
Budget Options for the Municipal Regional Permit

Report to the

Transportation, Water, and Infrastructure
Committee

April 10, 2017

By

Public Works Department

2015 Municipal Regional Permit Report to the Transportation, Water, and Infrastructure Committee

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Introduction

This Options Report to the Transportation, Water, and Infrastructure Committee (Committee) explores and provides recommendations to the Committee for implementing the Municipal Regional Permit adopted by the Regional Water Quality Control Board (Regional Board) in November 2015 (MRP 2.0). This is the third and final report on this topic. The first report to the Committee on June 9, 2016, the Policy Report, provided an overall background and history of past stormwater permits that have led to the current permit, current permit requirements, and policy implications of implementing MRP 2.0. These new permit requirements also have fiscal implications, which were reviewed in detail in the second report to the Committee, the Financial Report, on October 13, 2016.

Since the last meeting before the Committee on October 13, 2016, staff has gathered more detailed information on implementing permit requirements and acquired better data on implementation costs. Staff met with Regional Board staff on December 7, 2016, and reviewed the assumptions and interpretation of permit requirements used to develop estimated implementation costs. There were several interpretations of permit requirements that were incorrect and impacted implementation costs, which are discussed below. Staff also developed a strategic plan to implement MRP 2.0 in the most economical and effective manner. The options and recommendations presented in this report reflect the results of that strategic planning effort.

Financial Report Assumptions

The Financial Report drove home the point that PCB costs were far and away the most expensive provision of MRP 2.0. The report provided a worst case cost scenario, assuming a modest amount of source properties and a small amount of private development treating PCBs, and the County implementing the bulk of the PCB load reduction measures. The worst case scenario cost for the total five-year MRP 2.0 permit is about \$200 million. This is the corrected and updated cost estimate. A complete discussion of the assumptions and corrections is included in Appendix A. To reiterate the overarching role PCBs play in this worst case cost scenario, the cost for PCBs represents 92% of the total five-year permit cost.

Best Case Scenario

Having established the high end of the potential costs with the worst case scenario, perhaps it would be instructive to develop the low end of potential costs with a best case scenario. Since PCB control measures drive the high costs, a best case scenario would involve eliminating or drastically reducing Green Infrastructure implemented by the County. The absolute best case scenario, or Optimal Best Case Scenario, would eliminate any Green Infrastructure project costs incurred by the County. Under this scenario, all PCB load reductions would be met either with source property referrals or private development. The County would still incur costs associated with the additional trash requirements and planning aspects of Green Infrastructure, and increased costs to maintain source properties. Under this Optimal Best Case Scenario, the total five-year permit cost is about \$26 million, and reflects updated cost and assumptions from those used in the Financial Report. This is shown summarized in Table 1 and in more detail in Table 1 Support and Appendix A.

It seems extremely unlikely the County will not have any Green infrastructure project costs. It makes sense, therefore, to look at a second best case scenario, the Conservative Best Case Scenario, where the County has a modest amount of Green Infrastructure retrofit project costs. This scenario assumes the County is responsible for constructing Green Infrastructure projects to meet the minimum required in the permit, which is a 3.51 gram load reduction. To meet this requirement, it is assumed the County would need to implement projects that would treat a 78 acre mix of Old Industrial and Old Urban land uses at a total scenario cost of about \$50 million. This is shown summarized in Table 2 and in more detail in Table 2 Support and Appendix A.

Most Likely Scenario

Exhibit 1 summarizes all three scenarios, showing a range of \$200 million to \$25.8 million/\$49.8 million. This range is too broad to effectively plan and budget for MRP 2.0 compliance costs. For planning purposes, a Most Likely Scenario needs to be developed. There are two critical components in developing such a scenario, the two components that impact County PCB costs the most: source properties and private development. Each of these components is discussed below.

- **Source Properties.** Last year the Contra Costa Clean Water Program (Clean Water Program) contracted with a consultant to identify source properties throughout the County. The consultant researched over 1500 properties and eventually developed a list of source properties shown on Table 3. Table 3 identifies 173.06 grams of PCBs available from source properties to date. MRP 2.0 provides a 50% credit to source properties referred to the Regional Board and 50% credit upon completion of a remediation project. Remediation of source properties often takes many years, certainly beyond the term of this permit, so only 50% credit is allowed with these source properties. This results in a load reduction of about 87 grams. There is a question whether the Regional Board will accept all of these source properties for

referral. However, if they accept all these source properties then the balance needed for meeting the 90 gram load reduction for 2018 is only 3 grams. In 2020 the load reduction need grows to about an additional 100 grams. Due to the 50% credit, this would require identifying source properties with about 200 grams of PCB loading. It makes sense to hire a consultant to scour the County again looking for source properties, but it's unlikely many will be identified, and those that are identified will tend to have smaller yields. At this juncture it seems hopeful to assume this effort could result in identifying 100 grams of PCB loading resulting in 50 grams of load reduction credit.

- **Private Development.** Assuming we identify 50 grams of load reduction through source properties, that means all co-permittees must achieve an additional 50 gram load reduction. A 50 gram load reduction would require treating 578 acres of Old Industrial land or 1650 acres of Old Urban. If a private development fully remediates its project through an approved remediation plan, such as capping the property, then the control measure is allowed 100% credit. If a private development project uses green infrastructure to treat the stormwater and remove PCBs, then credit allowed for the control measure is reduced by a 70% efficiency factor. It is more likely for a project in an Old Industrial area to follow a remediation plan and it is common for a project in an Old Urban area to use green infrastructure. For planning purposes it is assumed that 75% of the Old Industrial land will be subject to remediation and 25% to green infrastructure, while 100% of the Old Urban land is assumed to use green infrastructure. With this assumption then, the total acreage needed for treatment is 640 acres in Old Industrial areas or 2360 acres in Old Urban areas. For comparison purposes, 2360 acres is about the size of El Cerrito. The County's 15.26% share of this is 98 acres in Old Industrial areas or 360 acres in Old Urban areas. To meet MRP 2.0 requirements, the green infrastructure or remediation project treating this acreage must be completed by June of 2020.

If 98 acres in Old Industrial and 360 acres in Old Urban areas are treated by private development, then County development projects will have reduced PCB loads by 8.5 to 10.9 grams. Staff reviewed the amount of PCBs private development projects have treated over the past several years. Table 4 shows the average PCBs treated over the last four years is 0.2 grams per year. Over the five-year permit term this would result in 1.0 grams, quite a bit less than the goal of about 10 grams. This would leave about 9 grams to be treated with County projects at a cost of \$43 million, assuming projects treating a mix of 200 acres in Old Industrial and Old Urban areas.

Adding to the \$43 million cost for PCBs the costs for the other additional provisions plus the MRP 1.0 costs, then the total estimated cost for the most likely scenario over the five-year MRP 2.0 is about \$69 million. This is shown summarized in Table 9 and in more detail in Table 9 Support and Appendix A.

Strategic Plan Recommendations

Staff has been working on a Strategic MRP 2.0 Implementation Plan to identify the most cost-effective control measures to meet permit compliance. In developing the Strategic Plan, staff first identified the unit cost of load reduction for each control measure. This allowed a comparison of which control measures were more cost-effective. Staff then developed a list of recommended control measures, with the estimated cost for implementing each control measure along with its "pros" and "cons". The recommended control measures are arranged by priority, with Tier 1 measures recommended for implementation in 2017 and Tier 2 measures recommended for further evaluation in 2018. Below are the strategic recommendations for the four additional requirements contained in MRP 2.0.

1. PCBs

The unit cost per gram load reduction for each PCB control measure is summarized in Table 5, and the recommended control measures for the FY 2017/18 budget to meet PCB load reduction requirements in 2018 and 2020 are summarized in Table 6. The following is a brief discussion of the top tier recommendations:

- **Green Infrastructure Project.** Even though the implementation cost per gram of this recommendation is high, staff believes it is important to gain experience with developing green infrastructure projects. In addition it shows the County is committed to meeting permit requirements. A project will be scoped out on County owned property that will, to the greatest extent practicable, be multi-objective and enhance the community.
- **Private Development.** Constructing PCB treatment facilities is very expensive and it makes sense to maximize the credit available through private development. There are two recommendations that pertain to identifying and maximizing PCB credits on private development projects.
- **Source Properties.** Identifying source properties and referring them to the Regional Board is the most cost-effective control measure to meet PCB load reduction requirements. Even though the Clean Water Program searched the County last year for source properties, there may still be some opportunities, especially around PG&E facilities and currently operating and/or abandoned railroad operations. There is also a recommendation to work with other agencies in the Bay Area on "mega" source properties that have huge amounts of PCBs, such as former manufacturing sites or closed Army/Navy bases. However, this is a second-tier recommendation as it will take some time to determine the institutional arrangements necessary to achieve it.

- **County Projects.** There are two recommendations that would incorporate green infrastructure into the County's various capital improvement programs. One centers around buildings and would include, for example, construction of building facilities, parking lots, etc. to include green infrastructure features and demolition of buildings to manage proper disposal of caulk and other PCB laden materials. The other centers around infrastructure and would include, for example, construction of roads, parks, airports, etc. Later in this report are two budget proposals, one a constrained, strategic, resource-based budget, and the other an unconstrained compliance-based budget. The approach in the unconstrained budget would be to apply green infrastructure to all projects regardless of location. The approach in the constrained budget would be to remove funding for green infrastructure components in County projects located in New Urban or Open-Space areas and reallocate the funds to a green infrastructure project in an Old Industrial area. This approach maximizes PCB load reduction return on investment.

2. Trash

The unit cost per one-percent load reduction for each trash control measure is summarized in Table 7, and the recommended control measures to meet 2017 trash load reduction requirements are summarized in Table 8. The following is a brief discussion of the top tier recommendations:

- **Full Trash Capture Devices.** This measure would appropriate a "not to exceed" budget amount to install full trash capture devices on about 160 drainage inlets. The maximum budget amount is recommended to be \$300,000. This shows a commitment to achieving our trash goals and results in a significant load reduction.
- **On Land Cleanup.** This is the most effective way of meeting the 70% load reduction requirements by June 2017. Contracts are already in place to perform trash pickup services throughout the County. It is fairly straightforward to extend the service area or increase the frequency of service within an existing service area to achieve the best results.
- **Adopt-a-Spot.** This program is patterned after the successful Adopt-a-Road program. In this case neighborhoods can adopt a drainage inlet, drainage facility, or trash area to keep it clean. This program may not be the most cost effective, however, it does add community value and pride in maintaining a clean neighborhood.
- **Plastic Bag/Polystyrene Ban.** To receive a trash load reduction credit for banning plastic bags, the County must identify what load plastic bags represent in the County's trash and how it compares to regional models. Recycle More did a study and found that the local statistics for plastic bags was a 95% match to the

regional model and was able to use the regional model numbers to determine the level of credit (8% for plastic bags and 6% for polystyrene containers). It is assumed this will be representative throughout the County. The County must also demonstrate, through monitoring, the degree to which the ban is being carried out in unincorporated communities. This is a fairly cost-effective control measure and should be pursued. The County would not be able to receive credit for a Polystyrene container ban in 2017 because of the time it would take to develop an ordinance and implementing program, so it is a Tier 2 recommendation. However, it is recommended to fund the ordinance development in FY 2017/18 so credit can be taken before the 80% trash load reduction requirement goes into effect in 2019.

- **Direct Trash Discharge Control Plan.** MRP 2.0 allows the County up to 15% load reduction for controlling problematic sources of trash in creeks, such as homeless encampments and illegal dumping. This load reduction allowance, or offset, is particularly attractive on the one hand as it is like a "tax credit" where the 15% credit is given irrespective of the underlying trash generation area or prior load reduction activities. On the other hand, beginning in 2019 three times more load must be removed to attain the same credit as in 2017. The Plan must outline a comprehensive program to remove trash from creeks and prevent future trash deposit and accumulation. The Plan was submitted on February 1, 2017, and must be approved by the Regional Board. However, it is unclear if the Regional Board will allow the Plan to be applied in the 2017 reporting period or if it will only be allowed in future reporting periods starting in 2018.
- **Creek Cleanups.** This is another 10% maximum allowance similar to the Direct Trash Discharge Control Plan. This control measure is cost-effective as it utilizes volunteer labor to do the bulk of the cleanup work. MRP 2.0 requires creeks to be cleaned out twice a year to qualify for this allowance.

3. Green Infrastructure

Construction of Green Infrastructure facilities is the predominant green infrastructure cost and is included in the PCBs section. The remaining Green Infrastructure requirement costs primarily cover administrative and planning activities. There are no unit costs or a cost comparison table for this work.

4. Mercury

All of the Mercury load reduction requirements are met by implementing PCB control measures. As a result, there are no unit costs or a cost comparison table specific to Mercury.

Budget Options for FY 2017/18

All of the Tier 1 recommendations from Table 6 and Table 8 were used to build a proposed budget for Fiscal Year 2017/18, along with a few select partially-funded Tier 2 recommendations. There were several criteria used to determine which control measures should be recommended for funding. Certainly, cost effectiveness outlined in Tables 5 and 7 was a factor, along with the ability to have a long-term impact on reaching the objective of improving water quality. Two other criteria were also used, the ability for a recommendation to influence or change behavior and the ability to improve an area by adding value to the community.

The proposed budget for Fiscal Year 2017/18 is outlined in Table 10. The budget shows the baseline costs of MRP 1.0, projected from earlier years, and the cost of the MRP 2.0 additional provisions, which added together provide the total MRP 2.0 budget. This budget is also a resource-based budget and constrained to respect the revenue sources available for funding these program activities. Although constrained, it does include some realignment of past funding which is described in more detail below.

Table 11 is a budget which is prepared based on the Most Likely Scenario outlined above and is a significantly larger budget. This budget is beyond our ability to finance with our dedicated revenue source and modest proposed realignments. The green infrastructure cost for Fiscal Year 2017/18 represents an estimated 15% for planning and project development to construct \$43 million in capital projects by 2020. Table 12 shows total costs for the resource-based scenario and the most likely scenario over the five-year permit term. The revenue-based scenario holds a constant \$700,000 cost for PCB load reduction each year.

Policy Implications of Budget Realignments

The proposed resource-based budget outlined in Table 10 includes some realignment of program responsibility and program funding. For the past 20 years there was more than adequate funding from the dedicated Stormwater Utility Assessment 17 (SUA 17) funds to comply with all stormwater permit requirements plus cover costs that were related to but not a specific requirement of the permit. Last year, compliance costs exceeded SUA 17 revenue and the program surplus was depleted. To meet this year's budget, it is necessary to look at some budget realignments which are described in more detail below.

- **Bethel Island Municipal Improvement District.** Many years ago, the Bethel Island Municipal Improvement District (BIMID) petitioned the County to receive some SUA 17 funds for drainage maintenance and water quality activities. This proposed realignment may impact the amount of SUA 17 funds distributed to BIMID depending on the amount of pollution reduction services they perform. Some drainage maintenance was funded throughout the County with SUA 17 in the past, but going forward there will be no SUA 17 funding available for this type of activity.

- **Street Sweeping.** When the Stormwater Utility Assessment was adopted in 1993 it presented a new revenue stream that could be used to fund certain County services. One of those was street sweeping. During MRP 1.0, baseline trash levels were developed and used to calculate compliance for meeting trash reduction requirements. Historic County street sweeping was counted in determining the baseline trash levels, so there is no "credit" for those expenditures in meeting trash reduction targets. A realignment of street sweeping costs could occur by allocating those costs that receive no credit (pre-baseline) to the General Fund. Those street sweeping costs that help meet trash reduction targets would still be paid with SUA 17 funds.

- **Flood Control District subsidies.** The Flood Control District provides flood protection services to many cities and communities in the County. Some watersheds have inadequate funding due to low tax rates that were locked in when Proposition 13 was passed in 1978. In these cases the Flood Control District looks to the city being served to help fund flood protection services. For unincorporated communities the Flood Control District turns to the County. Since 1993, the County has been using SUA 17 funds to help pay for flood protection services in the Wildcat, San Pablo, Rodeo, and Kellogg Creek watersheds. Each year the County spends about \$350,000 per year to fund flood protection services in the unincorporated communities in these watersheds. The proposed realignment of this funding would free up additional SUA 17 revenue for MRP permit compliance.

- **Funding Shifts to Other County Departments.** In the past, SUA 17 funded all activities associated with the stormwater permit, regardless of what department performed the activity. The proposed budget includes realignment of funding to those departments that conduct the permit required activities. For example, other departments conduct industrial and commercial site inspections, inspections for illicit discharges, and have been actively involved in the plastic bag ban program. The proposed budget reflects the reality that MRP 2.0 is a County permit not a Public Works Department permit.

- **Storm Damage.** To complicate the budget discussions this year, the Public Works Department and County must address what is currently estimated to be \$13 million in damage from winter storms.

Consequences of Non-Compliance

The Regional Board must issue the County a stormwater permit as required by and with authority from the Environmental Protection Agency and the federal Clean Water Act. The Regional Board also has authority through State statute that is, in many cases, more stringent than the Clean Water Act. When a permittee is in non-compliance, the Regional Board can issue a Notice of Violation and levy fines of \$37,500 per violation per day through federal authority, and \$10,000 per violation per day

through State authority. The largest exposure from non-compliance, however, is from third party lawsuits. If the Regional Board finds the County in non-compliance it is highly likely the County would lose any lawsuit and face a very expensive settlement agreement or court decision.

Conclusion

It is difficult to plan and budget for MRP 2.0, as the most expensive requirement, PCB load reductions, is not within our control. Satisfying the load reduction requirement starts at the Bay Area level, then is viewed at the County level, and then viewed at the municipal level. The requirement for the Bay Area is to reduce PCB loads by 3 kilograms by 2020. If one agency cleans up a "mega" property resulting in a 3 kilogram reduction, then all Bay Area permittees have met their permit requirement. If the Bay Area goal is not met, then each County must meet its own separate goal. For Contra Costa, our load reduction target is 560 grams countywide. If one of the cities in our County cleans up a highly polluted property that meets the 560 gram target, then all permittees within Contra Costa County have met their requirement. If collectively we do not meet our 560 gram target, then each municipality has a specific load reduction target that must be met, which for unincorporated Contra Costa County is 85.5 grams. So it is possible some other jurisdiction will meet our requirement for us, but if not then we will have to meet it all on our own.

However murky that seems, it is clear we cannot build ourselves out of the PCB load reduction requirement. Not when the costs range up to \$200 million. The proposed resource-based budget demonstrates a commitment to building a green infrastructure project and incorporating green infrastructure into our capital improvement programs. Beyond that, we will have to rely on private development, identifying additional source properties, and negotiating with owners of "mega" source properties to meet our load reduction requirements.

Staff requests direction from the Committee, and recommends implementing the strategies outlined in this report and funded in the resource-based budget, and providing direction on the Next Steps outlined below.

Recommended Next Steps

Board of Supervisors. Forward this report to the full Board for approval with a recommendation on an implementation budget.

Other Departments. Direct staff to work with the other departments identified in the constrained budget and assess their ability to fund various permit compliance activities as proposed.

Street Sweeping. Direct staff to determine where street sweeping can be reduced in pre-2009 areas to reduce impact on the General Fund and identify any resultant impact on community expectations of reducing municipal services.

Flood Control District Subsidies. Direct staff to come back to the Committee with a separate report on Flood Control District finances and the subsidies issue.

BIMID. Direct staff to review the agreement with BIMID to determine what activities meet pollution reduction permit requirements and can continue to be funded with SUA 17 funds.

Resource Plan. Direct staff to prepare a resource plan to provide the staffing and resources necessary to implement the activities proposed in this report.

Mid-Year Budget Review. Direct staff to return to the Committee in six months to report on the status of meeting MRP 2.0 permit targets, the cost to date to achieve the targets, the projected costs to complete the work for fiscal year 2017/18, and status of revenue sources needed for permit compliance.

**Table 1. MRP 2.0 Cost Compliance
Optimal Best Case Scenario**

Provision No.	MRP 2.0 Additional Requirements	Estimated Expenditures						Totals
		2016	2017	2018	2019	2020		
C.3	Green Infrastructure	\$0	\$91,500	\$41,000	\$889,000	\$43,000	\$1,064,500	
C.10	Trash	\$55,000	\$1,494,000	\$2,014,000	\$2,384,000	\$3,154,000	\$9,101,000	
C.11 and C.12	Mercury and PCB	\$31,000	\$11,000	\$213,000	\$261,000	\$267,000	\$783,000	
Additions Subtotals		\$86,000	\$1,596,500	\$2,268,000	\$3,534,000	\$3,464,000	\$10,948,500	
MRP 1.0		\$2,980,000	\$2,980,000	\$2,980,000	\$2,980,000	\$2,980,000	\$14,900,000	
Total MRP 2.0		\$3,066,000	\$4,576,500	\$5,248,000	\$6,514,000	\$6,444,000	\$25,848,500	

Table 1 Detailed Support for Optimal Best Case Scenario: PCB Load Reduction with No County GI Retrofit Project Costs

Provision Number	Requirement	2016	2017	2018	2019	2020
c.iii.2.	Report on land area treated by GI (BASMAA)	\$0	\$0	\$0	\$0	\$5,000
c.iii.3.	Submit a reasonable assurance analysis (included in C.12.c.ii.2)	\$0	\$0	\$0	\$0	\$0
c.iii.4.	Report on PCBs removed with GI	\$0	\$0	\$0	\$2,000	\$2,000
d.i.	Implementation plan for TMDL waste-load allocations (see C.12.d.ii.1)	\$0	\$0	\$0	\$0	\$0
d.ii.1.	Identify control measures	\$0	\$0	\$0	\$0	\$15,000
d.ii.2.	Implement control measures	\$0	\$0	\$0	\$0	\$5,000
d.ii.3.	Evaluate effectiveness of control measures	\$0	\$0	\$0	\$0	\$16,000
d.iii.	Submit implementation plan (included in C.12.d.ii.1)	\$0	\$0	\$0	\$0	\$0
e.i.-iii.	Evaluate PCBs in public infrastructure facilities (BASMAA)	\$0	\$0	\$2,000	\$0	0
C.12.f.i.	Manage demolition debris to contain PCBs (see C.12.f.ii.1)	\$0	\$0	\$0	\$0	\$0
f.ii.1.	Develop debris management protocols	\$0	\$0	\$0	\$45,000	\$0
f.ii.2.	Implement debris management protocols	\$0	\$0	\$0	\$5,000	\$0
f.ii.3.	Assessment of debris management effectiveness (BASMAA)	\$0	\$0	\$0	\$0	\$0
f.iii.1.	Report on implementing debris management	\$2,000	\$2,000	\$2,000	\$0	\$0
f.iii.2.	Prepare exemption justification (not applicable)					
f.iii.3.	Report on debris management protocols	\$0	\$0	\$0	\$0	\$2,000
f.iii.4.	Report on applicable buildings	\$0	\$0	\$0	\$0	\$11,000
f.iii.5.	Assessment methodology for load reduction (BASMAA)	\$0	\$0	\$0	\$0	\$0
g.i.-iii.	Fate and transport study (SFEI)	\$0	\$0	\$0	\$0	\$0
h.i.-iii.	Risk reduction program (included in MRP 1.0)	\$0	\$0	\$0	\$0	\$0
Subtotal Costs		\$31,000	\$11,000	\$213,000	\$261,000	\$267,000

Note:

1. The current distribution method of load reduction within the county is based on the proportional population of each co-permittee. If the Clean Water Program decided to develop an alternative distribution methodology, the estimated cost

Table 1 Detailed Support for Optimal Best Case Scenario: PCB Load Reduction with No County GI Retrofit Project Costs

Provision Number	Requirement	2016	2017	2018	2019	2020
C.12.a.i.	Implement PCB control measures	\$0	\$0	\$0	\$0	\$0
a.ii.1	Identify management areas with control measures	\$11,000	\$0	\$0	\$0	\$0
a.ii.2.	Identify current and new control measures (see C.12.a.ii.1)	\$0	\$0	\$0	\$0	\$0
a.ii.3.	Develop implementation schedule	\$10,000	\$1,000	\$1,000	\$1,000	\$1,000
a.ii.4.	Implement Source Properties control measure	\$0	\$0	\$200,000	\$200,000	\$200,000
a.ii.4.	Implement North Richmond Pump Station control measure	\$0	\$0	\$0	\$0	\$0
a.ii.4.	Implement Street Sweeping control measure	\$0	\$0	\$0	\$0	\$0
a.ii.4.	Implement Green Infrastructure control measure	\$0	\$0	\$0	\$0	\$0
a.iii.1.	Progress report on control measures	\$5,000	\$0	\$0	\$0	\$0
a.iii.2.	Develop status for each Annual Report	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
a.iii.3.	Update on control measures, source properties, milestones (see C.12.a.iii.2)	\$0	\$0	\$0	\$0	\$0
a.iii.4.	Alternative load reduction distribution (optional) (see Note 1)					
b.i.	Develop load reduction assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.ii.	Calculate PCB load reduction each year	\$0	\$5,000	\$5,000	\$5,000	\$5,000
b.iii.1.	Submit assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.iii.2.	Provide PCB load reductions each year (included in C.12.b.ii)	\$0	\$0	\$0	\$0	\$0
b.iii.3	Update assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.iii.4	Alternative load reduction distribution (optional) (see Note 1)					
c.i.	Minimum GI projects for PCBs (see C.12.a.ii.4)	\$0	\$0	\$0	\$0	\$0
c.ii.1	Implement GI projects for specified reduction (included in C.12.a.ii.4)	\$0	\$0	\$0	\$0	\$0
c.ii.2.	Reasonable assurance analysis on GI projects (BASMAA)	\$0	\$0	\$0	\$0	\$2,000
c.iii.1.	Report on GI and PCB load reduction (BASMAA)	\$0	\$0	\$0	\$0	\$0

**Table 2. MRP 2.0 Cost Compliance
Conservative Best Case Scenario**

Provision No.	MRP 2.0 Additional Requirements	Estimated Expenditures					Totals
		2016	2017	2018	2019	2020	
C.3	Green Infrastructure	\$0	\$91,500	\$41,000	\$889,000	\$43,000	\$1,064,500
C.10	Trash	\$55,000	\$1,494,000	\$2,014,000	\$2,384,000	\$3,154,000	\$9,101,000
C.11 and C.12	Mercury and PCB	\$31,000	\$11,000	\$213,000	\$261,000	\$24,224,000	\$24,740,000
	Additions Subtotals	\$86,000	\$1,596,500	\$2,268,000	\$3,534,000	\$27,421,000	\$34,905,500
	MRP 1.0	\$2,980,000	\$2,980,000	\$2,980,000	\$2,980,000	\$2,980,000	\$14,900,000
	Total MRP 2.0	\$3,066,000	\$4,576,500	\$5,248,000	\$6,514,000	\$30,401,000	\$49,805,500

Table 2 Detailed Support for Conservative Best Case Scenario: PCB Load Reduction (3.51 grams) with County GI Retrofit Projects

Provision Number	Requirement	2016	2017	2018	2019	2020
C.12.a.i.	Implement PCB control measures	\$0	\$0	\$0	\$0	\$0
a.ii.1	Identify management areas with control measures	\$11,000	\$0	\$0	\$0	\$0
a.ii.2.	Identify current and new control measures (see C.12.a.ii.1)	\$0	\$0	\$0	\$0	\$0
a.ii.3.	Develop implementation schedule	\$10,000	\$1,000	\$1,000	\$1,000	\$1,000
a.ii.4.	Implement Source Properties control measure	\$0	\$0	\$200,000	\$200,000	\$200,000
a.ii.4.	Implement North Richmon Pump Station control measure	\$0	\$0	\$0	\$0	\$0
a.ii.4.	Implement Street Sweeping control measure	\$0	\$0	\$0	\$0	\$0
a.ii.4.	Implement Green Infrastructure control measure	\$0	\$0	\$0	\$0	\$23,957,000
a.iii.1.	Progress report on control measures	\$5,000	\$0	\$0	\$0	\$0
a.iii.2.	Develop status for each Annual Report	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
a.iii.3.	Update on control measures, source properties, milestones (see C.12.a.iii.2)	\$0	\$0	\$0	\$0	\$0
a.iii.4.	Alternative load reduction distribution (optional) (see Note 1)					
b.i.	Develop load reduction assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.ii.	Calculate PCB load reduction each year	\$0	\$5,000	\$5,000	\$5,000	\$5,000
b.iii.1.	Submit assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.iii.2.	Provide PCB load reductions each year (included in C.12.b.ii)	\$0	\$0	\$0	\$0	\$0
b.iii.3	Update assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.iii.4	Alternative load reduction distribution (optional) (see Note 1)					
c.i.	Minimum GI projects for PCBs (see C.12.a.ii.4)	\$0	\$0	\$0	\$0	\$0
c.ii.1	Implement GI projects for specified reduction (included in C.12.a.ii.4)	\$0	\$0	\$0	\$0	\$0
c.ii.2.	Reasonable assurance analysis on GI projects (BASMAA)	\$0	\$0	\$0	\$0	\$2,000
c.iii.1.	Report on GI and PCB load reduction (BASMAA)	\$0	\$0	\$0	\$0	\$0
c.iii.2.	Report on land area treated by GI (BASMAA)	\$0	\$0	\$0	\$0	\$5,000

Table 2 Detailed Support for Conservative Best Case Scenario: PCB Load Reduction (3.51 grams) with County GI Retrofit Projects

Provision Number	Requirement	2016	2017	2018	2019	2020
c.iii.3.	Submit a reasonable assurance analysis (included in C.12.c.ii.2)	\$0	\$0	\$0	\$0	\$0
c.iii.4.	Report on PCBs removed with GI	\$0	\$0	\$0	\$2,000	\$2,000
d.i.	Implementation plan for TMDL waste-load allocations (see C.12.d.ii.1)	\$0	\$0	\$0	\$0	\$0
d.ii.1.	Identify control measures	\$0	\$0	\$0	\$0	\$15,000
d.ii.2.	Implement control measures	\$0	\$0	\$0	\$0	\$5,000
d.ii.3.	Evaluate effectiveness of control measures	\$0	\$0	\$0	\$0	\$16,000
d.iii.	Submit implementation plan (included in C.12.d.ii.1)	\$0	\$0	\$0	\$0	\$0
e.i.-iii.	Evaluate PCBs in public infrastructure facilities (BASMAA)	\$0	\$0	\$2,000	\$0	0
C.12.f.i.	Manage demolition debris to contain PCBs (see C.12.f.ii.1)	\$0	\$0	\$0	\$0	\$0
f.ii.1.	Develop debris management protocols	\$0	\$0	\$0	\$45,000	\$0
f.ii.2.	Implement debris management protocols	\$0	\$0	\$0	\$5,000	\$0
f.ii.3.	Assessment of debris management effectiveness (BASMAA)	\$0	\$0	\$0	\$0	\$0
f.iii.1.	Report on implementing debris management	\$2,000	\$2,000	\$2,000	\$0	\$0
f.iii.2.	Prepare exemption justification (not applicable)					
f.iii.3.	Report on debris management protocols	\$0	\$0	\$0	\$0	\$2,000
f.iii.4.	Report on applicable buildings	\$0	\$0	\$0	\$0	\$11,000
f.iii.5.	Assessment methodology for load reduction (BASMAA)	\$0	\$0	\$0	\$0	\$0
g.i.-iii.	Fate and transport study (SFEI)	\$0	\$0	\$0	\$0	\$0
h.i.-iii.	Risk reduction program (included in MRP 1.0)	\$0	\$0	\$0	\$0	\$0
Subtotal Costs		\$31,000	\$11,000	\$213,000	\$261,000	\$24,224,000

Note:

1. The current distribution method of load reduction within the county is based on the proportional population of each co-permittee. If the Clean Water Program decided to develop an alternative distribution methodology, the estimated cost

Exhibit 1

MRP 2.0 Compliance Costs for Unincorporated Contra Costa County

1. MRP 2.0 requirements for unincorporated Contra Costa County

- Reduce trash 70% by 2017 and 80% by 2019.
- Achieve 28.48 grams PCB load reduction by 2020 (County's 15.26% share of 560 grams countywide, plus 67% credit for debris management program).
- Achieve at least 3.51 grams PCB load reduction through Green Infrastructure by 2020 (23 grams countywide).
- Achieve at least 1.37 grams Mercury load reduction through Green Infrastructure by 2020 (9 grams countywide).

2. Assumptions

- Mercury reduction requirements are met with PCB load reduction control measures.
- County will adopt a PCB demolition management program and receive 67% credit.
- Old Urban/Industrial land uses are pre-1980 development shown on ABAG maps.

3. MRP 2.0 compliance costs for unincorporated Contra Costa County

- **Worst Case Scenario:** Total five-year permit cost is \$200,000,000
 - o 1.5 grams PCBs from development (10 acres Old Industrial/Urban per year)
 - o 1.0 grams PCBs from source properties (net load reduction after 50% credit)
 - o 1.0 grams PCBs from street sweeping in Old Industrial areas
 - o 0.14 grams PCBs diverting stormwater at the North Richmond Pump Station
 - o 24.84 grams PCB load reduction with public retrofit GI projects:
 - Treating 615 acres Old Urban/Old Industrial land use mix
 - \$215,000 Green Infrastructure cost per treated acre
 - 70% efficiency factor for Green Infrastructure
 - o PCB control measures represent 92% of total costs
- **Optimal Best Case Scenario:** Total five-year permit cost is \$25,800,000
 - o 24.97 grams PCB load reduction met with source property referrals
 - o 3.51 grams PCB load reduction met with private development
- **Conservative Best Case Scenario:** Total five-year permit cost is \$49,800,000
 - o 24.97 grams (87.7%) PCB load met with source properties or private development
 - o 3.51 grams (12.3%) PCB load met with public GI retrofit projects (\$24,000,000)
 - Treating 78 acres Old Urban/Old Industrial land use mix
 - \$215,000 Green Infrastructure cost per treated acre with 70% efficiency

**Table 3: Countywide PCB Load Reduction Estimates
From Source Properties**

Source Property Location	Acreage	PCB Yield Factor Grams/Acre/Year	Total Grams	PCB Load Reduction by Reporting Year (grams)	
				2018	2020
Antioch	18.5	3.978	73.6	37	0
County (Fass-Gertrude)	0.5	3.978	1.99	1	0
Pittsburg (Molino)	6.0	3.978	23.87	12	0
Richmond (Simms)	14.0	3.978	55.7	28	0
Richmond (Rickert)	0.5	3.978	1.99	1	0
San Pablo (Rumrill)	4.0	3.978	15.91	8	0
Totals	43.5		173.06	87	87
Load Reduction Requirement				90	186.7
Load Reduction Needed				3	100

Notes:

1. All Source Properties are located in Old Industrial areas, so the yield factor is calculated as the Source Property yield (4.065 grams/acre/year) minus the Old Industrial land use yield (.0865 grams/acre/year).
2. Half credit given in 2018, half credit upon completion. Remediation projects are assumed to take longer than remainder of permit term, so only 50% credit shown for this permit term (all in 2018).
3. The 2020 PCB load reduction requirement is 560 grams per year, but this is reduced 67% to 186.7 grams per year if all co-permittees implement a PCB Demolition Debris Management

Table 4. Green Infrastructure Built by Development Projects

I. Summary of Total PCBs Treated by Development for Each Year

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total PCBs (mg)	84.2	553.7	44.8	0	133	176.9	222.9	174.9	144.2

II. PCB Treatment Calculations for Each Development Project

Development Project Name	Location	Land Use Type	Treated/ Project Acres	GI Type	Year Installed	Efficiency Factor	PCB (mg)
Byron Jet Center (CCC)	Byron				2005		
Caballo Ranchero (MS 06-026)	Diablo	Old Urban	2.10		2008		44.5
Paulson Lane (SD 8939)	Walnut Creek	Old Urban	1.76	Bio filter	2008	.7	37.3
Stone Throw Farm (ZI 11861)	San Ramon	Open Space	.55	Self Treat	2008	1.0	2.4
Station Landing (DP 07-3064)	Pleasant Hill	Old Urban	4.57		2009		96.9
Central Concrete (ZI 07-12120)	Martinez	Open Space	3.8	Bio filter	2009	.7	11.4
Vasco Road Improvements (CCC)	Byron	Open Space	21	Bio filter	2009	.7	445.4
Shakespeare Festival (LP 08-2050)	Orinda	Open Space	4.83	Bio filter	2010	.7	14.5

Table 4. Green Infrastructure Built by Development Projects

Development Project Name	Location	Land Use Type	Treated/ Project Acres	GI Type	Year Installed	Efficiency Factor	PCB (mg)
Wallgreens (LP 08-2044)	Bay Point	Old Urban	1.43	Bio filter	2010	.7	30.3
Belmont Terrace (SD 8984)	Martinez	Old Urban (3.1)/Open Space (10.4)	13.49	Bio filter	2012	.7	97.0
El Rincon (SD 07-9189)	Bay Point	Old Urban	1.53	Bio filter	2012	.7	32.4
Print Plant (LP 10-2078)	Concord	New Urban	.88		2012		2.2
Jack-n-Box (ZI 09-12638)	Bay Point	New Urban	.56	Bio filter	2012	.7	1.4
Livorna Heights (MS 07-0017)	Alamo	Old Urban	0.24	Bio filter	2013	.7	5.1
South Avenue (MS 06-0013)	Alamo	Old Urban	1.08	Bio filter	2013	.7	22.9
Los Vaqueros (LP 11-2011)	Byron	Open Space	3.27	Bio filter	2013	.7	9.8
Sikh Center (LP 03-2052)	El Sobrante	Old Urban	2.64	Bio filter	2013	.7	56.0
Martinez Wellness Center (CCC)	Martinez	Old Urban	.46	Bio filter	2013	.7	9.8
Regional Med Ctr Parking Lot E (CCC)	Martinez	Old Urban	0.7	Bio filter	2013	.7	14.8
West County Health Ctr (CCC)	San Pablo	Old Urban	2.76	Bio filter	2013	.7	58.5

Table 4. Green Infrastructure Built by Development Projects

Development Project Name	Location	Land Use Type	Treated/ Project Acres	GI Type	Year Installed	Efficiency Factor	PCB (mg)
Arbor View (SD 07-9174)	Reliez Valley	Open Space	5.95	Bio filter	2014	.7	17.9
Tower Mart 101 (CV 13-0066)	Bay Point	Old Urban	.59	Bio filter	2014	.7	12.5
1251 Laverock (MS 07-0015)	Alamo	Old Urban	.94	Bio filter	2014	.7	19.9
Sam's Club (DP 11-3018)	Concord	Old Urban	8.14		2014		172.6
Laurel Place (SD 05-8769)	Concord	Old Urban	3.8	Bio filter	2015	.7	80.6
Hemme Estates (MS 14-0004)	Alamo	Old Urban	1.33	Bio filter	2015	.7	28.2
Westborough (SD 14-9376)	Walnut Creek	Old Urban	1.20	Bio filter	2015	.7	25.5
1210 Livorna Road (MS 06-0038)	Alamo	Old Urban	.74	Bio filter	2015	.7	15.7
1202 Mtn View Blvd (MS 14-0006)	Walnut Creek	Old Urban	.84		2015		17.8
2510 D. Leshner Dr. (LP 07-2045)	Concord	New Urban	2.92	Bio filter	2015	.7	7.1
Sufi Reoriented (LP 08-2034)	Saranap	Old Urban	1.03	Bio filter	2016	.7	21.8
San Ramon Vly Church (LP 12-2110)	Alamo	Old Urban	.46	Bio filter	2016	.7	9.8

Table 4. Green Infrastructure Built by Development Projects

Development Project Name	Location	Land Use Type	Treated/ Project Acres	GI Type	Year Installed	Efficiency Factor	PCB (mg)
66 Crest Avenue (MS 14-0013)	Alamo	Old Urban	1.97		2016		41.8
3600 Byers Road (MS 15-0005)	Byron	Open Space	.28	Irrigation Pond	2016	1.0	0.8
Mtn View Landing (DP 07-3029)	Vine Hill	Open Space	1.59	Bio filter	2016	.7	4.8
Queen of Heaven (LP 09-2036)	Reliez Valley	Open Space	1.98	Bio filter	2016	.7	6.0
Ashford Place (SD 05-8967)	Pacheco	Open Space	9.30	Bio filter	2016	.7	28.0
Alhambra Vly Road (SD 8634)	Alhambra Valley	Open Space	10.37	Bio filter	2016	.7	31.2

Notes:

1. The PCB load reduction is calculated by multiplying the yield factor for the appropriate land use type (86.5 mg PCB/acre/year for Old Industrial, 30.3 mg PCB/acre/year for Old Urban, 3.5 mg PCB/acre/year for New Urban, and 4.3 mg PCB/acre/year for Open Space) with the project/treated acreage.
2. All areas, either treated or self-treated, within the general project area were included in the treated acreage. Areas of the property obviously outside the project area were not considered in the treated acreage.
3. All projects are private development projects except those denoted (CCC), which are County projects.

Table 5. Unincorporated Contra Costa County PCB Control Measures Comparative Costs

Number	Control Measure	Description	Implementation Cost per gram	Annual Ongoing Cost per gram
1	North Richmond Pump Station	Connect to WCWD plant and divert stormwater for a maximum 0.14 grams/year. (Note 1)	\$840,000	\$2,200,000
2A	Green Infrastructure Old Industrial	Install Green Infrastructure on public land, with \$215,000 per treated acre and 70% efficiency. (Note 2)	\$3,500,000	\$50,000
2B	Green Infrastructure Old Urban	Install Green Infrastructure on public land, with \$215,000 per treated acre and 70% efficiency. (Note 2)	\$10,100,000	\$141,000
2C	Green Infrastructure New Urban	Install Green Infrastructure on public land, with \$215,000 per treated acre and 70% efficiency. (Note 2)	\$87,800,000	\$1,220,000
3A	Enhanced Street Sweeping Old Industrial	Assume curb and gutter installed on 200 foot long city blocks and treated area is block interior (40,000 SF). Assumes no drainage work required! (Note 3)	\$910,000	\$50,000
3B	Enhanced Street Sweeping Old Urban	Assume curb and gutter installed on 200 foot long city blocks and treated area is block interior (40,000 SF). Assumes no drainage work required! (Note 3)	\$2,600,000	\$50,000
4A	Identify Local Source Properties	Assume 1.0 grams average net load reduction with each source property identified in County. (Note 4)	\$7,000	\$25,000
4B	Identify Regional Source Properties	Work with agencies with "mega" source properties in the Bay Area to develop regional referrals. (Note 5)	Unknown	Unknown
5	Identify all Development Treatment	Identify all projects on private property that remediates or treats PCBs, through a variety of permit types, to maximize credit potential.	Low (requires administrative diligence)	Very Low (Maintenance of tracking processes)

Table 5. Unincorporated Contra Costa County PCB Control Measures Comparative Costs

6	Review Prior Development	Identify all development projects since 2009 to receive maximum credit for PCBs. Assume 1.0 grams PCBs yield.	\$10,000	None (one time administrative project)
7	County Building Projects	Include treatment of PCBs in Capital Projects. Assume investment in Old Industrial areas. (Note 2)	\$3,500,000	\$50,000
8	County Infrastructure Projects	Include treatment of PCBs in Infrastructure Projects. Assume investment in Old Industrial areas. (Note 2)	\$3,500,000	\$50,000

Notes:

1. The Annual Ongoing Cost is based on the standard rate for treating influent at the wastewater treatment plant. This ongoing cost could be substantially reduced if the diverted stormwater was considered a resource as part of a re-use project.
2. Annual maintenance costs for green infrastructure is assumed to be \$3,000 per treated acre (about \$2 per square foot - based on CCCPWD bio-retention project).
3. The estimated cost to install curb, gutter, and pavement widening is \$90 per lineal foot. The ongoing annual cost represents the additional street sweeping cost.
4. Cost estimate based on a similar project in Santa Clara County for the Leo Street neighborhood, and assume 50 grams.
5. It's unknown what the potential load reduction could be or what the costs would be to implement this control measure.

Table 6. Additional MRP 2.0 PCB Control Measures to meet 2018/2020 Load Reduction Requirements

Tier (1)	MRP 2.0 Control Measure	Recommendation	Estimated Cost FY 2017/18	Estimated PCB grams	Pros	Cons
1A	Install Green Infrastructure (Note 2)	Install a \$300,000 Green Infrastructure project on County owned parcel in Old Industrial area.	\$50,000 (Planning for \$300,000 project in 2020)	.08 grams (when project complete in 2020)	Learn process to develop a GI project and reduce unit costs	Expensive PCB per gram cost
1B	Identify all Development Treatment	Establish processes to identify and track all types of projects that treat or remediate PCBs.	\$50,000 (staff costs)	Unknown, depends on project types and timing, but perhaps 1.0 grams	Very low cost per PCB gram	Difficult to determine PCB load reduction
1C	Review Prior Development	Review all prior development approved since 2009 to receive maximum credit.	\$10,000 (staff time)	Unknown, depends on development, but likely in the range of 1.0 grams	Easy and inexpensive method for PCB credits	No guarantee any will be found
1D	Identify Local Source Properties	Work with the Clean Water Program to contract with a consultant to identify source properties within the County.	\$25,000 (County share)	Unknown, hopefully 50 grams	- Low cost per PCB gram - Most effective action to improve environment	Requires cooperation of all municipalities in County
1E	PCB Treatment on County Building Projects	Include treatment of PCBs in County capital building projects	Assume \$250,000 investment per project in Old Industrial area (Note 2)	0.07	- County controls project processes - Demonstrates commitment	Expensive PCB per gram cost
1F	PCB Treatment on Infrastructure Projects	Include treatment of PCBs in County road and other infrastructure projects	Assume \$250,000 investment per project in Old Industrial area (Note 2)	0.07	- County controls project processes - Demonstrates commitment	Expensive PCB per gram cost
2A	Identify Regional Source Properties	Work with the Clean Water Program and BASMAA to negotiate between Bay Area permittees and jurisdictions with "mega" source properties to share costs and credits.	\$5,000 (County share of \$35,000 effort, see Note 3)	25 (assumes this meets all PCB requirements except minimum required with Green Infrastructure)	- Low cost per PCB gram - Most effective action to improve environment	Requires cooperation of multiple agencies in Bay Area

Tier (1)	MRP 2.0 Control Measure	Recommendation	Estimated Cost FY 2017/18	Estimated PCB grams	Pros	Cons
2B	Enhanced Street Sweeping	Scope out a project to install curb and gutter around one block of an Old Industrial area, determine construction costs, annual ongoing costs, and benefits, and report back on a recommendation.	\$50,000 (staff costs)	Potential amount to be determined	Provides information to make informed decision on this type of control measure	No guarantee scoping cost will result in a good project
2C	North Richmond Pump Station	Work with WCWD to see if there is support for a re-use project and participate if funding is available for implementation and operations.	\$20,000 (staff time)	.14 grams	Multi-benefit project furthers re-use development	Low return on investment
2D	Research PG&E Spills	Work with the Clean Water Program to review State records to determine where PCB spills occurred in Contra Costa County.	\$5,000 (County share of consultant)	Unknown	Easy and inexpensive method for PCB credits	No guarantee any PCBs will be found
2E	Request PG&E for Spill Data	Work with the Clean Water Program to prepare and submit a public records request to PG&E to disclose all spills that have occurred in Contra Costa County.	\$5,000 (County share of consultant)	Unknown	Easy and inexpensive method for PCB credits	No guarantee any PCBs will be found

Notes:

1. Tier 1 control measures are recommended to be initiated in 2017, while Tier 2 control measures are recommended to be revisited in 2018 for further evaluation.
2. Estimated PCB grams based on \$215,000 per treated acre and 70% efficiency factor.
3. Even though this is a Tier 2 recommendation, it is recommended to budget \$5,000 for FY 2017-18 for staff time to explore and better define this control measure.

Table 7. Unincorporated Contra Costa County Trash Control Measures Comparative Costs

No.	Control Measure	Description	Implementation Cost	Percent Reduction (Note 11)	Implementation Cost per 1%	Annual Ongoing Cost
1	Full Trash Capture Devices (FTCD): Very High	Install full trash capture devices on all drainage inlets in Very High trash generation areas (62 inlets, Note 1).	\$86,000	15	\$5,400	\$112,000
2	Full Trash Capture Devices (FTCD): High	Install full trash capture devices on all drainage inlets in High trash generation areas (689 inlets, Note 1).	\$965,000	53	\$18,000	\$1,240,000
3	Full Trash Capture Devices (FTCD): Moderate	Install full trash capture devices on all drainage inlets in Moderate trash generation areas (993 inlets, see Note 1).	\$1,389,000	20	\$45,000	\$1,790,000
4	On-Land Clean Up	Increase trash pickup in current service area and expand pickup into additional areas. (Note 7)	\$500,000	37	\$13,500	\$35,000
5	Adopt-A-Spot	Implement an Adopt-a-Spot program (similar to the Adopt-a-Road program) that will enlist volunteers to improve trash reduction in target areas. (Note 12)	\$25,000	1	\$25,000	\$10,000
6	Ban Polystyrene Food Containers	Develop a ban on PolyStyrene food containers.	\$75,000	4	\$18,700	\$20,000
7	Ban on Plastic Bags	Enforce ban on plastic bags.	\$25,000	6	\$4,200	\$10,000
8	Direct Trash Discharge Control (DTDC) Plan	Cleanup homeless encampments and prevent illegal dumping in creeks. Costs for 2017 and 2018 only. (Notes 2 & 4)	\$300,000	15	\$20,000	\$260,000

Table 7. Unincorporated Contra Costa County Trash Control Measures Comparative Costs

No.	Control Measure	Description	Implementation Cost	Percent Reduction (Note 11)	Implementation Cost per 1%	Annual Ongoing Cost
9	Creek Cleanups	Implement a program using volunteers and County labor to remove trash twice a year from creeks. Assume 125 cubic yards removed (Notes 2 & 5)	\$150,000	10	\$15,000	\$150,000
10	Dynamic Trash Separator (FTCD): High	Install hydro-dynamic separator in the 340 acre North Richmond Pump Station Drainage system. (Note 9)	\$1,000,000	8	\$125,000	\$20,000
11	Street Sweeping	Regular sweeping of streets with curb and gutter to pick up trash. (Note 6)	\$125,000	11	\$11,000	\$125,000
12	Illegal Dumping	Pick up items illegally dumped on County property and rights of way. (Note 10)	\$650,000	0	N/A	N/A
13	100% Full Trash Capture Devices (FTCD)	Install full trash capture devices on all drainage inlets in Very High, High, and Moderate trash generation areas: 1744 - 139 installed = 1605 inlets. (Notes 1 and 8)	\$3,690,000	89	\$41,500	\$2,900,000
14	Community Based Education and Outreach Program	Develop trash reduction education and outreach programs specific to interested communities. (Note 12)	\$50,000	1	\$50,000	\$50,000
15	Commercial street sweeping	Increased frequency of street sweeping in commercial areas.	\$50,000	5	\$10,000	\$50,000
16	Patrol Trash Areas	Hire Deputy Sheriff to patrol creek channels and road areas to prevent homeless encampments and illegal dumping.	\$260,000	0 (Note 3)	(Note 3)	\$260,000

Table 7. Unincorporated Contra Costa County Trash Control Measures Comparative Costs

No.	Control Measure	Description	Implementation Cost	Percent Reduction (Note 11)	Implementation Cost per 1%	Annual Ongoing Cost
18	Mandatory Trash Service	Ensure every occupied residential and commercial property has trash service.	\$160,000	3 - 7	\$23,000 - \$53,000	\$25,000
19	Enforce Restaurant Buffers	Ensure restaurants maintain their 400 feet buffer areas free of trash.	\$25,000		Unknown	\$25,000
20	Effective Street Sweeping	Install No Parking signs with street sweeping schedule and enforce no parking during sweeping times.	Unknown		Unknown	

Notes:

1. Complete cost per inlet conversion is \$1,000 including planning, construction, and inspection. Assume 10% of inlets need structural modifications and cost \$5,000 per conversion. Annual maintenance costs per inlet is \$1,800 (\$600 three times per year).
2. Trash load requirements are increased by a factor of 3 after 2018 (from 12.4 cubic yards for 1% load reduction to 37.6 cubic yards) to maintain maximum credit of 10% for creek cleanups and 15% for homeless cleanups.
3. There is no direct trash load reduction with hiring a Deputy Sheriff to patrol creeks and roads, but if part of a comprehensive homeless and illegal dumping program (DTDC Plan) it could result in a reduction of trash in creeks.
4. A 1% trash load reduction (offset) is allowed with removal of 12.4 cubic yards of trash from homeless encampments and illegal dumping up to a maximum of 15%. The County must have a Direct Trash Discharge Control Plan approved by the Regional Board to be eligible for this reduction.
5. A 1% trash load reduction offset is allowed with removal of 12.4 cubic yards of trash from creeks and shorelines (outside of the DTDC Plan) up to a maximum of 10%. The County must perform the clean-ups twice a year and demonstrate a sustained environmental improvement.
6. The Regional Board considers full trash capture devices to be 100% effective and load reduction in any trash generation area goes automatically to Low, or fully compliant. However, the Regional Board does not consider other control measures that physically pick up trash to be 100% effective. For planning purposes it is assumed an investment in a control measure will result in the area dropping down to the next trash generation level so, for example, a Very High trash generation area will drop to a High trash generation area.
7. Implementation cost based on current contract, and percent reduction based on visual assessments.
8. Installing 100% FTCD does not result in 100% load reduction because not all trash generation areas drain to a drainage inlet. Percent reduction calculation assumes each inlet treats 2 acres.
9. Improvement costs in this watershed are split 61% County and 39% City of Richmond, based upon the jurisdictional tributary area to the North Richmond Pump Station. In this case, the implementation cost is for the whole project, but the estimated percent reduction and unit cost is based upon the County's portion only.

Table 7. Unincorporated Contra Costa County Trash Control Measures Comparative Costs

10. The County expends significant resources picking up illegal dumping along County roads in upland areas, however there is no credit for removing this trash from the landscape. Credit for illegal dumping is only allowed when it is removed along creeks, which is included in the Direct Trash Discharge Control Plan.
11. "Percent Reduction" represents the theoretical load reduction and does not take into account other factors that may influence the load, such as for example, other control measures in the same area (e.g. street sweeping).
12. A 1.0% load reduction is assumed by implementing this control measure.

Table 8. Additional MRP 2.0 Trash Control Measures to Meet Required 2017/2019 Load Reduction

Tier (1)	MRP 2.0 Control Measure	Recommendation	Estimated Cost (FY 2017/18)	Estimated Load Reduction (%)	Pros	Cons
1A	Install Full Trash Capture Devices	Install approximately 154 Full Trash Capture Devices in Very High and High trash generation areas.	\$300,000	7 (14) (Note 2)	Quick process to meet 2017 deadline	Less cost effective than dynamic separators
1B	On-Land Clean Up	Increase trash pickup in current service areas and expand pickup into additional areas.	\$200,000	10 (assumed to achieve 10% above existing)	Quick process to meet 2017 deadline	Requires visual assessment monitoring
1C	Adopt-a-Spot	Implement an Adopt-a-Spot program (similar to the Adopt-a-Road program) that will enlist volunteers to improve trash reduction in target areas.	\$25,000 (staff cost)	1 (assumed to achieve 1% above existing)	Adds value to community	More difficult to maintain program than other control measures
1D	Enforce Ban on Plastic Bags.	Enforce ban on plastic bags in unincorporated communities.	\$25,000	6	Fairly easy to implement	Requires ongoing monitoring
1E	Direct Trash Discharge Control Plan	Clean up homeless encampments and prevent illegal dumping in creeks. (costs for 2017 and 2018)	\$300,000	15	Cost effective measure with significant load reduction	Stop gap measure. Allowable credit reduced in 2019
1F	Creek Cleanups	Remove trash from creeks twice a year using volunteers and County labor. (costs for 2017 and 2018)	\$30,000	Up to 10	Cost effective measure using volunteer labor	Stop gap measure. Allowable credit reduced in 2019
2A	Ban Polystyrene Food Containers	Develop a ban on polystyrene food containers in unincorporated communities. (Note 3)	\$75,000	4	Fairly easy to implement	Difficult to implement in time for 2017 deadline
2B	Dynamic Trash Separator	Install a hydrodynamic separator in the North Richmond Pump Station drainage system. (Note 4)	\$1,000,000	8	More long term cost effective measure than FTCD	More complex project requires two years to implement
2C	Street Sweeping	Sweep additional streets with curb and gutter to pick up trash.	\$125,000	Unknown	Quick process to meet 2017 deadline	Requires visual assessment monitoring

Tier	MRP 2.0 Control Measure	Recommendation	Estimated Cost (FY 2017/18)	Estimated Load Reduction (%)	Pros	Cons
2D	70% Full Trash Capture Devices	Install full trash capture devices on all drainage inlets in Very High (62 inlets), High (689), and Moderate (31) trash generation areas.	\$1,100,000	70	Meets the 2017 load reduction requirement	Not a cost effective control measure
2E	Right Size-Right Service	Ensure trash customers have the right size container for the trash they generate.	\$150,000	5 - 10	Effective measure, eliminates trash at source	Complex program with multiple service providers
2F	Mandatory Trash Service	Ensure every occupied residential and commercial property has trash service.	\$160,000	5 - 10	Effective measure, captures trash at source	Complex program with multiple service providers
2G	Enforce Restaurant Buffers	Ensure restaurants maintain their 400 buffer areas free of trash.	\$25,000	Unknown	Fairly easy to implement	Not all restaurants have buffer areas
2H	Effective Street Sweeping	Install No Parking signs with street sweeping schedule and enforce no parking during sweeping times.	Unknown	Unknown	Improves investment in street sweeping	Unpopular measure, difficult to implement

Notes:

1. Tier 1 Control Measures are recommended to be initiated in 2017, while Tier 2 control measures are recommended to be revisited in 2018 for further evaluation.
2. The theoretical load reduction is 14% based on no prior trash control measures performed within the treated area, however, some trash control measures have occurred in the treated area and partial credit taken in prior reporting years. So, the actual load reduction is estimated at 7%, less than the theoretical load reduction.
3. Although this is a Tier 2 recommendation and will not help to achieve the 70% trash reduction by June 2017, it is recommended to budget \$75,000 for FY 2017-18 to establish the program so credit can be received in the 2018 reporting period.
4. Improvement costs in this watershed are split 61% County and 39% City of Richmond, based upon the jurisdictional tributary area to the North Richmond Pump Station. The estimated load reduction is based upon the County's portion only.

**Table 9. MRP 2.0 Cost Compliance
Most Likely Scenario**

Provision No.	MRP 2.0 Additional Requirements	Estimated Expenditures					Totals
		2016	2017	2018	2019	2020	
C.3	Green Infrastructure	\$0	\$91,500	\$41,000	\$889,000	\$43,000	\$1,064,500
C.10	Trash	\$55,000	\$1,494,000	\$2,014,000	\$2,384,000	\$3,154,000	\$9,101,000
C.11 and C.12	Mercury and PCB	\$31,000	\$11,000	\$213,000	\$361,000	\$43,367,000	\$43,983,000
Additions Subtotals		\$86,000	\$1,596,500	\$2,268,000	\$3,634,000	\$46,564,000	\$54,148,500
MRP 1.0		\$2,980,000	\$2,980,000	\$2,980,000	\$2,980,000	\$2,980,000	\$14,900,000
Total MRP 2.0		\$3,066,000	\$4,576,500	\$5,248,000	\$6,614,000	\$49,544,000	\$69,048,500

Table 9. Detailed Support for Most Likely Scenario

Provision Number	Requirement	2016	2017	2018	2019	2020
C.12.a.i.	Implement PCB control measures	\$0	\$0	\$0	\$0	\$0
a.ii.1	Identify management areas with control measures	\$11,000	\$0	\$0	\$0	\$0
a.ii.2.	Identify current and new control measures (see C.12.a.ii.1)	\$0	\$0	\$0	\$0	\$0
a.ii.3.	Develop implementation schedule	\$10,000	\$1,000	\$1,000	\$1,000	\$1,000
a.ii.4.	Implement Source Properties control measure	\$0	\$0	\$200,000	\$300,000	\$300,000
a.ii.4.	Implement North Richmon Pump Station control measure	\$0	\$0	\$0	\$0	\$0
a.ii.4.	Implement Street Sweeping control measure	\$0	\$0	\$0	\$0	\$0
a.ii.4.	Implement Green Infrastructure control measure	\$0	\$0	\$0	\$0	\$43,000,000
a.iii.1.	Progress report on control measures	\$5,000	\$0	\$0	\$0	\$0
a.iii.2.	Develop status for each Annual Report	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
a.iii.3.	Update on control measures, source properties, milestones (see C.12.a.iii.2)	\$0	\$0	\$0	\$0	\$0
a.iii.4.	Alternative load reduction distribution (optional) (see Note 1)					
b.i.	Develop load reduction assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.ii.	Calculate PCB load reduction each year	\$0	\$5,000	\$5,000	\$5,000	\$5,000
b.iii.1.	Submit assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.iii.2.	Provide PCB load reductions each year (included in C.12.b.ii)	\$0	\$0	\$0	\$0	\$0
b.iii.3	Update assessment methodology (BASMAA)	\$0	\$0	\$0	\$0	\$0
b.iii.4	Alternative load reduction distribution (optional) (see Note 1)					
c.i.	Minimum GI projects for PCBs (see C.12.a.ii.4)	\$0	\$0	\$0	\$0	\$0
c.ii.1	Implement GI projects for specified reduction (included in C.12.a.ii.4)	\$0	\$0	\$0	\$0	\$0
c.ii.2.	Reasonable assurance analysis on GI projects (BASMAA)	\$0	\$0	\$0	\$0	\$2,000
c.iii.1.	Report on GI and PCB load reduction (BASMAA)	\$0	\$0	\$0	\$0	\$0

Table 9. Detailed Support for Most Likely Scenario

Provision Number	Requirement	2016	2017	2018	2019	2020
c.iii.2.	Report on land area treated by GI (BASMAA)	\$0	\$0	\$0	\$0	\$5,000
c.iii.3.	Submit a reasonable assurance analysis (included in C.12.c.ii.2)	\$0	\$0	\$0	\$0	\$0
c.iii.4.	Report on PCBs removed with GI	\$0	\$0	\$0	\$2,000	\$2,000
d.i.	Implementation plan for TMDL waste-load allocations (see C.12.d.ii.1)	\$0	\$0	\$0	\$0	\$0
d.ii.1.	Identify control measures	\$0	\$0	\$0	\$0	\$15,000
d.ii.2.	Implement control measures	\$0	\$0	\$0	\$0	\$5,000
d.ii.3.	Evaluate effectiveness of control measures	\$0	\$0	\$0	\$0	\$16,000
d.iii.	Submit implementation plan (included in C.12.d.ii.1)	\$0	\$0	\$0	\$0	\$0
e.i.-iii.	Evaluate PCBs in public infrastructure facilities (BASMAA)	\$0	\$0	\$2,000	\$0	0
C.12.f.i.	Manage demolition debris to contain PCBs (see C.12.f.ii.1)	\$0	\$0	\$0	\$0	\$0
f.ii.1.	Develop debris management protocols	\$0	\$0	\$0	\$45,000	\$0
f.ii.2.	Implement debris management protocols	\$0	\$0	\$0	\$5,000	\$0
f.ii.3.	Assessment of debris management effectiveness (BASMAA)	\$0	\$0	\$0	\$0	\$0
f.iii.1.	Report on implementing debris management	\$2,000	\$2,000	\$2,000	\$0	\$0
f.iii.2.	Prepare exemption justification (not applicable)					
f.iii.3.	Report on debris management protocols	\$0	\$0	\$0	\$0	\$2,000
f.iii.4.	Report on applicable buildings	\$0	\$0	\$0	\$0	\$11,000
f.iii.5.	Assessment methodology for load reduction (BASMAA)	\$0	\$0	\$0	\$0	\$0
g.i.-iii.	Fate and transport study (SFEI)	\$0	\$0	\$0	\$0	\$0
h.i.-iii.	Risk reduction program (included in MRP 1.0)	\$0	\$0	\$0	\$0	\$0
	Subtotal Costs	\$31,000	\$11,000	\$213,000	\$361,000	\$43,367,000

Note:

1. The current distribution method of load reduction within the county is based on the proportional population of each co-permittee. If the Clean Water Program decided to develop an alternative distribution methodology, the estimated cost would be \$25,000.

Table 10. MRP 2.0 Implementation Budget: Resource Based (Constrained)

MRP Provision	Description	MRP 1.0 2017-2018	MRP 2.0 Additional Provisions	MRP 2.0 2017-18 Budget	Funding Source for 2017-18 Budget			
					SUA 17	Road Fund	Other Depts	General Fund
C2	Municipal Operations	\$32,000		\$32,000	\$32,000			
C2	Street Sweeping	\$200,000	\$125,000	\$325,000	\$125,000			\$200,000
C3	Development/LID	\$123,000		\$123,000	\$123,000			
C3:j	Green Infrastructure Planning		\$92,000	\$92,000				
C4	Industrial/ Commercial Site Controls	\$225,000		\$225,000	\$25,000			\$200,000
C5	Illicit Discharges	\$143,000		\$143,000	\$23,000			\$120,000
C6	Construction Controls	\$8,000		\$8,000	\$8,000			
C7	Public Outreach	\$210,000		\$210,000	\$210,000			
C8	Monitoring	\$30,000		\$30,000	\$30,000			
C9	Pesticide Controls	\$25,000		\$25,000	\$25,000			
C10	Trash (Note 1)	\$456,000	\$69,000	\$525,000	\$525,000			
C10	Trash capture devices (Note 2)		\$577,000	\$577,000	\$300,000	\$277,000		
C10	Trash seperator planning		\$100,000	\$100,000	\$100,000			
C10	On-land clean up	\$540,000	\$200,000	\$740,000	\$740,000			
C10	Adopt-a-Spot		\$25,000	\$25,000	\$25,000			
C10	Plastic bag ban program		\$25,000	\$25,000				\$25,000
C10	Polystyrene ban		\$75,000	\$75,000	\$75,000			
C10	Direct discharge controls (Note 6)	\$100,000	\$200,000	\$300,000	\$150,000	\$75,000	\$50,000	\$25,000

MRP Provision	Description	MRP 1.0 2017-2018	MRP 2.0 Additional Provisions	MRP 2.0 2017-18 Budget	Funding Source for 2017-18 Budget			
					SUA 17	Road Fund	Other Depts	General Fund
C10	Creek clean-ups (Note 7)	\$120,000	\$30,000	\$150,000	\$75,000		\$65,000	\$10,000
C11	Mercury Controls	\$15,000		\$15,000	\$15,000			
C12	PCB Controls (Note 3)	\$40,000	\$11,000	\$51,000	\$51,000			
C12	PCB/GI project		\$50,000	\$50,000	\$50,000			
C12	Identify development treatment		\$60,000	\$60,000	\$60,000			
C12	Local Source Properties		\$25,000	\$25,000	\$25,000			
C12	Regional Source Properties		\$5,000	\$5,000	\$5,000			
C12	County CIP Project (Note 4)		\$500,000	\$500,000		\$250,000		\$250,000
C15	Annual Report	\$70,000	\$20,000	\$90,000	\$90,000			
	RWQCB Fees	\$45,000		\$45,000	\$45,000			
	BIMID Cost Share	\$30,000		\$30,000	\$15,000	\$15,000		
	Drainage Inventory	\$50,000		\$50,000		\$50,000		
	Marina Program	\$10,000		\$10,000	\$10,000			
	Program Admin. (Note 8)	\$230,000		\$230,000	\$230,000			
	Knightsen Biofilter (Note 5)	\$10,000		\$10,000			\$10,000	
	Totals	\$2,712,000	\$2,189,000	\$4,901,000	\$3,247,000	\$699,000	\$470,000	\$485,000

Notes

1. Trash budget for MRP 1.0 represents projected costs from the past two years; the budget amount for MRP 2.0 Additional Provisions represents several small-scale planning activities such as maintenance plans, reports, and certifications.
2. The budget for full trash capture devices on drainage inlets includes \$300,000 for installation and \$277,000 for the first year of maintenance.

3. The PCB budget for MRP 1.0 is projected costs from the past two years; the budget amount for MRP 2.0 Additional Provisions is several small scale planning activities such as reports, schedules, and evaluations.
4. County Capital Improvement Program (CIP) projects are divided into two types: one is infrastructure projects like roads and bridges paid for from the Road Fund, and the other is building projects usually paid from the General Fund. If Green Infrastructure has been incorporated into the project scope and project budget, then this cost is already included in the project cost and is not an "additional" cost.
5. The Knightsen Biofilter project requires Public Works Department staff support to keep it going, which could be funded by the Flood Control District in its role of providing technical guidance throughout the County on flood relief planning work. However, once the planning work identifies a preferred alternative and it goes into project design, then the work would have to be locally funded.
6. Elements of the Direct Trash Discharge Control Plan will be implemented within the road rights of way funded with Road Funds, within Flood Control District rights of way funded with Flood Control Funds, and on County owned property funded with General Funds.
7. About half of the creek cleanup work will occur in Flood Control District rights of way and funded with Flood Control Funds, and a small portion are on County creek-front property and funded with General Funds.
8. Program Administration includes such items as supervision, training, budget and contract management, grant writing, and strategic planning.

Table 11 MRP 2.0 Implementation Budget: Most Likely Scenario (Unconstrained)

MRP Provision	Description	MRP 1.0 2017-2018	MRP 2.0 Additional Provisions	MRP 2.0 2017-18 Budget	Funding Source for 2017-18 Budget			General Fund
					SUA 17	Road Fund	Other Depts	
C2	Municipal Operations	\$32,000		\$32,000		\$32,000		
C2	Street Sweeping	\$200,000	\$125,000	\$325,000	\$125,000			\$200,000
C3	Development/LID Green	\$123,000		\$123,000	\$123,000			
C3.j	Infrastructure Planning Industrial/Commercial Site Controls		\$92,000	\$92,000	\$92,000			
C4								
C5	Illicit Discharges	\$225,000		\$225,000	\$25,000		\$200,000	
C5	Illicit Discharges	\$143,000		\$143,000	\$23,000		\$120,000	
C6	Construction Controls	\$8,000		\$8,000	\$8,000			
C7	Public Outreach	\$210,000		\$210,000	\$210,000			
C8	Monitoring	\$30,000		\$30,000	\$30,000			
C9	Pesticide Controls	\$25,000		\$25,000	\$25,000			
C10	Trash (Note 1)	\$456,000	\$69,000	\$525,000	\$525,000			
C10	Trash capture devices (Note 2)		\$577,000	\$577,000	\$300,000	\$277,000		
C10	Trash seperator planning		\$100,000	\$100,000	\$100,000			
C10	On-land clean up	\$540,000	\$200,000	\$740,000	\$740,000			
C10	Adopt-a-Spot		\$25,000	\$25,000	\$25,000			
C10	Plastic bag ban program		\$25,000	\$25,000			\$25,000	
C10	Polystyrene ban		\$75,000	\$75,000	\$75,000			
C10	Direct discharge controls (Note 6)	\$100,000	\$200,000	\$300,000	\$150,000	\$75,000	\$50,000	\$25,000

Table 11 MRP 2.0 Implementation Budget: Most Likely Scenario (Unconstrained)

MRP Provision	Description	MRP 1.0 2017-2018	MRP 2.0 Additional Provisions	MRP 2.0 2017-18 Budget	Funding Source for 2017-18 Budget			
					SUA 17	Road Fund	Other Depts	General Fund
C10	Creek clean-ups (Note 7)	\$120,000	\$30,000	\$150,000	\$135,000		\$15,000	
C11	Mercury Controls	\$15,000		\$15,000	\$15,000			
C12	PCB Controls (Note 3)	\$40,000	\$11,000	\$51,000	\$51,000			
C12	PCB/GI projects (Note 9)		\$13,050,000	\$13,050,000	\$50,000			\$13,000,000
C12	Identify development treatment							
C12	Local Source Properties		\$60,000	\$60,000	\$60,000			
C12	Regional Source Properties		\$25,000	\$25,000	\$25,000			
C12	County CIP Project (Note 4)		\$5,000	\$5,000	\$5,000			\$250,000
C15	Annual Report	\$70,000	\$20,000	\$90,000	\$90,000			
	RWQCB Fees	\$45,000		\$45,000	\$45,000			
	BIMID Cost Share	\$30,000		\$30,000	\$15,000	\$15,000		
	Drainage Inventory	\$50,000		\$50,000		\$50,000		
	Marina Program	\$10,000		\$10,000	\$10,000			
	Program Admin. (Note 8)	\$230,000		\$230,000	\$230,000			
	Knightsen Biofilter (Note 5)	\$10,000		\$10,000			\$10,000	
	Totals	\$2,712,000	\$15,189,000	\$17,901,000	\$3,307,000	\$699,000	\$420,000	\$13,475,000

Table 11 MRP 2.0 Implementation Budget: Most Likely Scenario (Unconstrained)

Notes

1. Trash budget for MRP 1.0 represents projected costs from the past two years; the budget amount for MRP 2.0 Additional Provisions represents several small-scale planning activities such as maintenance plans, reports, and certifications.
2. The budget for full trash capture devices on drainage inlets includes \$300,000 for installation and \$277,000 for the first year of maintenance.
3. The PCB budget for MRP 1.0 is projected costs from the past two years; the budget amount for MRP 2.0 Additional Provisions is several small scale planning activities such as reports, schedules, and evaluations.
4. County Capital Improvement Program (CIP) projects are divided into two types: one is infrastructure projects like roads and bridges paid for from the Road Fund, and the other is building projects usually paid from the General Fund. If Green Infrastructure has been incorporated into the project scope and project budget, then this cost is already included in the project cost and is not an "additional" cost.
5. The Knightsen Biofilter project requires Public Works Department staff support to keep it going, which could be funded by the Flood Control District in its role of providing technical guidance throughout the County on flood relief planning work. However, once the planning work identifies a preferred alternative and it goes into project design, then the work would have to be locally funded.
6. Elements of the Direct Trash Discharge Control Plan will be implemented within the road rights of way funded with Road Funds, within Flood Control District rights of way funded with Flood Control Funds, and on County owned property funded with General Funds.
7. Some of the creek cleanup work will occur in Flood Control District rights of way and funded with Flood Control Funds.
8. Program Administration includes such items as supervision, training, budget and contract management, grant writing, and strategic planning.
9. This budget item is 30% of a \$43 million capital program and will pay for project planning, CEQA, permitting, and design activities in FY 2017/18.

Table 12. Summary of MRP 2.0 Costs: Resource Based Scenario - Constrained

Additional Requirements	Expenditures					Totals
	2016	2017	2018	2019	2020	
Trash	\$55,000	\$1,494,000	\$2,014,000	\$2,384,000	\$3,154,000	\$9,101,000
Green Infrastructure	\$0	\$91,500	\$41,000	\$889,000	\$43,000	\$1,064,500
Mercury and PCB	\$31,000	\$705,000	\$700,000	\$700,000	\$700,000	\$2,836,000
Sub Totals	\$86,000	\$2,290,500	\$2,755,000	\$3,973,000	\$3,897,000	\$13,001,500
MRP 1.0 Projected Annual Cost	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$15,000,000
MRP 2.0 Total Cost	\$3,086,000	\$5,290,500	\$5,755,000	\$6,973,000	\$6,897,000	\$28,001,500

Summary of MRP 2.0 Costs: Most Likely Scenario

Additional Requirements	Expenditures					Totals
	2016	2017	2018	2019	2020	
Trash	\$55,000	\$1,494,000	\$2,014,000	\$2,384,000	\$3,154,000	\$9,101,000
Green Infrastructure	\$0	\$91,500	\$41,000	\$889,000	\$43,000	\$1,064,500
Mercury and PCB	\$31,000	\$6,511,000	\$6,713,000	\$15,361,000	\$15,367,000	\$43,983,000
Sub Totals	\$86,000	\$8,096,500	\$8,768,000	\$18,634,000	\$18,564,000	\$54,148,500
MRP 1.0 Projected Annual Cost	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$15,000,000
MRP 2.0 Total Cost	\$3,086,000	\$11,096,500	\$11,768,000	\$21,634,000	\$21,564,000	\$69,148,500