130)</td>
<td>Cigarette butts (61)</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Food wrappers (194)</td>
<td>Food wrappers (103)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tennis balls (244)</td>
<td>Paper pieces (84)</td>
<td></td>
</tr>
</tbody>
</table>

TABLE II.F-1: 2019 CREEK CLEANUP TOP VOLUNTEER COLLECTED ITEMS.
2019, prevalent trash items removed were: polystyrene pieces, food wrappers, paper pieces, cigarette butts, plastic film, and tennis balls (Table II.F-1).

On December 11, 2019 the City received the Volunteer Recognition Award from Valley Water (formerly known as Santa Clara Valley Water District), for its annual participation in National River Cleanup Day and Coastal Cleanup Day.

**Trash Booms**

The City of Palo Alto is responsible for the installation, maintenance, and operation of two trash booms on Matadero and Adobe Creeks in a joint partnership with Valley Water. The booms create a dedicated barrier to collect floating litter and debris. Matadero’s trash boom is installed upstream of Highway 101 near West Bayshore Road, where the creek is tidally influenced, but is maintained at a stable level by tide gates during dry weather. Adobe’s trash boom is installed downstream of Highway 101 near East Bayshore Road.

An agreement between the City and Valley Water permits the booms to be deployed from April 15 through December 15. During this time period, City staff removes trash and debris on National River Cleanup Day in May, and Coastal Cleanup Day in September, and other days as needed. Trash and debris are removed, separated, characterized, quantified, and weighed. On December 14, 2019, all remaining trash and debris on both booms were separated, characterized, quantified, and weighed. The booms were removed from the creeks for the winter season. The use of the two booms are very effective in capturing trash and debris prior to entering the natural areas of the Palo Alto Baylands that connect to the San Francisco Bay and Pacific Ocean.

For 2019, the trash booms collected 133 gallons of trash that weighed approximately 238 pounds and 0.66 cubic yards. The Adobe Creek Trash Boom collected 63 gallons and 89 pounds of trash, while the Matadero Creek Trash Boom collected 90 gallons and 150 pounds of trash. Styrofoam pellets and pieces continue to lead in total quantities. The continual staff efforts are a primary reason why the City of Palo Alto is a leader in Santa Clara County for MRP Section C.10 Trash Load Reduction efforts. For 2020, redesign and placement of the Adobe Creek Trash Boom will be necessary with the start of the new pedestrian bridge project over Highway 101.

**Trash Capture Devices**

The City has installed two large trash capture devices in order to meet MRP trash reduction requirements - Contech CDS hydro-dynamic vortex separators (HDS) - to intercept and capture trash from a 180-acre tributary drainage area that includes a section of the El Camino Real commercial corridor. The HDS units are inspected regularly, and annual maintenance frequencies are determined according to inspection results. At a minimum, when regular rainfall occurs, the devices are maintained once per year. Most recently, they were cleaned out on October 30, 2019.

**Collaborative Trash Reduction Efforts**

City Staff actively participates in countywide and regional coordination meetings to collaborate, provide technical input, and share resources on
**RWQCP TRASH POLLUTION PREVENTION HISTORY***

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>City installs a trash boom across Matadero Creek</td>
</tr>
<tr>
<td></td>
<td>Palo Alto’s single-use plastic bag ban ordinance goes into effect at grocery stores</td>
</tr>
<tr>
<td>2010</td>
<td>City adopts ordinance prohibiting plastic foam use at restaurants; The City includes plastic foam reduction in City contracts</td>
</tr>
<tr>
<td></td>
<td>Palo Alto expands Bag Ordinance, prohibiting single-use plastic checkout bags at retail and restaurants</td>
</tr>
<tr>
<td></td>
<td>The City installs a second trash boom across Adobe Creek</td>
</tr>
<tr>
<td></td>
<td>City’s Single-Use Plastic Policy revised to include plastic foam packaging</td>
</tr>
<tr>
<td>2011</td>
<td>City Council approves a Long-term Trash Management Plan</td>
</tr>
<tr>
<td></td>
<td>RWQCP partners with a tennis club to reduce tennis ball litter in Matadero Creek</td>
</tr>
<tr>
<td>2012</td>
<td>Two full-capture trash devices are installed in South Palo Alto (MRP Section C.10.a.iii requirement)</td>
</tr>
<tr>
<td>2013</td>
<td>Palo Alto expands Bag Ordinance, prohibiting single-use plastic checkout bags at retail and restaurants</td>
</tr>
<tr>
<td></td>
<td>The City begins a three-year plastics reduction program with Clean Water Action’s ReThink Disposable program. Four businesses complete the ReThink Disposable program during the first year</td>
</tr>
<tr>
<td></td>
<td>Plastic foam ordinance expanded to prohibit retail sale of ice chests, foodware, and packaging</td>
</tr>
<tr>
<td>2014</td>
<td>City updates Petty Cash and procurement card guidelines and training to prohibit staff purchase of polystyrene products, bottled water, and other plastic products</td>
</tr>
<tr>
<td></td>
<td>Palo Alto Unified School District begins installation of water bottle filling stations under Palo Alto High School student leaders leading a “Tap Out campaign”</td>
</tr>
<tr>
<td></td>
<td>City adopts Tobacco Retail Permit Ordinance, which may contribute to cigarette butt litter reduction over time</td>
</tr>
<tr>
<td>2015</td>
<td>RWQCP provides grant to Gunn High School to begin water bottle refilling station pilot program</td>
</tr>
<tr>
<td>2016</td>
<td>The City receives the Volunteer Recognition Award from Valley Water for their participation in National River Cleanup Day and Coastal Cleanup Day</td>
</tr>
<tr>
<td></td>
<td>City Council expands Disposable Foodware Items and Other Disposable Products Ordinance which prohibits plastic straws, stir sticks, plastic utensils and other plastic products</td>
</tr>
<tr>
<td></td>
<td>City completes three-year ReThink Disposable Program with Clean Water Action. Twelve businesses were certified in total</td>
</tr>
<tr>
<td>2017</td>
<td>Two additional restaurants complete the ReThink Disposable program, bringing the total to six</td>
</tr>
<tr>
<td></td>
<td>Girl Scout Troop 60016 helps make the month of May “Drinking Straw Awareness” month in Palo Alto</td>
</tr>
<tr>
<td></td>
<td>All PAUSD school sites now have at least one water bottle refilling station</td>
</tr>
<tr>
<td>2018</td>
<td>City Council approves a Long-term Trash Management Plan</td>
</tr>
<tr>
<td></td>
<td>RWQCP partners with a tennis club to reduce tennis ball litter in Matadero Creek</td>
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<tr>
<td></td>
<td>City completes three-year ReThink Disposable Program with Clean Water Action. Twelve businesses were certified in total</td>
</tr>
</tbody>
</table>

*Refer to previous Clean Bay Plan reports for more information.

County and regional trash reduction efforts. Staff also represents Palo Alto in the Creek Connection Action Group for the Santa Clara County. This group coordinates with Valley Water staff to plan activities and train volunteers for both the National River Cleanup and Coastal Cleanup Day events. Finally, staff participates in the regional Zero Litter Initiative (ZLI). ZLI brings together multiple cities and agencies with a common interest in preventing litter and its impacts on our local streets and transportation corridors, creeks, and neighborhoods. Initiatives identified in ZLI’s strategic plan include engagement with the business community, legislative advocacy, managing the impacts of trash from homeless encampments, and actions to reduce highway litter.

3. BUSINESS INSPECTION PROGRAMS

COMMERCIAL AND INDUSTRIAL FACILITIES

The City’s Business Inspection Program oversees commercial and industrial facilities, including vehicle service facilities, nurseries, greenhouses, and corporation yards, that have the potential of discharging pollutants to receiving waters. This program is described in the Industrial and Commercial Business Inspection Plan (BIP). The BIP describes the overall inspection process, including the list of businesses to inspect (and their associated inspection priority), as well as the various survey and inspection forms utilized at each business or facility.

In 2019, the City continued to focus on updating inspection forms utilized for industrial and commercial business inspections. Staff is developing inspection forms that are more tailored to the specific type of business being inspected (e.g., food facilities, vehicle service facilities, and dental offices). These updated forms will be tailored for the City’s upcoming geospatial-based stormwater management program, which will allow the staff to conduct inspections more efficiently in the field.
In 2020, staff plans on continuing the Business Inspection Program updates. The next step includes finalizing the inspection forms to be re-created in the City’s new stormwater management software. Staff will also focus on updating the City’s (BIP) Enforcement Response Plan, which describes the City’s compliance and enforcement program for the facilities inspected through this program.

VEHICLE SERVICE FACILITIES
The RWQCP has regulated vehicle service facilities and promoted the reduction of pollutant discharges from such facilities to the sanitary sewer and storm drain systems for more than 25 years as part of the City’s Business Inspection Program. Vehicle service facilities with process discharges to the sanitary sewer are permitted and typically inspected twice annually. All other vehicle service facilities are typically inspected once per year.

4. FATS, OILS GREASE (FOG)
Fats, oils, and grease (FOG) discharges cause or contribute to sanitary sewer blockages that may result in discharges of untreated wastewater to the City’s storm drain system, creeks and the Bay. Sanitary Sewer Overflows (SSOs) pose a risk to human health and the environment. Consequently, the City Utilities Department addresses reduction of SSOs and FOG programs in its Sanitary Sewer System Management Plan (SSMP). In addition, the City has a full-time FOG Inspector who focuses on reducing these pollutants to creeks and the Bay.

FOG SOURCES AND SOURCE CONTROL
The primary sources of FOG entering the RWQCP are from commercial and residential sectors. Commercial businesses that contribute FOG are food facilities (FFs) that include restaurants, grocery stores, food courts and cafeterias. The City has several high density and high volume restaurant areas including Downtown, Midtown, Town and

**RWQCP BUSINESS INSPECTION PROGRAMS POLLUTION PREVENTION HISTORY***

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>Clean Bay Business Program is created to regulate and encourage pollution prevention at vehicle service facilities (VSFs)</td>
</tr>
<tr>
<td>2012</td>
<td>RWQCP retires Clean Bay Business Program and integrates VSFs into the Industrial and Commercial Business Inspection Program</td>
</tr>
<tr>
<td>2015</td>
<td>RWQCP distributes “best practices” posters to vehicle service facilities to educate and promote pollution prevention best management practices at vehicle service facilities</td>
</tr>
<tr>
<td>2016</td>
<td>The City temporarily suspends the Clean Bay Business Program to assess its effectiveness and reorganize the program</td>
</tr>
<tr>
<td>2018</td>
<td>The City celebrates 20 years of the Clean Bay Business Program</td>
</tr>
</tbody>
</table>

*Refer to previous Clean Bay Plan reports for more information.

*RWQCP continues to collect wastewater samples twice per year at all permitted VSFs.*

*15 businesses with the RWQCP service area are identified as having participated in the Clean Bay Business Program for 20 years.*

*Eliminates requirements for VSFs to perform self-sampling of wastewater. The RWQCP continued to collect wastewater samples twice per year at all permitted VSFs.*

*Clean Bay Business Program is created to regulate and encourage pollution prevention at vehicle service facilities (VSFs).*

*The City temporarily suspends the Clean Bay Business Program to assess its effectiveness and reorganize the program.*

*Clean Bay Business Program is created to regulate and encourage pollution prevention at vehicle service facilities (VSFs).*

*The City celebrates 20 years of the Clean Bay Business Program.*

*The City temporarily suspends the Clean Bay Business Program to assess its effectiveness and reorganize the program.*

*Clean Bay Business Program is created to regulate and encourage pollution prevention at vehicle service facilities (VSFs).*

*The City temporarily suspends the Clean Bay Business Program to assess its effectiveness and reorganize the program.*
Country Village, Stanford Shopping Center and the California Avenue Business Districts. These areas have been the primary targets for increased inspection, enforcement, and preventative sewer line cleaning. The City’s FOG Program Staff reviews plans and specifications for proposed new and remodeled FFs to ensure the City’s requirements are met, both inside and outside the building that house the facility. Requirements include:

- all grease generating drainage fixtures must be plumbed to an approved and properly sized Grease Control Device (GCD);
- all non-grease generating drainage fixtures including high temperature discharges shall be plumbed directly to the sanitary sewer system; and
- new buildings constructed to house Food Facilities shall include a covered refuse enclosure large enough to accommodate all garbage, recycling, compost and waste oil containers.

FOOD FACILITY INSPECTIONS
There are over 400 FFs in the City of Palo Alto. Because each facility cannot be visited annually, facility compliance checks are prioritized based on potential SSO risk and past compliance performance. Facilities located near creeks or that have had past compliance problems receive more frequent inspections. Facilities that demonstrate on-going compliance receive fewer inspections. FFs are prioritized into the following categories:
- problem FFs in hot spots;
- problem FFs;
- FFs in hot spots;
- FFs that have only had minor issues in the past;
- FFs with potential to generate FOG; and
- FFs without significant potential to generate FOG (juice bars, coffee shops, etc.).

FOG CONTROL PROGRAM GOALS
The goals of the FOG program are to reduce the number, severity, and frequency of SSOs linked to FOG and reduce the environmental impact, cleanup costs, and liability to the City associated with its cleanups (Table II.F-2). City staff will continue contributing to regional programs such as the statewide California Water Environment Association (CWEA) and BAPPG workgroups. While the FOG program’s main focus is commercial areas, the program also addresses multi-family buildings with persistent issues related to grease that may contribute to fewer SSOs.

Inspections and Compliance
The 2020 Clean Bay Pollution Prevention Plan sets a goal of inspecting at least one quarter of the FFs each year (Table II.F-3). Feedback from collection system maintenance management indicates that efforts in these areas have been effective in reducing the number of FOG related overflows. Table II.F-3 includes violations and inspections related to both FOG program and stormwater violations.

Enforceable actions included:
- Excessive FOG on and around waste oil bins which are a threatened discharge;

| TABLE II.F-2: ANNUAL SANITARY SEWER OVERFLOWS (SSOs) |
|----------------------------------|---------|---------|
|                                | COMMERCIAL | RESIDENTIAL | TOTAL |
| SSO CAUSED ONLY BY FOG         | FOG RELATED SSO | SSO CAUSED ONLY BY FOG | FOG RELATED |
| 2013                           | 1         | 4         | 3       | 7       | 15     |
| 2014                           | 2         | 2         | -       | 6       | 10     |
| 2015                           | 2         | 1         | 3       | 4       | 10     |
| 2016                           | 1         | 1         | 2       | 2       | 6      |
| 2017                           | 1         | 0         | 1       | 1       | 3      |
| 2018                           | 0         | 0         | 0       | 2       | 2      |
| 2019                           | 0         | 0         | 0       | 1       | 1      |
• Storm drain discharges, or threatened storm drain discharges, such as washing kitchen equipment outside, allowing wastewater to flow to the storm drain system, or dumping mop wastewater;
• Failure to keep a maintenance log that documents GCD clean-out activities;
• Failure to maintain a GCD by not cleaning the contents out frequently enough to prevent excess FOG from entering the sanitary sewer;
• Failure to have an adequate and/or properly functioning GCD;
• Contributing to at least one SSO;
• The presence of food waste grinders that were to be removed by January 1, 2007; and
• For large cafeterias and markets, floor finish SDS submitted by a given due date to ensure they use a Zinc-Free Floor Finish or treat it as hazardous waste.

**TABLE II.F-3: SUMMARY OF FOG INSPECTION PROGRAM – 2019 EVALUATION**

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>2019 Evaluation (number inspected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Inspected</td>
<td>105</td>
</tr>
<tr>
<td>Inspections</td>
<td>253</td>
</tr>
<tr>
<td>Verbal Warnings</td>
<td>32</td>
</tr>
<tr>
<td>Warning Letters</td>
<td>1</td>
</tr>
<tr>
<td>Notices of Noncompliance</td>
<td>2</td>
</tr>
<tr>
<td>Compliance Agreements</td>
<td>0</td>
</tr>
<tr>
<td>Percent Compliance related to Total Inspections</td>
<td>85%</td>
</tr>
<tr>
<td>Plan Sets Reviewed</td>
<td>49</td>
</tr>
<tr>
<td>Number of grease related SSOs</td>
<td>2</td>
</tr>
<tr>
<td>Number of grease related SSOs in commercial areas</td>
<td>0</td>
</tr>
</tbody>
</table>

**RWQCP FOG POLLUTION PREVENTION HISTORY***

1992
• The City adopts the Sewer Use Ordinance, which requires food facilities (FFs) with grease generating activities to install grease control devices

2002
• An ordinance passes that prohibits the installation of food waste disposers (garbage disposals), and requires existing disposers be removed by January 1, 2007

2006
• The City hires their first full-time FOG inspector

2008
• The Food Service Program incorporates a FOG database system

2009
• City Staff creates new Best Management Practice posters to distribute during inspections

2010
• The Food Service Program incorporates a database system to track food facilities (FFs) stormwater compliance inspections and generate “Inspection Notification and Warning” letters

2012
• City Staff creates a FF requirement factsheet, which is distributed to FFs during permitting process

2018
• City Staff begins updating municipal code

*Refer to previous Clean Bay Plan reports for more information.
FOG Outreach
City staff promoted proper disposal of kitchen FOG in November through a utility bill insert for both residents and businesses.

As a member of the BAPPG, staff also promoted proper disposal of kitchen FOG on Univision Hispanic Radio stations between Thanksgiving week and New Year’s Day (November 18-25 and December 16-29), Univision aired a total of 63 total radio spots (58 30-second spots and 15 15-second spots) on radio station KBRG. Outreach included calls-to-action to visit Baywise.org.

5. POLYCHLORINATED BIPHENYLS (PCBs)
PCBS FROM BUILDINGS
PCBs in older buildings are a potential storm water pollutant, because they can enter the storm drain system at improperly managed construction sites where PCBs have been historically used. PCB sources include caulks and sealants, thermal/fiberglass insulation and other insulating materials, adhesives and mastics, rubber window seals and gaskets, and high voltage equipment.

In 2019, in order to meet MRP requirements, City staff continued to participate in a Bay Area effort to create a regional program to improve oversight of materials that may contain PCBs at construction projects during demolition projects. This regional program applies to commercial, public, institutional, and industrial structures that were constructed or remodeled from 1950 – 1980 (single-family, two-family, and wood-frame structures are exempt). Starting July 1, 2019, any applicable structures that are undergoing a complete demolition must screen for PCBs in designated priority building materials in order to comply with the PCBs in Priority Building Materials Demolition Program.

Efforts of this program in 2019 focused on finalizing the program materials, conducting outreach and training, and adopting a new City ordinance to support the implementation of this program. Staff conducted outreach to developers, contractors, and applicants that had a project currently seeking planning entitlement leading up to July 1, 2019 in order to explain upcoming
program requirements and provide an overview of the various program materials. Stormwater staff also conducted training for other internal City staff in both the Planning and Building workgroups in order to review the program requirements and various supporting documentation. Before the program launched on July 1, 2019, City Council amended Chapter 16.11 to add section 16.11.060 Management of PCBs During Building Demolition to support the implementation and ongoing enforcement of this program.

LOOKING FORWARD
The RWQCP provides programs that reduce both stormwater and wastewater sources of pollution.

1. Pesticide pollution prevention
To address IPM needs in 2020, the City will:
- continue to review comment letters regarding pesticide registration and evaluation activities by the EPA and DPR;
- implement the 2019 calendar year IPM report recommendations;
- provide training and technical consultation on pest management issues and product assessments;
- update the City’s IPM policy and procedures; and
- evaluate its IPM workshops and determine the ideal frequency and locations for increased attendance.

2. Trash reduction
The City of Palo Alto has met the 2019 MRP 80% trash reduction requirement and will continue to concentrate on individual trash reduction efforts to meet the long-term MRP trash requirements. In 2020, the City will:
- continue to operate and maintain the two trash booms and two trash capture devices as well as classify and quantify collected trash;
- conduct regular inspections of the creeks and Baylands to identify trash issues;
- identify trash issues through other inspections, including construction projects and commercial and industrial business inspections;
- continue to work with the Creek Connections Action Group and participate in creek cleanup efforts;
- perform Plastic Bag and Plastic Foam Ordinance compliance checks at Palo Alto retailers and food facilities; and
- assist Santa Clara County with Tobacco Retailer Permit Ordinance outreach and administration.

3. Business Inspection Program
In 2020, this program will update the:
- Business Inspection Plan and Enforcement Response Plan;
- education and outreach materials; and
- Vehicle Service Facility section in the City of Palo Alto’s Sewer Use Ordinance.

4. FOG reduction
In 2020, the FOG program will continue to:
- inspect any businesses that generate FOG that have not yet been inspected;
- improve communication between Environmental Services and the City of Palo Alto’s Building Department to ensure that any new/remodeled FFs are inspected for FOG-related issues during early construction;
- distribute mailers to all FFs prior to the holiday season reminding them to properly maintain all GCDs as outlined in the City’s Sewer Use Ordinance; and
- Finalize the new Chapter 16.13 Fats, Oil and Grease Handling municipal code chapter.

5. Polychlorinated Biphenyls (PCBs)
In 2020, the PCBs program will:
- continue conducting training for City staff regarding the PCBs in Priority Building Materials program.
SECTION III

CONTAMINANTS OFEmerging Concern
PERMIT DETAILS

Contaminants of emerging concern (CECs) are currently not regulated by the San Francisco Bay Regional Water Quality Control Board (Regional Board). However, the Regional Board is concerned with emerging contaminants entering local waterbodies and recycled water.

The City of Palo Alto’s Regional Water Quality Control Plant (RWQCP) participates in the Regional Monitoring Program (RMP). The RMP conducts research on emerging contaminants, analyzes potential risks to San Francisco Bay from CECs, and has developed a management strategy. A summary of RMP’s priority pollutants, management options, and future monitoring recommendations are included in Table III-1.

ENVIRONMENTAL CONCERNS

A CEC is defined by the San Francisco Estuary Institute (SFEI) as an unregulated or unmonitored chemical with the potential to enter the environment and harm people or wildlife. When present in aquatic ecosystems, human health is at risk due to bioaccumulation in fish and shellfish. CEC detection is increasing in urban water bodies such as the San Francisco Bay. Understanding the CECs that the

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>TIER ASSIGNMENTS</th>
<th>MANAGEMENT</th>
<th>MONITORING</th>
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<tbody>
<tr>
<td>High Concern</td>
<td>No CECs currently in this tier</td>
<td>303(d) listing</td>
<td>Studies to support TMDL or an alternative management plan</td>
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<td></td>
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<td>TMDL for alternative management plan</td>
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<td></td>
<td></td>
<td>Aggressive control actions for all controllable source</td>
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<tr>
<td>Moderate Concern</td>
<td>PFOS</td>
<td>Action plan for strategy</td>
<td>Consider including in Status and Trends monitoring</td>
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<tr>
<td></td>
<td>Fipronil</td>
<td>Aggressive pollution prevention</td>
<td>Special studies of fate, effects, sources, pathways, and loadings</td>
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<tr>
<td></td>
<td>PFOA</td>
<td>Low cost control actions</td>
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<td></td>
<td>Long-Chain Carboxylates</td>
<td>Low cost source identification and control</td>
<td>Conduct periodic screening in water, sediment, or biota, or discontinue monitoring Periodic screening in wastewater or urban runoff to track trends</td>
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<td></td>
<td>Imidacloprid</td>
<td>Low level pollution prevention</td>
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<td>Alkylphenols</td>
<td>Track product use and market trends</td>
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<td>Esters</td>
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<td>Microplastics</td>
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<tr>
<td>Low Concern</td>
<td>PBDEs</td>
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<td>HBCD</td>
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<tr>
<td></td>
<td>Pyrethroids*</td>
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<td>Pharmaceuticals and personal care products</td>
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<td>PBDDs and PBDFs</td>
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<tr>
<td>Possible Concern</td>
<td>Alternative Flame Retardants</td>
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<td>pesticides, PFAs</td>
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<td>Plastic additives</td>
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<td>Siloxanes</td>
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<td>SDPAs</td>
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<td>UV-BZTs</td>
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<td></td>
<td></td>
<td>Identify and prioritize contaminants of potential concern, track international efforts</td>
<td>Screening in water sediment, biota, wastewater effluent, urban runoff</td>
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</table>

*Pyrethroids are low concern in the Bay, but high concern in urban creeks.
RWQCP discharges into the Bay is the first step towards identifying source control measures that protect aquatic organisms.

2019 PROGRAM UPDATES

In 2019, RWQCP staff continued to participate in regional and national groups that study and analyze emerging contaminants.

1. PHARMACEUTICALS

The RWQCP has provided public education to hospitals, hospice caregivers, and residents to reduce the amount of pharmaceuticals entering the wastewater treatment plant since 2002. It has also funded a pharmaceutical takeback program at multiple locations throughout its service area. However, this was a costly service that could not provide adequate collection for all RWQCP service area residents. Therefore the RWQCP has supported the development of regional extended producer responsibility (EPR) models for the collection services that are needed.

An EPR model for pharmaceutical collection was established via the 2015 County of Santa Clara Safe Drug Disposal Ordinance which requires the pharmaceutical industry to provide an accessible, convenient, and comprehensive program for household generated pharmaceutical waste collection. On March 20, 2017, the MED-Project Product Stewardship Plan was approved by the Santa Clara County. During 2017 and 2018, Med-Project established pharmaceutical collection kiosks at retail pharmacies, hospitals and clinics with onsite pharmacies, and law enforcement agencies. Med-Project also established mail-back envelope distribution sites where residents can pick up a prepaid package and mail their unwanted medicine to MED-Project.

Due to the roll-out of the MED-Project program, the RWQCP retired its collection service after 15 years in January 2019. Collection sites for the RWQCP service area can be found on the MED-Project website (med-project.com) and cleanbay.org.

2. PERSONAL CARE

FIPRONIL, IMIDACLOPRID, INDOXACARB AND PYRETHROIDS

Fipronil, imidacloprid, indoxacarb and pyrethroids (e.g., bifenthrin, deltametrin, permethrin) are broad-spectrum insecticides that pose possible low or moderate concerns due to increased urban uses and its detection in wastewater, Bay sediment and urban creeks. In 2018, these chemicals were the highest pesticide priority for source control research in Bay Area wastewater treatment plants.

Concentrations of fipronil and its degradation products in sediment have exceeded thresholds on occasion, suggesting these compounds may pose risks to Bay aquatic life. The 2014 sediment monitoring data featured detections of one degradant at levels comparable to a toxicity threshold reported by Maul et al. (2008), indicating its designation as a moderate concern (RMP Tier III contaminant) for the Bay is still warranted.

Fipronil, imidacloprid and pyrethroids have limited registered uses in residential and urban settings, including flea and tick treatments for pets, gels for crack and crevice treatment, ant and cockroach baits, outdoor perimeter sprays for ant control, and outdoor subsurface/soil injection for termite control. Their application in pest treatments usually requires people and pets to wash the products off after application and/or laundry, resulting in these active ingredients entering the sanitary sewer system. See Figure III-1 “Flea Control Chemicals Pathway to Bay” infographic.

RWQCP supported consultants who engaged in scientific and management conversations with both US Environmental Protection Agency (USEPA) and
Department of Pesticide Regulation (DPR) regarding new scientific evidence linking pet flea control treatments and fipronil and imidacloprid in POTW effluent.

RWQCP also partners with other publicly owned treatment works (POTWs) throughout the Bay Area to address pesticide pollution through state and federal pesticide regulatory review. This is usually coordinated through the Bay Area Pollution Prevention Group (BAPPG) – a committee of Bay Area Clean Water Agencies (BACWA). Actions to date include:

- educating staff from DPR and USEPA about local pesticide pollution data and concerns;
- recommending analytical processes; and
- submitting comment letters during the pesticide re-registration process through BAPPG.

In 2019, BAPPG consultants provided outreach to the veterinary community about pesticide pathways to the Bay from flea and tick collars, and submitted comment letters to the USEPA which explained the pesticide transport route to the sanitary sewer and related scientific studies for priority pesticides. The BACWA EPA pesticide comment letters can be found at bacwa.org/document-category/comment-letters/.

**Next Steps**

The RWQCP is partnering with the DPR via BAPPG and BACWA to conduct a sewershed sampling in the RWQCP service area for research on fipronil. DPR is utilizing the data collected in the Palo Alto sewershed to develop a “Down the Drain” model to help DPR understand the impacts from pesticides to wastewater treatment plants.

**OTHER HOUSEHOLD HAZARDOUS WASTE (HHW)**

Several options are available for residents and businesses in the RWQCP service area to safely dispose of household hazardous waste (HHW). These include:

- **County HHW Programs**: Santa Clara and San Mateo Counties both operate household hazardous waste drop off programs serving most residents and businesses in their respective counties. The San Mateo County program serves the East Palo Alto Sanitary District, while the Santa Clara County program serves Los Altos, Los Altos Hills, Mountain View, and Stanford. The Santa Clara County program does not serve Palo Alto residents because the City of Palo Alto funds its own HHW program.
- **City of Palo Alto HHW Program**: Drop-off events for Palo Alto residents occur every Saturday during the hours of 9 am – 11 am and on the first Friday of the month between 3 pm – 5 pm. The City also participates in the American Coatings Association Paint Care program. Businesses and non-profit organizations located in the RWQCP service area that generate less than 220 pounds of hazardous waste per month can participate in Palo Alto’s Conditionally Exempt Small Quantity Generator Program. A registration and disposal fee is required based on the type and quantity of waste being disposed. Appointments are on Saturdays following the residential HHW drop-off hours.
- **Curbside Collection**: Palo Alto offers limited curbside collection of household hazardous wastes including batteries, electronic waste, used oil, and oil filters. Palo Alto’s HHW program submits an annual report to the Department of Resources Recycling and Recovery detailing the amount of each type of waste collected and how each was managed. These reports cover fiscal year periods that span from July through June. Figure III-2 summarizes the amount of waste types collected, in pounds, for fiscal year 2018/2019. The HHW program collected 266,926 pounds of hazardous waste from its permanent collection facility and 19,040 pounds from the curbside collection program in fiscal year 2018/2019. For more information, please view the CalRecycle 303 Household Hazardous Waste Collection Report.

### 3. MICROPLASTICS

Microplastic contamination (plastic fragments that are five millimeters or smaller) in aquatic ecosystems is associated with a number of potential concerns. Due to the hydrophobic properties of the plastic material, persistent organic chemicals including polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), dioxins, and pesticides such as DDT preferentially sorb to microplasticsootnote{Seltenrich, N. 2015. New Link in the food chain? Marine plastic pollution and seafood safety. Environmental Health Perspectives 123(2):A34-41.}. Lower trophic organisms can mistake microplastics for food; ingestion can lead to physical harm, exposure to sorbed contaminants, and bioaccumulation of...
microplastics in higher trophic organisms. However, no clear toxicity thresholds yet exist for this contaminant, leading to its assignment as a possible concern (Tier I contaminant) for San Francisco Bay.

Motivated by state and federal efforts to ban microbeads in personal care products, the RWQCP participated with the RMP to characterize Bay surface waters and wastewater treatment plant effluents for microplastic contaminants. Nine Central and South Bay surface water samples were collected and samples of effluent were collected from eight facilities discharging to the Bay. Microplastics in samples were characterized by size, type, and abundance.

In 2014, the RWQCP participated in a RMP Emerging Contaminant Workgroup study analyzing wastewater treatment plant effluent for microbead concentrations. Microbeads are polyethylene (i.e., plastic) microspheres that are widely used as exfoliating agents in cosmetics, skin care, and other personal care items. Study results documented the amounts of microplastics in wastewater discharges from the different wastewater treatment plants around the Bay.

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- Flammable & Poison 34%
- Reclaimable 51%
- Acid, Base, & Oxidizer 2%
- Universal Waste 11%
- Other 2%
  (i.e. sharps, pharmaceuticals, cooking oil, asbestos, fire extinguishers)

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2 Desforges, J. W., Galbraith M., Ross, P. S. 2015. Ingestion of microplastics by zooplankton in the North Pacific Ocean. Archives of Environmental Contamination and Toxicology.

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**RWQCP CONTAMINANTS OF EMERGING CONCERN POLLUTION PREVENTION HISTORY**

**2002**
- RWQCP establishes an interim pharmaceutical waste collection infrastructure
- RWQCP begins accepting pharmaceuticals in its Household Hazardous Waste Program and establishes six additional “drop off” locations in its service area

**2003**
- RWQCP staff begins effort to reduce pharmaceuticals from hospitals

**2004**
- RWQCP participates in a WaterReuse study “Removal and Destruction of N-nitrosodimethylamine (NDMA) and NDMA Precursors during Wastewater Treatment

**2005**
- The disinfectant for most of the potable water supplied throughout the RWQCP’s service area is changed from free chlorine to chloramine

**2006**
- Santa Clara Basin Watershed Management Emerging Contaminants Workgroup, chaired by RWQCP staff, finalizes a whitepaper titled Environmental Emergence of Triclosan
- Palo Alto adopts a policy to no longer purchase triclosan-containing hand soaps

**2007**
- RWQCP hires contractor to annually educate teachers about triclosan

**2010**
- The RWQCP switches from chlorine disinfection to ultra-violet light disinfection

**2011**
- Palo Alto Medical Foundation (PAMF) agrees to pay for its own pharmaceutical disposal program after RWQCP paid for a 3-year pilot that disposed of 12,000 pounds

**2013**
- RWQCP receives the Dr. Teng Chung Wu Pollution Prevention Award for emerging contaminants pollution prevention programs
- Polybrominated diphenyl ethers (PBDEs) were featured in Pulse of the Bay

*Refer to previous Clean Bay Plan reports for more information*
In 2017, the RWQCP participated in the regional microplastic sampling effort and helped design the sampler. The preliminary data indicates that approximately 300 times more microplastics are in stormwater than wastewater. The majority of the microplastics appear to be from tire fragments.

**LOOKING FORWARD**

In 2020, the RWQCP will:

- continue partnership with the San Francisco Estuary Institute’s Regional Monitoring Program—Emerging Contaminants Group, specifically the microplastic strategy for the SF Bay;
- track and comment on the new Department of Substances Control Green Chemistry Regulations, the use of nanoparticles, and advocate for regulations that place the burden on manufacturers to create products that do not pollute;
- work closely with the MED-Project and Santa Clara County Household Hazardous Waste Program to ensure that pharmaceutical collection sites for the RWQCP service area are providing the intended service;
- participate in national workgroups to establish manufacturer funded takeback of pharmaceuticals;
- participate in studies of emerging pollutants issues focusing on pharmacologically active compounds, and pesticides such as fipronil;
- participate in the Department of Pesticide sewershed analysis;
- continue to collect household hazardous waste from the RWQCP service area; and
- provide HHW information via the City’s Zero Waste outreach program (utility bills, advertisements, etc.), the RWQCP cleanbay.org website, and the RWQCP’s School Outreach Program.

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**2014**

- RWQCP participates in an RMP Emerging Contaminant Workgroup study of perfluorinated organic compounds in final effluent
- RWQCP participates in an RMP Emerging Contaminant Workgroup study of microbead concentrations in final effluent
- Results from an RMP study of PBDEs in the San Francisco Bay after the PBDE ban is submitted to a peer-reviewed journal and publishes in early 2015 in the journal, *Environmental Science and Technology*

**2015**

- 17 hospice and wastewater professionals participate in a one hour webinar funded by the Bay Area Pollution Prevention Group (BAPPG) and Sac Regional through statewide training through the California Hospice and Palliative Care Association (CHAPCA)
- RWQCP partners with San Francisco Estuary Institute (SFEI) to analyze fipronil in wastewater
- RWQCP works with the United States Consumer Product Safety Commission (CPSC) and the Palo Alto Police Department to install a new medicines drop-off bin in the lobby of the Police Station

**2016**

- RWQCP data indicate significant decreases in triclosan (65%) and triclocarban (95%) per capita influent loads between 2009 and 2016. This data attributed to the US Food and Drug Administration (FDA) ban of 19 common antibacterial agents, including triclosan and triclocarban
- RWQCP completed work and released study on perfluorinated organic compounds with an RMP Emerging Contaminant Workgroup

**2017**

- MED-Project Product Stewardship Plan is approved by the Santa Clara County. Pharmaceutical collection program expands as MED-Project brings additional kiosks and mailback envelope collection sites to RWQCP service area

**2018**

- CVS and Walgreens pharmacies bring additional kiosks to the RWQCP service area
- Watershed Protection retires City-funded pharmaceutical take-back program
- RWQCP completes Pharmaceuticals Screening Study
- RWQCP participates in regional Screening of Pharmaceuticals in San Francisco Bay Wastewater study by the Regional Monitoring Program

**2019**

- RWQCP retires pharmaceutical collection program upon roll-out of the MED-Project programs in the RWQCP service area
- SFEI/ Moore Foundation completed their initial microplastics study
PERMIT DETAILS
The City of Palo Alto is a leader in environmental sustainability. Its commitment to environmental protection include a plan to reach Zero Waste by 2021; a Sustainability and Climate Action Plan which seeks to reduce Palo Alto’s greenhouse gas emissions by 80% by the year 2030; a carbon neutral electric and natural gas portfolio for the public utilities it owns and green building requirements for municipal and residential buildings. Palo Alto is also a designated Tree City-USA, a League of American Bicyclists silver-ranked Bicycle Friendly Community, and has award-winning programs for the watershed protection services it provides to the Regional Water Quality Control Plant (RWQCP) service area. While there are no permit requirements for the RWQCP to maintain broader sustainability programs, most of the City of Palo Alto’s Office of Sustainability goals and the RWQCP permit requirements are mutually supportive. More information about Palo Alto’s sustainability programs is available at https://cityofpaloalto.org/services/sustainability.

ENVIRONMENTAL CONCERNS
Palo Alto’s Sustainability Programs primarily address environmental concerns although environmental issues are inextricable from quality-of-life, the economy, and social equity. The sustainability programs discussed below are not specific permit requirements, but are concerns that must be addressed and which intersect with the RWQCP responsibilities, e.g., climate protection, sea level rise, extended producer responsibility, and green purchasing.

2019 PROGRAM UPDATES
1. CLIMATE ACTION PLAN
The RWQCP is the City’s largest source of municipally-generated greenhouse gas (GHG) emissions, therefore its efforts to reduce Palo Alto’s GHG emissions is essential. Efforts to reduce GHG and plan for sea level rise are discussed in detail in Section II.E of this report.
RWQCP also helps lead and implement the City’s Sustainability and Climate Action Plan (S/CAP) initiative to reduce GHGs below 1990 levels by 2030 (known as “80x30”). In November 2017, Council approved the 2018-2020 Sustainability Implementation Plan (SIP) which focuses first on CO2 emissions and water resources. SIP actions will be updated at least every three years beginning in 2020. The remaining S/CAP areas—Zero Waste and Circular Economy; Municipal Operations; Climate Adaption and Sea Level Rise; Regeneration and Natural Environment; Financing Strategies; and Community Behavior, Culture, and Innovation—will also be discussed in future plans, although work in these areas continues.

2. PRODUCER RESPONSIBILITY
The RWQCP contributes financial support to the California Product Stewardship Council (CPSC) and the Product Stewardship Institute (PSI) to expand extended producer responsibility (EPR) partnerships and legislation. EPR places the primary responsibility for ethical end-of-life disposal of goods and related packaging on the manufacturer who profits from their sale. This reduces the financial and operational burden of collecting products such as electronic, pharmaceutical, and other wastes on local government.

In 2019, the City’s EPR efforts continued to focus on the roll-out of the Med-Project pharmaceutical collection as Palo Alto transitions its programs and outreach to focus and monitor Med-Project implementation in the RWQCP service area.

3. SEA LEVEL RISE RESPONSE
In 2019, Palo Alto City Council adopted a Sea Level Rise Adaptation Policy (Appendix I). The purpose of the policy is to plan for rising tides that could impact Palo Alto’s neighborhoods, economy and the Baylands habitat, and to ensure consistency and integration with the range of City plans that call for SLR planning. The policy requires a SLR vulnerability assessment which will also examine impacts to rising groundwater from SLR, and a SLR Adaptation Plan and timeline. An RFP for consultant services to perform the vulnerability assessment and assist staff with Plan development was issued in 2019. Work will begin in early 2020 and requires CEQA review.

Several adaptation projects are underway for the SLR vulnerability assessment. These include:
- **Horizontal Levee Pilot Project at the former Palo Alto Baylands Yacht Harbor.** A preliminary design (30% project definition) was completed in 2019. This work was a collaboration between the San Francisco Estuary Partnership, City of Palo Alto, and Environmental Science Associates. It was funded by a grant from the EPA Climate Ready Estuaries Program. The next phase of the project is anticipated to begin in February 2020. A project factsheet is included in Appendix J;
- **San Francisquito Creek Flood Protection, Ecosystem Restoration and Recreation Project.** This project was completed in 2018 and will help protect East Palo Alto and Palo Alto from flooding due to high creek flows, particularly during high tides and a two-foot sea level rise. The improvements to this lower reach of San Francisquito creek are a necessary first step in a broader plan to provide flood protection to more than 5,700 homes and businesses;
- **SAFER Bay Draft Feasibility Report (Strategy to Advance Flood Protection, Ecosystems and Recreation along the Bay).** A draft feasibility study was completed by the San Francisquito Creek Joint Powers Authority in 2019. The study examines possible reaches for improved levees, horizontal levees and habitat restoration in anticipation of projected mid-century sea level rise levels. The Study will be reviewed by City Council in 2020 to identify preferred options and direction and/or approvals on alternatives to advance into further detailed analysis.
- **South San Francisco Bay Shoreline Phase II Feasibility Study (Shoreline Study)** – The Shoreline Study is led by the U.S. Army Corps of Engineers with Valley Water and the California State Coastal Conservancy participating as the cost-sharing partners. The full Shoreline Study area extends from San Francisquito Creek in Palo Alto to Guadalupe River in San José, and is divided into ten economic impact areas (EIAs). Palo Alto makes up EIAs 1-3.

The Shoreline Feasibility Study is using the SAFER Feasibility Study to advance the conversation about funding opportunities, potential levee alignments, horizontal levee sites, and expanded recreational opportunities.
- **Palo Alto Baylands Vulnerability Assessment.** Funded by the City of Palo Alto Community
Services Division, this project assesses likely impacts to the Palo Alto Baylands from sea level rise;

- **Sea level rise planning requirements included in City planning documents** such as the City’s Comprehensive Plan, Sustainability and Climate Action Plan, Baylands Comprehensive Conservation Plan, Local Hazard Mitigation Plan, Threat and Hazard Identification Risk Assessment, and other key documents.

- **New Secondary Wastewater Outfall Pipe**
  The RWQCP is scheduled to begin construction of a secondary effluent outfall pipe in fall of 2020 to ensure wastewater can be released to the Bay given predicted mid-century SLR scenarios.

- **Palo Alto Flood Basin Tidegate Repairs**
  Valley Water owns and maintains the tidegate in the Palo Alto Flood Basin. Replacement of the aging and leaking structure will begin in spring 2020. The structure will be adaptable to rising Bay tides in future years.

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**LOOKING FORWARD**
Primary area for focus in 2020 will be on conducting the sea level, vulnerability assessments for sea level rise and related groundwater impacts, and beginning a draft of a Sea Level Rise Adaptation Plan for public input and eventual City Council approval.

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**RWQCP SUSTAINABILITY PROGRAMS HISTORY**

**1990s**
- Recycled content paper and policies is adopted

**2001**
- City of Palo Alto adopts Sustainability Policy

**2006**
- RWQCP helps form California Product Stewardship Council

**2007**
- City Adopts Climate Action Plan and pledges to reduce GHG emissions (City and Community) by 15% below 2005 levels by 2020
- Green Purchasing Policy is adopted

**2011**
- The City receives the Green California Summit and Exposition Award for its Green Purchasing Program

**2015**
- City of Palo Alto receives Acterra (nonprofit) Business Environmental Award for Sustainability Leadership

**2016**
- Palo Alto achieves 37 percent reduction in GHG from 1990 levels
- Participates in regional and local sea level rise planning
- Palo Alto City Council adopts new goal to reduce GHG emissions 80% below 1990 levels by 2030

**2017**
- Council approved the 2018-2020 Sustainability Implementation Plan (SIP) which focusing first on CO2 emissions and water resources
- City converts copy paper to 100% recycled content and increases recycled content for custodial products

**2018**
- Office paper policy is revised

**2019**
- Sea Level Rise Adaptation Policy adopted by City Council

*Refer to previous Clean Bay Plan reports for more information.*
SECTION V

OUTREACH
PERMIT DETAILS

The City of Palo Alto’s Regional Water Quality Control Plant (RWQCP) is required to provide public outreach for wastewater pollutants as part of its National Pollutant Discharge Elimination System (NPDES) Permit, and for stormwater pollutants as part of the Municipal Regional Stormwater (MRP) Permit. The objectives of these Permits are to increase pollution prevention best practices in residential, business, school and other target communities, and to inspire an understanding of how daily activities at home, work or school can protect the Bay. Outreach may include: community events, school outreach programs, and education campaigns. Outreach may include best practices that address multiple pollutants (e.g., household hazardous waste and pharmaceutical disposal), and topics related to local watershed protection and enhancement such as the expansion of recycled water services.

ENVIRONMENTAL CONCERNS

Stormwater education programs aim to reduce pollutants such as trash, pesticides and automobile fluids, while wastewater pollution prevention education strives to prevent sanitary sewer overflows from FOG and wipes, and the disposal of hazardous materials into the sanitary sewer.

2019 PROGRAM UPDATES

The RWQCP provided extensive outreach in 2019 to schools, residents, and businesses.

1. SCHOOL PROGRAMS

ELEMENTARY AND MIDDLE SCHOOL PROGRAMS

The RWQCP contracts with the nonprofit Grassroots Ecology to offer programs for elementary and middle school classes in the RWQCP service area. The RWQCP 2018-2019 school outreach goal was to provide 115 presentations to 3,000 students. The program exceeded its target by providing 136 school programs to 3,398 students at 20 schools, including:

- East Palo Alto Sanitary District: 11 classes/312 students
- Los Altos: 27 classes/703 students
- Mountain View: 14 classes/342 students
- Palo Alto: 84 classes/2041 students

The teachers’ rating of classes for this school year averaged 4.8 out of 5 both for quality of program
and clarity of presenters. In addition, teachers stated that students in 90% of classes showed an increased understanding of the difference between the storm drain system and the sewer systems. RWQCP school programs are aligned with Next Generation Science Standards. Classroom programs include:

**Grade 2–What’s Bugging you?**
Students crawl into the world of insects as they learn about the importance of insects in the food chain, how pesticides pollute our water and environment, and whether there really are “good bugs” or “bad bugs.” Students work together to assemble a large insect habitat puzzle on the floor while reading aloud fascinating facts about insects. Listening and focusing skills are emphasized while practicing teamwork. The program concludes with giving the students the opportunity to eat “edible bugs.”

**Grade 2–Problem Plastics**
Students learn alternatives to plastic and how to be part of the pollution solution. Students finish by decorating a reusable bag made from recycled plastic to take home.

**Grade 3–Who Dirtied the Bay?**
Students step into a time machine and trace the history of the San Francisco Bay to learn about the impact of humans on our watershed. A hands-on activity builds their understanding of how runoff flows into creeks and the Bay, both directly and through the storm drain system, as they “dirty” a simulated model with pollutants from the past and present. Students learn what they can do to be solutions to the pollution that impacts this vital ecosystem.

**Grade 3 and up–Watershed Warriors!**
Using an interactive tabletop relief model called “Enviroscape®,” students learn what defines a watershed. After building out the model with props to create residential, commercial and agricultural communities, students simulate how rain moves pollutants through the watershed to a river, bay and ocean. The simulation concludes with a discussion of pollution sources and best practices to keep pollutants from entering the watershed.

**Grade 4–Mercury Past and Present**
Students take a hands-on look at the impact of mercury on San Francisco Bay through the lens of the Gold Rush by tracing the history of how mercury was mined in southern Santa Clara County, used in the gold mining process, and subsequently washed into San Francisco Bay. Through the interactive “Fish-Eat-Fish” game, students experience how this toxic metal is transferred through the Bay ecosystem and food chain through bioaccumulation. Students learn what we do in present day to prevent more mercury from entering our local environment.

**Grade 7–Microbes in Sewage**
Using activated sludge from the wastewater treatment plant, students observe, document, and identify the microbes that remove pollutants from wastewater. This lab always gets an audible “WOW” from the students when they first look in the microscope. A review of the wastewater treatment process, proper lab procedures, and microscope techniques are provided, along with lab supplies, lab worksheets, and very active microbes from the wastewater treatment plant.

**ZunZun**
RWQCP service area schools are also offered free assembly programs provided by ZunZun via SCVURPP.

**High School Programs**
High school outreach is currently provided upon request and is usually project-based or via a mentoring program that is
offered to students through school districts in the RWQCP service area.

- **Wastewater Treatment Plant Tours**—In 2019, the RWQCP conducted twelve tours for a total of 445 people. See Appendix K—RWQCP School Programs Brochure.

2. **RESIDENTIAL OUTREACH**
In 2019, the RWQCP continued to provide wastewater and stormwater pollution prevention outreach to its service area as listed below:

- **Utility bills inserts, utility announcements, digital and print media**: Palo Alto residents received eight utility bill inserts in 2019 related to watershed protection. Topics included: pool draining, less-toxic pest control, green infrastructure, stormwater rebates, Fats Oils and Grease (FOG), pharmaceutical disposal, and “don’t rush to flush” outreach on what not to flush down the drain. In addition, utility announcements (short messages printed on the top of the utility bills) ran monthly. Utility bills and inserts reach 26,000 residents each month. Additional digital and print ads run concurrently with utility bill inserts throughout the RWQCP service area. See Appendix L for a list of all digital and print materials created in 2019.

- **Cleanbay.org website**. The RWQCP website provides pollution prevention and watershed protection information for residents, businesses, industry and schools. The site features a video of the RWQCP wastewater treatment process, and information about whom to call for illegal spills, hazardous waste disposal and other information required by the Municipal Regional Stormwater Permit.

- **Special events and workshops**: Staff provided outreach at 18 tabling events and workshops reaching 978 people. Details are provided in Appendix M—2019 Outreach and Public Education Events. Highlighted topics included less toxic pest management, recycled water, safe medication disposal, and green stormwater infrastructure. Additionally, the City of Palo Alto contracts with Grassroots Ecology for creek monitoring and public education about local creeks. Events this year included a creek walk along San Francisquito Creek on August 7, attended by 14 people, several of them neighbors of the creek. In addition, Grassroots Ecology held its yearly World Water Monitoring Challenge at Bol Park, in Palo Alto, on December 7th. Twenty-nine volunteers came to the event despite the
rain to learn about nonpoint source pollution, water quality and water flow. At both events, common creek pollutants (such as car oil, brake pad dust, soapy water from washing cars in a driveway, pet waste, pesticides, fertilizers, and trash) were discussed and, in some cases, observed. These important events help educate the community about local waterways, the wildlife that lives in local urban creeks, and what individuals can do to help improve water quality.

• Outreach collaboration with SCVURPPP and BAPPG. The RWQCP continues to participate in regional outreach efforts with SVCURPPP, BAPPG, and others that benefit the RWQCP service area.

• Updates to the RWQCP brochure, video and graphics to reflect changes to the sludge dewatering building and decommissioned incinerator.
# RWQCP Outreach Pollution Prevention History*

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
</table>
| 1992 | RWQCP launches Vehicle Inspection Program  
Clean Bay Business Recognition Program is launched |
| 1995 | Clean Bay Auto Recognition Program starts |
| 1998 | The City of Palo Alto initiates *Our Water, Our World* program funding |
| 2000 | Elementary School Program Begins  
Watershed Watch program is developed |
| 2001 | Sewer Science program is developed |
| 2005 | RWQCP receives Friends of the Estuary Comprehensive Conservation and Management Plan (CCMP) Award for Clean Bay Campaign |
| 2007 | RWQCP video and brochure is updated |
| 2015 | Video about RWQCP wastewater treatment processes is filmed |
| 2016 | RWQCP launches new website, www.cleanbay.org |
| 2017 | MOU with Ravenswood School District established to provide Microbes in Sewage lab to all sixth grade students |
| 2018 | School Program realigned to Next Generation Science Standards and teaching materials and programs updated |
| 2019 | RWQCP launches new website, www.cleanbay.org |

*Refer to previous Clean Bay Plan reports for more information.

## Looking Forward

In 2020, the RWQCP will continue most of its current outreach efforts. Priorities are to:

1. Ensure that permit requirements for outreach are met;
2. Leverage and supplement BAPPG and SCVURPP regional outreach efforts to enhance reach in the RWQCP service area;
3. Install a monitor in the Operations Building to assist in wastewater treatment plant tours;
4. Modify outreach about pest control targeting specific featured pests associated with the most prevalent sources of wastewater or stormwater pollution;
5. Evaluate opportunities to add a program for sixth grade focusing on Green Stormwater Infrastructure and sea level rise;
6. Increase outreach for recycled water and Green Stormwater Infrastructure.
## APPENDIX A: SUMMARY OF RWQCP POLLUTION PREVENTION PROGRAM

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>• Pollution Prevention Program initiated</td>
</tr>
</tbody>
</table>
| 1990 | • Storm drain permit issuance—began to direct wastewater discharges to sewer  
      • Increased industrial enforcement  
      • Large dischargers required to prepare pollution prevention plans |
| 1991 | • Silver reduction program initiated  
      • Community outreach on copper-based root control products |
| 1992 | • Launched Clean Bay Business Program for vehicle service facilities  
      • Local ban on sale and use of copper-based root control products |
| 1993 | • Cooling water systems program  
      • Laboratory program  
      • Education on selenium toner  
      • Clean Bay Business Program for hardware stores and plumbers started  
      • Sewer line through Superfund site begins to receive high levels of arsenic |
| 1994 | • Regional outreach on copper-based root control products  
      • Pool, spa and fountain outreach program  
      • Machine shop program started  
      • Automobile parts stores Clean Bay Business Program initiated |
| 1995 | • Reduced local discharge limit for nickel  
      • Expanded cooling water systems efforts  
      • Regional mobile cleaner outreach  
      • Hospital and medical facility program  
      • Sewer line through Superfund site repaired  
      • Copper dumping incident  
      • Final ban on sale of lead-containing gasoline takes effect  
      • Intensive enforcement on silver program, vehicle service facility program |
| 1996 | • Regional ban on copper-based root control products  
      • Regional mobile cleaner certification  
      • Metal finishing program  
      • Vehicle Clean Bay Business program five-year anniversary; 88% participation |
| 1997 | • Auto body shop BMPs distributed  
      • School program enhanced  
      • Record 92% of vehicle service facilities become Clean Bay Businesses |
| 1998 | • Laboratory improves mercury analysis  
      • IPM Partnership launched  
      • Began collection of mercury thermometers and other products; collected 34 pounds mercury  
      • Printers and dentists receive BMPs |
| 1999 | • Launched mercury thermostat drop-off program  
      • Began education campaign regarding residential woodsmoke pollution  
      • Expanded the IPM Partnership program  
      • Sewage sludge incinerator rehabilitation for enhanced pollution prevention. |
<table>
<thead>
<tr>
<th>YEAR</th>
<th>ACTIONS</th>
</tr>
</thead>
</table>
| 2000 | • City of Palo Alto adopts a Mercury and Dioxin Elimination Policy; participating in and funding the Association of Bay Area Governments (ABAG) dioxin group  
  • Initiated dental stakeholder group regarding amalgam management  
  • Mercury product legislation drafted  
  • Piloted a residential drop-off program for fluorescent lamps  
  • City of Palo Alto adopts fireplace ordinance  
  • Sewage sludge incinerator rehabilitated for enhanced pollution prevention. |
| 2001 | • Initiated and drafted SB 633, the CA Mercury Reduction Act  
  • Conducted mercury audits at three local hospitals  
  • Successful expansion of pilot residential recycling of fluorescent lamps at 5 hardware stores and at RWQCP  
  • Led BAPPG in creation of an inspection checklist for dental offices and a set of PowerPoint presentations for dental community outreach  
  • Began using 20% biodiesel in City’s diesel landfill and golf course equipment  
  • Began purchasing process-chlorine-free office paper and letterhead and unbleached paper towels  
  • Completed the City pesticide policy and implementation plan  
  • Assisted the Palo Alto Unified School District (PAUSD) with the “Healthy Schools Act” compliance |
| 2002 | • The Mercury Elimination Policy resulted in new City purchasing specifications to require low-mercury lamps  
  • Created first annual report of City pesticide use  
  • Initiated copper pollution prevention program, educating local plumbers and designers about copper pipe corrosion  
  • New Sewer Use Ordinance passed that:  
    • Lowered the mercury limit for industrial dischargers  
    • Prohibited sewer disposal of zinc-containing floor waxes  
    • Banned new and replaced copper roofs  
    • Required covered carwash facility for new and remodeled buildings with 25 units or more  
    • Added boilers and heat exchangers to the requirement of wastewater collection and analysis if one is doing scouring and cleaning.  
  • Led Emerging Contaminants Workgroup of the Watershed Management Initiative to compile and finalize an Endocrine Disrupting Compounds Information Sheet.  
  • Distributed a “drug free sewers” utility bill notice to describe proper disposal of expired prescriptions  
  • Initiated chemical root control applicator permitting program |
| 2003 | • Completed work plan for an advanced mercury source control study that focuses on (1) improving amalgam collection and pretreatment at dental offices and (2) continuing identification of on-site RWQCP mercury uses and alternatives  
  • Palo Alto has developed seven IPM plans and extensive training for weeds, gophers, ground squirrels, yellow jackets, ants, rats, and mice  
  • From inception through 2003, the fluorescent lamp program collected over 7,575 lamps at four drop off sites in our service area  
  • In the 2002/2003 school year, RWQCP school program visited 151 classrooms which reached approximately 3,682 students. This was a 41% increase over the previous year  
  • Palo Alto staff educated approximately 350 people regarding Endocrine Disruptor Compounds by presenting at seven different conferences/meetings throughout California |

1Association of Bay Area Governments, Bay Area Dioxins Project, February 2004.
SECTION VI: APPENDIX

APPENDIX A: SUMMARY OF RWQCP POLLUTION PREVENTION PROGRAM (CONTINUED)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ACTIONS</th>
</tr>
</thead>
</table>
| 2004 | • Palo Alto and Mountain View adopted dental amalgam pretreatment ordinances requiring dentists to install amalgam separators by March 31, 2005  
     • City of Palo Alto fluorescent lamp collection program was expanded throughout Santa Clara County and is now operated by the Santa Clara County Household Hazardous Waste Program  
     • Implemented two successful, non-chemical ground squirrel control strategies: the use of shade cloth along the municipal golf course fence line to deter ground squirrel population expansion, and a new trap design which captures up to four ground squirrels per trap. The traps have proven immediately successful  
     • Published: Tracking the Fate of Polybrominated Diphenyl Ethers releases in a Wastewater Treatment Plant Effluent\(^2\), concluding that the RWQCP discharges 2 pounds per year of PBDEs to the Bay |
| 2005 | • Dentists required to install amalgam separators in service area by March 31, 2005; 98% of dentists complied  
     • City of Palo Alto collected 8,481 pounds of fluorescent lights at the recycling center.  
     • Analyzed City pesticide use; designed a prioritization process for annual workplan; drafted IPM Scope of Services for structural pest control contract  
     • Made pesticide use reporting system for City staff available electronically and integrated database with GIS to map pesticide use  
     • Served as chair of the Emerging Contaminants Workgroup of the Santa Clara Basin Watershed Management Initiative, which in 2005 produced two white papers titled “Discussion of Pharmaceutical Disposal to Sewer Systems” and “Environmental Emergence of Triclosan”  
     • In 2004/2005 school years, RWQCP school program visited 151 classrooms, which reached approximately 4025 students |
| 2006 | • City of Palo Alto led a BAPPG/CWEA Dental Amalgam Training that was attended by approximately 90 people  
     • Inspected 113 of 300 food service facilities within the first 6 months of the program  
     • Co-led a regional pharmaceutical disposal event at 39 locations throughout the Bay Area that diverted over 3,500 lbs of pharmaceutical waste. In Palo Alto, collected approximately 960 lbs of pharmaceuticals at pharmacies, local senior centers, and the wastewater treatment plant within the RWQCP service area. Authored a report titled “Report on the San Francisco Bay Area’s Safe Medicine Disposal Days” |
| 2007 | • In 2006-2007 fiscal year collected 270 pounds of thermometers and thermostats and 13,498 lbs of fluorescent lights  
     • Hired and began using an EcoWise Certified IPM contractor for City facilities to ensure reduced dependence on pesticide use and discontinued use of structural pesticides associated with water quality impacts and ecotoxicity  
     • In 2006/2007 school years, RWQCP school program visited 163 classrooms, which reached approximately 3,961 students at twenty-six schools. Expanded our microbes in sewage program to educate all seventh graders in our service area |
| 2008 | • Updated Mercury Loading Estimate (previous Estimate was for 2000) to reflect new loadings after full implementation of Dental Amalgam Program. Dental office mercury loading, as a percentage of the total, decreased from 56% to 29%, and it is estimated that 11 pounds per year of mercury that would have been discharged to the sanitary sewer is now captured by amalgam separators  
     • Completed analysis of salinity (total dissolved solids, sodium, and chloride) in RWQCP partner trunklines, influent, and recycled water  
     • Expanded food service facility program to include expanded stormwater, polystyrene activities in addition to more rigorous enforcement of grease control device maintenance and sizing requirements |
| 2009 | • Adopted and implemented an ordinance restricting single-use plastic checkout bags at large grocery stores, which became effective on September 18, 2009  
     • Performed annual evaluation of City’s pest management and pesticide use, which demonstrated that the City’s ecotoxic pesticide use has decreased to the lowest levels since the program’s inception in  
     • Adopted ordinance provision restricting molybdenum use in cooling systems and developed a brochure on cooling system additive restrictions in the RWQCP service area |
| 2010 | • In 2010, the Brake Pad Partnership was instrumental in passing the California Brake Pad Reformulation Bill (SB 346) which requires brake manufacturers to reduce the amount of copper in brake pads to no greater than 5 percent by 2021, then to no greater than 0.5 percent 2055  
     • Adopted and implemented an ordinance that restricts the use of expanded polystyrene disposable food service containers by Food Vendors  
     • Implemented energy efficiency projects for the activated sludge aeration basins and trickling filter lift pumps that resulted in an 11% reduction in electricity use in 2010 compared to the average of the previous four years |

\(^{2}\)North, K.D., Environmental Science and Technology, 2004: 38, 4484-4488
<table>
<thead>
<tr>
<th>YEAR</th>
<th>ACTIONS</th>
</tr>
</thead>
</table>
| 2011 | • Received the Department of Pesticide Regulation 2011 IPM Innovator Award  
      • Led and coordinated 2011 Plastic Reduction Summit attended by multiple Bay Area public agencies and nonprofits  
      • City staff determined the locations of saline groundwater infiltration to the sewer trunklines by using continuous monitoring equipment  
      • Expanded number of pharmaceutical collection sites to five permanent collection locations |
| 2012 | • Reduced mercury entering the environment by more than 50 percent since installation of amalgam separators in 2005.  
      • Palo Alto has a combined total of 12 pesticide free parks and facilities, in addition there was no pesticides used for rodent control.  
      • Completed EIR to expand plastic checkout bag ordinance to include all retailers including food service establishments.  
      • RWQCPs 2011 CO2 emissions are 13% lower than the 2005 emissions. |
| 2013 | • Single use plastic bag ban was expanded to include all retail and food service establishments, which has reduced the amount of plastic bag sightings throughout the City.  
      • Installed trash booms in both Matadero and Adobe Creeks which capture a significant amount of trash prior to the flood basin.  
      • Received the 2013 Teng-Chung Wu Pollution Prevention Award from the Water Board for the City’s work on reducing emerging contaminants at the source. |
| 2014 | • Phil Bobel, the Assistant Director for Public Works–Environmental Services receives Dr. Teng-Chung Wu Pollution Prevention Award for Lifetime Achievement. |
| 2015 | • City approved expansion of existing Plastic Foam Ordinance to prohibit retail sale/distribution of plastic foam ice chests, packaging materials, foodware, and egg cartons.  
      • RWQCP reduced greenhouse gas emissions by 41% since 2005, maintaining compliance with the City’s emission reduction goals.  
      • Release request for proposals on the Advanced Water Purification System Feasibility Study. |
| 2016 | • RWQCP began 3rd reverse osmosis pilot plant to evaluate pretreatment options  
      • New regulation became effective with new reporting and testing requirements for Federal Sewage Sludge Incinerator Pollutants  
      • Adopted new City goal to reduce community and municipal emissions 80% from 1990 levels by 2030  
      • RWQCP reduced greenhouse gas emissions by 60% since 1990  
      • Completed design of the sludge dewater and haul facility to allow for incinerator scheduled for 2019  
      • The City worked with Palo Alto Unified School District to expand water bottle filling stations. |
| 2017 | • RWQCP Watershed Protection Manager receives Dr. Teng Chung Wu Pollution Prevention Award for leadership in BAPPG and pharmaceutical disposal leadership  
      • Completed the 2016 Integrated Pest Management Report which showed 93% average reduction in ecotoxic pesticide use from baseline years  
      • Conducted incinerator emissions test to prove compliance with emission limits and set operating parameter limits to maximize operational flexibility  
      • RWQCP hosts Sludge Dewatering and Truck Loadout Facility Construction Project Groundbreaking Ceremony  
      • Four businesses completed the ReThink program: Kirk’s Steakburgers, New York Pizza, Gelataio, and Sprout’s Café |
| 2018 | • Worked with Girl Scout Troop 60016 to make the month of May “Drinking Straw Awareness Month”  
      • Completed the 3rd reverse osmosis pilot project that evaluated pretreatment options  
      • Led Fall 2018 Regional IPM Coordinators Meeting which focused on glyphosate alternatives and IPM tracking software |
| 2019 | • See Table 1 in Executive Summary |
## APPENDIX B: RWQCP REGIONAL COMMITMENTS

<table>
<thead>
<tr>
<th>GROUP</th>
<th>BRIEF DESCRIPTION</th>
<th>RWQCP ROLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Science Center/San Francisco Estuary Institute Board</td>
<td>Provides water quality science support and information management for governments and nonprofits.</td>
<td>Alternate Board Member</td>
</tr>
<tr>
<td>Bay Area Clean Water Agencies (BACWA)</td>
<td>BACWA works with state and federal regulatory agencies, 39 municipal wastewater agencies, and non-governmental organizations, to improve the health of San Francisco Bay. It provides technical expertise, financial support, and a public utility perspective to ensure that regulations affecting members are well-informed, thoughtful, and effective.</td>
<td>Member, Support Financially</td>
</tr>
<tr>
<td>• BACWA - Air</td>
<td>Shares information about air regulations that impact wastewater treatment plants.</td>
<td>Member, support financially</td>
</tr>
<tr>
<td>• BACWA - Bay Area Pollution Prevention Group (BAPPG)</td>
<td>Develops regional pollution prevention programs.</td>
<td>Steering Committee Member, support financially</td>
</tr>
<tr>
<td>• BACWA - Nutrients</td>
<td>Shares information about nutrients in the San Francisco Bay.</td>
<td>Participant</td>
</tr>
<tr>
<td>• BACWA - Permits Committee</td>
<td>Shares information on NPDES permitting and pollutant issues.</td>
<td>Participant</td>
</tr>
<tr>
<td>• BACWA - Biosolids</td>
<td>Shares information about biosolids disposal.</td>
<td>Participant</td>
</tr>
<tr>
<td>• BACWA - Recycled Water</td>
<td>Shares information about recycled water regulations.</td>
<td>Participant</td>
</tr>
<tr>
<td>• BACWA – Pretreatment Committee</td>
<td>Shares information about pretreatment issues.</td>
<td>Participant</td>
</tr>
<tr>
<td>Bay Area Biosolids to Energy Coalition</td>
<td>A consortium of wastewater treatment plants working to develop a regional biosolids-to-energy facility.</td>
<td>Member</td>
</tr>
<tr>
<td>Bay Area Stormwater Management Agencies Association (BASMAA)</td>
<td>Coordinates regional stormwater public education and outreach messages and services.</td>
<td>Participant</td>
</tr>
<tr>
<td>• BASMAA – Integrated Pest Management Partnership Committee</td>
<td>Regional group that creates Our Water, Our World fact sheets and public displays that are used throughout the state.</td>
<td>Participant, support financially</td>
</tr>
<tr>
<td>California Association of Sanitation Agencies (CASA)</td>
<td>State-level voice for public wastewater agencies regarding regulatory, legislative, and legal issues.</td>
<td>Member, Support financially</td>
</tr>
<tr>
<td>California Product Stewardship Council</td>
<td>Statewide nonprofit leads product stewardship legislation, information and projects.</td>
<td>Participant, support financially</td>
</tr>
<tr>
<td>California Water Environment Association (CWEA)</td>
<td>Statewide professional organization that trains wastewater professionals.</td>
<td>Conference Session Organizers</td>
</tr>
<tr>
<td>GROUP</td>
<td>BRIEF DESCRIPTION</td>
<td>RWQCP ROLE</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
<td>------------</td>
</tr>
<tr>
<td>California Wastewater Climate Change Group</td>
<td>Shares information and represents the wastewater perspective on regulations and regional projects regarding climate change and greenhouse gas emissions.</td>
<td>Member, Support financially</td>
</tr>
<tr>
<td>Copper Brake Pad Partnership</td>
<td>A consortium of government regulators, brake pad manufacturers, stormwater management agencies, and environmental professionals that evaluate the potential effects of brake wear debris on water quality.</td>
<td>Support Financially</td>
</tr>
<tr>
<td>Creek Connection Action Group</td>
<td>County-wide effort to coordinate two creek clean up days in conjunction with National River Day and Coastal Cleanup Day</td>
<td>Participant, support financially</td>
</tr>
<tr>
<td>Product Stewardship Institute</td>
<td>A national organization that works with state and local government agencies, manufacturers, retailers, environmental groups, federal agencies, and other stakeholders to reduce the health and environmental impacts of consumer products.</td>
<td>Participant, Support financially</td>
</tr>
<tr>
<td>Regional Monitoring Program (RMP) Steering Committee</td>
<td>Regional Monitoring Program is run and operated by the San Francisco Estuary Institute. The steering committee guides the goals of the Regional Monitoring Program.</td>
<td>Vice-Chair</td>
</tr>
<tr>
<td>Regional Monitoring Program–Emerging Contaminants Committee</td>
<td>This RMP subgroup guides research on emerging contaminants in the San Francisco Bay.</td>
<td>Participant</td>
</tr>
<tr>
<td>ReNUWIt (Reinventing the Nation’s Urban Water Infrastructure)</td>
<td>An interdisciplinary, multi-institution research center whose goal is to create a sustainable urban water infrastructure</td>
<td>Participant</td>
</tr>
<tr>
<td>Silicon Valley Anti-Litter Group</td>
<td>County-wide group of local agencies and elected officials who work together to clean up trash in Santa Clara County.</td>
<td>Participant</td>
</tr>
<tr>
<td>Santa Clara Valley Water District: Salt and Nutrient Planning Stakeholders</td>
<td>Manages future ground water quality.</td>
<td>Participant</td>
</tr>
<tr>
<td>SCVURPPP (Santa Clara Valley Urban Runoff Pollution Prevention Program) and Workgroups/Ad-Hoc Groups</td>
<td>SCVURPPP is an association of 13 Santa Clara Valley cities and towns, together with Santa Clara County and the Santa Clara Valley Water District that collaborate on meeting shared Municipal Regional Stormwater Permit requirements via regulation, monitoring and outreach. The City participates in all workgroup/ad hoc groups, including Commercial/Industrial/Illegal Discharge, C.3, Pollutant of Concern, Watershed Education and Outreach, Trash, Municipal Operations, Construction, etc.</td>
<td>Participant</td>
</tr>
<tr>
<td>Santa Clara Basin Watershed Management Initiative (SCBWMI)</td>
<td>Coordinates existing regulatory framework on basin wide scale with representatives from regional and local public agencies; civic, environmental, resource conservation and agricultural groups; professional and trade organizations; business and industrial sectors; and the public.</td>
<td>Co-chair</td>
</tr>
<tr>
<td>SCBWMI POTW Forum</td>
<td>Coordinate South Bay Dischargers permit renewal.</td>
<td>Participant</td>
</tr>
<tr>
<td>GROUP</td>
<td>BRIEF DESCRIPTION</td>
<td>RWQCP ROLE</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>SCBWMI ZLI</td>
<td>The Zero Litter Initiative (ZLI) aims to reduce litter in Santa Clara County.</td>
<td>Co-lead</td>
</tr>
<tr>
<td>Tri-TAC</td>
<td>Tri-TAC is a technical advisory committee that works with regulatory agencies and</td>
<td>Participant</td>
</tr>
<tr>
<td></td>
<td>interest groups to improve the effectiveness and accountability of environmental</td>
<td></td>
</tr>
<tr>
<td></td>
<td>programs that impact California wastewater treatment plants. Tri-TAC is a joint</td>
<td></td>
</tr>
<tr>
<td></td>
<td>program of the League of California Cities, the California Association of Sanitation</td>
<td></td>
</tr>
<tr>
<td>Urban Pesticide</td>
<td>Public agency and NGO representatives group that discuss pesticide-related</td>
<td>Participant</td>
</tr>
<tr>
<td>Committee</td>
<td>legislation, research and trends in urban pesticide use and pest management.</td>
<td></td>
</tr>
<tr>
<td>Water Environment</td>
<td>Provides water quality professionals around the world with the latest in water</td>
<td>Member</td>
</tr>
<tr>
<td>Federation (WEF)</td>
<td>quality education, training, and business opportunities.</td>
<td></td>
</tr>
<tr>
<td>Water Environment</td>
<td>National independent research organization on wastewater and stormwater issues.</td>
<td>Member</td>
</tr>
<tr>
<td>Research Foundation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(WERF)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C: EFFLUENT LIMITATIONS

Desire to comply with the RWQCP’s toxic pollutant effluent limitations provide significant motivation for the programs described in this plan. The RWQCP’s NPDES permit issued in August 2014 (Order No. R2-2014-0024) has both concentration limits (Tables A-1) and the Mercury and PCB Watershed Permit (Order No. R2-2017-0041) has mass limits (Table A-2).

TABLE A-1: EFFLUENT LIMITS

<table>
<thead>
<tr>
<th>CONSTITUENT</th>
<th>UNITS</th>
<th>MONTHLY AVERAGE</th>
<th>DAILY MINIMUM</th>
<th>AVERAGE WEEKLY</th>
<th>INSTANTANEOUS MINIMUM</th>
<th>INSTANTANEOUS MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemical Oxygen Demand</td>
<td>mg/L</td>
<td>10</td>
<td>20</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>mg/L</td>
<td>10</td>
<td>20</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>pH</td>
<td>Standard units</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>6.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>mg/L</td>
<td>5</td>
<td>10</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Turbidity</td>
<td>NTU</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>10</td>
</tr>
<tr>
<td>Total Ammonia</td>
<td>mg/L as nitrogen</td>
<td>2.7</td>
<td>9.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Copper, Total Recoverable</td>
<td>μg/L</td>
<td>21</td>
<td>32</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mercury</td>
<td>μg/L</td>
<td>0.025</td>
<td>--</td>
<td>0.027</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Nickel, Total Recoverable</td>
<td>μg/L</td>
<td>25</td>
<td>31</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cyanide, Total</td>
<td>μg/L</td>
<td>6.2</td>
<td>11</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Dioxin - TEQ</td>
<td>μg/L</td>
<td>1.4 x 10^-8</td>
<td>2.8 x 10^-8</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PCBs</td>
<td>μg/L</td>
<td>0.00039</td>
<td>0.00049</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

TABLE A-2: TOXIC POLLUTANT EFFLUENT MASS LIMITS

<table>
<thead>
<tr>
<th>CONSTITUENT</th>
<th>AVERAGE ANNUAL LIMIT (KG/YR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.31</td>
</tr>
<tr>
<td>CONTINGENCY ACTION</td>
<td>DISCHARGE REDUCTION</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Add corrosion inhibitor to local drinking water supplies</td>
<td>Reduce copper piping corrosion by an estimated 30% if inhibitor addition was implemented in all SFPUC water supplies in the RWQCP service area.</td>
</tr>
<tr>
<td>Create financial incentives for implementation of copper pollution prevention measures at private businesses, emphasizing measures for largest copper dischargers</td>
<td>Reduce copper wastewater discharge from industrial copper use, from cooling towers, and from circulating hot water systems. Some additional reductions in industrial process copper discharge (in 2002, about 5% of RWQCP influent copper), cooling water copper corrosion discharges (currently 3% of influent copper) and circulating hot water system discharges (which may be as much of 3% of influent copper) are possible.</td>
</tr>
<tr>
<td>Advocate use of CPVC piping and/or restrict use of copper piping in new construction and remodeling</td>
<td>Reduce copper discharges from corrosion of copper piping. Rate of reduction is uncertain as the current pipe replacement rate in the service area is unknown. Since replacement rate is probably slow, significant reductions would probably not be achieved for 5 to 10 years.</td>
</tr>
<tr>
<td>Implement regional training and certification program for plumbers. Require use of recommended fluxes and solders and adherence to IAPMO best management practices during all copper plumbing installation</td>
<td>Reduce copper discharges from corrosion of copper piping due to poor installation practices. The amount of reduction that would be achieved is unknown. Reduction would slowly increase as piping is replaced.</td>
</tr>
<tr>
<td>Adopt copper pipe flow velocity restrictions as part of city building codes</td>
<td>Reduce copper discharges from corrosion and erosion of copper piping. The amount of discharge reduction is unknown, but could be measurable depending on current average flow velocities. Reduction would slowly phase in as piping is replaced.</td>
</tr>
<tr>
<td>Recommend lower operating temperatures for home and business hot water systems (while maintaining user safety and sanitation)</td>
<td>Reduce copper discharges from corrosion of hot water piping (which occurs at an accelerated rate). The amount of discharge reduction is unknown.</td>
</tr>
<tr>
<td>Prohibit installation of open cooling towers and prohibit towers with copper piping and parts</td>
<td>Reduce copper discharges from cooling towers (3% of RWQCP copper influent) as the restriction phased in. Preliminary data suggest that at least half of the cooling water systems in the service area are open systems or contain copper, and that copper discharge reductions of more than 50% are possible if such systems are replaced with copper-free closed systems.</td>
</tr>
<tr>
<td>Expand wastewater recycling programs</td>
<td>Reduce the amount (but not the concentration) of copper discharged to San Francisco Bay by an amount proportional to the amount of wastewater diverted from Bay discharge.</td>
</tr>
<tr>
<td>Investigate and consider implementing chemical addition to increase copper removal at the RWQCP</td>
<td>Increase copper removal efficiency at the RWQCP, decreasing copper discharge concentration. Copper discharge reduction (if any) is unknown. (Full-scale testing would be required to determine the potential reductions).</td>
</tr>
<tr>
<td>Expand water conservation education and incentive programs</td>
<td>Reduce copper discharges associated with water use, primarily from water supply and corrosion. The amount of reduction would be proportional to the decrease in indoor water use achieved.</td>
</tr>
<tr>
<td>COPPER CONTROL PROGRAM ITEM NUMBER</td>
<td>ITEM DESCRIPTION</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>i.</td>
<td>Provide education and outreach to the public (e.g., focus on proper pool and spa maintenance and plumbers’ roles in reducing corrosion)</td>
</tr>
<tr>
<td>ii.</td>
<td>If corrosion is determined to be a significant copper source, work cooperatively with local water purveyors to reduce and control water corrosivity as appropriate, and ensure that local plumbing contractors implement best management practices to reduce corrosion in pipes</td>
</tr>
<tr>
<td>iii.</td>
<td>Educate plumbers, designers, and maintenance contractors for pools and spas to encourage best management practices that minimize copper discharges</td>
</tr>
</tbody>
</table>
## APPENDIX F: CYANIDE CONTROL PROGRAM IMPLEMENTATION PLAN

<table>
<thead>
<tr>
<th>CYANIDE CONTROL PROGRAM ITEM NUMBER</th>
<th>ITEM DESCRIPTION</th>
<th>IMPLEMENTATION PLAN</th>
<th>IMPLEMENTATION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Inspect each potential cyanide contributing source to assess the need to include that contributing source in the control program</td>
<td>The following three facilities were identified as potential contributors of cyanide to the RWQCP: Communications and Power Industries, Hammon Plating Corporation, and Space Systems/Loral, LLC. Each of these facilities were inspected by the RWQCP's Pretreatment Program, and all three are included in the cyanide control program.</td>
<td>Complete</td>
</tr>
<tr>
<td>ii.</td>
<td>Inspect potential cyanide contributors included in the control program at least annually. Inspection elements may be based on USEPA guidance, such as Industrial User Inspection and Sampling Manual for POTWs</td>
<td>The potential cyanide contributors identified above will be inspected at least annually. Communications and Power Industries, Hammon Plating Corporation, and Space Systems/Loral, LLC are typically inspected semiannually, with compliance monitoring, including cyanide analysis, conducted monthly by the RWQCP.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>iii.</td>
<td>Develop and distribute educational materials to potential cyanide contributing sources regarding the need to prevent cyanide discharges</td>
<td>The RWQCP will utilize the educational materials developed by the Bay Area Pollution Prevention Group. Distribution of educational materials began in 2011. Pretreatment program inspectors regularly stress the importance of proper cyanide control during industrial facility inspections.</td>
<td>Complete</td>
</tr>
<tr>
<td>iv.</td>
<td>Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs</td>
<td>The emergency monitoring and response plan is located in Appendix G.</td>
<td>Complete</td>
</tr>
<tr>
<td>v.</td>
<td>If ambient monitoring shows cyanide concentrations of 1.0 μg/L or higher in the main body of the San Francisco Bay, undertake actions to identify and abate cyanide sources responsible for the elevated ambient concentrations</td>
<td>Monitoring of San Francisco Bay is conducted through the Regional Monitoring Program. The RWQCP will identify necessary actions if cyanide concentrations reach 1.0 μg/L or greater.</td>
<td>On hold</td>
</tr>
</tbody>
</table>
Influent and effluent monitoring are conducted per the requirements of the Palo Alto Regional Water Quality Control Plant’s NPDES permit. This plan sets out sampling and investigative measures to be taken in any instance of influent sampling analysis results that are above the typical range (non-detect at <0.002 mg/L – 0.005 mg/L).

1. **Sample results greater than 0.005 mg/L CN**
   a. Re-sample influent (grab), deploy composite sampler.
   b. Re-sample effluent (grab), deploy composite sampler.
   c. Contact each of the identified and potential cyanide contributors; discuss any recent activities that could have caused a high value.
      i. Hammon Plating Corporation
      ii. Communications and Power Industries, LLC
      iii. Space Systems Loral, LLC
   d. Standard follow-up sampling and enforcement response will be implemented for non-compliant activities or IU discharges above the applicable Federal and/or local limits.

2. **Additional sample results greater than 0.005 mg/L CN**
   a. Inspect, collect grab samples, and deploy composite samplers for each of the identified and potential cyanide contributors.
      i. Hammon Plating Corporation
      ii. Communications and Power Industries
      iii. Specific Plating
   b. Standard follow-up sampling and enforcement response will be implemented for IU discharges above the applicable Federal categorical limits and/or local limits.
   c. Collect grab samples from each of the partner’s trunk lines.
   d. Deploy composite samplers at each of the partner’s trunk lines.
   e. If cyanide is detected above the typical non-detect range then further sampling will be conducted upstream of the location in order to narrow down the potential source area.

3. **Sample Results greater than 0.02 mg/L CN**
   a. Conduct all activities in Cases 1. and 2.

All findings will be reported in a letter to Regional Board for Cases 2. and Case 3. or if effluent limits are exceeded. Follow up actions, and summarized program results will be reported in the Pretreatment Program Annual Report.
APPENDIX H: SINGLE-USE PLASTIC POLICY

POLICY AND PROCEDURES 5-05/PWD
September 2016

CITY OF PALO ALTO SINGLE-USE PLASTICS POLICY

The purpose of this Policy is to reduce pollution, solid waste and greenhouse gas emissions associated with City purchases of plastic products. In addition, the intent of this policy is to demonstrate leadership by going beyond the requirements imposed via City Ordinance which apply to City of Palo Alto retailers and food service establishments.

The City recognizes that single-use plastics including plastic bags, single-use plastic water bottles, and expanded plastic foam food and beverage containers, ice chests and packaging materials are high-volume components of plastic litter found in local creeks and San Francisco Bay which harm wildlife and water quality, and which contribute to the City’s solid waste stream. If plastic is released to the environment by wind or improper disposal, it does not biodegrade and removal from the environment is difficult, expensive and has limited success. Plastic foam products cannot be recycled in Palo Alto’s recycling program.

Single-use plastic water bottles and plastic foam are included because of their frequent occurrence in ecosystem litter and readily available alternatives. Eliminating single-use plastics:

1. Aligns with the City’s policy to achieve Zero Waste by 2021;
2. Aids compliance with the Municipal Regional Permit which requires “no adverse impact” from storm drain sources of litter in local creeks by 2022; and
3. Conforms with the City’s Sustainability/Climate Action Plan goal to reduce Greenhouse gas emissions associated with the manufacture, transport and disposal of products purchased by the City.

The following items shall be phased out of City Operations by the dates indicated:

1. Single-use plastic bags shall not be purchased or distributed, effective September 18, 2009;
2. Plastic foam ice chests, packaging materials and food and beverage containers as defined by Palo Alto’s Plastic Foam Ordinance 5371 shall not be purchased, used or distributed at City sponsored events after December 31, 2009;
3. Single-use plastic water containers shall not be purchased, distributed or sold after December 31, 2009;
4. The City will require its vendors and contractors to eliminate the use of plastic foam used for primary, secondary and shipping packaging in goods by January 1, 2017 unless individual contract specifications list an earlier date. Contract specifications and terms and conditions will include language requiring that:
a. All primary, secondary and shipping (tertiary) packaging be minimized to the maximum extent feasible while balancing the need to protect the product being shipped;

b. Expanded foam plastics (e.g., foam or cushion blocks, trays, packing “peanuts”), such as but not limited to polystyrene (aka Styrofoam™), polypropylene, or polyurethane shall not be used as primary, secondary or tertiary/shipping packaging with the following exceptions:
   i. Primary packaging made from these materials may be used if the vendor, manufacturer, contractor individually or collaboratively does one of the following:
      1. Takes the material back at the City’s convenience and at no cost to the City, or
      2. Pays the City’s costs for handling and disposal.

c. Bioplastics that meet ASTM D6400 standards for compostability may be accepted with approval from the City’s Environmental Services Division subject to local municipal compost facility requirements;

d. If approved by the City’s Environmental Services Division, a packaging requirement may be waived if no other viable packaging alternative exists; and

e. The City will include the above standards when relevant in City contract specifications, Purchase Order Terms and Conditions, and policies related to cash handling and procurement card use.

Applicability of this Policy
This Policy shall apply to all City operations, with the exception of emergency response actions as needed. City contractors, lessees and vendors shall also adhere to the Policy when providing a service or attending City-sponsored events, meetings or other gatherings. All events sponsored or co-sponsored by the City shall also be in compliance with the Policy. This Policy will also be included in the Environmentally Preferable Purchasing Chapter of the Palo Alto Purchasing Manual and shall be implemented via contracts, purchase orders and agreements.

Procedures
City staff, vendors, lessees and event managers shall all be responsible for adherence to the Policy and ensuring that non-conforming plastic containers are not distributed at City facilities or City sponsored (or co-sponsored) events. Purchasing staff shall also assist in ensuring that non-conforming plastic containers are not purchased. Changes to this Policy must be coordinated through the City Manager’s Office. Questions and/or clarifications of this Policy should be directed to the Public Works Department.

Definitions:
1. Primary packaging designates the layer of packaging in immediate contact with the product;
2. **Secondary Packaging** protects the product and the primary packaging, which often is the packaging most visible to the consumer in retail displays such as cardboard cartons, cardboard boxes and cardboard/plastic crates.

3. **Tertiary or Shipping Packaging**: Shipping containers used for transport of products that may be wrapped in primary and/or secondary packaging.

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**Recommended:**

Public Work Director

Date: 9/22/16

**Approved:**

City Manager

Date: 9/30/16

Page 3 of 3
SEA LEVEL RISE ADAPTATION

OVERVIEW
The State of California anticipates that relative sea level rise (SLR) projections stemming from greenhouse gas emissions and related climate change pose significant economic, environmental and social risks to communities along the San Francisco Bay Shoreline, including the City of Palo Alto. Research shows that these projections may worsen if greenhouse gas emission trajectories continue unabated.1

Sea level rise in San Francisco Bay is anticipated to range between three feet to more than ten feet by 2100 with rising tides likely thereafter.2 In Palo Alto, many City services and infrastructure that are essential to the City’s public health, safety and economy are located within areas that are predicted to be inundated by Bay water if adaptation measures are not implemented.3

PURPOSE OF POLICY
The purpose of this policy is to plan for rising tides that could impact Palo Alto’s neighborhoods, economy and the Baylands habitat, and to ensure consistency and integration with the range of City plans that call for SLR planning such as the City’s 2030 Comprehensive Plan (adopted November 2017), the Sustainability and Climate Action Plan (S/CAP) (November 2016) and related Sustainability Implementation Plans (SIPs), the Local Hazard Mitigation and Adaptation Plan (March 2017), the Baylands Master Plan (2008), Baylands Comprehensive Conservation Plan (in development), and the Urban Forest Master Plan (February 2019), and other key planning documents that are produced. This policy will serve as a blueprint for the development of a Sea Level Rise Adaptation Plan, and is not intended to establish requirements on new development for implementation prior to Plan adoption; however, projects may be encouraged in advance to consider sea level rise as part of the development process. Definitions and terminology relevant to this policy are listed in Appendix 1—Policy Definitions and Related Terminology.

POLICY SUMMARY
The City recognizes that the best way to avoid long-term impacts from the worst SLR predictions and to minimize adaptation response costs is to reduce greenhouse gas (GHG) contributions locally and to support regional, state and national initiatives that reduce GHGs.

Palo Alto will lead by example and coordinate on SLR studies and planning efforts with East Palo Alto, Mountain View, and other cities and public agencies, including counties, as well as utilities, and public-private partnerships, as needed. Palo Alto will establish interdepartmental SLR Planning responsibilities into City

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2 Reference 1, page 18.
procedures and planning (see, e.g., Appendix 2–Departmental Responsibilities for Sea Level Rise Planning).

Palo Alto will use the Ocean Protection Council (OPC) 2018 Probabilistic SLR Projections published by the State of California (Appendix 3) for proposed development projects, renovations and possible property acquisitions and other City planning unless a more suitable reference is identified and agreed upon by local agencies tasked with SLR preparedness. City of Palo Alto, business and residential investments in new property, development, and infrastructure should be designed based on OPC SLR projections for the useful life of the asset to avoid flooding or erosion. To that end, the forthcoming Sea Level Rise Adaptation Plan should consider the following best practices:

1. Upgrades to existing property or infrastructure that are considered less-critical (not essential to immediate public health and safety, e.g. trails or playing fields) should consider the impacts of SLR beyond 2050 using the Low Risk Aversion or Medium-high Risk Aversion Projection listed in Table 1;

2. For critical development and infrastructure (e.g., wastewater treatment facility or utilities that are essential to public health and safety), a risk assessment should be completed based on the SLR projections to 2100 and to include the lifetime of the building using the Medium-high or Extreme Risk Aversion Projections;

3. All designs and engineering strategies, where possible and financially feasible, should be adaptable to changing climate predictions. Each new development should be required to develop and maintain an individual “adaptation pathway plan” to prepare for changes in rising sea level, and related groundwater intrusion. In all sea level rise assessments, and where data are available, the City will consider Base Flood Elevations, storm surge, groundwater table changes due to rising sea levels, and wave runup, where appropriate.

BACKGROUND
Greenhouse gases trap the earth’s heat which warms land and oceans. This causes both thermal expansion of the oceans and Antarctic and Greenland ice melt which together are the primary sources of SLR globally and in San Francisco Bay.

SLR threatens the operational integrity of critical services and facilities, e.g., Palo Alto’s electrical, gas, water and wastewater utilities, the Municipal Service Center, the Palo Alto Airport, Highway 101 and surrounding roads. Business districts and residential neighborhoods within the projected SLR area are vulnerable to a rising Bay and potential future FEMA insurance zone requirements.

SLR is also likely to affect the elevation and salinity of groundwater close to the Bay. Rising groundwater could have impacts on belowground infrastructure which may be subject to corrosion and buoyancy effects and could contribute to liquefaction. In the case of very low-lying areas, groundwater may result in surface flooding and long-term ponding.

Under current SLR predictions, the Palo Alto Baylands may be submerged by mid-century which would eliminate their ability to buffer upstream or Bayside flooding sources, attenuate storm surge or sequester carbon. The encroachment of Bay water may alter or eliminate habitat for endangered species that reside in
Palo Alto Baylands and the millions of birds that use the Palo Alto segment of the Pacific Flyway for seasonal migration. The recreational and inspirational services of the Palo Alto shoreline could change if Baylands trails, playing fields and golf course are surrendered to encroachment of San Francisco Bay.

The decisions that Palo Alto makes in future years to adapt to rising tides extend beyond the City’s borders. Implications with built features such as levees will impact (help or imperil) adjacent communities and thus require close coordination with surrounding local and regional agencies.

PROCEDURES FOR POLICY IMPLEMENTATION

1. The City will:

   a) conduct a SLR vulnerability assessment, which will:

   i. identify critical and less-critical City infrastructure and ecosystem assets to manage risks given predicted SLR scenarios through 2100 and beyond;

   ii. Identify hazards and determine tolerable risks of the City and community members (risk = hazard x exposure x vulnerability; risk ($/year) = frequency (events/year) x consequences ($/event);

   iii. include an economic assessment of SLR vulnerability for public and private property and cost estimates for inaction;

   iv. engage community members in the process.

   b) develop a multi-year SLR Implementation Plan to coordinate internal and regional SLR planning, project funding and public outreach. The Plan will include a SLR adaptation plan and timeline which will:

   i. align with the intent and language of the City’s various plans, policies and documents that intersect with SLR Policy and Plan (e.g., the Comprehensive Plan, Sustainability and Climate Action Plan, Local Hazard Mitigation Plan, Baylands Comprehensive Conservation Plan, Baylands Master Plan, Regional Water Quality Control Plant Long Range Facility Plan, Urban Water Management Plan, Recycled Water Strategic Plan, Parks Master Plan, etc.);

   ii. include a table of prioritized adaptation pathways to manage risks to natural and built assets based on the SLR Vulnerability Assessment. Adaptation pathways provide a menu of recommendations and logically staged phases for adaptation over time based on triggers related to SLR levels. Adaptation pathways factor in cost/benefits, the lengthy time to plan, fund and build response strategies and potential additional benefits of carbon sequestration, GHG reduction, wildlife protection and social equity;
iii. include a development plan for public and private property anticipated to be impacted by SLR which may include:
   a. changing the city zoning map and amending requirements, restrictions, or municipal codes to be stricter than state or federal requirements as necessary and when feasible to reduce risks;
   b. adding conditions of approval for project permits in areas where there is a SLR or groundwater intrusion risk;
   c. establishing geographic areas and/or triggers for requiring consideration of relocation;
   d. developing restrictions or additional criteria; and
   e. funding identification
   f. educate and engage community members in the process of SLR planning, including creating a SLR Task Force and meeting with stakeholders (e.g., realtors, property owners, etc.) to educate them about SLR and the options, tradeoffs, and costs, for resilience;

iv. address budget and funding considerations for additional or existing staff to perform SLR planning, adaptation and Capital Improvement Projects (CIPs);

v. provide guidance on managing and enhancing Baylands, creek and open space ecosystem services to mitigate SLR impacts through carbon sequestration and absorption. Examples of this include the use of horizontal levees, expanding or improving Baylands habitat; this guidance should consider the use of the Baylands Comprehensive Conservation Plan, and the concept of “Operational Landscape Units” developed by San Francisco Estuary Institute which delineate Bay shoreline ecosystem functions and services within the natural and built environment and not by jurisdictional boundaries, and;

vi. include the development of educational materials and technical assistance for staff and developers, including:
   a. a checklist and primer on SLR, risk and sharing risk, and planning guidance;
   b. technical and regulatory guidance to City engineers and public developers so that projects are designed based on accepted OPC SLR assumptions and which prompt design-standard revisions, and protect, adapt, retreat responses for threatened areas;
   c. a risk assessment process to be used during CIP site selection, planning and property purchases;
   d. a SLR and groundwater projection zone map which also shows the intersection of the FEMA flood zone and associated insurance requirements;
2. **Recognize policy limits:** This policy does not establish specific requirements for all projects because each site condition is unique, but instead provides expectations for developing guidance and tools to answer key building and infrastructure design and SLR response strategies. This policy also recognizes that not all codes and regulations that govern construction are yet synchronized with OPC SLR predictions, however Palo Alto will incorporate SLR guidance and planning into its own construction and planning process proactively for both public and private structures until regional standards are adopted for use.
Appendix 1: Policy Definitions and Related Terminology

**Adaptation Pathway:** “Pathways” in relation to adaptation is an approach designed to schedule adaptation decision-making. It identifies the decisions that need to be taken now and those that may be taken in future. The approach supports strategic, flexible and structured decision-making. The pathways approach allows decision makers to plan for, prioritize and stagger investment in adaptation options. Trigger points and thresholds help them identify when to revisit decisions or actions. Examples of pathways approaches can be translated into visual aids such as “route maps” that support communication and consultation with stakeholders. The adaptation pathway approach has been successfully applied in adaptation planning for infrastructure and water management projects, and broader cross-sector adaptation planning.\(^4\)

**Baylands:** Lands which are located between the lines of mean high tide and mean low tide (California Coastal Commission Sea Level Rise Policy Guidance).

**Base Flood Elevation (1% annual chance flood):** A flood that has a 1% probability of occurring in any given year. The 100-year floodplain is the extent of the area of a flood that has a 1% chance of occurring or being exceeded in any given year. This is indicated by the Special Flood Hazard Area (SFHA) on FEMA flood maps.

**Baylands Comprehensive Conservation Plan:** A plan currently being prepared by the City of Palo Alto that provides specific programs and projects to achieve the goals and policies of the Baylands Master Plan.

**Baylands Master Plan:** A plan prepared by the City of Palo Alto to provide a framework and guide for actions in the Baylands that seek to preserve the area’s unique natural, recreational and flood-prevention resources.

**Capital Improvement Program (CIP):** The Capital Improvement Program (CIP) includes projects that help maintain or improve City assets, often called infrastructure. To be included in the City of Palo Alto Capital Budget, a project must meet the following criteria:

- Must have a minimum cost of $50,000 for each stand-alone unit or combined project.
- Must have a useful life of at least five to seven years (the purchase or project will still be functioning and not be obsolete at least five to seven years after implementation).
- Must extend the life of an existing asset or provide a new functional use for an existing asset for at least five years. Examples include extensive roof rehabilitations. These improvements are distinguished from ongoing maintenance work that may extend the life of the asset but is done on a routine basis.

**Climate change:** Any long-term change in climate conditions in a place or region, whether due to natural causes or as a result of human activity.

**Comprehensive Plan:** The City of Palo Alto Comprehensive Plan (or Comp Plan) is the primary tool for guiding land use and development in Palo Alto. The Plan fulfills the State requirement that the City adopt

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a General Plan. The Plan provides a foundation for the City’s development regulations, capital improvements program, and day-to-day decisions.

**Critical infrastructure:** City built assets with a long-projected life span (greater than 50 years) which if compromised by rising tides could potentially have catastrophic results on public health, safety or well-being, e.g., wastewater treatment facilities, stormwater infrastructure, levees or impoundments, bridges along major evacuation routes, airports, seaports, railroads, and major highways, EOC/Fire/Police/Healthcare, schools, homeless shelters, landfills and contaminated sites.

**Less-critical Infrastructure:** City assets that have an expected lifetime of 10-20 years or is replaceable and adaptable, or has limited interdependencies and limited consequences should the system fail or be inundated by water. Examples include isolated parks, unpaved trails.

**Design life:** The life expectancy of a project as determined during design. As opposed to useful life (see below).

**Erosion:** The wearing away of land by natural forces; on a beach, the carrying away of beach material by wave action, currents, or the wind, the loss of marsh due to the erosion of the marsh edge by waves. Development and other non-natural forces (e.g., water leaking from pipes or scour caused by wave action against a seawall) may create or worse erosion problems (California Coastal Commission Sea Level Rise Policy Guidance).

**Facilities:** All buildings, communications facilities, energy systems, industrial facilities, all transportation networks, water and wastewater systems, and parks.

**Flood (or Flooding):** Refers to normally dry land becoming temporarily covered in water, either periodically (e.g., tidal flooding, king tides) or episodically (e.g., storm surge or tsunami flooding).

**Greenhouse gases (GHGs):** Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride.

**Green Stormwater Infrastructure (GSI):** Infrastructure that uses vegetation, soils, and natural processes to manage stormwater runoff and reduce peak flows in flood control channels or creeks. Examples of GSI include landscape-based stormwater “biotreatment” using soil and plants ranging in size from grasses to trees; pervious paving systems (e.g., interlocking concrete pavers, porous asphalt, and pervious concrete); rainwater harvesting systems (e.g., cisterns and rain barrels); and other methods to capture and use stormwater as a resource.

**Groundwater:** The water found below the surface of the land and contained in the pore spaces of saturated geologic media (sand, gravel). Groundwater is either rain water that has seeped through the soil surface and by means of gravity of soil conditions drained from high to lower elevation areas. Groundwater can also come from the bay transferred via bay mud under the existing levees. Groundwater can be source of water found in wells and springs.
**Hazard:** A situation involving danger such as coastal flooding, earthquake rainfall and local flooding.

**Local Hazard Mitigation Plan:** The Federal Disaster Mitigation Act of 2000 (DMA) requires all cities, counties, and special districts to adopt a Local Hazard Mitigation Plan (LHMP) to receive disaster mitigation funding from the Federal Emergency Management Agency (FEMA). Hazard mitigation planning is the process used by state, local and tribal leaders to understand risks from natural hazards and develop long-term strategies to reduce the impacts of disasters on people, property, and the environment. The Palo Alto Local Hazard Mitigation Plan is updated every three years.

**Mean Sea Level:** The average relative sea level over a period, such as a month or a year, long enough to average out transients such as waves and tides.

**Ocean Protection Council (OPC):** The Council was created pursuant to the California Ocean Protection Act (COPA), which was signed into law in 2004 by Governor Arnold Schwarzenegger. The mission of the OPC is to “…ensure that California maintains healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations. The OPC is committed to basing its decisions and actions on the best available science, and to promoting the use of science among all entities involved in the management of ocean resources.” The OPC published the State of California Sea Level Rise Guidance Document and subsequent updates which provides an estimated range of predicted SLR and subsequent updates.

**Operational Landscape Units:** A delineated area that effectively provides specific ecosystem functions and services within the natural and built environment.

**Pacific Flyway:** A major north-south flyway for migratory birds in America, extending from Alaska to Patagonia. Every year, migratory birds travel some or all of this distance both in spring and in fall, following food sources, heading to breeding grounds, or travelling to overwintering sites.

**Protect, adapt, retreat strategies:** Responding to SLR generally involves three general concepts:

- **Protect:** Implementing strategies that reduce the risk of SLR impacts to land e.g., levees, horizontal levies, floodwalls, flood gates, and wetlands;

- **Adapt:** Adjusting to natural or human systems in response to actual or expected climatic stimuli or their effects, which minimizes harm or takes advantage of beneficial opportunities. This includes building any new or substantially-improved structures elevated above future flood levels or as structures that can be submerged without sustaining appreciable damage.

- **Retreat:** Surrendering an area partially, seasonally or completely to rising sea level;

**Regional Water Quality Control Plant (RWQCP):** Owned and operated by the Palo Alto, the Plant treats wastewater for the communities of Los Altos, Los Altos Hills, Mountain View, Palo Alto, Stanford University and the East Palo Alto Sanitary District. The mission of the RWQCP is to protect San Francisco Bay by
cleaning and treating wastewater before it is discharged.

Relative Sea Level: Sea level measured by a tide gauge with respect to the land upon which it is situated.

Risk: Often expressed as “hazard x exposure x vulnerability;” in terms of costs per year it can be expressed as “frequency (events/year) x consequences ($/event).

SAFER Bay Project Feasibility Report: SAFER (Strategy to Advance Flood protection, Ecosystem and Recreation along San Francisco Bay) has prepared a feasibility report that is in the review and comment phase. Once City staff comments are made and report revised as needed, the report will be available for public review and comment.

Sea level: The height of the ocean relative to land; tides, wind, atmospheric pressure changes, heating, cooling, and other factors cause sea level changes.

Sea level rise (SLR): Sea level can change, both globally and locally, due to (a) changes in the shape of the ocean basins, (b) changes in the total mass of water and (c) changes in water density. Factors leading to SLR under climate change include both increases in the total mass of water from melting land-based snow and ice, and changes in water density from an increase in ocean water temperatures and salinity changes. Relative SLR occurs where there is a local increase in the level of the ocean relative to the land, which might be due to ocean rise and/or land level subsidence.

Storm Surge: A rise above normal water level due to low atmospheric pressure associated with storms and the action of wind stress on the water surface.

Sustainability and Climate Action Plan (S/CAP): Palo Alto’s plan to reduce the city and community’s greenhouse gas emissions to meet climate protection goals and also consider broader issues of sustainability, such as sea level rise, land use and biological resources.

Sustainability Implementation Plans (SIPS): Specific actions needed to achieve S/CAP goals.

Useful life: The period over which a project is expected to be available for use by an entity. This period of time typically exceeds the design life (see above).

Threat and Hazard Identification and Risk Assessment (THIRA): A THIRA helps communities better understand the hazards from natural, technological, and human-caused threats that pose the greatest risk. The Palo Alto THIRA report is updated every two years.

Vulnerability: The extent to which a species, habitat, ecosystem, or human system is susceptible to harm from climate change impacts. More specifically, the degree to which a system is exposed to, susceptible to, and unable to cope with, the adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, as well as of non-climatic characteristics of the system, including its sensitivity, and its coping and adaptive capacity.
**Vulnerability Assessment:** A practice that identifies who and what is exposed and sensitive to change and how able a given system is to cope with extremes and change. It considers the factors that expose and make people or the environment susceptible to harm and access to natural and financial resources available to cope and adapt, including the ability to self-protect, external coping mechanisms, support networks, and so on.
Appendix 2–Departmental Responsibilities for Sea Level Rise Planning

The following table is a menu of potential actions to be confirmed in the plan for each department.

<table>
<thead>
<tr>
<th>Lead Department</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Administrative Services Department | 1. Revise Purchasing Department construction solicitation templates and contract documents to include SLR and sustainability considerations.  
2. Prioritize SLR planning and budget equal to other performance indicators for projects within projected SLR areas. |
| City Manager’s Office | 1. Implement the Sustainability and Climate Action Plan to reduce greenhouse gas emission contributions.  
2. Include SLR update with annual Earth Day and Sustainability Implementation Plan reporting.  
3. Consider development of key performance indicators to track if the City is meeting its SLR planning goals.  
4. Provide outreach through City Manager Office communication channels about how the City is preparing for sea level rise in coordination with Public Works and Utilities Department outreach.  
5. Prioritize SLR projects equal to other Council priorities. |
| Community Services/Open Space | Implement the recommendations of the 2019 Palo Alto Baylands Vulnerability Assessment for flood control, access, non-recreational features and facilities, habitats and wildlife where feasible, e.g.:  
1. Seek funding to expand and enhance Baylands habitat to leverage wave attenuation, water absorption and other ecosystem services that mitigate SLR.  
2. Develop climate-smart planting palettes that are projected to survive under changing climate conditions. |
| Office of Emergency Services | Continue to consider sea level rise in community risk assessments, such as Threat and Hazard Identification Risk Assessment and Local Hazard Mitigation Plan, with appropriate risk considerations and weighting. |
| Planning & Community Environment | 1. Update zoning code and related requirements, such as design standards for public and private development based on OPC predictions. |
| Public Works–Airport | 1. Plan for SLR to reduce risk of impacts to Airport operations.  
2. Seek funding opportunities with the Federal Aviation Administration and Caltrans Division of Aeronautics. |
| Public Works–Interdepartmental | 1. Coordinate groundwater management in recognition that SLR will push groundwater levels inland and closer to the surface.  
2. Explore the interaction between groundwater, Sea Level Rise and Stormwater. |
### Public Works–Engineering

1. Plan, design, identify funding, build and maintain resiliency features in City planning and CIP projects per the City’s Comprehensive Plan, e.g.:
   a) Manage the preparation of SAFER feasibility report and potential environmental review, funding, public outreach and construction of SAFER levees and related projects to mitigate SLR.
   b) Seek grants and other funding for design alternatives and structures that mitigate SLR.
   c) Build design alternatives and structures that mitigate SLR.

2. Manage the implementation of large-scale stormwater infrastructure rehabilitation projects to minimize flooding from upstream sources, e.g.:
   a) Construct the high priority projects identified through Storm Drain Master Plan and listed with the Stormwater Management Fee and consider integration of GSI Plan elements.
   b) Address FEMA regulations (flooding risks) and sea level rise associated with at least 100-year storm events for at least the design life of the structure.
   c) Manage stormwater rebate program and coordinate with development services, inspect project sites once completed and issue rebates to property owners for installed rainwater capture devices.
   d) Work with Development Services to help developers of private projects comply with SLR policy and plans and FEMA regulations.
   e) Implement County Hazard Mitigation Plan (FEMA).
   f) Implement Green Stormwater Infrastructure Plan requirements.
   g) Design new infrastructure to be flexible so that it may be incrementally enhanced as sea level rise increases.

### Public Works–Environmental Services

1. Coordinate internal discussions on SLR planning at a frequency that facilitates proactive planning, e.g., quarterly or as needed.
2. Manage SLR risks to allow for ongoing operations of the RWQCP and the sanitary landfill;
3. Seek opportunities and funding to enhance the Baylands ecosystem and build and nature-based features such as horizontal levees.
5. Conduct Public Outreach on SLR education and planning in
| Utilities | 1. Execute energy portfolio-related actions in the SIPS Plan for Utilities-related asset protection from flooding, SLR and erosion.  
2. Increase climate and SLR messages in ongoing water conservation public awareness campaigns in coordination with the City Manager’s Office and Public Works–Watershed Protection. | coordination with the City Manager’s Office and Utilities.  
6. Prepare Policy updates.  
7. Lead Green Stormwater Infrastructure planning and implementation. |
### Appendix 3—Ocean Protection Council 2018 Probabilistic Sea Level Rise Projections

*Rising Seas Report, State of California Sea Level Rise Guidance*

<table>
<thead>
<tr>
<th>Year</th>
<th>Low Risk Aversion Likely Range (ft.) 66% Probability</th>
<th>Medium-high Risk Aversion (ft.) 0.5% probability 1-in-200 chance</th>
<th>Extreme Risk Aversion (ft.) (No probability yet available)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>Use for less-critical infrastructure and services e.g., trails, playing fields, golf course that could potentially be surrendered to SLR.</td>
<td>Use for critical infrastructure and services e.g., Regional Water Quality Control Plant, Municipal Service Center, Utilities infrastructure</td>
<td></td>
</tr>
<tr>
<td>2040</td>
<td>0.5</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>2050</td>
<td>0.8</td>
<td>1.3</td>
<td>1.8</td>
</tr>
<tr>
<td>2060</td>
<td>1.1</td>
<td>1.9</td>
<td>2.7</td>
</tr>
<tr>
<td>2070</td>
<td>1.5</td>
<td>2.6</td>
<td>3.9</td>
</tr>
<tr>
<td>2080</td>
<td>1.9</td>
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<td>2090</td>
<td>2.4</td>
<td>4.5</td>
<td>6.6</td>
</tr>
<tr>
<td>2100</td>
<td>2.9</td>
<td>5.6</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>3.4</td>
<td>6.9</td>
<td>10.2</td>
</tr>
</tbody>
</table>

SLR rates in this table show the upper-range predictions for how SLR may increase in future years and the SLR rate assumptions that should be used for different facilities and development. Probabilistic projections in the first two columns are with respect to a baseline of the year 2000, or more specifically the average relative sea level over 1991 - 2009. These numbers do not include impacts of El Niño, storms or other acute additions to sea-level rise. The time period referenced should be based on the useful life of the structure. The low and medium-risk projections listed in this table may underestimate the likelihood of extreme sea-level rise, particularly under high greenhouse gas emissions scenarios which as the writing of this policy are projected to continue to increase.

Not all infrastructure and development need to be designed to withstand the most extreme SLR predictions. This table suggests the types of facilities that could be designed to withstand the low, medium or extreme risk scenarios. Buildings for which there is an extreme risk aversion (e.g. wastewater treatment facilities) require more extensive and thus more costly designs and retrofits.

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*The relative SLR heights above as it relates to Palo Alto’s shoreline can be viewed at Adapting to Rising Tides Bay Shoreline Flood Explorer online tool at [https://explorer.adaptingtorisingtides.org/home](https://explorer.adaptingtorisingtides.org/home).

** OPC guidance also includes an Extreme Risk Aversion scenario (aka H++ Scenario (Sweet et al 2017 Single scenario)). The probability of this scenario is currently unknown, but its consideration is important, particularly for high stakes, long-term decisions for critical infrastructure and given the uncertainties of projected GHG emissions discussed above.

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**APPENDIX J: HORIZONTAL LEVEE FACTSHEET**

**FACTSHEET**

**PALO ALTO HORIZONTAL LEVEE PILOT PROJECT**

**WHAT IS A HORIZONTAL LEVEE?**
A horizontal levee is a flood control levee with a gently sloping berm along the Bay shoreline which provides key transitional habitat between tidal wetlands and terrestrial uplands. Horizontal levees utilize green infrastructure rather than traditional greyscape solutions (i.e., rip rap) to include habitat enhancement, wastewater polishing, and sea level rise adaptation benefits to traditional flood control infrastructure. These systems include a vegetated, gently sloped, ecotone on the bayside of the levee that provides transitional and refugia habitat for marsh species such as the Salt Marsh Harvest Mouse and Ridgway’s rail.

![FIGURE 1: Horizontal Levee Conceptual Design](image)

**CITY OF PALO ALTO HORIZONTAL LEVEE PILOT PROJECT (PAHLPP)**
The City of Palo Alto (City) is evaluating a horizontal levee pilot in the Palo Alto Baylands. The project would utilize highly treated wastewater from the Regional Water Quality Control Plant to irrigate a vegetated ecotone prior to discharge into the San Francisco Bay. The City hopes to gain valuable information from this pilot to ultimately incorporate into planned improvements to the current flood control levees. The current levees are not FEMA certified and routinely experience overtopping that threatens City infrastructure, private buildings, and other development west of Highway 101 with flooding. Through implementation of the PAHLPP, the City aims to fulfill select goals from the Baylands Comprehensive Conservation Plan (in progress) and the City’s Comprehensive Plan. The PAHLPP will be the first of its kind that receives treated wastewater for irrigation providing polishing treatment prior to discharge via shallow surface/subsurface seepage to the Bay.

**PROJECT OBJECTIVES**
1. Improve and restore habitat along the Harbor Marsh perimeter for native species.
2. Adapt to sea level rise by providing a transitional slope that will support freshwater plants which build organic soils that may be able to keep pace with some level of sea level rise.
3. Reduce flood risk by integrating a horizontal levee on the Bayfront of a traditional flood control levee to provide wave attenuation and vegetative protection for the flood control levee core.
4. Provide polishing treatment to treated wastewater.
5. Enhance social infrastructure by providing opportunities for compatible low-impact recreation and public engagement with nature.
6. Be on the leading edge of integrating habitat enhancement with sea level rise adaptation and novel wastewater treatment approaches around the San Francisco Bay.

Last updated: 1/9/2020
Your Students Can Make an Impact in Preventing Water Pollution and Help Keep San Francisco Bay Healthy.

Our free programs provide a fun and engaging way for students to learn how they can help protect local creeks and San Francisco Bay. Each program is correlated to both State and Next Generation Science Standards. Schedule a program with us today:
cleanbayeducation@cityofpaloalto.org

Free Water Pollution Prevention Education Programs

**What's Bugging You?**

**2nd Grade**

Students crawl into the world of insects as they learn about the importance of insects in the food chain and in various ecosystem services. Students will evaluate what they know about bugs, discussing and developing their concepts of “good” and “bad” bugs as they share bug facts. Students will learn how pesticides can enter the environment and impact the food chain. The program concludes with giving students the opportunity, with no pressure, to eat edible bugs.

**Who Dirtied the Bay?!?**

**3rd Grade**

Students step into a time machine and trace the history of the San Francisco Bay to learn about the impact of humans on our watershed. A hands-on activity builds their understanding of how runoff flows into creeks and the Bay, both directly and through the storm drain system, as they “dirty” a simulated model with pollutants from the past and present. Students learn what they can do to solve solutions to the pollution that impacts this vital ecosystem.

**Mercury: Past & Present**

**4th Grade**

Students take a hands-on look at the impact of mercury on San Francisco Bay through the lens of the Gold Rush by tracing the history of how mercury was mined in southern Santa Clara County, used in the gold mining process, and subsequently washed into San Francisco Bay. Through the interactive “Fish-Eat-Fish” game, students experience how this toxic metal is transferred through the Bay ecosystem and food chain through bioaccumulation. Students learn what we do in present day to prevent more mercury from entering our local environment.

**Watershed Warriors**

**3rd and 5th Grades**

Using an interactive tabletop relief model called “Enviroscape™”, students learn what defines a watershed. After building out the model with props to create residential, commercial and agricultural communities, students simulate how rain moves pollutants through the watershed to a river, bay and ocean. The simulation concludes with a discussion of pollution sources and best practices to keep pollutants from entering the watershed.

**Tour Your Water Treatment Plant**

Just how do we clean 20 million gallons a day, 365 days a year? At the RWQCP you’ll see the multiple treatment processes that wastewater undergoes before reentering the water cycle in the Bay. Call 650.838.2901 to arrange a tour. Tour content is modified for age appropriateness. Consider pairing this tour with a classroom program or watch our online video of the wastewater treatment process (visit cleanbay.org for this and other videos).

**Storm Drain Stenciling**

Somewhere around your school campus, or in the immediate neighborhood, there's a storm drain. Whether you're looking for a service project or a direct and memorable way to teach water pollution prevention, stenciling storm drains around your school with the Only Rain Down Our Drain logo can be the way to go. We provide all the materials and instructions. Call 650.329.2122 or email cleanbayeducation@cityofpaloalto.org to arrange this activity. Consider combining this activity with Watershed Warriors!
CLEAN BAY 2018-2019

POLLUTION PREVENTION PLAN

PAULO ALTO REGIONAL WATER QUALITY CONTROL PLANT
2501 EMBARCADERO WAY
PALO ALTO, CA 94303

February 2019: Pollution Prevention Plan
ARE YOUR UNWANTED PILLS PILING UP?

Tossing unwanted medicine in the trash poses an accidental poisoning threat to children and pets. Disposal down sinks or toilets can cause pharmaceutical pollution in San Francisco Bay because wastewater treatment plants are not designed to remove these chemicals.

Find your nearest Palo Alto pharmaceutical disposal location:

**CVS Pharmacy Locations:**
- 2701 Middlefield Rd, Palo Alto
  - M-F: 8am-9pm, Sat: 10am-6pm, Sun: 10am-5pm
  - (650) 330-0132
- 352 University Ave, Palo Alto
  - M-F: 9am-9pm, Sat & Sun: 10am-6pm
  - (650) 324-3248

**Maximart Pharmacy**
- 240 Cambridge Ave, Palo Alto
  - M-F: 10am-7pm, Sat: 10am-6pm
  - (650) 327-3922

**Palo Alto Medical Foundation**
- 795 El Camino Real, Palo Alto
  - Near the Walgreens Pharmacy on Level A
  - M: 9am-6:30pm, Tu-F: 9am-7pm, Sat: 9am-1pm
  - (650) 853-6066

**Palo Alto Police Department**
- 275 Forest Ave, Palo Alto
  - M-Th: 8am-4pm
  - (650) 329-2406

**Stanford Healthcare Pharmacy**
- 875 Blake Wilbur Dr, Palo Alto
  - M-F: 9am-5:30pm
  - (650) 736-3800

**Walgreens**
- 300 University Ave, Palo Alto
  - M-F: 8am-9pm, Sat: 9am-6pm, Sun: 10am-6pm
  - (650) 326-3404

**Household Hazardous Waste Station**
- 2501 Embarcadero Way, Palo Alto
  - Sat: 9am-11am, First Fri: 3pm-5pm
  - (650) 496-5910

This location does not accept controlled substances. Visit cityofpaloalto.org/hazwaste for more information.

Please consolidate pills into one container and leave ointments and liquids in original container.

For additional locations or free mail-back options, visit cleanbay.org
March 2019: Rodenticides Campaign

**APPENDIX L: PUBLIC EDUCATION MATERIALS (CONTINUED)**

**OH RATS!**
**KEEP RODENTS OUT OF THE HOME AND KIDS, PETS AND WILDLIFE SAFE.**

Rodent infestations are messy, but poison baits—which are often flavored or scented like food—pose threats to children and pets when accidentally consumed. Wildlife and pets are at additional risk for poisoning when they feed on rodents killed by baits. The California Department of Fish and Wildlife also discourages use of rodent baits which harm or kill countless owls, hawks, bobcats and other animals every year.

Use these tips recommended by professionals:

1. **REMOVE SOURCES OF SHELTER, FOOD AND WATER:** Keep food in the refrigerator or in puncture-proof containers with tight-fitting lids. Do not leave pet food out overnight. Remove rodent habitat like ivy and debris. Store lumber away from structures and keep at least 18” above the ground. Keep vegetation at least three feet away from buildings. Clean up over-ripe fruit off the ground.

2. **FIND AND BLOCK THE POINT OF ENTRY:** Sprinkle baby powder or flour lightly along suspected areas to detect rodent tracks. Mice can squeeze through openings as small as a pencil diameter. Stuff scouring pads and copper mesh into large gaps and seal holes with cement, spackle or caulk. Use door sweeps and weather stripping for doors and windows.

3. **IF TRAPS ARE ABSOLUTELY NECESSARY,** use snap traps properly-sized for either rats or mice, depending on which rodent problem you have. Bait traps with peanut butter and place them where you have seen rodent activity with the trap trigger facing the wall and out-of-reach to kids, pets and wildlife. **NEVER USE GLUEBOARDS.** They are inhumane, can easily harm other animals and may result in having to address a still-living but trapped animal.

4. **SECURE DEAD RODENTS, NESTS AND DROPPINGS IN A SEALED PLASTIC BAG AND DISPOSE IN THE OUTDOOR TRASH.** Wear rubber gloves and wipe all surfaces with a hydrogen peroxide-containing disinfectant.

5. **NEED TO HIRE A PEST MANAGEMENT PROFESSIONAL?** Visit ourwaterourworld.org and click on “Pest Control Operators” to find companies that use least-toxic rodent control, or use our free Ask Our Expert service to speak with a professional.

For more information about rodent identification and control, visit ourwaterourworld.org.

For more information about Palo Alto’s Watershed Protection Programs visit cleanbay.org or call 650.329.2122.

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**RATS?**

Get tips...

to keep rodents out of the home and kids, pets and wildlife safe.

**OH RATS!**
**Learn about less-toxic approaches recommended by professionals.**

**RATS?**

Find out about safer ways to keep rodents out of the home

Learn 5 easy steps!

Recommended by professionals to keep kids, pets and wildlife safe.

**OH RATS!**
**Learn about safer approaches & easy steps to control rodents.**

**OH RATS!**
**KEEP RODENTS OUT OF THE HOME AND KIDS, PETS AND WILDLIFE SAFE.**

Learn about less-toxic approaches recommended by professionals

**OH RATS!**
**KEEP RODENTS OUT OF THE HOME AND KIDS, PETS AND WILDLIFE SAFE.**

Get tips recommended by professionals
**April 2018:**

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For more information about Palo Alto’s Watershed Protection Programs visit cleanbay.org or call 650.329.2122.
REBATES TO SLOW THE FLOW

These rebates, available for residents and businesses, reuse stormwater for irrigation, conserve potable water, and reduce water pollution in our creeks and Bay.

Rain Barrels
Rain barrels are placed at the base of roof downspouts to collect rainwater for landscape irrigation.
$50 rebate per barrel

Cisterns
Cisterns are large tanks that collect rainwater for landscape irrigation. Cisterns can be above or below ground, depending on the site.
Rebate at 15 cents per gallon*

Permeable Pavement
Pervious concrete, asphalt and pavers reduce storm runoff and filter pollutants as rain percolates into soil below.
Rebate at $1.50 per square feet*

Green Roof
Green roofs allow rainwater to soak into vegetation instead of running off the building. They also provide additional building insulation and reduce heating and cooling costs.
Rebate at $1.50 per square feet*

* Maximum residential rebate is $1,000 and maximum commercial rebate is $10,000.

Learn more about design tips, eligibility requirements and application forms at www.cityofpaloalto.org/stormwater or call 650-329-2122.

Funded by your monthly Stormwater Management Fee.

March 2019: Stormwater Rebates Poster 2 x 3
Remember that to conserve water, pools should only be drained to stabilize water hardness or to make a repair.

If a repair is needed, look for your sewer cleanout marked with an “S” usually located in a landscaped area. Can’t find your cleanout? Call us for help.

Use a garden hose to drain your pool, spa or fountain into the cleanout.

Clean the filter on a dirt area away from the storm drain.

When you need to discharge a large amount of chlorinated water, call the Regional Water Quality Control Plant at 650.329.2598 to avoid a sewer backup. Visit cleanbay.org for more information.

When draining your pool, spa or fountain:

- Remember that to conserve water, pools should only be drained to stabilize water hardness or to make a repair.
- If a repair is needed, look for your sewer cleanout marked with an “S” usually located in a landscaped area. Can’t find your cleanout? Call us for help.
- Use a garden hose to drain your pool, spa or fountain into the cleanout.
- Clean the filter on a dirt area away from the storm drain.

When you need to discharge a large amount of chlorinated water, call the Regional Water Quality Control Plant at 650.329.2598 to avoid a sewer backup. Visit cleanbay.org for more information.

Warm weather means more time outside enjoying pool and spa time! If you need to drain your pool, spa or fountain, drain to your sewer cleanout to keep copper, chlorine and other chemicals out of creeks and the Bay where it can harm wildlife. Instead, drain to the sanitary sewer.

Keep chemicals out of Bay
Click here and see how to drain your pool the safest way.

GOOD CLEAN FUN!
Including wildlife! Drain to the sewer cleanout to keep harmful chemicals out of creeks & Bay!
April 2019: ‘What Happens After It’s Flushed’ Infographic

Without modern wastewater treatment the Bay’s fish, birds, mammals and plant life could not survive and the Bay would be unsafe for people to enjoy. Here’s how wastewater treatment works:

**STEP 1. WASTEWATER DRAINS**
From bathrooms, kitchens, and industrial facilities to the RWQCP in underground pipes via gravity.

**STEP 2. SCREENING**
Wastewater is screened to remove larger items like tampons, condoms, and single-use wipes that should not be flushed.

**STEP 3. SETTLING**
Smaller waste particles settle out from wastewater in large sedimentation tanks.

**STEP 4. MICROORGANISMS MUNCH**
Trillions of bacteria, fungi, and other microorganisms consume carbon and ammonia from the wastewater.

**STEP 5. FILTRATION**
Wastewater moves through coal and sand filters that remove particles as fine as one micron.

**STEP 6. ULTRAVIOLET DISINFECTION**
UV light kills pathogens.

**DISCHARGE TO SAN FRANCISCO BAY AND RENZEL MARSH**
20 hours after the process starts, more than 99% of the pollutants from human waste have been removed. The treated water is released to Palo Alto Baylands.

**RECYCLED WATER**
1 million gallons of recycled water is generated daily for irrigation on golf courses and landscaping. Recycled water receives additional filtration and chlorine treatment before use.

**SOLIDS PROCESSING**
Solids are dewatered and hauled offsite for further treatment. The end product is used as fertilizer for agriculture.

Visit cleanbay.org for a short video of the wastewater treatment process, to sign up for a RWQCP tour, or learn about other efforts to protect San Francisco Bay.
HOW SLUDGE MANAGEMENT HAS CHANGED

BEFORE: Incineration

AFTER: Dewatering

May 2019: Incinerator ‘Before and After’ Poster

May 2019: Dewatering Factsheet

The City of Palo Alto Regional Water Quality Control Plant (RWQCP) treats wastewater collected from the East Palo Alto Sanitary District, Mountain View, Los Altos, Los Altos Hills, Palo Alto and Stanford. Sludge must be processed as part of wastewater treatment. The new Sludge Dewatering Building opening in June 2019, features state-of-the-art technology to dewater sludge before it is processed offsite for use as an agricultural soil amendment. The dewatering process replaces energy-intensive incineration which was used at the Plant since 1972. Incineration used 1,400°F temperatures to reduce the volume of sludge and destroy pathogens. Escalating maintenance costs for the aging incinerators and the City’s goal to reduce greenhouse gas emissions (GHG) were the two main drivers for updating the sludge-handling process.

ENVIRONMENTAL BENEFITS OF SLUDGE DEWATERING
• Using sludge dewatering instead of incineration to process biosolids will reduce GHG by ~15,000 metric tons of carbon dioxide equivalent each year. This approximates removing 3,000 passenger cars annually from the road. It is projected that this will result in more than a 50% reduction of the RWQCP’s total GHG emissions. With the incinerator in use, the RWQCP contributed the most GHG of any City-owned facility. However it made up only one percent of the City’s estimated community-wide GHG emissions. Since 2005, other RWQCP efforts to reduce GHG emissions have included purchasing carbon-neutral electricity, using landfill gas to offset natural gas used in the incinerators, and continuously fine-tuning equipment for maximum energy efficiency.

• Decommissioning the incinerator will also eliminate 700 tons of hazardous incinerator ash each year. This is an 85% reduction in hazardous waste generated at City-owned facilities.

How the dewatering process works:
• Large revolving belts press water out of sludge (Figure 1). The remaining water is treated in the wastewater treatment process;
• Dewatered sludge, also known as “sludge cake” is hauled away and processed off-site at two facilities: Lystek International Limited in the City of Fairfield (82 miles from the RWQCP), and Synagro-WWT, Inc. in Merced County (114 miles from the RWQCP);
• Synagro composts the sludge, and Lystek uses thermal and chemical processes to treat the material;
• The final product of both treatment sites is an agricultural soil supplement (Figure 2).

FIGURE 1: Revolving belts press water out from sewage sludge.
Never use your toilet or sinks as a trashcan. Only flush toilet paper or human waste.

Click for more info!

Don’t Rush to Flush!

Never use your toilet or sinks as a trashcan. Only flush toilet paper or human waste.

Click for more info!

Don’t Rush to Flush!

Never use your toilet or sinks as a trashcan. Only flush toilet paper or human waste.

Learn why a toilet isn’t a trashcan.

May 2019: ‘Don’t Rush to Flush’ Campaign

Never use your toilet or sinks as a trashcan. Only flush toilet paper or human waste.

Don’t Rush to Flush!

Don’t Rush to Flush!

Click for more info!

Don’t Rush to Flush!

FOR MORE INFORMATION VISIT CLEANBAY.ORG OR CALL 650.329.2122

Don’t Rush to Flush!

Don’t Rush to Flush!

Click for more info!

Don’t Rush to Flush!

Don’t Rush to Flush!

Click for more info!
DON’T RUSH TO FLUSH!

Never use your toilet or sinks as a trashcan. Flushing these items is a common cause of sewer backups into homes and streets. Chemicals and medications that are flushed can move through the wastewater treatment process and enter the Bay.

- Wipes of any kind (even if the label claims that they are “flushable”)
- Cotton pads or swabs
- Medication
- Diapers
- Kitty litter
- Hair
- Tampons, applicators or maxi pads
- Toilet roll tubes
- Cigarettes
- Dental floss
- Cleaning chemicals
- Paints and pesticides
- Fats, oils, or grease (FOG)
- Contact lenses
- Razors

Only toilet paper and human waste should be flushed down the toilet.

FOR MORE INFORMATION VISIT CLEANBAY.ORG OR CALL 650.329.2122

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- Contact lenses
- Razors
- or any other stuff!

Only toilet paper and human waste should be flushed down the toilet.

VISIT CLEANBAY.ORG OR CALL 650.329.2122 FOR MORE INFORMATION.
WASTEWATER TREATMENT
For a Cleaner Bay.

Other Processes:
Solids are removed from wastewater, blended to a uniform size and dewatered on a belt press. These "biosolids,"–also known as "sludge cake,"–are emptied into cake storage bins for trucks to haul offsite for composting, or for thermal and chemical treatment. All biosolids are ultimately used as an agri-cultural soil amendment.

RECYCLED WATER
The RWQCP generates approximately one million gallons of recycled water each day for irrigation on golf courses and landscaping. Recycled water is discharged to San Francisco Bay and Renzel Marsh. The RWQCP generates approximately one million gallons of recycled water each day for irrigation on golf courses and landscaping. Recycled water is discharged to San Francisco Bay and Renzel Marsh.

August 2019:
Wastewater Treatment Plant
Tri-Fold Brochure Update

Recycled Water Treatment
Discharge to San Francisco Bay and Renzel Marsh.

HOW YOU CAN HELP
KEEP THE SOUTH BAY CLEAN.

FATS, OIL, & GREASE
Don't pour it down the drain! Fats, Oil & Grease (FOG) are collected by several inspectors, and environmental professionals who work together to help achieve a much cleaner Bay.

STORMWATER
Never pour anything down a storm drain except water.

PHARMACEUTICALS
Never dispose of these hazardous waste products down the drain.

HAZARDOUS WASTE
Never dispose of hazardous waste products down the drain.

IT ALL BEGINS HERE...
Wastewater Treatment Process

STEP 1
SCREENING
Wastewater enters the Regional Water Quality Control Plant, where it is screened to remove large items. The screened wastewater flows to the sedimentation tank, where large items are removed.

STEP 2
SETTLING
The wastewater is pumped into a sedimentation tank, where sediments settle to the bottom. The clarified wastewater then flows to the chlorination basin, where it is disinfected with ultraviolet light.

STEP 3
CLEANER WATER INTO THE BAY
The treated wastewater is discharged to San Francisco Bay and Renzel Marsh, where it is further treated before being released into the environment.

...AND ENDS HERE.
Cleaner Water into the Bay.

Printed on 100% recycled paper.

Visit our website for collection information for your surrounding communities.

Drain! Fats, Oil & Grease
Don't pour it down the drain! Fats, Oil & Grease (FOG) are collected by several inspectors, and environmental professionals who work together to help achieve a much cleaner Bay.

The Regional Water Quality Control Plant (RWQCP) is operated by partners who work together to help achieve a much cleaner Bay.

The RWQCP generates approximately one million gallons of recycled water each day for irrigation on golf courses and landscaping. Recycled water is discharged to San Francisco Bay and Renzel Marsh.

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THEMATIC APPROACH:
The thematic approach begins with an overview of the wastewater treatment process, including screening, settling, chlorination, and discharge to the environment. Each step of the process is illustrated, with a focus on the importance of each step in achieving a cleaner Bay.

Wastewater Treatment Plant
Tri-Fold Brochure Update

Drain! Fats, Oil & Grease
Don't pour it down the drain! Fats, Oil & Grease (FOG) are collected by several inspectors, and environmental professionals who work together to help achieve a much cleaner Bay.

The Regional Water Quality Control Plant (RWQCP) is operated by partners who work together to help achieve a much cleaner Bay.
August 2019: Tick and Flea Online Ads

GIVE YOUR PUP FLEA AND TICK CHEWABLES!

SWITCH TO FLEA AND TICK CHEWABLES FOR YOUR PET
August 2019: ‘Love Our Bay’ Kids Temporary Tattoos
The Palo Alto Flood Basin

This detention basin was built in 1956 to act as a barrier between the San Francisco Bay tides and our urbanized areas. During heavy rainfall and high tides, stormwater runoff from three creeks (Adobe, Barron and Matadero) travels into this flood basin and is detained by the surrounding earthen levee and mechanical tide gates. The flood basin has a large storage capacity for creek and bay water. The tide gates regulate the amount of water that is held in the flood basin and can release water to the Bay as needed. Without this system in place, heavy storm events combined with seasonal high tides could push storm runoff upstream, over creek channels and onto streets and private property.

This flood basin was designated as a wetlands nature preserve in 1973 and provides 600 acres of habitat for birds, mammals and fish.

A delicate balance

One manual tide gate is opened or closed to adjust water levels in the flood basin. A balance must be kept to ensure there is flood protection and enough tidal water to support wildlife and habitat, but not too much water to cause mosquitoes to hatch.

Photo of tide gate structure. Each open-section of the tide gate houses two smaller gates that open and close based on tide heights and creek levels. During low tides, the tide gates are raised to release the excess runoff into the San Francisco Bay.

Closed Tide Gate. At high tide, the gate is closed and pressure from bay water keeps it from opening.

Open Tide Gate. At low tide, the gate is automatically opened by the outflow from Matadero, Adobe & Barron Creeks.

August 2019: Palo Alto Flood Basin Interpretive Signage
STORMWATER
REBATES
APPLICATION
Available for Residents and Businesses.

September 2019: Green Stormwater Rebates Application Cover
APPENDIX L: PUBLIC EDUCATION MATERIALS (CONTINUED)

September 2019:
Green Stormwater Infrastructure Diagrams

ABOVE GROUND CISTERN

Gutter and Downspout
Cap
Inlet
Overflow Pipe
Spigot
Sump Pump
Not required, but recommended.

BELOW GROUND CISTERN

Inlet
Locked Vent Cap
Vent Pipe
Overflow Pipe
Outlet
Pump
Away from home, and to landscaping if possible.

PERVIOUS PAVEMENT

Bedding
Pervious Pavement
Base
Subbase
Soil Subgrade
Drain
If required.

RAIN BARREL

Downspout
Inlet
Screen
Keeps bugs and debris out of water supply.
Overflow Mechanism
Away from home, and to landscaping if possible.

RAIN GARDEN

Downspout
Native Plants
Spigot
At least 3” from barrel.
Mulch Layer
Level, Unlined Bottom
Rain Garden Soil Mix
Ponding Depth
At least 6” to 12”

SECTION VI: APPENDIX 109
ARE YOU READY FOR WINTER STORMS?

This rainy season, learn what to do before, during and after storms of any size to help you stay comfortable and safe.

PROTECT YOUR FAMILY

- Visit cityofpaloalto.org/preparedness for help preparing family emergency plans and emergency kits. Make sure your emergency plan includes pets, neighbors who need extra help, and safe routes to high ground.
- Keep an emergency kit stocked and handy at home, work, and in the car. Kits should include a first aid kit, essential medicines, food (remember special diets and pets), cash, a radio, batteries stored in a water-tight plastic bag.
- Stay informed. Keep the list of phone numbers on the reverse of this flyer handy on your phone.
- Sign up at alertsc.com to have local emergency sent to you via text, voicemail or email ada@cityofpaloalto.org.
- Bookmark cityofpaloalto.org/storms for up-to-date local storm information.
- Stay powered safely:
  - In case of undetected gas leaks, use flashlights during a power outage. Never enter a building.
  - Keep generators outside, away from the house and in open air to prevent carbon monoxide poisoning. Never run a generator in your garage or near an open window.
- Turn around, don’t drown. Don’t drive through standing water. It may be deeper than you think and your car may stall. Abandon your car if you are stuck in water.

PROTECT YOUR PROPERTY

- Know Your Flood Hazard Area and insure your property sufficiently. Identify your flood zone designation at cityofpaloalto.org/floodzones. Homeowner insurance policies don’t cover flood damage if you are in a high-risk flood area.
- Build responsibly by following building codes for any type of construction for your home.
- Clean out roof gutters, downspouts, landscape inlets and seales to avoid clogged lines. Flooding. Downspouts shall drain away from building foundations. Ensure sump pumps functioning, and garage flood vents are unobstructed so that flood water can flow freely.
- Sandbag materials are available at three locations in Palo Alto beginning November 15. See the reverse of this flyer for locations.
- If your property has been damaged by a storm, check with the City’s Development Center to see if you meet FEMA standards for “Substantial Damage and Improvement.” Call (650) 329-2579.
- Sandbag materials are available at three locations in Palo Alto beginning November 15. See the reverse of this flyer for locations.
- Identify your flood zone designation at cityofpaloalto.org/floodzones
- Protect your family by following these steps:
  - Make sure your emergency plan includes pets, neighbors who need extra help, and safe routes to high ground.
  - Know Your Flood Hazard Area and insure your property sufficiently.
  - Build responsibly by following building codes for any type of construction for your home.
  - Clean out roof gutters, downspouts, landscape inlets and seales to avoid clogged lines. Flooding. Downspouts shall drain away from building foundations. Ensure sump pumps functioning, and garage flood vents are unobstructed so that flood water can flow freely.
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KNOW WHAT TO DO AFTER A STORM

- DO NOT TURN GAS BACK ON YOURSELF. Call City of Palo Alto Utilities for service at (650) 329-2413.
- Don’t handle live electrical equipment in wet areas. If you have any concerns about electrical power lines or equipment on your property, call (650) 329-2413 for the service.
- Protect our creeks and Bay. Do not dump. Call (650) 329-2413 to report hazardous spills and illegal dumping in storm drains.
- Blocked storm drains and mud slides Palo Alto Public Works (650) 329-2579.
- Gas/water leaks and sewer spills Palo Alto Utilities Dispatch (650) 329-2579.
- Flood warning and creek levels Visit cityofpaloalto.org/creekmonitor to monitor real-time creek level information at five locations on San Francisquito, Matadero and Adobe Creeks, rainfall rates and totals at Foothills Park, and Bay tide level.
- Sign up at sfcjpa.org/floodwarning to receive text or email notifications for potential flood conditions for the San Francisquito Creek watershed. This service is funded by the San Francisco Creek Joint Powers Authority.
- Find flood water resources at redcross.org/prepare, search “Red Cross Flood” in the Apple App Store or Google Play.
- Sanbag locations (Starts November 15)
  - Palo Alto Airport (and of Embarcadero Road)
  - Mitchell Park (600 E. Meadow Drive)
  - Rinconada Park (Hopkins Avenue at Newell Road)
- Sandbag locations (Starts November 15)
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  - Mitchell Park (600 E. Meadow Drive)
  - Rinconada Park (Hopkins Avenue at Newell Road)
- General information:
  - Non-emergency Fire/Police: (650) 329-2413
  - Power outage and electrical problems Palo Alto Electric Operations (650) 329-2413
  - Gas/water leaks and sewer spills Palo Alto Utilities Dispatch (650) 329-2579.
  - Fallen trees Palo Alto Public Works (650) 329-2413.

EMERGENCY INFORMATION

- Fire/Police: (650) 329-2413
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WINTER STORM RESOURCES

Visit cityofpaloalto.org/storms for links to essential Palo Alto-specific storm information. Prepare for this year’s winter weather. Review the tips on the reverse of this flier and keep the resources below handy or in your phone.

EMERGENCY INFORMATION

- FLOOD WARNING AND CREEK LEVELS
  - Visit cityofpaloalto.org/creekmonitor to monitor real-time creek level information at five locations on San Francisquito, Matadero and Adobe Creeks, rainfall rates and totals at Foothills Park, and Bay tide level.
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- Public Safety Social Media cityofpaloalto.org/papconnect (650) 329-2420 (recorded message)
- Radio stations KCBS 740 AM/106.9 FM KZSU 90.1 FM 490 AM
- Weather information: weather.gov

CITY CREW SERVICES

- Power outage and electrical problems Palo Alto Electric Operations (650) 329-2413
- Gas/water leaks and sewer spills Palo Alto Utilities Dispatch (650) 329-2579.
- Blocked storm drains and mud slides Palo Alto Public Works (650) 329-2413.
- Fallen trees Palo Alto Public Works (650) 329-2413.

GENERAL INFORMATION

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BECOME AN EMERGENCY SERVICES VOLUNTEER (ESV)

The City of Palo Alto Office of Emergency Services provides programs and training for:

- Neighborhood and Block Preparedness
- Community Emergency Response Teams
- Radio Communications

Learn more at cityofpaloalto.org/emergencyvolunteers

November 2019:
Storm Preparedness/Tips
CITY OF PALO ALTO

GREEN STORMWATER INFRASTRUCTURE PLAN

October 2019: Green Stormwater Infrastructure Plan Document
GREEN STREETS IMPROVE COMMUNITIES

“Green Streets” slow, absorb and filter pollution in stormwater runoff and enhance pedestrian and bicycle features. Learn more about Green Streets and the City’s Green Stormwater Infrastructure Plan at cityofpaloalto.org/GSI or call 650-329-2122.

- **Stormwater Planters:** capture, filter, and slow roof runoff from disconnected downspouts.
- **Permeable Pavement:** reduces runoff by percolating rain into the soil below.
- **Tree Well Filters:** utilize suspended pavement systems so that roots can extend further; this allows trees to grow taller, provide more shade, and absorb more runoff.
- **Bioretention Areas:** filter runoff collected from hardscapes through drought-tolerant plants and well-draining soils. They can also provide traffic-calming features.

**Funded by your monthly Stormwater Management Fee.**

November 2019: Green Stormwater Infrastructure Utility Bill Insert
ARE YOUR UNWANTED PILLS PILING UP?

Tossing unwanted medicine in the trash poses an accidental poisoning threat to children and pets. Disposal down sinks or toilets can cause pharmaceutical pollution in San Francisco Bay because wastewater treatment plants are not designed to remove these chemicals.

cleanbay.org

Call locations prior to visiting to confirm bin is still active. Please consolidate pills into one container and leave ointments and liquids in original container.

November 2019:
Medication Disposal Tear Sheet

**ARE YOUR UNWANTED PILLS PILING UP?**

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cleanbay.org

Call locations prior to visiting to confirm bin is still active. Please consolidate pills into one container and leave ointments and liquids in original container.

November 2019:
Medication Disposal Tear Sheet
Avoid Sanitary Sewer Blockages

Fats, Oils, and Grease (FOG) poured down your sink may cost you money, time and hassle.

Pouring fats, oils and grease into the sanitary sewer system is an environmental and public health issue. FOG builds up in sewer lines and clogs pipes causing backups in your home, and can spill raw sewage into streets, storm drains, and creeks. Repairing clogged pipes can cost hundreds of dollars to fix and thousands of dollars if the clog causes wastewater to spill out and damage bathrooms and floors.

To prevent sewer backups:
- Never pour grease down sink drains or into toilets.
- Try removing grease from plates and utensils by wiping oily dishes with a paper towel and place in your green compost cart.
- For small amounts of oil and grease, consolidate them into a compostable container such as a milk carton and place in your green compost cart—cityofpaloalto.org/foodscrap
- Don’t pour grease or cooking oil down garbage disposals. Put baskets/strainers in sink drains to catch food scraps and other solids, and empty the drain baskets/strainers into your green compost cart.
- Bring large amounts of unwanted cooking oil (salad dressing, fryer oil) to the Household Hazardous Waste (HHW) Station—cityofpaloalto.org/hazwaste

What To Do With Food Scraps:
- Try composting produce scraps at home to reduce waste, create healthy soil and improve your garden—cityofpaloalto.org/compost
- Toss any meat scraps, bones or dairy products into your green compost cart.

Have a clogged sewer line? ALWAYS call us before calling a plumber!
- The City will need to check the line to make sure no other utility services will be damaged by clearing it. For more information on avoiding sewer backups and safety information, call us at (650) 329-2579 or visit cityofpaloalto.org/safeutility

www.cityofpaloalto.org/safeutility
(650) 329-2161

November 2019: FOG/Sewer Blockages Utility Bill Insert
December 2019:
Touchscreen Monitor with Plant Presentation/Tour
## APPENDIX M: 2019 PUBLIC OUTREACH EVENTS

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT</th>
<th>REACH (APPROX)</th>
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<tr>
<td>2/11/2019</td>
<td><strong>CWEA P3S Conference</strong>&lt;br&gt;Presentation on pharmaceuticals in RWQCP service area</td>
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<td>4/13/2019</td>
<td><strong>Great Race to Save Water</strong>&lt;br&gt;City of Palo Alto Earth Day tabling event</td>
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<td>4/14/2019</td>
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<td>4/17/2019</td>
<td><strong>Wilson Sonsini Earth Day</strong>&lt;br&gt;Earth Day event for corporate staff in Palo Alto</td>
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<td>4/19/2019</td>
<td><strong>VM Ware Earth Day (Turtle Day)</strong>&lt;br&gt;Earth Day event for corporate staff in Palo Alto</td>
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<td>4/24/2019</td>
<td><strong>Vi Sustainability Day</strong>&lt;br&gt;Earth Day event for seniors and caretakers</td>
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<td>4/30/2019</td>
<td><strong>Community Meeting on Northwest County Recycled Water Strategic Plan</strong>&lt;br&gt;Presentation on recycled water</td>
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<td>5/4/2019</td>
<td><strong>May Fete</strong>&lt;br&gt;Annual City of Palo Alto tabling event</td>
<td>150</td>
</tr>
<tr>
<td>5/18/2019</td>
<td><strong>National River Creek Cleanup Day</strong>&lt;br&gt;Creek cleanup event on Adobe Creek</td>
<td>8</td>
</tr>
<tr>
<td>5/18/2019</td>
<td><strong>National River Creek Cleanup Day</strong>&lt;br&gt;Creek cleanup event on Matadero Creek</td>
<td>18</td>
</tr>
<tr>
<td>6/5/2019</td>
<td><strong>Dewatering Building Ribbon Cutting</strong>&lt;br&gt;Ribbon cutting ceremony for the new dewatering building and retirement of incinerator. Tours of wastewater treatment plant.</td>
<td>50</td>
</tr>
<tr>
<td>7/5/2019</td>
<td><strong>MSC Open House</strong>&lt;br&gt;Annual City of Palo Alto tabling event</td>
<td>150</td>
</tr>
<tr>
<td>6/20/2019</td>
<td><strong>CWEA Dinner Meeting</strong>&lt;br&gt;Hosted by City of Palo Alto. Presentation on RWQCP facility: &quot;New Sludge Dewatering Facility: Commissioning Lessons Learned&quot;</td>
<td>70</td>
</tr>
<tr>
<td>9/21/2019</td>
<td><strong>Coastal Cleanup Day</strong>&lt;br&gt;Creek cleanup event on Adobe Creek</td>
<td>23</td>
</tr>
<tr>
<td>9/21/2019</td>
<td><strong>Coastal Cleanup Day</strong>&lt;br&gt;Creek cleanup event on Matadero Creek</td>
<td>20</td>
</tr>
<tr>
<td>10/5/2019</td>
<td><strong>Bay Day</strong>&lt;br&gt;Tour of the RWQCP</td>
<td>8</td>
</tr>
<tr>
<td>10/23/2019</td>
<td><strong>Community Meeting on Potential Agreement for Water Reuse</strong>&lt;br&gt;Presentation on recycled water</td>
<td>30</td>
</tr>
<tr>
<td>12/7/2019</td>
<td><strong>Stormwater Re却e Workshop</strong>&lt;br&gt;Workshop on City of Palo Alto stormwater rebate program and guidelines on how to maintain structures.</td>
<td>50</td>
</tr>
</tbody>
</table>

**GRAND TOTAL**: 1127