Source Property Identification Pilot Study
Pulgas Creek Pump Station Watershed
San Carlos, California

A Pilot Project of the
Clean Watersheds for a Clean Bay (CW4CB)
USEPA Grant-Funded Project

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1.0 INTRODUCTION

Provisions C.11.e and C.12.e of the Municipal Regional Permit (MRP) for stormwater discharges in the San Francisco Bay Area required that Permittees perform pilot projects to evaluate and quantify the removal of mercury and polychlorinated biphenyls (PCBs) through various stormwater controls. The pilot projects were intended to inform future efforts to achieve the stormwater runoff load allocations set forth in the San Francisco Bay PCBs and mercury Total Maximum Daily Load (TMDL) water quality restoration programs. One type of these pilot projects was designed to attempt to identify individual properties that are sources of PCBs or mercury for potential referral to regulatory agencies for further investigation and abatement. This report documents the source property identification pilot project that was conducted in the Pulgas Creek Pump Station (PCPS) watershed in the City of San Carlos, including the project background, methods, monitoring program, results, and associated costs.

The PCPS watershed is one of five drainages in the Bay Area with old industrial land uses and elevated PCBs concentrations in street dirt and municipal separate storm sewer system (MS4) sediment samples that was selected for pilot testing the effectiveness of controls for PCBs and mercury in stormwater runoff. The pilot projects were implemented through a regional project called Clean Watersheds for a Clean Bay (CW4CB). CW4CB was funded by a grant from the U.S. Environmental Protection Agency (EPA) to the Bay Area Stormwater Management Agencies (BASMAA) and matching funds from Bay Area countywide stormwater management programs. The San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) provided in-kind matching funds, and along with the City of San Carlos, was a partner for the CW4CB projects conducted in San Mateo County. The mercury and PCB load reduction effectiveness evaluations for the PCPS watershed source property identification pilot study and other CW4CB pilot projects are presented separately in the CW4CB Final Project Report (basmaa.org/Clean-Watersheds-for-a-Clean-Bay-Project/CW4CB-Overall-Project-Report).

1.1 Background

The PCPS watershed was selected as the location for this pilot project primarily based on elevated PCBs concentrations in street dirt and MS4 sediment samples collected in the watershed during previous studies. In 2000 and 2001, a collaborative project among BASMAA member agencies referred to as the Joint Stormwater Agency Project (JSAP) measured concentrations of PCBs, mercury and other pollutants in embedded sediments collected from stormwater conveyance systems throughout the Bay Area. The JSAP investigations initially identified the PCPS watershed as having elevated PCBs concentrations in MS4 sediments (KLI and EOA 2002). In 2002 and 2003, follow-up PCBs case studies were conducted in the watershed by SMCWPPP which involved both new sampling and re-sampling of previous JSAP locations (SMSTOPPPP 2003). These studies identified two potential PCBs source properties in the watershed. However, based on the spatial distribution of PCBs in the watershed’s MS4 sediments, it appeared that other sources remained unidentified. More recently, results from a 2010 study by the San Francisco Estuary Institute (SFEI) identified the watershed as one of 15 locations in the Bay Area with clusters of elevated PCBs concentrations in street dirt and MS4 sediment samples (Yee and McKee 2010).

1These requirements were found in the version of the MRP that was adopted in October 2009 and expired in November 2014. The MRP was reissued with updated requirements in November 2015.
1.2 Description of Project Location

The PCPS watershed is located in the City of San Carlos, CA (Figure 1). The geographic area of the PCPS is approximately 260 acres and a stormwater pump station is located at the bottom of the drainage. Old industrial land use comprises about 60 percent of the total watershed area. Selected attributes of the watershed are summarized in Table 1.

1.3 Project Objectives

This pilot project built upon the previous efforts described above to identify PCBs and mercury sources in the PCPS (SMSTOPPP 2004 and Yee and McKee 2010). The overall goal was to attempt to identify properties with the potential for discharging sediments with elevated PCBs and/or mercury concentrations to local public right-of-way (ROW) areas, including the stormwater drainage system. Such properties would then be considered for referral to the San Francisco Bay Regional Water Quality Control Board (RWQCB) and/or other appropriate agencies for further investigation and abatement.
Figure 1. Location of the Pulgas Creek Pump Station Watershed.
Table 1. Pulgas Creek Pump Station Watershed Attributes

<table>
<thead>
<tr>
<th>Approximate Watershed Area (acres)</th>
<th>Pump Station at Watershed Bottom?</th>
<th>Percent of Soil/Sediment Samples ≥ 1.0 mg/kg PCBs</th>
<th>Maximum Concentration in Soils/Sediments (prior to this study) (mg/kg)</th>
<th>Major Land Uses in 2005</th>
<th>Approximate Percent Old Industrial Land Use²</th>
<th>Approximate Percent Other Old Urban Land Use³</th>
<th>Number of PG&amp;E Substations</th>
<th>Number of Auto Dismantlers</th>
<th>Historic/Current Rail (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>260</td>
<td>Yes</td>
<td>17%</td>
<td>12</td>
<td>Industrial Commercial</td>
<td>60%</td>
<td>40%</td>
<td>1</td>
<td>0</td>
<td>0/669</td>
</tr>
</tbody>
</table>

1 - Sources of data include previous field studies (KLI and EOA 2002, SMSTOPPP 2003, and Yee and McKee 2010) and municipal staff communications.

2 - Areas industrialized prior to 1968 delineated by identifying industrial land areas in 1968 aerial photography maps and comparing those with industrial land uses identified in 2005 maps developed by the Association of Bay Area Governments (ABAG) and the San Mateo County Assessor parcel data layer.

3 - Areas urbanized prior to 1974 which were delineated using an urban extents layer from 1974, the closest year to 1968 with data available. All areas that were within the urban extent in 1974 and which were not already identified as “old industrial” were defined as “other old urban.”

4 - The SFEI Proposition 13 study (Yee and McKee 2010) developed the historic rail layer by digitizing rail lines shown on georectified 1959 USGS topographic quads that were not present on a current rail layer included with the USGS Digital Line Graph.
2.0 METHODS

2.1 Overview

The methods used to identify PCBs and mercury source properties in the PCPS and the other CW4CB pilot watersheds were modeled after a project conducted by the City of Oakland through a State of California Proposition 13 grant (Kleinfelder 2006). That project focused on identifying sources of PCBs-containing sediments to the MS4 in the Ettie Street Pump Station (ESPS) watershed in the City of Oakland. In the PCPS and each of its other pilot watersheds, CW4CB adapted and refined the ESPS watershed source property investigation methods as appropriate for local conditions. In general, the process consisted of the following five steps:

1. **Records review.** Review general information sources (e.g., spill site databases, historic land use and available sampling data) and records on specific properties/businesses to begin identifying potential source properties within the watershed.

2. **Reconnaissance survey.** Perform a driving/walking reconnaissance survey of the watershed to further identify potential source properties and begin looking for evidence that runoff from such locations is likely to convey pollutants to MS4s.

3. **Facility inspections.** Perform inspections of selected facilities within the watershed.

4. **Sediment testing.** Test sediments collected from the public ROW and private properties in the watershed for PCBs, mercury and other particle-bound pollutants.

5. **Identify potential sources properties and consider making referrals as appropriate.** Where laboratory data confirm elevated pollutant concentrations, consider referring properties to regulatory agencies for cleanup and abatement. The referral process includes submission of a form to the RWQCB identifying each suspect property, attached to which is any additional information required to justify the referral (e.g., reports documenting site history and laboratory data).

2.2 Pilot Project Steps

The following sections describe in more detail how each of the above steps were applied in the PCPS watershed pilot investigation.

**Step 1: Records Review**

The first step in the process of identifying potential source properties within the PCPS watershed was to obtain and review readily available information and records for every parcel in the watershed and the associated businesses for evidence of pollutant storage, use or release. The information sources utilized included the following:

- Records related to the use of hazardous materials and generation of hazardous waste - a list of PCBs product trade names was used to assist this effort (Appendix 1);
- Business licenses or permits for a description of current and historical businesses that were present on a property;
- Digital aerial and site photographs (e.g., Google Earth™);
- Records from stormwater industrial/commercial facility inspections;
- Code enforcement records for evidence of non-permitted uses and activities;
- Illicit discharge and source identification records; and
- Recorded land title records for evidence of any limitations placed on future activities such as deed restrictions.

State and federal databases with information on pollutant use and/or release sites (Table 2) were also reviewed for any information on sites related mercury or PCBs in the PCPS watershed.

### Table 2. State and Federal Databases on Pollutant Use and/or Release Reviewed

<table>
<thead>
<tr>
<th>Name of Database or List</th>
<th>Internet URL</th>
<th>Agency that Developed and Maintains</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geotracker</td>
<td><a href="http://geotracker.swrcb.ca.gov">http://geotracker.swrcb.ca.gov</a></td>
<td>California State Water Resources Control Board</td>
<td>- Leaking Underground Tank (LUST) sites&lt;br&gt;- Regional Water Quality Control Board cleanup sites&lt;br&gt;- Land disposal sites&lt;br&gt;- Military sites&lt;br&gt;- Permitted Underground Storage Tank (UST) facilities&lt;br&gt;- Monitoring wells&lt;br&gt;- Department of Toxic Substances Control (DTSC) cleanup sites&lt;br&gt;- DTSC hazardous waste permit sites</td>
</tr>
<tr>
<td>DTSC Envirostor</td>
<td><a href="http://www.envirostor.dtsc.ca.gov/public/">http://www.envirostor.dtsc.ca.gov/public/</a></td>
<td>California Department of Toxic Substances Control</td>
<td>- National Priorities List (Federal Superfund Sites)&lt;br&gt;- State Response Sites&lt;br&gt;- Voluntary Cleanup Sites&lt;br&gt;- School Cleanup Sites&lt;br&gt;- Corrective Action Sites&lt;br&gt;- Tiered MRP Sites&lt;br&gt;- Leaking Underground Fuel Tank (LUFT) cleanups (same as LUST)&lt;br&gt;- Spills, Leaks, Investigations and Cleanups Sites (SLIC)</td>
</tr>
<tr>
<td>Coast Guard Spills Database</td>
<td><a href="http://www.nrc.uscg.mil/nrsinfo.html">http://www.nrc.uscg.mil/nrsinfo.html</a></td>
<td>United States Coast Guard</td>
<td>- Incidents of spills of oil and other toxic substances into the environment.</td>
</tr>
<tr>
<td>PG&amp;E Bay Area PCB equipment spills</td>
<td>Not Applicable</td>
<td>Pacific Gas and Electric (PG&amp;E)</td>
<td>- List of spills of PCB-containing dielectric fluids from PG&amp;E distribution line equipment in the Bay Area (1994 -2000).</td>
</tr>
</tbody>
</table>
### Name of Database or List | Internet URL | Agency that Developed and Maintains | Description
--- | --- | --- | ---
Cleanup Sites in California | [http://www.epa.gov/region9/cleanup/california.html](http://www.epa.gov/region9/cleanup/california.html) | US Environmental Protection Agency | • Superfund Sites - EPA's program to identify, investigate and clean up uncontrolled or abandoned hazardous waste sites throughout the United States.
• Brownfields – EPA’s Brownfields Program works to clean up and redevelop potentially contaminated lands.


Toxic Release Inventory | [http://www.epa.gov/tri/](http://www.epa.gov/tri/) | US Environmental Protection Agency | • Data on toxic chemical releases and waste management activities reported annually by certain industries as well as federal facilities.

My Environment | [http://www.epa.gov/myenvironment/](http://www.epa.gov/myenvironment/) | US Environmental Protection Agency | • EPA-regulated facilities
• Air Quality Index (AQI)
• Water quality monitoring and conditions for local water bodies
• Cleanup sites

Enviro-facts System | [http://www.epa.gov/enviro/index.html](http://www.epa.gov/enviro/index.html) | US Environmental Protection Agency | Allows retrieval of information from multiple databases including:
• Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), Brownfields, and other cleanup sites
• MRP Compliance System (PCS)
• Resource Conservation Recovery Act - RCRAInfo
• Toxic Release Inventory (TRI)
• Toxic Substances Control Act (TSCA)

### Step 2: Reconnaissance Survey

The second step to identify potential source properties was to conduct a driving/walking reconnaissance survey from the entire public ROW in the PCPS watershed. The survey provided additional information about subject properties and a check of the information obtained during the records review to identify potential source areas and estimate the potential for stormwater runoff to convey surface sediments (potentially containing PCBs and/or mercury) from such areas to the municipal stormwater collection system.

Watershed maps and a survey data form adapted from the inspection check list developed during the ESPS project (Kleinfelder 2006) were used during the reconnaissance survey (Appendix 2). The data form included potential indicators of PCBs/mercury release, such as indications of sediment erosion from a property and migration to the street or MS4s, evidence of pollutant use/release in visible outdoor areas of properties, and any visible impacts to the adjacent public ROW. The maps showed the watershed boundary, streets, property lines, storm drain inlets, and other stormwater collection system infrastructure (e.g., flood control channels) within the drainage.
During the reconnaissance survey, the entire public ROW in the watershed was visited on foot and/or by car. Digital photographs were taken of notable features in the watershed. Field staff looked for potential indicators of pollutant use and/or release from properties and impacts to the adjacent public ROW, including, but not limited to the following:

- Unpaved or other areas where sediment erosion may occur, especially when there is evidence of migration of sediments from a property to the public ROW;
- Electrical equipment (e.g., transformers);
- Outdoor hazardous material/waste storage areas (e.g., tanks, drums), especially with poor housekeeping;
- Signs related to hazardous materials and wastes;
- Recycling/scrap yards (e.g., for automobiles);
- Building demolition, renovation or window replacement sites;
- Unusually stressed vegetation; and
- Unidentified puddles or stains.

**Step 3: Facility Inspections**

The third step to identify potential source properties was to conduct on-site inspections of selected suspect properties and the facilities on the properties. The combined information from the records review (Step 1) and reconnaissance survey (Step 2) was used to select properties for on-site inspections. The observations made during Step 2 provided information used to evaluate the potential for migration of sediment-bound pollutants from suspect properties to stormwater conveyances. Table 3 presents typical attributes of sites with higher, medium and lower potential for PCBs/mercury release to streets and stormwater conveyances. Other factors/constraints that were considered in selecting sites for inspections included available budget, existing inspection schedules (e.g., CUPA\(^2\) hazardous material inspections), and inspector availability.

The inspections were conducted by project staff, with assistance from inspector staff with the San Mateo County Environmental Health Division (SMCEHD). Resources used by inspectors included the Pollutants of Concern Stormwater Inspectors’ Guidance Manual (BASMAA 2010), a companion PowerPoint presentation, and Section 9 of the ASTM Phase I Environmental Site Assessment guidance (ASTM 2005). These training materials describe the types of facilities where PCBs and/or mercury may be used and typical applications, how to identify associated products and equipment, proper disposal/recycling and spill cleanup practices, and guidance on referring facilities to regulatory agencies when appropriate.

The checklist developed for property inspections during the ESPS project (Kleinfelder 2006) and information from the above Inspectors’ Guidance Manual was adapted for use in the field during the facility inspections. The inspection form included priority uses and activities potentially associated with PCBs and/or mercury, examples of questions for inspectors to ask current owners, tenants or site managers.

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\(^2\)Certified Unified Program Agency.
supervisors, and a space for inspectors to sketch the site and observations made in the field (Appendix 3).

Table 3. Typical Attributes of Sites with Higher, Medium and Lower Potential for PCB/Mercury Release to Streets and Stormwater Conveyances

<table>
<thead>
<tr>
<th>Typical attributes of sites with higher potential for PCB/mercury release:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Records of PCB/mercury release at the site.</td>
</tr>
<tr>
<td>• Indications of PCB/mercury-associated materials/processes.</td>
</tr>
<tr>
<td>• Locations where sediment may erode and be mobilized off-site by stormwater runoff, vehicles, and/or wind (e.g., unpaved areas).</td>
</tr>
<tr>
<td>• Illegal dumping occurs.</td>
</tr>
<tr>
<td>• Outdoor hazardous material/waste storage areas (e.g., tanks, drums) with poor housekeeping.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical attributes of sites with medium potential for PCB/mercury release:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Industrial land uses.</td>
</tr>
<tr>
<td>• Electrical equipment (e.g., transformers with PCBs).</td>
</tr>
<tr>
<td>• Outdoor hazardous material/waste storage areas (e.g., tanks, drums) with fair to good housekeeping.</td>
</tr>
<tr>
<td>• Unidentified barrels or drums.</td>
</tr>
<tr>
<td>• Demolition, large-scale window replacements, or other renovations have occurred (potentially releasing PCB caulks/sealants).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical attributes of sites with lower potential for PCB/mercury release:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Non-industrial land uses.</td>
</tr>
<tr>
<td>• Minimal potential for sediment loading to stormwater collection system.</td>
</tr>
<tr>
<td>• No history of PCB/mercury-related activities.</td>
</tr>
</tbody>
</table>

1Adapted from the ESPS project (Kleinfelder 2006).

Step 4: Surface Sediment Testing

The fourth step in the process to identify potential source properties was to conduct targeted sediment monitoring in the watershed. Figure 2 provides a general summary of the criteria and decision-making process used to prioritize properties for adjacent public ROW sampling based on the combined results of the first three steps in the process (i.e., records review, reconnaissance survey, and inspections). The post-inspection property priorities were used to inform development of a surface sediment sampling and chemical analysis monitoring plan.

Sample Site Selection and Field Methods

A two-phase approach was implemented following the example of the ESPS project (Kleinfelder 2006), in which sediment samples were first collected in public ROW areas adjacent to selected suspect properties (Phase 1). The results were then used to prioritize locations for a second round of sampling (Phase 2). Phase 1 focused on collecting samples from storm drain inlets, street curbs, driveways and other areas in the public ROW where accumulated sediment appeared to have migrated off of adjacent priority properties. Phase 2 included additional public ROW sample locations adjacent to priority properties, samples from municipal properties, and, in the one instance where permission was obtained, a sample collected from a storm drain inlet on a private property.
Figure 2. Decision Tree for Prioritizing a Property for Adjacent Public ROW Sampling.
Kinetic Laboratories, Inc. (KLI) of Santa Cruz, one of the CW4CB monitoring contractors, conducted both phases of soil/sediment monitoring in the PCPS watershed following the methods and procedures documented in the CW4CB QAPP and CW4CB Task 3 SAP (BASMAA 2012 a and b). Detailed field methods reports and photographic documentation prepared by KLI for each sampling phase are available on the CW4CB website (basmaa.org/CW4CB-Project_Reports).

**Laboratory Analysis Methods**

All sediment samples collected during both phases of the monitoring were analyzed for PCBs congeners, total mercury, total organic carbon (TOC), and grain size. Approximately ten percent of the samples (selected randomly) were also analyzed for the following secondary analytes: dioxins, furans, polybrominated diphenyl ethers (PBDEs), organochlorine (OC) pesticides, and polycyclic aromatic hydrocarbons (PAHs). With the exception of the samples for grain size analysis, all samples were passed through a 2 mm sieve in the laboratory before analysis to remove larger particles such as rocks and cobbles, consistent with previous Bay Area sediment chemistry studies (e.g., KLI and EOA 2002, SMSTOPPP 2003 and 2004, and Yee and McKee 2010). Laboratory methods are described further in the CW4CB QAPP and Task 3 SAP (BASMAA 2012a and b). Table 4 summarizes the analytical methods and laboratories used for each analyte.

**Table 4. Sediment Sample Analytes, Sampling & Analytical Methods, and Laboratories**

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Sampling Method</th>
<th>Analytical Method</th>
<th>Units</th>
<th>Assigned Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOC</td>
<td>Grab</td>
<td>SM6310-B-11</td>
<td>%</td>
<td>Soil Control Laboratory</td>
</tr>
<tr>
<td>Grain Size</td>
<td>Grab</td>
<td>ASTM D422M/PSEP</td>
<td>%</td>
<td>Soil Control Laboratory</td>
</tr>
<tr>
<td>Mercury</td>
<td>Grab</td>
<td>EPA 7471</td>
<td>µg/kg</td>
<td>Soil Control Laboratory</td>
</tr>
<tr>
<td>PCBs</td>
<td>Grab</td>
<td>EPA 1668A</td>
<td>µg/kg</td>
<td>ALS Environmental</td>
</tr>
<tr>
<td>Dioxins</td>
<td>Grab</td>
<td>EPA 1613B</td>
<td>ng/kg</td>
<td>ALS Environmental</td>
</tr>
<tr>
<td>PBDEs</td>
<td>Grab</td>
<td>EPA 8270C</td>
<td>µg/kg</td>
<td>ALS Environmental</td>
</tr>
<tr>
<td>OC Pesticides</td>
<td>Grab</td>
<td>EPA 8081-SM</td>
<td>µg/kg</td>
<td>ALS Environmental</td>
</tr>
<tr>
<td>PAHs</td>
<td>Grab</td>
<td>EPA 8270PNA-SM</td>
<td>ng/g</td>
<td>ALS Environmental</td>
</tr>
</tbody>
</table>

1Each sample was analyzed for PCBs, mercury, TOC, and grain size. Approximately 10% of the samples (selected randomly) were also analyzed for dioxins, PBDEs, organochlorine pesticides, and PAHs, per the CW4CB SAP (BASMAA 2012b).

**Data Quality Assurance and Control Methods**

An extensive field and laboratory data quality assurance / quality control (QA/QC) program was established by the CW4CB QAPP and Task 3 SAP (BASMAA 2012a and b). The program included equipment cleaning methods, sampling protocols, sample hold times, minimum analytical reporting limits, and included the use of blind field duplicates, method blanks, matrix spike/spike duplicates, surrogate spikes, laboratory control samples, certified reference materials, and laboratory replicates. Data quality objectives were established for each QA/QC sample and procedures established for flagging any data not meeting established criteria. A summary of the complete data quality review for Phase 1 and Phase 2 data are available on the CW4CB website (basmaa.org/CW4CB-Project_Reports).
Data Analysis Methods

The sediment chemistry data were used to inform identification of properties potentially discharging sediments with elevated PCBs and/or mercury concentrations. Samples were analyzed for the 40 PCBs congeners routinely reported by the San Francisco Estuary Regional Monitoring Program (www.sfei.org). Total PCBs were calculated by summing the concentrations of each of the 40 congeners. Because PCBs and mercury adsorb to fine particles (e.g., < 62.5 µm in diameter), total PCBs and mercury concentrations were also normalized to the fine fraction. Sediment concentrations were compared across sites and with data from other Bay Area locations in order to identify parcels and/or areas within the watershed with elevated concentrations. PCBs homolog profiles were used to assess potential similarities between samples collected at different locations in the watershed, and for comparison with typical Aroclor profiles, which may help inform evaluating PCBs sources and transport pathways.

Step 5: Identification of Potential Source Properties

The primary basis used to identify PCBs or mercury source properties for potential referral to the RWQCB was the results of sample chemical analysis. For the purpose of prioritization and to provide general guidance and inform next steps, properties within the CW4CB pilot investigation watersheds were divided into three categories based on PCBs and mercury concentrations found within sediment samples (Table 5). These categories were selected based upon the distribution of PCBs and mercury concentrations in a dataset of more than 1,200 soil and sediment samples collected from streets and MS4s across the Bay Area between 1999 and 2015 (Gunther et al. 2001, KLI and EOA 2002, Salop et al. 2002, City of San Jose and EOA 2002 and 2003, SMSTOPPP 2003 and 2004, Kleinfelder 2005 and 2006, EOA 2007a and b, Yee and McKee 2010). The “high” category includes roughly the top 10 to 15 percent of Bay Area concentrations and the “moderate” category includes concentrations that are in approximately the top 25 percent. These categories represent elevated concentrations that may be within the halo of a PCBs or mercury source. The low category represents concentrations below the 75th percentile, which are assumed to be at or below “urban background” levels which generally fall outside the halo of a PCBs or mercury source.

Table 5. Prioritization Categories based on Maximum Soil/Sediment PCBs & Mercury Concentrations.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total PCBs (mg/kg)</th>
<th>Total Mercury (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public ROW Samples</td>
<td>Private Property Samples</td>
</tr>
<tr>
<td>High - Likely Source Property (Potential Referral and/or Further Investigation)</td>
<td>≥ 0.5</td>
<td>≥ 1.0</td>
</tr>
<tr>
<td>Moderate - Potential Source Property (Potential Further Investigation and/or Referral)</td>
<td>0.2 – &lt; 0.5</td>
<td>0.2 – &lt; 1.0</td>
</tr>
<tr>
<td>Low – Unlikely Source Property</td>
<td>&lt; 0.2</td>
<td>&lt; 0.2</td>
</tr>
</tbody>
</table>

The thresholds used to establish these categories were somewhat arbitrary but help to establish priorities for property referrals and other follow-up control measures municipalities may implement to reduce or prevent the release of pollutants from source properties and/or to reduce the mass of pollutants stored within storm drainage infrastructure. Properties associated with high PCBs or mercury concentrations either in the adjacent public ROW or on the property itself were identified as likely source properties to consider for referral, while properties associated with moderate PCBs or mercury
concentrations were identified as potential source properties for further investigation and potential referral, especially if any other information gained during an investigation (e.g., records review and/or property inspections) was linked to PCBs or mercury.
3.0 RESULTS

The source property identification pilot study in the PCPS watershed was conducted through a collaboration among CW4CB, SMCWPPP, the City of San Carlos, and SMCEHD. The following sections present the results of the study.

3.1 Records Review

The records review was conducted November 2010 through February 2011. Of the 480 properties identified within the boundaries of the PCPS watershed, the review preliminarily identified 140 properties as potential source properties, including many properties with enforcement histories with regulatory agencies related to pollutants. Additional details are provided below.

- **San Mateo County Assessor website** ([http://www.smcare.org/apps/ParcelMaps/default.aspx](http://www.smcare.org/apps/ParcelMaps/default.aspx)). This site provided the parcel numbers and/or addresses for all properties within the boundaries of the watershed.

- **State Water Resources Control Board’s Geotracker** ([http://geotracker.swrcb.ca.gov/](http://geotracker.swrcb.ca.gov/)): Geotracker allows users to search by address, city or zip code for the following types of sites: Leaking Underground Tank (LUST) sites; RWQCB cleanup sites; land disposal sites; military sites; permitted Underground Storage Tank (UST) facilities; monitoring wells; Department of Toxic Substances Control (DTSC) cleanup sites; and DTSC Hazardous Waste Permit Sites. A search of DTSC cleanup sites in San Carlos yielded two results in the PCPS watershed for PCBs – California Oil Recyclers at 977 Bransten Road and Tanklage Square at 837 Industrial Road. 977 Bransten Road is discussed further later in this report (see Section 3.4). Based on the information available it appears that PCBs found in soils at Tanklage Square at 837 Industrial Road are contained and have not migrated off-site.

- **California Department of Toxic Substances Control (DTSC) Envirostor** ([http://www.envirostor.dtsc.ca.gov/public/](http://www.envirostor.dtsc.ca.gov/public/)): The Envirostor function allows users to search by zip code, address or city for the following cleanup sites: National Priorities List (Federal Superfund Sites); State Response Sites; Voluntary Cleanup Sites; School Cleanup Sites; Corrective Action Sites; Tiered Permit Sites; LUFT cleanups; Spills, Leaks, Investigations and Cleanups Sites (SLIC). Envirostor also allows users to search for Permitted Operating, Post Closure Permitted, and Historical Non-Operating Hazardous Materials Facilities. Review of sites in the PCPS watershed reporting toxic releases to the EPA did not show any PCBs releases. There are ten designated SLIC sites in the PCPS watershed, but none included PCBs among the contaminants of concern. Of the various types of cleanup sites listed, only California Oil Recyclers at 977 Bransten Road and Tanklage Square at 837 Industrial Road showed contamination by PCBs. 977 Bransten Road is discussed further later in this report (see Section 3.4). Based on the information available it appears that PCBs found in soils at Tanklage Square at 837 Industrial Road are contained and have not migrated off-site.

- **United States Environmental Protection Agency’s (EPA) Envirofacts** ([http://www.epa.gov/enviro/](http://www.epa.gov/enviro/)) and My Environment ([http://www.epa.gov/myenvironment](http://www.epa.gov/myenvironment)). These resources allows users to search by pollutant or industry classification. Of searches for PCBs, mercury and mercury compounds, only Kelly Moore Paint at 1015 Commercial Street was identified (for use of mercury compounds). No sites in this database within the PCPS watershed were associated with PCBs.
- **EPA’s Storage, Disposal and Transformer Registrations** ([http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/data.htm](http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/data.htm)). Based on the available online list on the EPA website, there were no sites registered with the EPA for PCBs in San Carlos.

- **Coast Guard Spills Database** ([http://www.nrc.uscg.mil/nrsinfo.html](http://www.nrc.uscg.mil/nrsinfo.html)). The spills database shows incidents of spills of oil and other toxic substances into the environment. The database showed three spill records in the PCPS watershed at 960 Industrial Road, 1300 Industrial Road and 920 Center Street, but none included PCBs.


- **San Mateo County Environmental Health Division.** In-office hazardous materials files of PCPS watershed addresses were reviewed. Properties with hazardous waste permits were identified. Because the hard-copy files were sometimes very large (e.g., hundreds of pages), preliminary review of the files was conducted to identify any properites with PCBs – none was found.

- **City of San Carlos**. Records regarding stormwater inspections were obtained from the City Stormwater Inspector and reviewed. There were no records of inspections within the PCPS watershed.

- **Google Earth™ satellite and aerial imagery software.** Satellite imagery of the watershed was carefully reviewed to preliminarily identify current land use of properties located within the watershed, including screening out low priority properties such as residential units and commercial buildings, and for the remaining properties, to gather information about the type(s) of businesses on each property, and other information such as the existence and condition of pavement on the site, evidence of vehicle tracking sediment off-site, and housekeeping practices. Historical satellite imagery available on Google Earth™ was also reviewed for additional information on properties.

### 3.2 Reconnaissance Survey

Project staff conducted the reconnaissance survey in the PCPS watershed’s public ROW areas in March 2012. A global positioning system camera was used to capture locations and photographs of suspect properties that showed any potential to be PCBs or mercury sources, including those with the potential for sediment mobilization to the public ROW. Based on the results of the reconnaissance survey, the preliminary list of potential source properties was narrowed from 140 to the 40 properties that appeared to be relatively higher priority based on site conditions such as potential for sediment export, on-site outdoor hazardous material/waste storage areas (e.g., tanks, drums), and poor housekeeping.

### 3.3 Facility Inspections

Facility inspections were coordinated with the City of San Carlos and SMCEHD, the agency that routinely conducts stormwater and hazardous materials inspections in the city. Prior to property inspections, SMCEHD sent out a letter to each property owner informing them of the upcoming inspection. Inspections were conducted by project and SMCEHD staff in April 2012. Thirty-four of the 40 priority properties were inspected. The remaining six properties from the list of 40 were not inspected due to lack of access (e.g., no known owner, closed business, and/or unsuccessful repeated attempts to contact owner). However, those properties were observed to the extent possible from the adjacent public ROW.
The inspectors walked around the indoor and outdoor areas of the property accompanied by a facility representative, asked questions about the property and surrounding area, and completed facility inspection forms that documented the observations made. Notes were kept about each property and the surrounding area, including locations of existing on-site private storm drain inlets or potential areas of concerns, which were mapped.

3.4 Soil/Sediment Monitoring

Based on the criteria in Table 3, the results of the above records review, reconnaissance survey, and facility inspections were used to categorize each of the 40 priority properties as having higher, medium and lower potential for PCBs/mercury release to streets and stormwater conveyances. This categorization then informed development of a Phase 1 plan for sampling soils/sediments in the public ROW in the PCPS watershed. Phase 1 monitoring was conducted in September 2012 on days with no measurable precipitation. Sampling locations in the public ROW during Phase 1 included street curbs and gutters, sidewalks, stormwater catch basins, stormwater manholes, and unpaved surface soil areas.

The results of the Phase 1 sampling were then used to inform development of a Phase 2 sampling plan, which was implemented in May 2013. Phase 2 included additional public ROW sample locations adjacent to priority properties, samples from municipal properties, and, in the one instance where permission could be obtained, a sample from a storm drain inlet on a priority private property. A total of 25 soil/sediment samples (including 2 field duplicates) were collected during this study in the PCPS watershed at the locations described in Table 6 and shown on Figure 3.

Soil/sediment concentrations for the primary analytes, including total PCBs, mercury, TOC, % fines, grain size, total PCBs normalized to % fines, and mercury normalized to % fines, are summarized in Table 7. The complete dataset of sediment concentrations measured in the PCPS watershed during this study, including individual PCBs congener concentrations and secondary analytes (dioxins, PBDEs, organochlorine pesticides, and PAHs), are available on the CW4CB website (basmaa.org/monitoring-data).

PCBs Analysis

PCBs were detected in all soil/sediment samples collected in the PCPS watershed during this study, with total PCBs concentrations ranging from 0.017 to 193 mg/kg (Figure 4 and Table 7). The location and magnitude of total PCBs concentrations measured during both phases of sampling in the PCPS are illustrated in Figure 5. Because PCBs may be associated with fine particles, PCBs concentrations were also evaluated following normalization to percent fines (less than 63 µm in diameter). In general, the pattern of relative PCBs concentrations among the samples was similar following normalization.

The highest total PCBs concentration (193 mg/kg) was found in sediment sample PUL22, which was collected from the property at 1411 Industrial Road in the southern half of the PCPS. Total PCBs in this sample were two orders of magnitude higher than any other samples collected in the watershed and twice as high as any other soil/sediment sample in the Bay Area dataset (Figure 6). Except for PUL22, all other total PCBs concentrations measured in the PCPS watershed were within the range of concentrations measured previously in the Bay Area. The concentration of total PCBs in sediment sample PUL27 (PCBs = 0.96), which was collected from the PCPS wet well (which drains the entire watershed), and several other samples was in the top 10 percent of the Bay Area samples. In addition, nearly one-half of the samples from the PCPS watershed exceeded the assumed urban background total
PCBs concentration in the Bay Area of 0.2 mg/kg (see Section 2.2, Step 5). These sample results and the associated nearby properties are summarized in Table 8 and described below.

**PUL4**

PUL4 was collected during Phase 1 and had an elevated concentration of PCBs (2.5 mg/kg). This sample was collected from a sidewalk manhole that accesses the main storm drain line that runs along Industrial Road. Much of the southernmost portion of the watershed drains to this location. Elevated PCBs have been found in samples from this same location in previous studies (SMSTOPPP 2004). Thus, one important goal of the Phase 2 sampling effort was to attempt to identify specific properties and/or areas that may contribute PCBs to the MS4 at the PUL4 location.

The PG&E substation on Industrial Road across the street from the manhole where PUL4 was collected had long been a suspect source property since it drains to the PUL4 location in the MS4 and because PCBs are associated with electrical equipment. This property was referred to the RWQCB for further investigation and potential abatement in a 2003 letter. More recently, as part of this study SMCWPPP and BASMAA worked together in an unsuccessful attempt to gain permission from PG&E to collect soil samples from the substation property. However, public ROW soil/sediment samples collected during this study from areas just outside of the PG&E substation property were very close to (i.e., PUL 18, PCBs = 0.22 mg/kg) or below urban background levels. These data, combined with the very elevated result for PUL22 and other elevated samples upstream of PUL4, suggest that the 1411 Industrial Road property (located across the street from the PG&E substation) and likely other properties in the southernmost portion of the PCPS are the primary source of the PCBs found in PUL4, rather than the substation.

**PUL22**

PUL22 was a Phase 2 sample with a very elevated PCBs concentration (193 mg/kg) that was collected from a storm drain inlet located in the parking lot of 1411 Industrial Road. This property drains to the MS4 at the sidewalk manhole where PUL4 (PCBs = 2.5 mg/kg) was collected (Figures 3 and 5). Since 2012 the occupant of this property has been a Habitat for Humanity Re-Store. Before that the property was occupied by an auto body shop and an automotive paint company. Between 1958 and 1994, Adhesive Engineering / Master Builders, Inc. was the occupant and conducted manufacturing, research and development of construction grade epoxy resin and products. Although information linking the property to PCBs was not found in the online database searches, review of the SMCEHD hazardous materials files revealed Adhesive Engineering / Master Builders, Inc. had a history of violations for leaky wastewater drums and improper storage of hazardous wastes in the late 1980s and early 1990s, and that PCBs had been used on the site in the past. Additional review of the files revealed an environmental assessment report conducted as part of a business closure in 1994. This report revealed that 93 mg/kg PCBs was found in a soil sample collected in 1987. The soil sample was collected beneath an aboveground tank that was heated by oil containing PCBs circulating in coils around the tank. The report also described the removal in 1987 of 44 cubic yards of contaminated soil from the area where the tank was located. As part of the 1994 environmental assessment, a soil sample was collected from the same area and PCBs were not detected at that time, but soil samples from other areas on the property were not collected and tested for PCBs. The results of the records review and the elevated PCBs concentrations found in PUL22 and PUL4 suggest that the 1411 Industrial Road property may be a source of PCBs to the MS4.
PUL28 was a Phase 2 sample with an elevated PCBs concentration (1.2 mg/kg) that was collected in a public ROW area that drains to the PUL4 location in the MS4 (i.e., the PUL4 location in the main storm drain line along Industrial Road). PUL28 consisted of material trapped in a storm drain inlet (and its grate and the adjacent gutter) located on Washington Street near the northwest corner of Washington Street and Bayport Avenue. The inlet was located one block upstream of the PG&E substation (Figures 3 and 5), and was collected primarily to help identify areas, other than the substation property, that may contribute PCBs to the MS4 at the PUL4 location. The properties draining directly to the PUL28 inlet include all of the properties on the north side of Washington Street, between Bayport Avenue and Old County Road and a few properties on Old County Road. The records review, field reconnaissance, and facility inspections did not reveal any information linking PCBs releases to any of these properties. 1000 Washington Street is the closest property to the PUL28 sample location. The occupant was Gonsalves and Stronck Construction. The records review revealed that Spectrum Label Corporation was in business at this location from 1968 through at least 1998, and was a permitted hazardous waste generator subject to the federal Resource Conservation Recovery Act (RCRA). Only limited information was found on the activities of Spectrum Label Corporations at the site, and information was not found linking PCBs to this property.

PUL12 had an elevated PCBs concentration (0.84 mg/kg) and was collected in a public ROW area that drains to the PUL4 location in the MS4. PUL12 was collected during Phase 1 from the sidewalk and driveway in front of 1040 Varian Street. Provence Stone, the occupant, produced stone and marble products (e.g., slabs and tiles) and did not appear to be a type of business that would be associated with PCBs. The records review revealed that Farinon Electric was located at the site from the 1960s through at least 1989 and was a hazardous waste generator regulated under RCRA. No other information was found about specific activities at this property in the past. Other nearby properties include two Redwood Lumber and Supply properties located across the street, at 1651 and 1653 Old County Road. These properties had large unpaved areas where old lumber and equipment were stored. Wind-blown dust and soil tracking off the site was observed that could lead to migration across the street to the location where PUL12 was collected. However, PUL25, a separate sample collected in the public ROW outside of 1653 Old County Road, had a relatively low PCBs level (0.02 mg/kg).

PUL20 was a Phase 2 sample with an elevated PCBs concentration (0.55 mg/kg) that was collected in a public ROW area that drains to the PUL4 location in the MS4. The sample was collected from the storm drain inlet (and material trapped in its grate) on Washington Street near the southwest corner of Industrial Road and Washington Street, across the street from the PG&E substation. The inlet is adjacent to and drains the property at 1600 Industrial Road and also drains the properties on the south side of Washington Street between Bayport Avenue and Industrial Road, but does not directly drain the PG&E substation. Avenue Auto Service and Painting currently occupies 1600 Industrial Road and has been a hazardous waste generator since at least 1986. SMCEHD files indicated this business was known to have poor housekeeping and other maintenance problems. However, the records review and field surveys did not reveal any direct links to PCBs for any of the properties draining to the PUL20 location.

3In general, wind and any flooding conditions could also carry surface soils and sediments from other nearby properties that don’t directly drain to a given location.
PUL7

PUL7 had an elevated PCBs concentration (0.4 mg/kg). Sediment was collected during Phase I from a storm drain inlet on Howard Avenue at the southwest corner of Bayport Avenue and Howard Avenue and the street gutter just east of the storm drain inlet. This public ROW area does not drain to the PUL4 location in the MS4. Several properties in the PCPS watershed drain to the inlet. Field crews noted that it appeared that drainage from OK Lumber, located on two adjoining properties (1061 Howard Avenue and 1323 Old County Road), flowed through a parking lot adjacent to the street and then into the catch basin where PUL7 was collected. There appeared to be high potential for soil erosion from OK Lumber, primarily due to a large unpaved lot which was used to store lumber and equipment. Soil tracking from this lot to Howard Avenue was observed. The records review found little information about this site, but did indicate previous businesses at the site included Marshall Electric in the 1970s and Flynn Equipment Supply Company in 1965.

PUL1

In the northern half of the PCPS watershed, sampling was focused along Bransten Road, where elevated PCBs concentrations have been observed during previous studies (SMSTOPPP 2004 and Yee and McKee 2010). PUL1 was collected during Phase I from the street gutter in front of 977 Bransten Road and had an elevated PCBs concentration (1.61 mg/kg). The current occupant of this property is GC Lubricants. 977 Bransten Road is a DTSC cleanup site due to soil and groundwater contamination with PCBs and other pollutants associated with activities at GC Lubricants and California Oil Recyclers, Inc., a previous tenant at the site. Abatement measures have been implemented to reduce movement of contaminated soils from the property, including a concrete cap over contaminated areas and containment berms around the property. However, the results of the records review and from PUL1 and samples collected during previous investigations suggest that sediments with PCBs may have migrated from the 977 Bransten Road property into the public ROW, including the street and the MS4.

PUL15

PUL15 was collected during Phase I and had an elevated concentration of PCBs (1.41 mg/kg). This sample was collected in front of 941 Bransten Road, the property immediately east of 977 Bransten Road. The sample was collected by sweeping up fine sediment from the gutter east of the main access driveway up to the second (low use) access driveway. The occupant of the property was Ahern Rentals, a large equipment rental facility. It was noted that the property contains historic rail areas that have been paved over. However, the records review and field surveys did not reveal any direct links to PCBs. PCBs in this sample may originate from adjacent 977 Bransten Road (see above section describing PUL1).

PUL10

PUL10 was collected during Phase in front of 1008 Bransten Road, the property immediately west of 977 Bransten Road, and had an elevated concentration of PCBs (0.34 mg/kg). The sample was collected by sweeping up fine sediment from the eastern end of an access driveway with broken up pavement. The occupant was Aim Sheet Metal. The property is mostly paved but the paving is not in good condition. This location was formerly a LUST cleanup site for gasoline, but the records review and field surveys did not reveal any direct links to PCBs. PCBs in this sample may originate from adjacent 977 Bransten Road (see above section describing PUL1). Field crews indicated that at the time of sample collection, a nearby property (Cemex Concrete Supply, located at 1026 Bransten Road) contributed cement dust to the area where PUL10 was collected. Visual inspection from outside the Cemex property indicated the
site was mostly unpaved, housekeeping appeared poor, and equipment was stored on-site. Two properties adjacent to 1026 Bransten Road and also owned by Cemex (781 and 789 Old County Road) had unpaved areas, historical railways, poor housekeeping, and equipment and unlabeled drums were stored on-site. 781 Old County Road was occupied by a large truck maintenance shop. 789 Old County Road appeared unoccupied, but a former business (Reed Roofing) was a hazardous waste generator and a LUST cleanup site was located here in the past. The project team was not able to gain access to any of the Cemex properties for inspections and sampling. However, the records review and field surveys did not reveal any direct links to PCBs for any of these properties.

**PCBs Homolog Profiles**

For all samples that had total PCB concentrations >0.2 mg/kg, PCB homolog profiles were compared with homolog profiles for various Aroclor formulations developed by Frame et al. (1996), which were adjusted to include only the 40 congeners analyzed for in the PCPS watershed samples (Figure 7). The majority of the samples (86%) were dominated by higher chlorinated homologs (e.g., PCBs with 5 or more chlorine atoms), which suggests weathered samples since weathering may reduce lesser chlorinated homologs (di, tri and tetra) at a faster rate than higher chlorinated homologs. Only three samples were dominated by lower chlorinated homologs (e.g., PCBs containing 4 or fewer chlorine atoms), including both the highest total PCBs concentration sample in the watershed (PUL22) and the pump station wet well sample (PUL27). The homolog profiles for these samples were significantly correlated with each other ($R^2 = 0.91$, $p<0.01$) suggesting a link between the PCBs found on the property at 1411 Industrial Road and PCBs deposited in the pump station wet well. The homolog profile from the pump station wet well sample was also significantly correlated with PUL4, the second most elevated sample in the watershed ($R^2=0.85$, $p=0.01$), which was found in sediment collected from the main storm drain line that runs down Industrial Road, immediately downstream of both the property at 1411 Industrial Road and the PG&E substation on Industrial Road. However, PUL4 and PUL22 were not significantly correlated, although this lack of correlation between the inlet sample collected from 1411 Industrial Road and the downstream MS4 sample may, in part, be due to the timing of sample collection. PUL22 and PUL27 were collected in May 2013 during Phase 2 sampling, whereas PUL4 was collected in October 2012 during Phase 1 sampling.

The homolog profile pattern from PUL22 contained a predominance of tri- and tetra-chlorinated biphenyls, and most closely correlated with Aroclor 1242 ($R^2=0.98$, $p<0.001$). The pump station sample was also correlated with Aroclor 1242 ($R^2=0.86$ $p<0.01$), as well as Aroclor 1016 ($R^2=0.85$, $p=0.01$). PUL4, collected from a manhole in the sidewalk along Industrial Road, was not significantly correlated with any of the known Aroclor formulations. Two samples collected in the public ROW just outside of the PG&E substation (PUL8 and PUL9) were neither elevated (i.e., they were not above assumed urban background of 0.2 mg/kg), nor significantly correlated with either the elevated sample at PUL4 (which drains the substation), nor with the pump station sample. They were, however, significantly correlated with each other ($R^2 =0.95 – 0.97$, $p<0.01$) and with Aroclor 1260 ($R^2=0.94 – 0.97$, $p<0.01$).

Table 9 presents common uses of the different Aroclor formulations. Given the general use categories, the overlap among applications for different Aroclor formulations, the lack of information about historic use and disposal of Aroclors, the likely possibility that multiple Aroclor formulations may have been used, and the impact of weathering on sample homolog profiles, it is not possible to identify the specific Aroclor(s) or use(s) responsible for elevated PCBs in soil/sediment in the PCPS watershed. However, the homolog profiles do suggest links between certain samples, as described above.
Table 6. Description of Sample Sites in the Pulgas Creek Pump Station Watershed.

<table>
<thead>
<tr>
<th>Sampling Phase</th>
<th>Sample Date</th>
<th>Station Code</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Sample Site Type</th>
<th>Public vs. Private</th>
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<td>PUL1</td>
<td>37.50618</td>
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<td>PUL7&lt;sup&gt;a&lt;/sup&gt;</td>
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<td></td>
<td>PUL8-FD&lt;sup&gt;b&lt;/sup&gt;</td>
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<td></td>
<td>PUL26</td>
<td>37.50653</td>
<td>-122.25444</td>
<td>Storm drain inlet</td>
<td>City Property</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PUL27</td>
<td>37.50470</td>
<td>-122.24899</td>
<td>Pump Station Wet Well</td>
<td>City Property</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PUL28</td>
<td>37.49831</td>
<td>-122.24598</td>
<td>Storm drain inlet</td>
<td>Public ROW</td>
</tr>
</tbody>
</table>

<sup>a</sup>Secondary analytes were also analyzed for in this sample.

<sup>b</sup>FD - Field Duplicate.
**Table 7. Soil/Sediment Concentrations of Primary Analytes Measured in the Pulgas Creek Pump Station Watershed**

<table>
<thead>
<tr>
<th>Station Codea</th>
<th>Total PCBs (mg/kg)</th>
<th>Total PCBs (mg/kg Fines)</th>
<th>Mercury (mg/kg)</th>
<th>Mercury (mg/kg Fines)</th>
<th>Total Solids (%)</th>
<th>Total Organic Carbon (%</th>
<th>% Fines (&lt;63 μm)</th>
<th>Grain Size (% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pebble ≥4 mm</td>
</tr>
<tr>
<td>PUL22</td>
<td>193</td>
<td>12,601</td>
<td>0.07</td>
<td>4.8</td>
<td>98</td>
<td>2.3</td>
<td>1.5</td>
<td>0.4</td>
</tr>
<tr>
<td>PUL4</td>
<td>2.5</td>
<td>88</td>
<td>0.13</td>
<td>4.6</td>
<td>76</td>
<td>0.8</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>PUL11</td>
<td>1.6</td>
<td>23</td>
<td>0.05</td>
<td>0.63</td>
<td>99</td>
<td>0.7</td>
<td>7.1</td>
<td>2.0</td>
</tr>
<tr>
<td>PUL15</td>
<td>1.4</td>
<td>11</td>
<td>0.23</td>
<td>1.8</td>
<td>99</td>
<td>1.2</td>
<td>13</td>
<td>4.0</td>
</tr>
<tr>
<td>PUL28</td>
<td>1.2</td>
<td>9.5</td>
<td>0.14</td>
<td>1.1</td>
<td>96</td>
<td>4.0</td>
<td>13</td>
<td>1.8</td>
</tr>
<tr>
<td>PUL27</td>
<td>0.96</td>
<td>12</td>
<td>0.15</td>
<td>1.8</td>
<td>96</td>
<td>1.5</td>
<td>8.3</td>
<td>2.3</td>
</tr>
<tr>
<td>PUL12</td>
<td>0.84</td>
<td>5.2</td>
<td>0.07</td>
<td>0.45</td>
<td>100</td>
<td>2.2</td>
<td>16</td>
<td>2.0</td>
</tr>
<tr>
<td>PUL20</td>
<td>0.55</td>
<td>6.2</td>
<td>0.10</td>
<td>1.1</td>
<td>97</td>
<td>3.2</td>
<td>8.8</td>
<td>1.8</td>
</tr>
<tr>
<td>PUL7</td>
<td>0.40</td>
<td>3.2</td>
<td>0.13</td>
<td>1.1</td>
<td>44</td>
<td>5.9</td>
<td>12</td>
<td>4.0</td>
</tr>
<tr>
<td>PUL10</td>
<td>0.34</td>
<td>2.4</td>
<td>0.04</td>
<td>0.26</td>
<td>100</td>
<td>0.3</td>
<td>14</td>
<td>3.1</td>
</tr>
<tr>
<td>PUL18</td>
<td>0.22</td>
<td>1.9</td>
<td>0.10</td>
<td>0.85</td>
<td>98</td>
<td>5.3</td>
<td>12</td>
<td>2.6</td>
</tr>
<tr>
<td>PUL26</td>
<td>0.14</td>
<td>1.0</td>
<td>0.07</td>
<td>0.50</td>
<td>98</td>
<td>5.7</td>
<td>14</td>
<td>3.4</td>
</tr>
<tr>
<td>PUL19-FD</td>
<td>0.11</td>
<td>0.88</td>
<td>0.17</td>
<td>1.4</td>
<td>93</td>
<td>3.3</td>
<td>13</td>
<td>2.9</td>
</tr>
<tr>
<td>PUL14</td>
<td>0.11</td>
<td>0.52</td>
<td>0.18</td>
<td>0.88</td>
<td>97</td>
<td>3.2</td>
<td>21</td>
<td>6.9</td>
</tr>
<tr>
<td>PUL23</td>
<td>0.11</td>
<td>1.0</td>
<td>0.06</td>
<td>0.61</td>
<td>100</td>
<td>1.1</td>
<td>10</td>
<td>1.3</td>
</tr>
<tr>
<td>PUL19</td>
<td>0.09</td>
<td>0.82</td>
<td>0.21</td>
<td>2.0</td>
<td>94</td>
<td>3.8</td>
<td>10</td>
<td>2.2</td>
</tr>
<tr>
<td>PUL24</td>
<td>0.07</td>
<td>0.55</td>
<td>0.12</td>
<td>1.0</td>
<td>99</td>
<td>1.6</td>
<td>12</td>
<td>2.3</td>
</tr>
<tr>
<td>PUL8-FD</td>
<td>0.06</td>
<td>0.33</td>
<td>0.11</td>
<td>0.57</td>
<td>99</td>
<td>2.0</td>
<td>19</td>
<td>5.1</td>
</tr>
<tr>
<td>PUL2</td>
<td>0.05</td>
<td>0.16</td>
<td>0.05</td>
<td>0.16</td>
<td>99</td>
<td>0.8</td>
<td>32</td>
<td>13</td>
</tr>
<tr>
<td>PUL8</td>
<td>0.05</td>
<td>0.28</td>
<td>0.22</td>
<td>1.3</td>
<td>99</td>
<td>2.7</td>
<td>17</td>
<td>4.7</td>
</tr>
<tr>
<td>PUL9</td>
<td>0.05</td>
<td>0.36</td>
<td>1.10</td>
<td>8.3</td>
<td>100</td>
<td>1.8</td>
<td>13</td>
<td>2.7</td>
</tr>
<tr>
<td>PUL5</td>
<td>0.02</td>
<td>0.05</td>
<td>0.04</td>
<td>0.09</td>
<td>99</td>
<td>0.9</td>
<td>37</td>
<td>12</td>
</tr>
<tr>
<td>PUL13</td>
<td>0.02</td>
<td>0.09</td>
<td>0.36</td>
<td>1.9</td>
<td>99</td>
<td>4.4</td>
<td>19</td>
<td>3.9</td>
</tr>
<tr>
<td>PUL21</td>
<td>0.02</td>
<td>1.1</td>
<td>0.05</td>
<td>3.3</td>
<td>99</td>
<td>1.1</td>
<td>1.6</td>
<td>0.6</td>
</tr>
<tr>
<td>PUL25</td>
<td>0.02</td>
<td>0.09</td>
<td>0.07</td>
<td>0.37</td>
<td>99</td>
<td>0.8</td>
<td>20</td>
<td>3.2</td>
</tr>
</tbody>
</table>

FD - Field duplicate.

Note: total PCBs and mercury sample results that exceed assumed urban background concentration are shaded.
Figure 3. Locations of Soil/Sediment Samples Collected in the Pulgas Creek Pump Station Watershed.
Figure 4. Soil/Sediment Total PCBs Concentrations in the Pulgas Creek Pump Station Watershed. Includes Total PCBs (40 RMP congeners) and Total PCBs Normalized to Percent Fine
Figure 5. Concentrations of PCBs measured in the Pulgas Creek Pump Station Watershed
Figure 7. Homolog Profiles for Soil/Sediment Samples with Total PCBs > 0.2 mg/kg in the Pulgas Creek Pump Station Watershed (top figure), and Homolog Profiles of Different Aroclor Formulations (bottom figure). Source: Frame et al. 1996.4

4The Aroclor formulation homolog profiles presented here were modified from the Aroclor congener compositions reported by Frame et al. (1996) to include only those congeners (and associated co-eluting congeners) that were reported for the PCPS watershed samples.
Table 8. Summary of Elevated PCBs and Mercury Samples Collected in the Pulgas Creek Pump Station Watershed and Associated Properties.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Type</th>
<th>PCBs (mg/kg)</th>
<th>Mercury (mg/kg)</th>
<th>Associated Properties - Description/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUL22</td>
<td>Private Property</td>
<td>193</td>
<td>0.074</td>
<td>1411 Industrial Road - Habitat for Humanity. On-site sample collected from storm drain inlet in parking lot. SMCEHD files indicated Adhesive Engineering / Master Builders, Inc. occupied the property about 1958-1994, used PCBs on-site, and had a history of violations for leaky wastewater drums and improper storage of hazardous wastes. An environmental assessment report associated with 1994 business closure described use of oil containing PCBs to heat on-site tank. PCBs were detected at 93 mg/kg in a 1987 soil sample at the tank location and abatement (soil removal) was performed.</td>
</tr>
<tr>
<td>PUL4</td>
<td>Public ROW</td>
<td>2.5</td>
<td>0.13</td>
<td>Sample collected from a manhole in sidewalk adjacent to 1411 Industrial Road (see above) and across the street from the PG&amp;E substation. The southernmost portion of the PCPS watershed drains to this location in the MS4, including 1411 Industrial Rd. and many other properties.</td>
</tr>
<tr>
<td>PUL1</td>
<td>Public ROW</td>
<td>1.6</td>
<td>0.05</td>
<td>977 Bransten Road - GC Lubricants. Sample collected from the street gutter in front of this property, which is a DTSC cleanup site with PCBs contamination in soil and groundwater.</td>
</tr>
<tr>
<td>PUL15</td>
<td>Public ROW</td>
<td>1.4</td>
<td>0.23</td>
<td>941 Bransten Road - Ahern Rentals, a large equipment rental facility. Sample was collected just downstream of the property’s driveway. Property contains historic rails that have been paved over. Entire lot is paved. PCBs may originate from adjacent 977 Bransten Road (see above). The records review and field surveys did not find direct links to PCBs.</td>
</tr>
<tr>
<td>PUL28</td>
<td>Public ROW</td>
<td>1.2</td>
<td>0.14</td>
<td>1000 Washington Street - Gonsalves and Stronck Construction. Sample collected from storm drain inlet on Washington Street and adjacent gutter. Spectrum Label Corporation occupied this location from 1968 through at least 1998 and was a permitted hazardous waste generator under RCRA. The records review and field surveys did not find direct links to PCBs.</td>
</tr>
<tr>
<td>PUL27</td>
<td>Municipal</td>
<td>0.96</td>
<td>0.15</td>
<td>Sample collected from wet well of PCPS, which is located at bottom of the drainage.</td>
</tr>
<tr>
<td>PUL12</td>
<td>Public ROW</td>
<td>0.84</td>
<td>0.07</td>
<td>1040 Varian St. - Provence Stone. Farinon Electric, located at the site from the 1960s through at least 1989, was a RCRA hazardous waste generator The records review and field surveys did not find direct links to PCBs.</td>
</tr>
<tr>
<td>PUL20</td>
<td>Public ROW</td>
<td>0.55</td>
<td>0.10</td>
<td>1600 Industrial Rd. - Avenue Auto Service and Painting. Sample collected from storm drain inlet. This site has been a hazardous waste generator since at least 1986. SMCEHD files indicated this business has had poor housekeeping and other maintenance problems. The records review and field surveys did not find direct links to PCBs.</td>
</tr>
<tr>
<td>PUL7</td>
<td>Public ROW</td>
<td>0.40</td>
<td>0.13</td>
<td>Sample collected from storm drain inlet and adjacent gutter on Howard Avenue. Nearby properties included OK Lumber at 1061 Howard Avenue and 1323 Old County Road. High potential for soil erosion from large unpaved lot used to store lumber and equipment. Soil tracking from this lot to Howard Avenue was observed. Previous occupants of the OK Lumber site included Marshall Electric in the 1970s and Flynn Equipment Supply Company in 1965. The records review and field surveys did not find direct links to PCBs.</td>
</tr>
<tr>
<td>PUL10</td>
<td>Public ROW</td>
<td>0.34</td>
<td>0.04</td>
<td>1008 Bransten Rd. - AIM Sheet Metal. Sample collected from soil in broken up pavement of access driveway. Formerly a LUST cleanup site for gasoline. The property is mostly paved but the paving is not in good condition. PCBs may originate from adjacent 977 Bransten Road (see above). The records review and field surveys did not find direct links to PCBs.</td>
</tr>
<tr>
<td>PUL18</td>
<td>Public ROW</td>
<td>0.22</td>
<td>0.10</td>
<td>Corner of Industrial Road and Center Street - PG&amp;E substation. The PCBs concentration in this sample is very close to the assumed urban background level. PCBs at higher concentrations in nearby samples appear to originate from properties other than the substation, including 1411 Industrial Road (see above).</td>
</tr>
<tr>
<td>PUL9</td>
<td>Public ROW</td>
<td>0.05</td>
<td>1.10</td>
<td>PG&amp;E substation located at the corner of Industrial Road and Washington Street. Sample collected by sweeping up fine sediments just outside the southern corner of substation property. Field crews indicated the sample was collected at a location where there appeared to have been stormwater runoff flow from the PG&amp;E substation property toward the street gutter.</td>
</tr>
<tr>
<td>PUL13</td>
<td>Public ROW</td>
<td>0.02</td>
<td>0.36</td>
<td>1511 - 1531 Old County Road - includes Laskey-Mendell Trade Printing, Furniture Revival, Dino’s Autobody, and a small lumber yard. Sample was collected by compositing sediment from four stained areas in the dirt/gravel alley between Washington and Center Streets. The alley is close to and parallel to Old County Road. The records review and field surveys did not find direct links to mercury.</td>
</tr>
</tbody>
</table>

Note: total PCBs and mercury sample results that exceed assumed urban background concentration are shaded.
Table 9. Common Uses of Aroclors.\(^1\)

<table>
<thead>
<tr>
<th>A-1016</th>
<th>Capacitors</th>
</tr>
</thead>
</table>
| A-1221 | Capacitors  
Gas Transmission Turbines  
Rubber  
Polyvinyl acetate - Improved quick-track and fiber-tear properties  
Polystyrene – Plasticizer  
Epoxy resins - Increased resistance to oxidation and chemical attack; better adhesive properties |
| A-1232 | Hydraulic fluid  
Rubber  
Adhesives  
Polyvinyl acetate - Improved quick-track and fiber-tear properties |
| A-1242 | Transformers  
Heat transfer  
Hydraulic fluid  
Gas transmission turbines  
Rubbers  
Carbonless copy paper  
Wax extenders  
Polyvinyl acetate - Improved quick-track and fiber-tear properties |
| A-1248 | Hydraulic fluids  
Vacuum pumps  
Rubbers  
Polyvinyl chloride - Secondary plasticizers to increase flame retardance and chemical resistance  
Epoxy resins - Increased resistance to oxidation and chemical attack; better adhesive properties |
| A-1254 | Transformers  
Capacitors  
Hydraulic fluids  
Vacuum pumps  
Synthetic resins  
Wax extenders  
De-dusting agents  
Inks  
Cutting oils  
Pesticide extenders  
Sealants and caulking compounds  
Polyvinyl chloride - Secondary plasticizers to increase flame retardance and chemical resistance  
Styrene-butadiene co-polymers - Better chemical resistance  
Ethylene vinyl acetate – Pressure-sensitive adhesives  
Chlorinated rubber - Enhanced resistance, flame retardance, electrical insulation properties |
| A-1260 | Transformers  
Hydraulic fluids  
De-dusting agents  
Polyvinyl chloride - Secondary plasticizers to increase flame retardance and chemical resistance  
Polyester resins - Stronger fiberglass; reinforced resins and economical fire retardants  
Varnish - Improved water and alkali resistance |

Mercury Analysis

Mercury was detected in all soil/sediment samples collected in the PCPS watershed, at concentrations ranging from 0.04 to 1.1 mg/kg (Figure 8 and Table 7), with a median of 0.16 mg/kg. The location and magnitude of the mercury concentrations measured during both phases of sampling in the watershed are illustrated in Figure 9.

Less than 20% of the samples in the PCPS watershed exceeded the median soil/sediment mercury concentration for all Bay Area measurements (Figure 10). Because mercury may be associated with fine particles, mercury concentrations were normalized to percent fines (less than 63 µm in diameter). In general, the pattern of relative mercury concentrations among the samples was similar following normalization. There were no significant relationships identified between mercury and PCBs concentrations, nor with TOC or percent fine sediment (p>0.05).

Only two samples (PUL9 and PUL13) had mercury concentrations elevated above typical urban background in the Bay Area (0.3 mg/kg based on the top 25% of mercury concentrations measured in the Bay Area dataset - see Section 2.2, Step 5 and Figure 10). These samples and the associated nearby properties are summarized in Table 8 and described below.

PUL9

PUL9 (mercury = 1.1 mg/kg) was collected by sweeping up fine sediments in the public ROW just outside the southern corner of the PG&E substation located at the corner of Industrial Road and Washington Street. Field crews indicated the sample was collected at a location where there appeared to have been stormwater runoff flow from the PG&E substation property toward the street gutter.

PUL13

PUL13 (mercury = 0.36 mg/kg) was collected from the public ROW in a dirt/gravel alley between Washington and Center Streets, located close to and parallel to Old County Road, by compositing surface soils from four stained areas. The adjacent properties were 1511 through 1531 Old County Road, including Laskey-Mendell Trade Printing, the Furniture Revival, Dino’s Autobody, and a small lumber yard. The only relevant information about these properties found during the records review was that Furniture Revival (1523 Old County Road) was identified as a hazardous waste generator subject to RCRA.

Grain Size and TOC Analysis

Grain size distributions are summarized in Table 7. All samples were dominated by the sand fraction, which comprised 43% to 86% of each sample, while the fine fraction (< 63 um) comprised 1.5 – 37% of each sample. The distributions were similar across the sample location types (e.g., surface soils and sediments from pavement, storm drain inlets, manholes, and the pump station wet well). TOC ranged from 0.28% to 5.9%, with a mean of 2.4%.

Secondary Analytes

A subset of samples were analyzed for a number of secondary analytes. PUL7, PUL8, and PUL19 were analyzed for PAHs and OC pesticides (including chlordanes and DDTs), while PUL8, PUL10 and PUL19 were analyzed for PBDEs, dioxins, and furans. PAHs were detected in all three samples. Total PAH concentrations ranged from 3.7 mg/kg to 164 mg/kg, with PUL7 having the highest concentration. At
least one chlordane and one DDT compound were also detected in all three samples, with concentrations ranging from 4.6 to 66 ug/kg (total chlordane) and 4.4 to 30 ug/kg (total DDTs). Total PBDEs concentrations detected ranged from 74 to 330 ug/kg. Dioxins and furans were detected in all samples, with concentrations of individual compounds ranging from not detected to 7,300 µg/kg. The concentrations of TCDDs ranged from not detected to 2.7 ng/kg. The complete secondary analyte dataset is available on the CW4CB website (basmaa.org/monitoring-data).
Figure 8. Soil/Sediment Total Mercury Concentrations in the Pulgas Creek Pump Station Watershed. Includes Total Mercury and Total Mercury Normalized to Percent Fines.
Figure 9. Concentrations of Mercury Measured in the Pulgas Creek Pump Station Watershed.
4.0 DISCUSSION AND SUMMARY

The PCPS watershed, located in the City of San Carlos, is one of five drainages in the Bay Area with old industrial land uses and elevated PCBs concentrations in street dirt and MS4 sediment samples that was selected for pilot testing the effectiveness of controls for PCBs and mercury in stormwater runoff. The pilot projects were implemented through the regional CW4CB project. CW4CB was funded by a grant from EPA to BASMAA and matching funds from Bay Area countywide stormwater management programs, including SMCWPPP, which provided in-kind matching funds for the CW4CB projects conducted in San Mateo County. The mercury and PCB load reduction effectiveness evaluations for the PCPS watershed source property identification pilot study and other CW4CB pilot projects are presented separately in the CW4CB Final Project Report (basmaa.org/Clean-Watersheds-for-a-Clean-Bay-Project/CW4CB-Overall-Project-Report).

The overall goal of this study was to attempt to identify properties in the PCPS watershed with the potential for discharging sediments with elevated PCBs and/or mercury concentrations to local public ROW areas, including the stormwater drainage system. Such properties would then be considered for referral to the RWQCB and/or other appropriate agencies for further investigation and abatement.

In general, the source property identification process consisted of the following five steps:

1. Records review. Review general information sources (e.g., spill site databases, historic land use and available sampling data) and records on specific properties/businesses to begin identifying potential source properties within the watershed.

2. Reconnaissance survey. Perform a driving/walking reconnaissance survey of the watershed to further identify potential source properties and begin looking for evidence that runoff from such locations is likely to convey pollutants to MS4s.

3. Facility inspections. Perform inspections of selected facilities within the watershed.

4. Sediment testing. Test sediments collected from the public ROW and private properties in the watershed for PCBs, mercury and other particle-bound pollutants.

5. Identify potential sources properties and consider making referrals as appropriate. Where laboratory data confirm elevated pollutant concentrations, consider referring properties to regulatory agencies for cleanup and abatement. The referral process includes submission of a form to the RWQCB identifying each suspect property, attached to which is any additional information required to justify the referral (e.g., reports documenting site history and laboratory data).

The review of records on properties in the PCPS watershed was conducted November 2010 through February 2011. The reconnaissance survey in the PCPS watershed’s public ROW areas was conducted in March 2012. Facility inspections were conducted in April 2012. Phase 1 sediment sampling was conducted in September 2012 and Phase 2 sampling was conducted in May 2013.

In the southern portion of the PCPS, the results of the records review and the elevated PCBs concentrations found in PUL22 and PUL4 suggest that the 1411 Industrial Road property may be a source of PCBs to the MS4. At the time of sampling this site appeared well maintained and had paved surfaces that were in good condition, suggesting the possibility that soils potentially containing PCBs in the underlying subsurface migrated directly into the on-site storm drain inlet (e.g., through underground
The PCBs homolog profiles for samples PUL22 (1411 Industrial Road) and PUL27 (PCPS wet well) were significantly correlated with each other, suggesting a link between the PCBs found on the property at 1411 Industrial Road and PCBs deposited in the pump station wet well located at the bottom of the watershed (see Section 3.4).

It should be noted that the PG&E substation at the corner of Industrial Road and Center Street had long been a suspect source property since it drains to a MS4 manhole where elevated PCBs samples have been collected (e.g., PUL4) and because PCBs are associated with electrical equipment. The substation was informally referred to the RWQCB for further investigation and potential abatement in a 2003 letter. More recently, as part of this study SMCWPPP and BASMAA worked together in an unsuccessful attempt to gain permission from PG&E to collect soil samples from the substation property. However, public ROW soil/sediment samples collected during this study from areas just outside of the PG&E substation property were at or below urban background levels. These data, combined with the very elevated result for PUL22 and other elevated samples upstream of PUL4, suggest that the 1411 Industrial Road property (located across the street from the PG&E substation) and likely other properties in the southernmost portion of the PCPS are the primary source of the PCBs found in PUL4, rather than the substation.

In the northern portion of the PCPS, the results of the records review and from PUL1 and samples collected during previous investigations suggest that sediments with PCBs may have migrated from the 977 Bransten Road property into the public ROW, including the street and the MS4.

SMCWPPP will work with staff from the City of San Carlos to determine next steps for 1411 Industrial Road and 977 Bransten Road, including potentially referring these two properties to the RWQCB. However, based on the spatial distribution of elevated sediment samples and watershed drainage patterns, it appears that not yet confirmed sources of PCBs to urban runoff (other than these two properties) remain in the PCPS watershed. SMCWPPP is therefore currently implementing additional investigations to attempt to identify additional source properties in the watershed.

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5977 Bransten Road was informally referred to the RWQCB for further investigation and potential abatement in a 2003 letter.
5.0 REFERENCES


City of San Jose and EOA, Inc. 2002. Case Study Investigating Elevated Levels of PCBs in Storm Drain Sediments in San Jose, California. April 15, 2002.

City of San Jose and EOA, Inc. 2003. Year Two Case Study Investigating Elevated Levels of PCBs in Storm Drain Sediments in San Jose, California. July 2003.


APPENDIX 1 - List of PCBs Product Trade Names
# PCBs Product Trade Names

Reference USEPA:
http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/aroclor.htm#aroclor

Shaded names are those that were most commonly used in the United States.

<table>
<thead>
<tr>
<th>Aroclor - used by Monsanto Company</th>
<th>Chlorextol - Allis-Chalmers trade name</th>
<th>Inerteen - used by Westinghouse</th>
<th>Pyranol/Pyrenol - used by General Electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aroclor(^1)</td>
<td>Chlorextol(^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arochlor(^1)</td>
<td>Inerteen(^3)</td>
<td>Pyraclor</td>
<td></td>
</tr>
<tr>
<td>Aroclor(^2)</td>
<td>Decachlorodiphenyl</td>
<td>Pyralene</td>
<td></td>
</tr>
<tr>
<td>Arochlor(^1)</td>
<td>Delor</td>
<td>Kanechlor</td>
<td>Pyranol(^4)</td>
</tr>
<tr>
<td>Arubren</td>
<td>Delorene</td>
<td>Kaneclor</td>
<td>Pyroclor</td>
</tr>
<tr>
<td>Asbestos</td>
<td>Dicaplor</td>
<td>Kennechlor</td>
<td>Saf-T-Kuhl</td>
</tr>
<tr>
<td>Askarel</td>
<td>Diconal</td>
<td>Leromoll</td>
<td>Saf-T-Kohl</td>
</tr>
<tr>
<td>Askarel</td>
<td>Diphenyl, chlorinated</td>
<td>Magvar</td>
<td>Santosol</td>
</tr>
<tr>
<td>Auxol</td>
<td>DK</td>
<td>MCS 1489</td>
<td>Santotherm</td>
</tr>
<tr>
<td>Bakola</td>
<td>Duconal</td>
<td>Montar</td>
<td>Santothern</td>
</tr>
<tr>
<td>Biphenyl, chlorinated</td>
<td>Dykanol</td>
<td>Nepolin</td>
<td>Santovac</td>
</tr>
<tr>
<td>Chlophen</td>
<td>Educarel</td>
<td>No-Flamol</td>
<td>Solvol</td>
</tr>
<tr>
<td>Chloretol</td>
<td>EEC-18</td>
<td>NoFlamol</td>
<td>Sorol</td>
</tr>
<tr>
<td>Chlorextol(^2)</td>
<td>Elaol</td>
<td>Non-Flamol</td>
<td>Soval</td>
</tr>
<tr>
<td>Chlorinated biphenyl</td>
<td>Electrophenic</td>
<td>Olex-sf-d</td>
<td>Sovol</td>
</tr>
<tr>
<td>Chlorinated diphenyl</td>
<td>Elemex</td>
<td>Orophene</td>
<td>Sovtol</td>
</tr>
<tr>
<td>Chlorinol</td>
<td>Elinol</td>
<td>Pheaoclor</td>
<td>Terphenychlore</td>
</tr>
<tr>
<td>Chlorobiphenyl</td>
<td>Eucarel</td>
<td>Pheneochlor</td>
<td>Thermanal</td>
</tr>
<tr>
<td>Chlorodifhenyl</td>
<td>Fenchlor</td>
<td>Phenoclor</td>
<td>Therminol</td>
</tr>
<tr>
<td>Chlorophen</td>
<td>Fenclor</td>
<td>Plastivar</td>
<td>Turbinol</td>
</tr>
<tr>
<td>Chorextol</td>
<td>Fenoclor</td>
<td>Polychlorinated diphenyl</td>
<td></td>
</tr>
</tbody>
</table>
**TYPE OF LAND USE:**
- Commercial
- Industrial
- Municipal/Agency
- Transportation-related
- Miscellaneous (railroad lines/yards, coatings, printing inks, pesticides, stressed vegetation, etc.)
- Unidentified puddles or stains

**EVIDENCE OF POTENTIAL PCB SOURCE** (check all that apply and describe in space given)

1. Electrical applications/utilities (transformers, capacitors, appliances, televisions, fluorescent light ballast, motors, etc.)
2. Evidence of outdoor hazardous material/waste storage areas (tanks, drums, scrap materials, e-waste). If so, are they labeled?
3. Recycling/scrap yards (auto dismantlers)
4. Outdoor burning or combustion
5. Manufacturing industries with heat transfer systems (e.g., chemicals, high-tech, asphalt, metal products, etc.)
6. Building demolition, renovation or window replacement sites/recyclers
7. Miscellaneous (railroad lines/yards, coatings, printing inks, pesticides, stressed vegetation, etc.)
8. Unidentified puddles or stains

**SITE/AREA INFORMATION**

**LOCATION** (include address/cross street, if applicable): 

**NAME OF BUSINESS(ES)** (if available): 

**TYPE OF LAND USE:**
- Commercial
- Industrial
- Municipal/Agency
- Transportation-related
- Miscellaneous (railroad lines/yards, coatings, printing inks, pesticides, stressed vegetation, etc.)

**DESCRIPTION OF SURVEYED AREA:** 

**INSPECTED BY:** ____________________________________  
**DATE:** _______/_______/_______
### POTENTIAL FOR SEDIMENT EROSION FROM SITE/AREA TO OCCUR (check all that apply and describe in space given)

<table>
<thead>
<tr>
<th>Potential Factor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property contains or appears to contain open areas (areas without structures or buildings)</td>
<td></td>
</tr>
<tr>
<td>Street/driveway(s)/parking lot(s) not paved, partially paved or in poor condition</td>
<td></td>
</tr>
<tr>
<td>Sidewalk(s) cracked, in poor condition, or lacking</td>
<td></td>
</tr>
<tr>
<td>Vehicle activity (appears to occur) to/from site on unpaved areas</td>
<td></td>
</tr>
<tr>
<td>Vacant or undeveloped lot(s)</td>
<td></td>
</tr>
<tr>
<td>Site/area has been identified by the city or other party as an illegal dumping location</td>
<td></td>
</tr>
</tbody>
</table>

### ADDITIONAL INFORMATION. Does site/area confirm records review findings? Explain below. Add any additional notes that will inform potential facility inspections. Include names of any identified buildings. Sketch the site to show potential sediment sources and pathways to streets and storm drain inlets. Attach a separate piece of paper, if needed.
CW4CB TASK 3 FACILITY INSPECTION FORM

Initial Priority Ranking: H M L
(based on inspection)

INSPECTED BY: _______________________________ DATE: __________/________/______
MAP NUMBER/ID: __________________________ PHOTO ID #: _______________________

SITE INFORMATION

NAME OF CURRENT BUSINESS: ____________________________ TYPE OF BUSINESS: ____________________________

NAME OF OWNER: __________________________ COVERED UNDER GENERAL INDUSTRIAL PERMIT?: ____________________________

ADDRESS (include cross street, if possible): __________________________ APN #: __________________________

NAME AND TITLE OF OFF-SITE CONTACT: __________________________ CONTACT INFORMATION: __________________________
ADDRESS: __________________________ EMAIL: __________________________
PH: __________________________

NAME AND TITLE OF ON-SITE CONTACT (if different from above): __________________________ CONTACT INFORMATION: __________________________
ADDRESS: __________________________ EMAIL: __________________________
PH: __________________________

DESCRIPTION OF SITE (include areas of principal interest and apparent level of housekeeping). ALSO ATTACH A SKETCH OF THE SITE ON A SEPARATE PIECE OF PAPER (include potential sources and pathways to storm drain inlets and on-site and ROW sampling locations).

TYPE OF POTENTIAL PCB SOURCE (consider current and past use; check all that apply and describe in space given below)

- Electrical applications/utilities (transformers, capacitors, appliances, televisions, fluorescent light ballasts, motors, etc.)
- Hydraulic fluids (lifts, die-casting machinery, etc.)
- Plasticizers (sealants, caulk, PVC, polyurethanes, polycarbonates, etc.)
- Evidence of outdoor hazardous material/waste storage areas (tanks, drums, scrap materials, e-waste). If so, can they be identified?
- Recycling/scrap yards (auto dismantlers)
- Outdoor burning or combustion
- Manufacturing industries with heat transfer systems (e.g., chemicals, high-tech, asphalt, metal products, etc.)
- Building demolition, renovation or window replacement site/recycler
- Gas compressors/stations/pipelines
- Miscellaneous (rail road lines/yards, coatings, printing inks, pesticides, stressed vegetation, etc.)

1
## CW4CB TASK 3 FACILITY INSPECTION FORM

### POTENTIAL FOR SEDIMENT EROSION FROM SITE/AREA TO OCCUR (check all that apply, describe in space given and include in attached sketch)

- Property contains open area(s)/driveway(s)/parking lot(s) not paved, partially paved or in poor condition (circle which applies)
- Vehicle activity to/from site on unpaved areas
- Does the property border streets without curbs, berms or other containment?
- Vacant or undeveloped lot
- If waste (construction/hazardous materials/etc.) is generated on-site, is it kept in a dumpster or other container? If so, describe

### STORMWATER INFRASTRUCTURE AND HYDROLOGY (if any of the below apply to this site, include in attached sketch)

- Are stormwater treatment practices present? If so, describe.
- Are private storm drains or inlets located near the facility? If so, describe.
- Has storm drain infrastructure identified in GIS been located on property? Any infrastructure not previously identified?
- Is there sediment accumulation at edges of property, curbs, catch basins, or elsewhere? If so, describe.

### QUESTIONS FOR OWNER/CONTACT (include dates when possible)

1. What type of business(es) did the previous tenant(s)/owner(s) have, and when did they exist?

2. Are PCBs in use now or have they been in the past on this facility? Have there been any spills or leaks? If so, when?

3. Have there been any building fires in the past? Major exterior renovation or window replacement? If so, when?

4. Does the facility have a power substation onsite? In the past? If so, when?

5. What type of business was on the neighboring properties (if applicable)?

6. How are the ground surfaces maintained (hosed, swept)? How is the material disposed of afterwards?

7. Are vehicles used on-site? If so, what type, and is there potential for dirt to be transferred off-site?