



RMP
**REGIONAL MONITORING
PROGRAM FOR WATER QUALITY
IN SAN FRANCISCO BAY**

sfei.org/rmp

**Regional Monitoring Program for Water Quality
in San Francisco Bay**

2019 Detailed Workplan and Budget

Final

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Summary

In 2019 the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) is entering its 27th year of collecting data and communicating information to support water quality management decisions. This Detailed Workplan and Budget describes the activities that will be completed in 2019, the proposed funding levels, and the deliverables for each task.

The total revenue and expense for 2019 is \$3,883k as shown in Table 1 and Figures 1-2. The majority of the expenses in 2019 (65%) will be for Status and Trends monitoring and special studies (Tasks 6-7). The cost for programmatic tasks (Tasks 1-5) is \$162k higher than in 2018, mostly due to adding a new database management task and the extra cost associated with publishing the *Pulse of the Bay* Report. In addition, \$66,500 will be repaid to Undesignated Funds. This repayment is for the South Bay Margins Sediment Study which was conducted in 2017 using Undesignated Funds.

The planned expenses for 2019 are higher than the sum of fees and Alternative Monitoring Requirement (AMR) contributions. Therefore, \$70k from Undesignated Funds will be used to balance the budget. Normally, we avoid having contributions and withdrawals from Undesignated Funds in the same year because they cancel each other out. However, in this case, it is important to formally repay the money advanced for the 2017 South Bay Margins Sediment Study in order to have clear accounting.

Table 1: Bay RMP 2019 Budget by Task.

	Grand Total
1. Program Management	\$376,700
2. Governance	\$304,200
3. QA and Data Services	\$225,000
4. Annual Reporting	\$209,000
5. Communications	\$173,000
6. S&T Monitoring	\$1,267,350
7. Special Studies	\$1,241,600
8. Unallocated	\$19,346
Total Actual Expenses	\$3,816,196
Contributions to Reserve Funds	\$66,500
Grand Total for Expense	\$3,882,696
Revenue from Fees	\$3,543,121
Revenue from AMR Contributions	\$269,575
Interest	\$0
Undesignated Funds Used	\$70,000
Grand Total for Revenue	\$3,882,696

Figure 1: Bay RMP 2019 Revenue and Expenses.

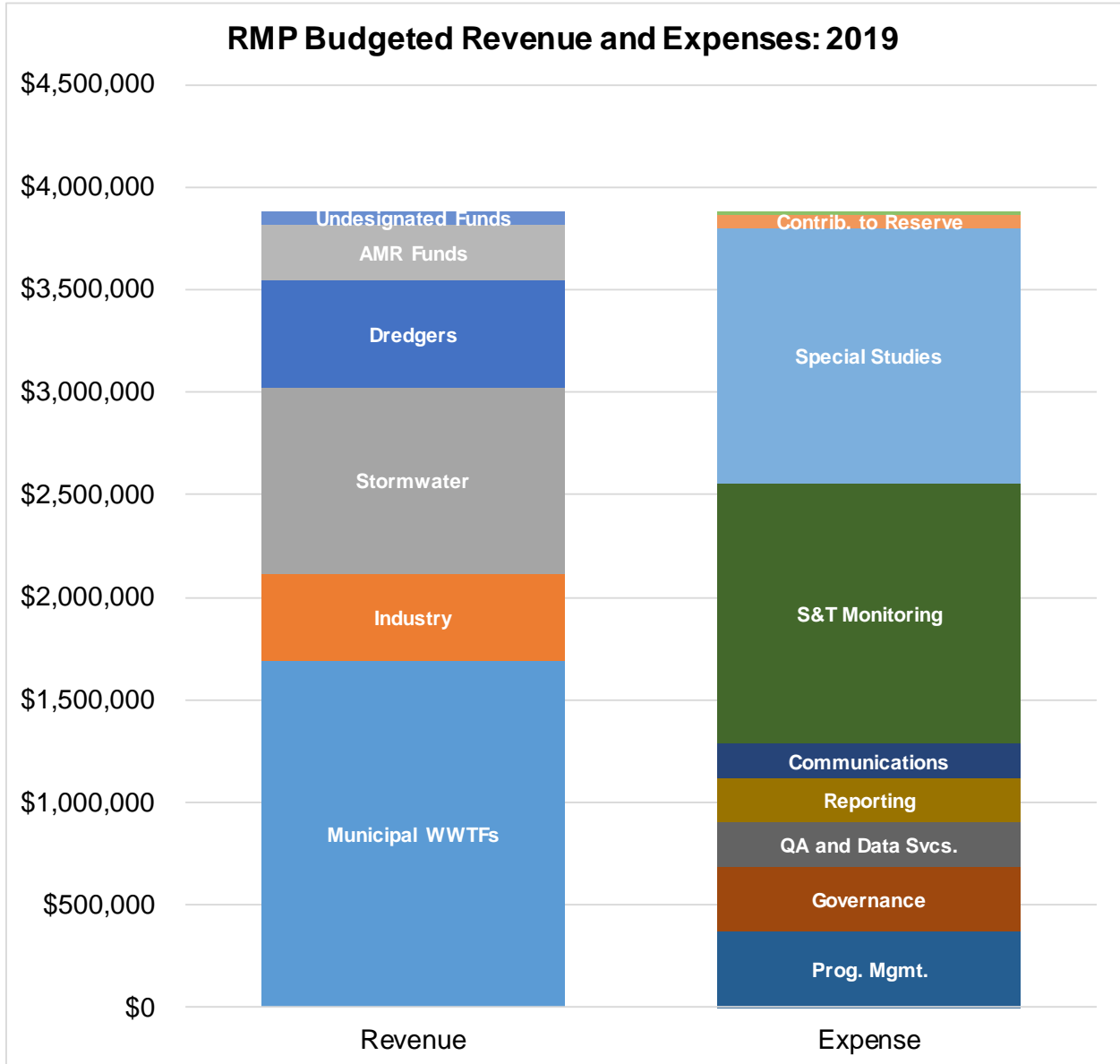
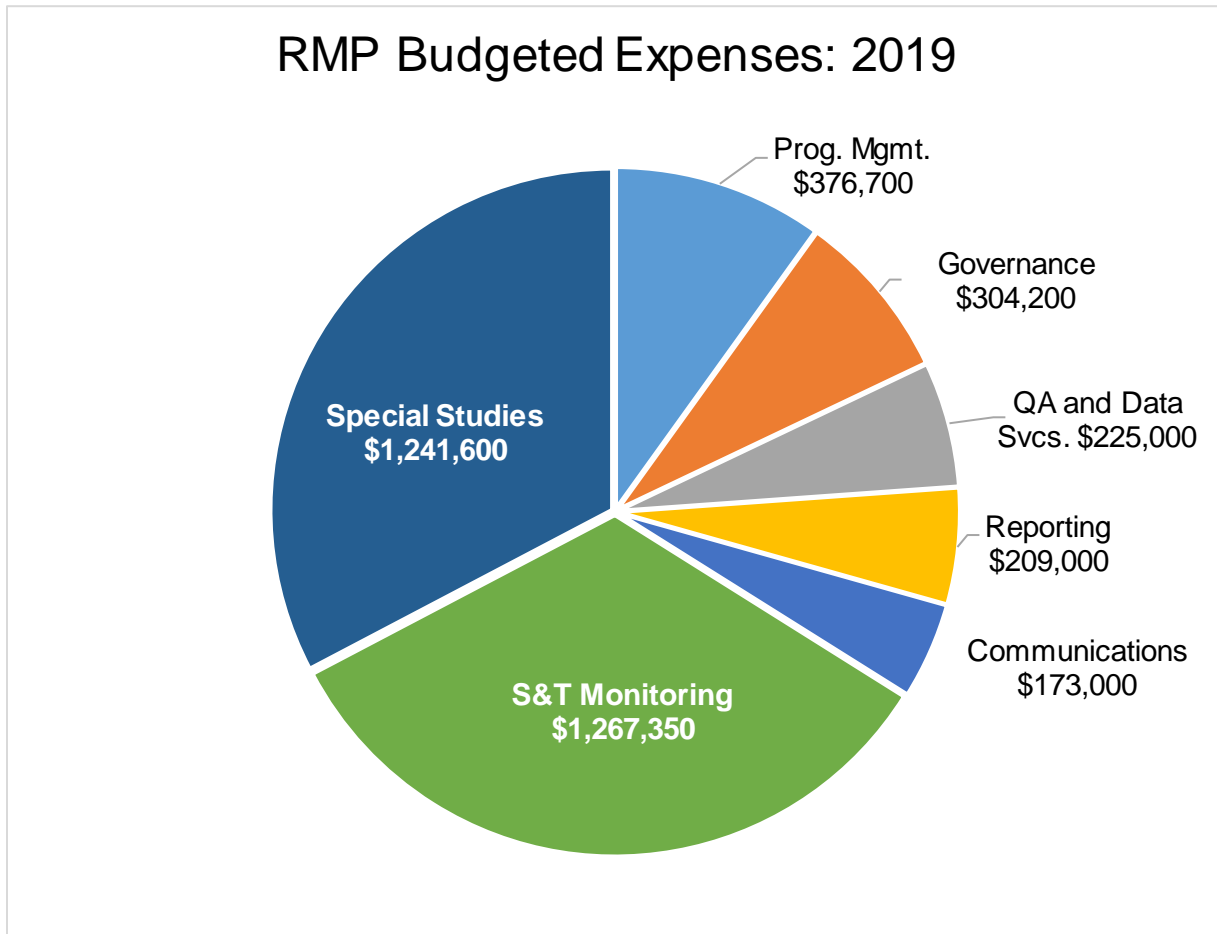


Figure 2: Bay RMP 2019 Budget by Task.



2019 Revenue

The total revenue for the RMP in 2019 is \$3,882k. The breakdown of this revenue between participant fees, interest income, designated reserve funds, and Undesignated Funds is shown in Table 2.

a. Participant Fee Revenue

The target fee revenue for the RMP in 2019 is \$3,693k. The manner in which the fees are supposed to be divided up between Program Participants is shown in Figure 3. Fees were increased by 3% relative to the 2018 budget as approved by the Steering Committee on November 1, 2017. The actual fees collected in 2019 will be \$150k below the target fees. This variance is because of a \$150k expected shortfall in the fees paid by U.S. Army Corps of Engineers.

b. Alternative Monitoring Requirement Funds

In FY19, the RMP received \$270k of supplemental funding from municipal wastewater agencies under the Alternative Monitoring Requirement (AMR) order. The intended use of these funds is for emerging contaminants studies.

c. Interest Revenue

RMP funds earn interest from the Local Agency Investment Fund. Interest in 2019 could be as high as \$60k. In past years, this interest has been included as revenue in the budget but for 2019 it will not. Instead, the interest will accumulate in an interest account. Then, after 2019 is complete, all of the interest accrued during 2019 will be transferred to the Undesignated Funds account. Accounting for interest as income during the year was confusing to staff and risky because the income was not guaranteed. The same amount of money will be available to the Steering Committee but it will first be saved as Undesignated Funds. Use of this interest to fund a contribution to the Status and Trends Set-Aside account is discussed on page 18.

d. Designated Reserve Funds

i. Dredger Reserve Fund

Dredging activity in the Bay is variable over the years. In years where there is lots of activity, any fees paid by dredgers that are greater than the target fees are stored in the Dredger Reserve Fund. These funds are held in reserve and can only be used to pay for shortfalls in dredger fees in future years. The balance of the Dredger Reserve Fund is negative (-\$46,395) because dredger fees in 2018 were lower than the target fees. The 2019 budget assumes that dredger fees will at least equal the target fees. If that is not the case, the revenue (and expense) in the budget will need to be revised downward or Undesignated Funds will need to be added to make up for this revenue shortfall. The 2019 dredger fees, and whether there is a shortfall or not, will be known in early 2019.

ii. Set-Aside Funds

The RMP uses designated funds (called “Set-Asides”) to smooth out the year-to-year expenses of the Status and Trends program. Rather than having a spike in expenses in one year, the Steering Committee designates some funds to be set aside in light years and withdrawn in years with lots of monitoring. In 2019, the Status and Trends monitoring costs are lower than average so a \$60k contribution will be made to the Set-Aside. This contribution is discussed more in the section on Status and Trends expenses (page 18).

e. Undesignated Funds

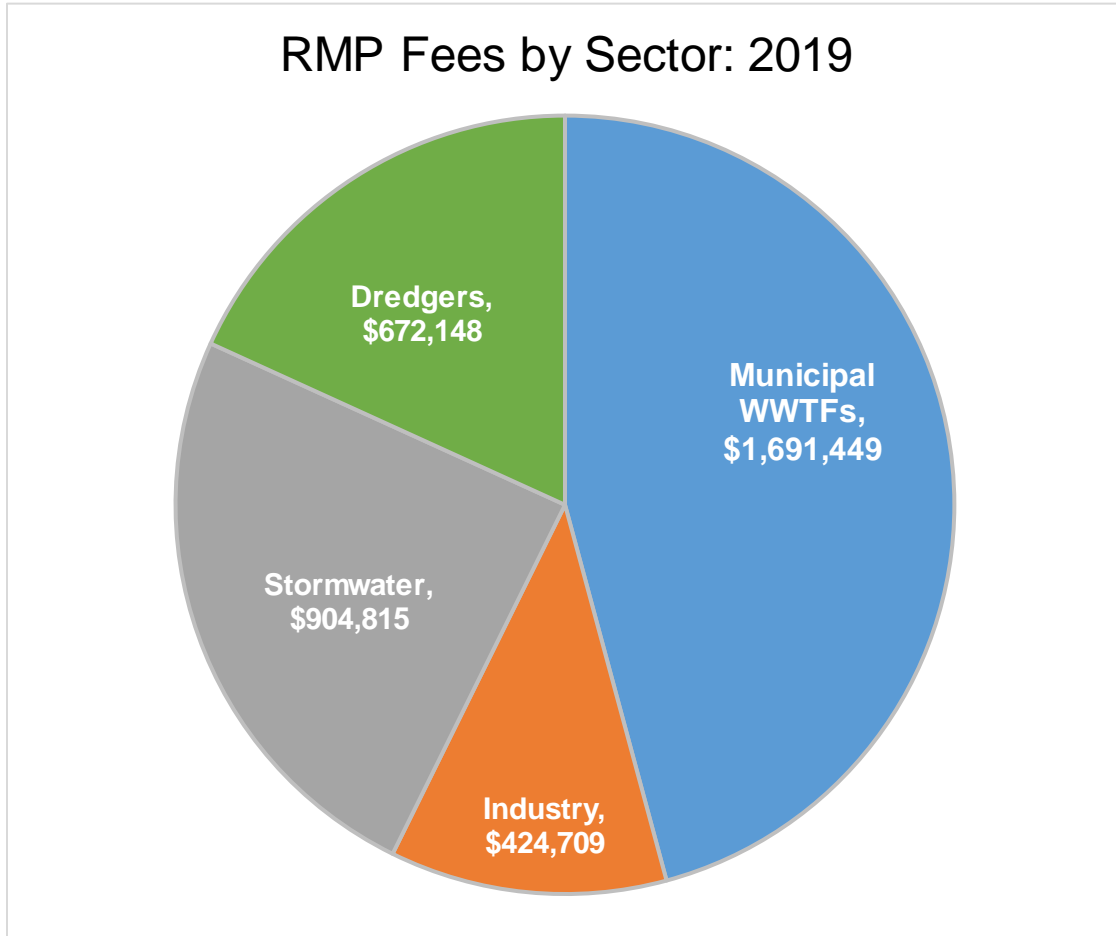
The RMP maintains a balance of Undesignated Funds for contingencies. Higher than anticipated revenues and elimination or reduction of lower priority elements sometimes lead to accumulation of funds that can be used for high priority topics at the discretion of the Steering Committee. The current balance of Undesignated Funds is \$885k.

A total of \$70k of Undesignated Funds are proposed to be used for the 2019 budget. The purpose of this request is to fill the budget gap between revenue and expenses. On July 25, 2018, the Steering Committee approved the use of \$110k to fund special studies in 2019. The programmatic costs for 2019 were lower than expected so not all of these funds were needed to balance the budget.

Table 2: 2019 RMP Revenue.

Revenue Category	Subcategory	Amount
Participant Fees	Municipal	\$1,691,449
Participant Fees	Industrial	\$424,709
Participant Fees	Stormwater	\$904,815
Participant Fees	Dredgers	\$672,148
Participant Fees	Local Dredgers - expected surplus (deficit)	TBD
Participant Fees	USACE Dredgers - expected surplus (deficit)	-\$150,000
Supplemental POTW Payments for AMR Order Coverage (FY19)		\$269,575
Interest Income		0
Designated Reserve Funds	Set-Aside Funds for S&T Monitoring	\$0
Designated Reserve Funds	Dredger Reserve Funds	\$0
Undesignated Reserve Funds		\$70,000
TOTAL REVENUE		\$3,882,696

Figure 3: Bay RMP 2019 Fee Allocations for Program Participants.



2019 Programmatic Tasks

RMP expenses fall into three broad categories: programmatic expenses, Status and Trends monitoring, and special studies. This section details the budgets for programmatic expenses for 2019.

The programmatic budget covers the following tasks:

- Program management
- Governance
- Quality Assurance (QA) and Data Services
- Annual Reporting
- Communications

The total cost to implement these tasks in 2019 is \$1,288k. This budget is \$162k more than the 2018 budget. The reasons for the cost increases are summarized in Table 3. Most of the year-to-year difference is because a Pulse of the Bay report will be produced in 2019 and a new database management task was added. The rest of the increase is \$26.7k (2.4%), which is less than inflation.

The programmatic tasks were trimmed back last year. The Steering Committee had to increase the budget for some governance tasks in the middle of the year, primarily because of higher than expected costs for workgroup meetings. The 2019 budget includes modest increases to the programmatic tasks because the tasks cannot be completed with any less funding.

More details about each of these tasks are provided in the following sections, on Table 4, and in Appendix A. Appendix A contains descriptions for each subtask or expense, budget justifications, and the expected deliverables.

Table 3: RMP 2019 Programmatic Budget Compared to the 2017 and 2018 Budgets.

	2017 Budget	2018 Budget	2019 Budget	Difference	Comments
1. Program Management	\$394,000	\$370,000	\$376,700	\$6,700	Slight increase due to inflation.
2. Governance	\$270,000	\$304,200	\$304,200	\$0	Nominal costs are unchanged but effective costs are lower due to inflation.
3. QA and Data Services	\$185,000	\$175,000	\$225,000	\$50,000	Increase is due to adding a new task to maintain the DMMO database (\$50k)
4. Annual Reporting	\$216,500	\$115,000	\$209,000	\$94,000	Most of the increase is due to the 2019 Pulse Report, which is \$85k more than the 2018 RMP Update Report.
5. Communications	\$165,000	\$162,000	\$173,000	\$11,000	Cuts to the 2018 budget were too deep. Restoring budget to 2017 equivalency.
Total	\$1,230,500	\$1,126,200	\$1,287,900	\$161,700	\$135k of the increase is from the Pulse Report and DMMO database task. The rest of the increase is \$26.7k (2.4%), which is less than inflation.

1. Program Management

Program management subtasks include program planning, contract and financial management, technical oversight, internal and external coordination, and administration. The total expense for these tasks is \$377k, which is \$7k (1.8%) more than the 2018 budget. Approximately half of the cost for this category is fiduciary oversight of program expenses and contractors. These financial management funds also support staff time to manage funds and contracts for Supplemental Environmental Projects (SEPs) that are performed by the RMP.

The major deliverables that will be completed with these funds are: the Multi-Year Plan, the Detailed Workplan, quarterly financial updates to the Steering Committee, and quarterly tracking of deliverables and action items. Funds for technical oversight allow for internal review by senior staff of the many reports, presentations, posters, workplans, memos, and other communications coming out of the RMP. The funds for external coordination cover participation in meetings with external partners to coordinate programs and leverage RMP funds (e.g., coordinating work on the Pulse Report and other reports, coordination with SCCWRP, and serving as liaison to the Delta RMP and other RMPs).

2. Governance

Governance subtasks include convening, coordinating, and facilitating Steering Committee, Technical Review Committee, and Workgroup meetings. Tasks include preparing agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing minutes from past meetings, coordination with committee chairs, and honoraria and travel for external advisors. The total budget for these tasks is \$304k which is the same as the 2018 amended budget. The cost of workgroup meetings (\$193k) accounts for more than half of this line item. The budget for staff time to prepare materials and proposals is \$133k and the budget for honoraria and travel costs for external science advisors is \$60k.

The major deliverables that will be completed with these funds are: quarterly Steering Committee meetings, quarterly Technical Review Committee meetings, and seven Scientific Workgroup meetings with external science advisors in the spring. In 2018, the meeting of Emerging Contaminants Workgroup was expanded to two days and was coordinated with the Exposure and Effects Workgroup. Feedback on this approach was positive so we will repeat this process in 2019.

The original 2018 budget for governance tasks was \$269k but the costs for workgroup meetings were higher than expected. On July 25, 2018, the Steering Committee approved a \$35k increase to the governance tasks budget. The budget for 2019 is reasonable assuming the same number of meetings as last year. The only way to significantly reduce the cost of governance is to reduce the number of workgroup meetings.

3. QA and Data Services

Quality assurance is a critical foundation for the scientific investigations of the RMP. The major quality assurance tasks for 2019 are keeping the Quality Assurance Project Plan up to date, and preparing QA summaries for datasets. In addition to processing new data, the Program needs to maintain the millions of records generated since it began in 1993. Database maintenance includes incorporating updates and corrections to data, including re-analyzed results and updates implemented by CEDEN/SWAMP. RMP staff also maintain and enhance web-based data access and visualization tools such as CD3 and an automated system to handle data submittals from the laboratories.

In 2019, one new task will be added: DMMO Database Support. Special study funding in 2018 was used to migrate the DMMO database and website to the SFEI server. DMMO managers would like to continue this collaboration indefinitely because it provides a more secure platform for the database. Benefits to the RMP include better access to sediment testing records in the DMMO database and more efficient invoicing methods for dredger fees. Therefore, ongoing funding for this project is proposed as part of the QA and Data Services task. The funding requested in 2019 is \$50k (funding for Year 1 was \$55k) to work through a long list of updates. In future, the funding needed to maintain the database will be lower.

The total cost for these tasks will be \$225k. This budget is \$50k more than it was in 2018, which reflects adding the new DMMO Database Support task.

4. Annual Reporting

The total cost for these tasks will be \$209k. This budget is \$94k more than it was in 2018. Most of the increase in costs are due to publishing a *Pulse of the Bay* report in 2019.

A *Pulse of the Bay* report will be produced in 2019, to be released at the Annual Meeting in October. The *Pulse of the Bay* report will cost \$85k more than the *RMP Update* report that was prepared in 2018. The *Pulse of the Bay* report will contain articles on a theme chosen by the Steering Committee plus updated indicators of water quality in the Bay.

Tasks related to the Annual Meeting include developing the meeting agenda, managing logistics, advertising about the meeting, managing attendee registration, preparing presentations, and staffing the meeting. The budget for the Annual meeting in 2018 was \$60k. The 2019 budget will be increased to \$69k because of increasing costs of catering, venues, and staff time.

5. Communications

Communications tasks will implement the plans included in the RMP Communications Strategy, approved by the Steering Committee in July 2014. Tasks will include the distribution of RMP information to stakeholders, natural resource managers, and the public through multiple media channels (e.g., website, publications, email newsletters, fact sheets, social media, etc.). In 2019, the RMP will continue to provide support for *Estuary News* (\$16k) plus staff time to plan and review content.

Stakeholder engagement is critically important to addressing the information needs of RMP participants. Tasks include preparing for and attending RMP stakeholder meetings (e.g., BACWA, BASMAA, BPC, LTMS, WSPA, and RB2) as well as communicating directly with stakeholder representatives.

Other communications tasks include responding to inquiries for RMP data and reports, including press calls, and producing summary information on important topics in convenient formats. The budget for this last item (“Outreach Products”) has been increased relative to 2017 to allow for better formatting of final reports and executive summaries. Participation in workshops and conferences for SWAMP, SETAC, ACS, and other professional organizations allows sharing of RMP information, gathering of information from other investigators on the latest advances in monitoring and understanding, and identification of opportunities for collaboration with other organizations. Presentations at local meetings and to local audiences are also important for collaboration and information dissemination to scientific partners. Funding for this task also supports maintenance of the RMP website.

The total cost for these tasks in 2019 will be \$173k. This budget is \$11k more than it was in 2018. The Communications budget was cut in 2018 but costs did not decrease. The 2019 budget amount restores this budget to 2017 levels after accounting for inflation.

Appendix A lists additional details for the programmatic tasks and subtasks, including budget justifications and deliverables.

Table 4: Bay RMP 2019 Programmatic Budget by Subtask. Detailed descriptions of the tasks, budget justifications, and deliverables are provided in Appendix A.

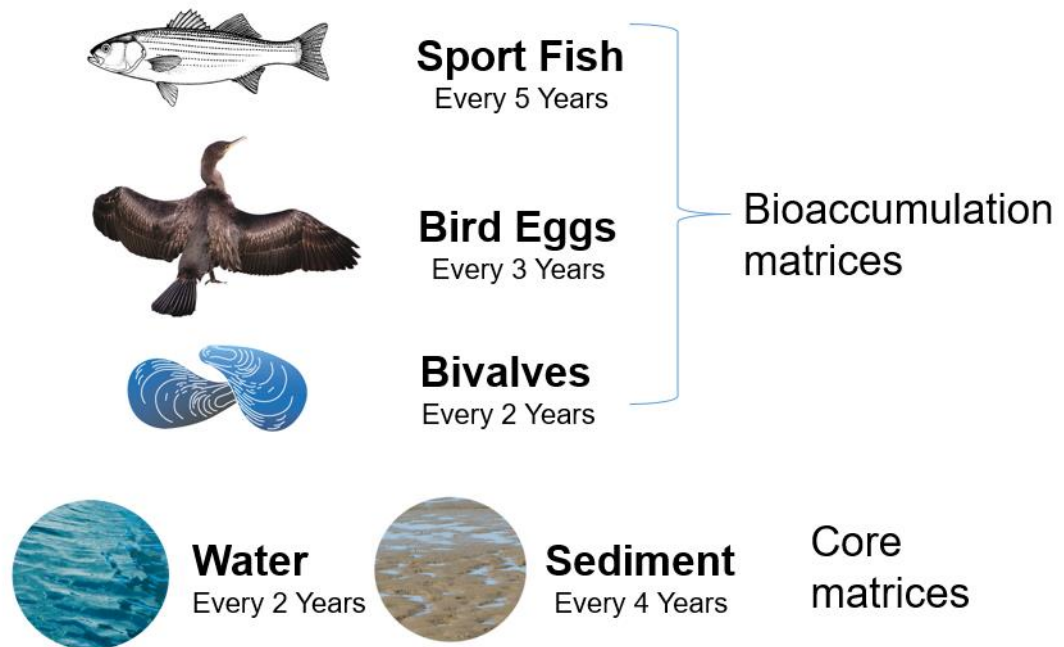
Task	Subtask	Direct Cost	Labor	Subcontract	Grand Total
1. Program	A. Budget and Workplan Development		\$41,200		\$41,200
Management	B. Contract and Financial Management		\$140,000		\$140,000
	C. Technical Oversight		\$60,000		\$60,000
	D. Internal Coordination		\$90,000		\$90,000
	E. External Coordination		\$32,000		\$32,000
	F. Administration	\$5,000	\$8,500		\$13,500
2. Governance	A. SC meetings	\$1,600	\$50,000		\$51,600
	B. TRC meetings	\$1,600	\$58,000		\$59,600
	C. WG meetings	\$4,000	\$129,000		\$133,000
	D. External Science Advisors	\$60,000			\$60,000
3. QA and Data	A. Quality Assurance System		\$30,000		\$30,000
Services	B. Online Data Access: CD3		\$65,000		\$65,000
	C. Database Maintenance		\$50,000		\$50,000
	D. Updates to SOPs and Templates		\$30,000		\$30,000
	E. DMMO Database Support		\$50,000		\$50,000
4. Annual Reporting	A. Pulse Report	\$15,000	\$125,000		\$140,000
	B. Annual Meeting	\$19,000	\$50,000		\$69,000
5. Communications	A. Communications Plan Implementation	\$16,000	\$28,000		\$44,000
	B. Stakeholder Engagement		\$24,000		\$24,000
	C. Responses to Information Requests		\$12,000		\$12,000
	D. Outreach Products	\$500	\$29,500		\$30,000
	E. Presentations at Conferences and Meetings	\$12,500	\$37,500		\$50,000
	G. RMP Website Maintenance		\$13,000		\$13,000
Grand Total		\$135,200	\$1,152,700	\$0	\$1,287,900

2019 Status and Trends Monitoring and Reserve Funds

In 2014, the Steering Committee and Technical Review Committee revised the Status and Trends (S&T) sampling schedule to free up resources. The current schedule is shown in Figure 4.

Figure 4: RMP Status and Trends Monitoring Schedule

Status and Trends Monitoring



In 2019, water and sport fish sampling will occur. In addition, the RMP provides annual support to the USGS for suspended sediment and nutrient monitoring. This support will continue in 2019. We are also proposing a budget of \$49k for laboratory intercomparison studies for high-profile parameters such as PCBs in sport fish and selenium in water and tissue. The total cost for S&T monitoring in 2019 will be \$1,267k.

While not part of the S&T monitoring budget, \$60k will be contributed to the Designated Set-Aside account for future S&T activities.

More information about each of the S&T tasks is provided in the line item budget (Table 5), the sections below, and Appendix A.

USGS Sacramento Support: Continuous Monitoring of Suspended Sediment (\$250k)

This work is led by Dr. Maureen Downing-Kunz of the USGS California Water Science Center. The USGS maintains four suspended sediment stations in the Estuary with RMP funding (i.e., Richmond Bridge, Alcatraz, Exploratorium, and Dumbarton Bridge). This funding leverages suspended sediment monitoring at two other stations (Benicia Bridge, Mallard Island) and salinity at seven stations that are funded by other partners. In addition, the RMP has used Special Studies funding to add dissolved oxygen sensors to six stations and nutrient parameter sensors to three stations. Discussions are underway to determine how to maintain the existing monitoring scheme in light of increasing costs and the available budget, which has been fixed at \$250,000 since 1993. Funding is provided by the U.S. Army Corps of Engineers directly to the USGS.

USGS Menlo Park Support: Monthly Basic Water Quality (\$242k)

This work is led by Dr. Jim Cloern of the USGS in Menlo Park. The study performs monthly water sampling to map the spatial distributions and temporal trends of basic water quality parameters along the entire Bay-Delta system. Measurements include salinity, temperature, dissolved oxygen, suspended sediments, and phytoplankton biomass. This basic information is required to follow the seasonal changes in water quality and estuarine habitat as they influence biological communities and the distribution and reactivity of trace contaminants.

The RMP pays only a fraction of the total cost of these cruises. USGS support for the cruises is in jeopardy and may cease in 2019. The USGS has committed to continuing the cruises through August 2019. Options to continue these cruises after that are being discussed in the Nutrient Management Strategy committee meetings.

2019 Water Cruise Laboratory Expenses and Data Management (\$215.5k)

The Status and Trends schedule calls for water sampling every two years. Water samples from 22 random and targeted sites will be collected and sent to laboratories for analyses of metals, conventional parameters, and aquatic toxicity. Subcontracts for the vessel (\$30k), sample collection/logistics (\$63.5k), and laboratories (\$48k) make up the majority of the cost. The cost to QA and manage the data from this sampling effort will be \$25k.

2019 Sport Fish (\$405k)

The Status and Trends schedule calls for sport fish sampling every five years. Fish will be collected from 7 target locations in the Bay and sent to laboratories for analyses of mercury, selenium, PCBs, PBDEs, PFAS, and dioxins. Subcontracts for collection/logistics (\$135k) and laboratories (\$150k) make up the majority of the cost. The cost to QA and manage the data from this sampling effort will be \$45k. A final report will be produced by the end of 2020.

Laboratory Intercomparison Studies (\$49k)

Laboratory intercomparison studies boost confidence in analytical methods and results, act as an insurance policy for unforeseeable changes in analysis procedures and analytical contractors, and provide many other benefits. With water and sport fish monitoring scheduled for 2019, there is an opportunity to conduct intercomparison studies for the critical parameters of PCBs and selenium.

PCBs are an important parameter for sport fish tissue. The last sport fish samples were analyzed by CDFW's Water Pollution Control Laboratory (WPCL). This laboratory is no longer in operation. The 2019 sport fish samples will be analyzed by SGS-AXYS. To check for shifts in PCBs due to changing labs, SGS-AXYS will analyze 6 archives that were previously analyzed by WPCL. Shiner surf perch archives will be used for this study.

The purpose of this intercomparison study is to identify primary and backup analytical laboratories for each matrix in preparation for long-term selenium monitoring of water, clam, and sturgeon tissues in northern San Francisco Bay. In particular, a new analytical laboratory for selenium analyses in wildlife tissues (i.e., clams and sturgeon muscle plugs), which were historically conducted by the USGS Menlo Park. Current bioaccumulation models for selenium are highly sensitive to particulate water concentrations, so the lab intercomparison conducted in 2017 for water samples will be repeated. For more details on the study design, see Appendix C.

Sample Archive (\$83.5k)

The RMP stores archives of sediment, bivalve, bird egg, and sport fish samples, as well as other miscellaneous samples, in archives for potential future analyses. Short-term archives are stored at Schaeffer's Meat and Storage in Oakland. Long-term archives are stored at NIST in Charleston, South Carolina. Costs in 2019 will cover continued storage fees for the archives (\$35k for Schaeffer's and \$22k for NIST) as well as labor to manage the archives and the archive database (\$12k). The cost also includes subcontractor support from AMS to access the archives and to support a purge of old archives. Purging the old archives will save time in the long run because storage costs are rising at 15% per year. Staff will continue to look for ways to strategically use the archives, both within the RMP and with academic partners.

2019 Field Sampling Report and Support (\$22k)

At the end of the field season, RMP staff will prepare the Field Sampling Report, which will summarize the 2019 field sampling effort. The goal of the report is to document where samples were collected and any complications during field sampling. The report will not contain any data analysis or results. Clear documentation of field sampling effort is part of the overall quality assurance system for the Program. This budget line also includes miscellaneous logistical support from AMS for RMP sampling. Shipping preserved samples or international shipping is a common request.

Contributions to Reserve Funds (\$66.5k)

\$66.5k from the 2019 budget will be added to the Undesignated Funds account to repay half of the \$133k that was advanced for the 2017 South Bay Margins Study. The first half of this repayment was made in 2018.

No monitoring contingency funds were used last year so no funds are needed to restore this account to its normal balance of \$50k.

The RMP uses designated funds (called “Set-Asides”) to smooth out the year-to-year expenses of the Status and Trends program. Rather than having a spike in expenses in one year, the Steering Committee designates some funds to be set aside in light years and withdrawn in years with lots of monitoring. In 2019, the Status and Trends monitoring costs are lower than average so a \$60k contribution will be made to the Set-Aside.

Even though 2019 is a "contribution" year for the S&T Set Aside, the \$60k contribution does not show up in the 2019 budget. This is because the \$60k will be transferred directly from the Undesignated Funds account to the S&T Set-Aside account. Interest accrued on RMP funds in 2019 (estimated to be \$60k) will be deposited to the Undesignated Funds account in April 2020 to cover this cost. This process would be the same as adding \$60k in interest as revenue and \$60 in expense for the set-aside to the 2019 budget but has fewer transactions and is easier for the accounting staff.

Appendix A lists additional details for the Status and Trends Monitoring tasks and subtasks, including budget justifications and deliverables.

Table 5: Bay RMP 2019 Status and Trends Budget by Subtask.

Task	Subtask	Direct Cost	Labor	Subcontract	Grand Total
6. S&T Monitoring	A. USGS Sacramento Support			\$250,000	\$250,000
	B. USGS Menlo Park Support			\$242,000	\$242,000
	C. 2019 Water Cruise	\$4,000	\$45,000	\$141,500	\$190,500
	D. 2019 Water Data Mgmt		\$25,000		\$25,000
	E. 2019 Sport Fish Monitoring	\$5,000	\$70,000	\$285,000	\$360,000
	F. 2019 Sport Fish Monitoring Data Mgmt		\$45,000		\$45,000
	I. S&T Laboratory Intercomparison Studies	\$8,000	\$16,000	\$25,350	\$49,350
	J. Sample Archive	\$35,000	\$10,000	\$38,500	\$83,500
	K. S&T Field Sampling Report & Support		\$12,000	\$10,000	\$22,000
	Grand Total	\$52,000	\$223,000	\$992,350	\$1,267,350
Contributions to Reserve Funds	S&T Monitoring Set Aside Contribution				\$0*
	Monitoring Contingency Fund Replenishment				\$0*
	Undesignated Funds				\$66,500*
	Total				\$66,500

*For more details, see description in text.

2019 Special Studies

The total costs for special studies in 2019 will be \$1,242k. Figure 5 shows how these costs are distributed across seven focus areas. Additional details on each of the studies are provided in the line item budget (Table 6). Appendix B lists all the special studies with brief descriptions of the work to be completed, deliverables, and due dates.

Figure 5: RMP Special Studies Funding for 2019 by Focus Area.

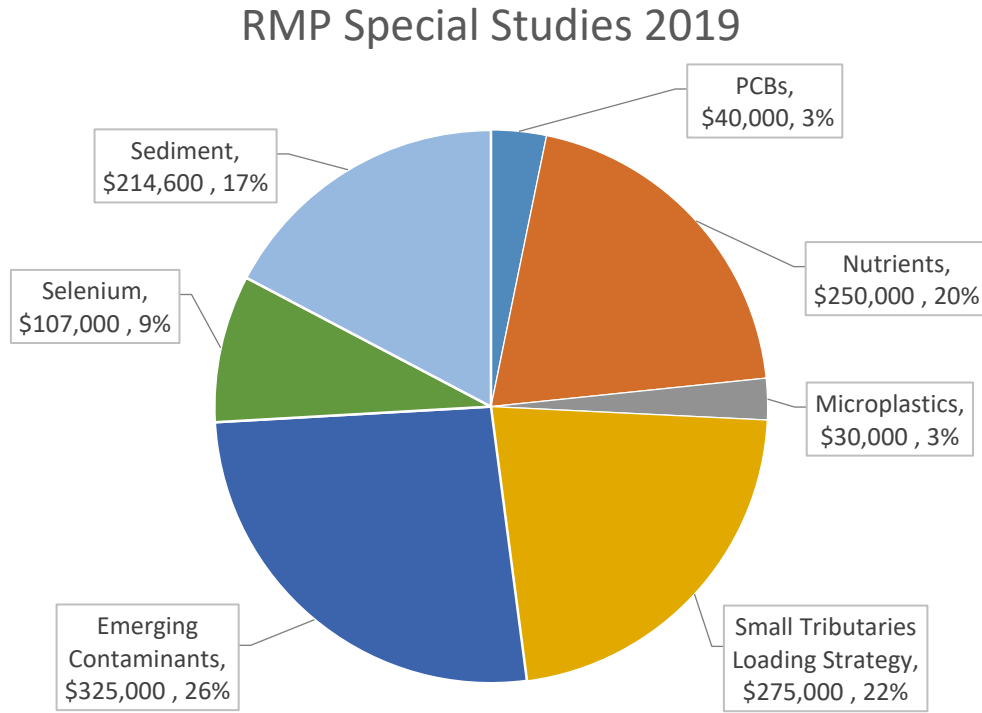


Table 6: Bay RMP 2019 Special Studies Budget by Subtask.

Task	Direct Costs	Labor	Subcontracts	Total
Special Study: EC Ethoxylated Surfactants Study*		\$76,200	\$46,800	\$123,000
Special Study: EC in Urban Stormwater Year 1*		\$85,000	\$47,000	\$132,000
Special Study: EC Strategy Support	\$5,000	\$65,000		\$70,000
Special Study: Microplastic in Sport Fish*		\$15,000		\$15,000
Special Study: Microplastic Strategy		\$15,000		\$15,000
Special Study: Nutrient Special Studies	\$250,000			\$250,000
Special Study: PCB Stormwater Monitoring for PMUs		\$30,000		\$30,000
Special Study: PCB Strategy Support		\$10,000		\$10,000
Special Study: Sediment Bathymetric Change Study			\$77,000	\$77,000
Special Study: Sediment Beneficial Reuse Workshop	\$6,500	\$23,500		\$30,000
Special Study: Sediment Bulk Density Study		\$30,000		\$30,000
Special Study: Sediment Conceptual Understanding and Monitoring Strategy		\$65,600	\$12,000	\$77,600
Special Study: Selenium North Bay Clam and Water	\$1,240	\$9,000	\$64,760	\$75,000
Special Study: Selenium Strategy Support		\$10,000		\$10,000
Special Study: Selenium Sturgeon Muscle Plug	\$1,920	\$7,000	\$13,080	\$22,000
Special Study: STLS Advanced Data Analysis		\$50,000		\$50,000
Special Study: STLS Regional Model Development		\$60,000		\$60,000
Special Study: STLS Strategy Support and Coordination		\$40,000		\$40,000
Special Study: STLS WY19 POC Recon Monitoring	\$6,000	\$88,000	\$31,000	\$125,000
Grand Total	\$270,660	\$679,300	\$291,640	\$1,241,600

*These studies are funded with the \$270k of FY19 Alternative Monitoring Requirement (AMR) funds.

Appendix A: Bay RMP 2019 Programmatic and Status and Trends Task Descriptions, Budget Justifications, and Deliverables.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
1. Program Management	A. Budget and Workplan Development	Labor	\$41,200	Preparing annual workplans and budgets (Detailed Workplan, Multi-Year Plan) plus other program planning activities.	\$1.2k increase from 2018 budget due to inflation.	2019 Multi-Year Plan (draft in October '19, final in January '20), 2020 Detailed Workplan (draft in October '19, final in January '20)
	B. Contract and Financial Management	Labor	\$140,000	Tracking expenditures versus budget, accounting, updating planned hours, working with auditors, preparing financial updates to RMP SC, developing contracts, overseeing contracts, invoicing stakeholders, updating the MOU between SFEI-ASC and the Water Board as needed.	\$20k decrease from 2018 budget.	Executed contracts. Monthly invoicing. Quarterly financial updates to SC. Quarterly updates to planned budget in accounting software.
	C. Technical Oversight	Labor	\$60,000	Review of work products by Lead Scientist, Program Manager, and Senior Scientists to ensure the quality of RMP deliverables.	\$10k increase from 2018 budget. More oversight needed over expanded CEC Program and Sediment WG.	Improved quality work products
	D. Internal Coordination	Labor	\$90,000	Workflow planning, tracking deliverables, and holding staff meetings.	\$10k increase from 2018 budget. New Sediment WG team and expanded CEC team require more time for staff meetings.	RMP Deliverables Tracking System and Stoplight Reports (quarterly at SC meetings)

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	E. External Coordination	Labor	\$32,000	Participation in meetings with external partners to coordinate programs (e.g., linking RMP monitoring with SWAMP, meeting with SCCWRP, serving as liaison to the Delta RMP and other RMPs)	\$2k increase from 2018 budget	Program efficiencies through coordination with partners.
	F. Administration	Labor	\$8,500	Office management assistance (e.g., RMP mailings, arranging travel, purchasing).	\$3.5k increase from 2018 budget. Back to 2017 budget levels.	Program efficiencies through support for science staff.
		Direct Cost	\$5,000	Direct costs of chemicals, hazardous waste disposal, supplies, postage, journal articles, and software.	Same amount as 2018 budget.	
2. Governance	A. SC meetings	Labor	\$50,000	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing minutes from past meetings. Pre-meeting with Chair and Co-Chair.	\$2k increase from 2018 budget due to inflation.	Four SC meetings
		Direct Cost	\$1,600	Catering for meetings at SFEI.	Same amount as 2018 budget. Typical catering cost is \$400 per meeting. Four meetings per year.	

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	B. TRC meetings	Labor	\$58,000	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing minutes from past meetings.	\$10k increase from 2018 budget. Increased cost needed to have RMP technical staff engaged with TRC meetings.	Four TRC meetings
		Direct Cost	\$1,600	Catering for meetings at SFEI.	Same amount as 2018 budget. Typical catering cost is \$400 per meeting. Four meetings per year.	
	C. WG meetings	Labor	\$129,000	Preparing proposals for special studies, agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing past meeting minutes.	\$13k decrease from 2018 budget. Fewer proposals will be prepared based on SC direction at the MYP meeting.	Seven Workgroup meetings - ECWG (two days), Microplastics, SPLWG, EEWG, PCB, Selenium, Sediment/Dredged Material
		Direct Cost	\$4,000	Catering for meetings at SFEI.	\$1k increase from 2018 budget. Typical catering cost is \$400 per meeting. Seven to ten meetings per year.	

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	D. External Science Advisors	Direct Cost	\$60,000	Honoraria and travel for external science advisors. Funds may be used to hire experts on other topics such as statistics.	Same amount as 2018 budget. Honoraria for external advisors to RMP Workgroups. Assumes \$2k honoraria for 25 advisors plus travel costs for spring WG meetings.	Program efficiencies through ongoing peer-review and expert advice.
3. QA and Data Services	A. Quality Assurance System	Labor	\$30,000	Updating the Quality Assurance Project Plan, writing a summary QA report for all S&T activities for the year, and researching analytical methods. Maintaining the SFEI laboratory SOP file system.	Same amount as 2018 budget.	(1) Annual QAPP update, (2) Annual QA Summary Report for S&T activities, (3) Participate in Annual Data Services/QA Meeting with TRC in December, (4) Respond to QA Officer requests
	B. Online Data Access: CD3	Labor	\$65,000	Adding enhancements and updates to RMP's web-based data access tool CD3.	Same amount as 2018 budget.	Specific tasks planned: (1) Create shared link and tutorial video for download tool; (2) Add SFB Basin Planning Units; (3) Automate sum generation and TEQs; (4) Link data to the EPA Chemistry Dashboard website (https://comptox.epa.gov/dashboard); (5) Tool maintenance and performance upgrades, including tune the API and modify the download tool to handle high capacity traffic.

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	C. Database Maintenance	Labor	\$50,000	Incorporating updates and corrections to data as needed, including re-analyzed results and updates implemented by CEDEN/SWAMP.	Same amount as 2018 budget.	(1) Enforce VariableCodes constraint. (2) Fix orphaned RMP Tissue Records. (3) Fix Organism Records for prior years RMP. (4) Update location of Yerba Buena Island bivalve stations. (5) Address budget shortfalls resulting from issues encountered during formatting and QA review or add-on datasets not previously budgeted for.
	D. Updates to SOPs and Templates	Labor	\$30,000	Developing and enhancing software tools and processes such as EDD templates and writing and maintaining internal SOPs to increase efficiency of data management tasks	Same amount as 2018 budget.	(1) Pulse graphics improvements (started in 2018, may carryover a little). (2) Update tissue scripts as needed. (3) Expected QA Table 4. Addition to Data Submittal Portal: Include a receipt back to data provider for their records.

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	E. DMMO Database Support	Labor	\$50,000	Maintaining the website and database for the Dredged Material Management Office.	New task. Special study funding in 2018 was used to transfer the database and website to the SFEI server.	Specific tasks planned: (1) Host and maintain website and database. Implement performance upgrades, including upgrading outdated technology; (2) Train labs/contractors on populating templates; (3) Populate data templates with data stored in PDF reports and upload backlog of data templates to database; (4) Perform improvements to website; (5) Expand querying and mapping of data by adding data to CD3; and (6) Modify website to capture information needed for RMP dredger fee calculations.
4. Annual Reporting	A. Pulse Report	Labor	\$125,000	Preparing technical content (text, analyses, graphics) and web presence. Managing contractors for design, editorial content, and printing/mailing.	Labor and design cost of \$125k is based on 2017 Pulse actuals (\$112k for labor and graphic design contract) which would be \$120k in 2019 dollars.	Pulse of the Bay Report (September)
		Direct Cost	\$15,000	Printing and mailing for Pulse Report	\$8.5k decrease from 2017 budget. Estimate for 1,200 print run and mailing using new print-on-demand vendor. Cost in 2017 was \$23.5k.	

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	B. Annual Meeting	Labor	\$50,000	Developing the meeting agenda, managing logistics, advertising about the meeting, managing attendee registration, preparing presentations, staffing the meeting.	\$5k increase from 2018 budget. Increased funding needed to prepare and practice quality presentations.	Annual Meeting (October)
		Direct Cost	\$19,000	Direct costs for venue and catering for Annual Meeting.	\$4k increase from 2018 budget. Actual costs in 2018 will be \$16k. Estimated direct costs: \$5k for venue, \$10k for catering, \$2k for social, \$2k for travel/misc.	
5. Communications	A. Communications Plan Implementation	Labor	\$28,000	Coordinating the distribution of RMP information to stakeholders, natural resource managers, and the public through multiple media channels (e.g., Estuary News, website, publications, email newsletters, fact sheets, social media, etc.). Coordinating and reviewing content for the newsletter.	\$1k increase from 2018 budget (inflation).	Four issues of Estuary News with RMP content (quarterly). Four RMP eUpdate Newsletters (quarterly).

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Direct Cost	\$16,000	Contribution to SFEP to Estuary News.	\$1k increase from 2018 budget (inflation).	
	B. Stakeholder Engagement	Labor	\$24,000	Preparing for and attending RMP stakeholder meetings (e.g., BACWA, BASMAA, LTMS, WSPA, RB2) as well as communicating directly with stakeholder representatives.	\$4k increase from 2018 budget. Budget is still \$4k below 2017 budget.	RMP presentations at BACWA, BASMAA, LTMS, BPC, WSPA, and RB2 Meetings.
	C. Responses to Information Requests	Labor	\$12,000	Responding to inquiries for RMP data and reports, including press calls.	Same amount as 2018 budget.	Timing delivery of RMP information to stakeholders. Timely responses to press calls.
	D. Outreach Products	Labor	\$29,500	Producing technical content and design for outreach products. Design hours can also be used to format important technical reports.	Same amount as 2018 budget. Assuming 80 hours of design staff time and the rest of the budget for technical staff time.	The types of products to be produced are visually compelling final reports, short summaries of key reports, and manuscripts for high impact findings.

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Direct Cost	\$500	Printing costs for outreach products		
	E. Presentations at Conferences and Meetings	Labor	\$37,500	Preparation for and participation in workshops and conferences for SWAMP, NorCal SETAC, ACS, and other professional organizations; as well as presentations at local meetings. Includes design hours for RMP posters or presentations.	\$2.5k increase from 2018 budget.	Presentation of RMP data at up to six conferences or local meetings (December).
		Direct Cost	\$12,500	Travel and registration costs for RMP staff to attend conferences, workshops, and local meetings.	\$2.5k increase from 2018 budget. Assuming five conferences at \$2k per conference plus \$2.5k for other travel costs.	
	G. RMP Website Maintenance	Labor	\$13,000	Updating the RMP website with new reports and items. Funds for online data access tools (e.g., CD3) are in the Data Services/QA budget.	Same amount as 2018 budget.	Updates to website with new reports and content (at least quarterly).
6. S&T Monitoring	A. USGS Sacramento Support	Subcontract	\$250,000	Support for USGS-Sacramento to conduct in-situ sensor monitoring. The program is supported by USACE pass-through funding (\$250,000).	USGS receives \$250,000 directly from USACE. This support is included in the revenue from dredgers.	Continuous suspended sediment monitoring at 5 stations

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	B. USGS Menlo Park Support	Subcontract	\$242,000	Support for USGS-Menlo Park to conduct nutrient monitoring.	Subcontract with USGS.	Monthly measurements of basic water quality at 38 stations
	C. 2019 Water Cruise	Subcontract	\$141,500	Subcontracts for vessel (USGS), field sampling (AMS), and laboratory analyses.	Estimated subcontractor costs based on quotes from October 2018.	
		Labor	\$45,000	Developing a cruise plan, managing subcontractors for field and laboratory work, staffing the cruise, and follow-up on samples sent to the labs.	Estimated labor costs from S&T 10-year plan.	Sampling and Analysis Plan and subcontracts. Successful collection of samples.
		Direct Cost	\$4,000	Field supplies and shipping expenses.	Estimated direct costs from S&T 10-year plan.	
	D. 2019 Water Data Mgmt	Labor	\$25,000	Formatting, performing QA/QC review, and uploading RMP field and analytical results from laboratories to SFEI's RDC database and replicating to CEDEN.	Estimated cost from Data Services.	Processing and upload 2019 S&T Water data.
	E. 2019 Sport Fish Monitoring	Subcontract	\$285,000	Costs for fish sample collection by CCR and laboratory analyses.	Estimated subcontractor costs from S&T 10-year plan.	
		Labor	\$70,000	Developing a Sampling and Analysis Plan, managing subcontractors for field and laboratory work, follow-up on samples sent to the labs, and preparing a final report.	Estimated labor costs from S&T 10-year plan.	Sampling and Analysis Plan for sport fish and subcontracts. Successful collection of samples. Final report due 12/31/2020.

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Direct Cost	\$5,000	Field supplies and shipping for sport fish samples.	Estimated direct costs from S&T 10-year plan.	
	F. 2019 Sport Fish Monitoring Data Mgmt	Labor	\$45,000	Formatting, performing QA/QC review, and uploading RMP field and analytical results from laboratories to SFEI's RDC database and replicating to CEDEN.	Estimated cost from Data Services.	Processing and upload 2019 Sport Fish data.
	I. S&T Laboratory Intercomparison Studies	Subcontract	\$25,350	Subcontracts for RMP laboratories to participate in IC studies or to run extra samples from the archives.	Subcontract costs for laboratory participation in IC studies.	
		Labor	\$16,000	Design and execution of laboratory intercomparison studies for key parameters in water and tissue samples. The focus this year will be on PCBs in sport fish tissue and Selenium in water and tissue.	60 hours for QA Officer to design, manage, and report on results to the TRC.	Presentation to the TRC on findings from IC studies.

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Direct Cost	\$8,000	Supplies and sample shipping costs.		
	J. Sample Archive	Subcontract	\$38,500	Storage costs for archives of sediment, bivalve, bird egg, and sport fish samples. Short-term archives are stored at Schaeffers in Oakland. Long-term archives are stored at NIST. Payments to NIST are made in odd numbered years.	NIST contract estimated based on previous amendment.	Long-term RMP sample archive
		Labor	\$10,000	Maintain and enhance the Archive Data Sample tool and respond to archive sample requests	\$3k increase from 2018 budget. Extra hours needed to identify and throw out old archives, which will save money in the long run.	(1) Update documentation and template (2) General upkeep and maintenance for tools and data (3) Set up User Accounts and Help Desk (4) Manage internal and external data requests (5) Purge old archives from Schaeffers.

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Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Direct Cost	\$35,000	Storage costs for archives of sediment, bivalve, bird egg, and sport fish samples. Short-term archives are stored at Schaeffers in Oakland. Long-term archives are stored at NIST. Payments to NIST are made in odd numbered years.	Refrigeration costs estimated based on 2018 invoices.	Short-term RMP sample archive.
	K. S&T Field Sampling Report & Support	Subcontract	\$10,000	Providing logistical and planning support for RMP field operations as requested by the RMP Program Manager. Shipping preserved samples or international shipping is a common request.	Quote from AMS. This is an on-call service.	
		Labor	\$12,000	Preparing a summary report to document the outcome of the previous S&T field season (stations visited, samples collected, target analytes) and supporting RMP sampling logistics	\$2k increase from 2018 budget.	Field Sampling Report (December)

Appendix B: Bay RMP 2019 Special Study Descriptions and Deliverables.

Study Name	Budget	Summary	Deliverables
Emerging Contaminants Strategy	\$70,000	Annual update of CEC Strategy, including tracking new information, updating the Tiered Framework and Multi-Year Plan. Increasing needs for stakeholder support, coordination of pro bono studies, and development and use of CEC transport model.	Update RMP CEC Strategy document (April 2020); Present updated strategy at SC (May 2020)
Contaminants of Emerging Concern in Urban Stormwater	\$132,000	Preliminary results from a 2016 RMP Special Study that scanned Bay water samples for contaminants via non-targeted analysis suggest that stormwater has the potential to contain significant levels of potentially harmful contaminants. A two-year study is proposed to provide an intensive and pioneering examination of CECs in urban stormwater. Analysis will include a targeted list of key CECs in urban stormwater developed to probe stormwater-related Coho salmon aquatic toxicity in the Puget Sound region and an additional three classes of emerging contaminants identified as critical stormwater data needs: per and polyfluoroalkyl substances (PFASs), phosphate flame retardants, and ethoxylated surfactants. The first year would include site selection and pilot sample collection and analysis for all four CEC classes, and the second year would focus on collecting a greater number of samples for this Bay Area-wide screening study. If insufficient samples are collected within two years, study may be extended to a third year.	Pilot study site selection (November 2018); pilot study sample collection (4/30/2019); SAP for Years 2-3 (November 2019)
Ethoxylated Surfactants in Ambient Water, Margin Sediment, and Wastewater	\$123,200	This study will analyze a broad suite of ethoxylated surfactants in three Bay matrices: ambient water, sediment, and wastewater. This study would provide information to help determine whether ethoxylated surfactants should be classified as Moderate Concern contaminants. The data will also guide development of a monitoring and management strategy for this class of contaminants. Investigation of ethoxylated surfactants in the stormwater pathway is proposed by the Contaminants of Emerging Concern in Urban Stormwater study.	Wastewater and water sample collection (August 2019); QA of data and upload to CEDEN (February 2020); Preliminary results presentation at ECWG Meeting (April 2020); Manuscript and summary for managers (August 2020)

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Study Name	Budget	Summary	Deliverables
Small Tributaries Program Management	\$40,000	The goal of the STLS Program over the next few years is to continue to provide information to RMP Stakeholders and the public that directly supports the identification and management of PCBs and Hg sources, concentrations, loads, and the determination of trends in relation to management efforts and beneficial uses in San Francisco Bay. This task is to support the Small Tributaries POC stormwater concentration and loading program through monthly communication with BASMAA program and Water Board representatives, including regular check in phone calls, planning for and development of meeting agendas and materials, preparation of meeting summaries, and monitoring the agenda of and attendance at key external meetings.	Coordination meetings (December 2019)
Small Tributaries Loading POC Watershed Characterization Reconnaissance Monitoring	\$125,000	Over past four years, RMP has funded a watershed characterization reconnaissance study to identify high leverage watersheds and subwatersheds for PCBs and Hg sources and to develop a remote sampler method to decrease costs and increase ease of data collection. This study is a continuation of that monitoring effort. The study will help gain further knowledge and understanding of PCBs and Hg concentrations and particle ratios in stormwater in areas that have a disproportionately larger area of older urban and industrial land use. It is primarily a field study and the level of effort will be tailored to the amount of budget available.	Select sampling sites; collect & ship wet season samples (April 2019); wet season sampling organization; SAP for POC monitoring; Lab analysis, QA, and data management; WY 2019 POC Report (Draft by November 2019, final by March 2020)
STLS Regional model development to support trends strategy Part I - Planning	\$60,000	The draft STLS Trends Strategy outlines a process to answer the key management question of how loads of pollutants of concern (e.g., PCBs) are changing over time. Progress has been made in trend analysis for individual watersheds, but questions remain as to how the loads at the regional scale have and will change as a result of decadal long management actions and in relation to TMDL goals. The draft STLS Trends Strategy identified this question as a priority and developed a multi-year plan of using regional modeling to obtain initial answers by 2022. This study is to develop a detailed Modeling Implementation Plan to guide regional modeling effort in next few years, as the implementation of the first year of the multi-year plan.	Modeling Implementation Plan (draft by May 2019, final by July 2019)

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Study Name	Budget	Summary	Deliverables
Advanced Data Analysis, Phase II	\$50,000	Reconnaissance data collected during single storms have provided good evidence to support enhanced management effort in watersheds with high PCB concentrations in water and on sediment particles. However, to date, such data have had only limited value for prioritization of management effort in watersheds exhibiting moderate or lower concentrations. This project proposes to enact the second phase of development and application of enhanced ranking and fingerprinting methods for the spatial prioritization and identification of watersheds, sub-watersheds, and PCBs source areas. The outcome of this study will be a finalized stepwise methodology and application of that methodology to existing stormwater datasets to help prioritize areas for enhanced management or further sampling.	Technical Report (draft by May 2019 and final by November 2019)
High Frequency Moored Sensor Network: data analysis, interpretation, and maintenance	\$250,000	High frequency water quality data will be collected through a network of in situ moored sensors in Lower South Bay and South Bay. Instruments measure multiple parameters, including specific conductance (or salinity), temperature, depth, dissolved oxygen, turbidity, chlorophyll-a, fDOM, and phycocyanin, and data is used to assess condition, inform mechanistic investigations of factors regulating water quality, and calibrate/validate water quality models. Funding will be used for mooring maintenance, data management (including QA/QC), and data interpretation.	Deliverables for the nutrient special studies will be tracked through the Nutrient Management Strategy Committees.
Ship-based Monitoring for Nutrient-Related Parameters with USGS		Discrete samples and in-situ sensor-based measurements will be collected during USGS cruises in San Francisco Bay aboard the R/V Peterson on ~12 full-bay cruises and an additional ~12 South Bay cruises (Figure 1), with a SFEI staffer participating as a field technician during cruises. The overall program continues USGS' long-term water quality studies in San Francisco Bay, and is jointly funded by USGS, the RMP, and the NMS. Data from the program play critical roles in nearly all of NMS' activities, including condition assessment, hydrodynamic and biogeochemical model calibration and validation, and improved understanding of nutrient behavior and nutrient-related effects within SFB.	Deliverables for the nutrient special studies will be tracked through the Nutrient Management Strategy Committees.

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Study Name	Budget	Summary	Deliverables
Microplastic Strategy	\$15,000	<p>In early 2019, SFEI will complete a major two-year project on microplastic monitoring, modeling, and policy guidance, which was funded by the Gordon and Betty Moore Foundation with generous matches from the RMP and others. To continue to provide strategic support on this issue to the San Francisco Bay Regional Water Board and other RMP stakeholders, strategy funding is recommended for 2019. Core deliverables include tracking new information regarding microplastic occurrence and toxicity; responding to requests for information from the Water Board and other stakeholders; and, in collaboration with the Workgroup, identifying any essential data gaps for San Francisco Bay that could be filled by the RMP or others. Strategy funding also allows for important leveraging activities such as the coordination of pro bono analyses by partners.</p>	<p>Update RMP Microplastic Strategy (September 2019); Present updated Strategy to SC (January 2020)</p>
Microplastic in San Francisco Bay Sport Fish	\$15,000	<p>With external funding from the Moore Foundation and the RMP, SFEI has just completed the first year of a two-year study to characterize microplastic in San Francisco Bay. The project will provide information to address many of the management questions articulated in the RMP Microplastic Strategy. A key element that was not included in the Moore project was the characterization of microplastic in sport fish. Sport fish are an important food source to humans and Bay wildlife and are integrators of contaminants present in Bay water, sediment, and prey fish. In 2019, as part of RMP Status and Trends monitoring, sport fish will be collected, and analyzed for a suite of contaminants. This project proposes to augment the existing RMP efforts by including microplastic analyses. Shiner surfperch and striped bass from up to two sites will be analyzed for microplastics in the gut. Optional add-on studies include analyzing for microplastics in the muscle tissue from a subset of the fish samples and gut analysis of fish samples from a third site.</p>	<p>Coordinate collection and archiving of sport fish samples for microplastic analysis (October 2019)</p>

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Study Name	Budget	Summary	Deliverables
Bay Sediment Conceptual Understanding and Monitoring Strategy	\$77,600	<p>In fall 2016, the RMP provided \$50,000 toward an EPA-funded project titled Healthy Watersheds Resilient Baylands (HWRB). The RMP funds are for the development of a sediment monitoring strategy for addressing key data gaps related to the transport of sediment to and within the Bay. Since developing the scope of work for the HWRB project, there has been a growing focus on sediment monitoring in the Bay that has led to a reevaluation of the necessary components of the sediment monitoring strategy development effort. Specifically, there needs to be a conceptual understanding of Bay sediment dynamics that can be used to develop monitoring and modeling priorities. There also needs to be close coordination with the newly-formed RMP Sediment Workgroup and other regional efforts focused on Bay sediment monitoring, and a stand-alone sediment monitoring strategy that is available for use by the RMP and other partner organizations sooner than the completion of the HWRB project. There should also be a presentation of the sediment monitoring strategy to the RMP Sediment Workgroup and key stakeholders. This funding request is for budget to support these additional project components.</p>	<p>Working meetings with regional experts; Framework report (February 2019); Expert review of Framework report; Technical report (draft by May 2019, final by August 2019); Presentation of final Conceptual Understanding and Strategy</p>
Update of Erosion and Deposition in San Francisco Bay	\$77,000	<p>In 2014 and 2015 the Ocean Protection Council (OPC) contracted for bathymetric surveys of large portions of San Francisco Bay. This data along with recent NOAA, USGS, and California State University Monterey Bay surveys can now be combined to create a revised bathymetric Digital Elevation Model (DEM) of the whole of San Francisco Bay (South Bay, Central Bay, San Pablo Bay, and Suisun Bay). Analysis of these surveys and comparison with the USGS DEMs of earlier surveys will provide an update on the quantities and patterns of erosion and accretion in the Bay over the past 25 to 35 years. Such information can be used to assess how the Bay has responded to changes in sediment supply from the Delta and tributaries and provide managers with data for making decisions on a variety of issues, including exposure of legacy contaminated sediment and strategies for beneficial dredge disposal.</p>	<p>A. Update to the RMP Sediment Workgroup on preliminary results (by May 31, 2019) B. USGS Data Release with new bathymetric grids for San Pablo Bay, Carquinez Strait, and Suisun Bay (by December 31, 2019) C. Presentation at the 2019 State of the Estuary Conference on interim results (by December 31, 2019)</p>

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Study Name	Budget	Summary	Deliverables
Workshop on Sediment Screening and Testing Guidelines for Beneficial Reuse of Dredged Sediments	\$30,000	The San Francisco Bay Regional Water Quality Control Board has guidelines for chemical testing requirements and evaluation of test results for the placement of dredge materials in beneficial reuse environments, such as wetland restoration (SFBWRCB. 2014). These guidelines sometimes prevent dredged sediments from the Bay and flood control channels from being beneficially reused despite the fact that there is an urgent need for sediment for wetland restoration around the Bay. The purpose of this study is to organize a workshop with technical experts and stakeholders to discuss whether the current approach to screening contaminants in dredged sediments is too protective, not protective enough, or just right. The deliverable will be a workshop summary that will distill the findings relative to the charge questions and provide recommendations to the Water Board regarding revisions to the Sediment Screening and Testing Guidelines.	Workshop (March 2019); Workshop summary (draft by May 2019, final by September 2019)
Sediment Bulk Density Study	\$30,000	The definition of sediment bulk density and the conversion between sediment bulk mass to bulk volume is an important step in many sediment calculations. It is used in dredging operations, sediment modeling studies, in the design of wetland restoration projects. The proposal is to create guidance on the definition of bulk density for use in San Francisco Bay projects, to provide typical values for different environments, and protocols for measuring and reporting bulk density in the future.	Draft Framework for local expert review (February 2019); Technical Report (draft by May 2019, final by August 2019)
Priority Margin Unit Stormwater PCB Monitoring	\$30,000 (plus \$37k of SEP funds)	This proposed study would yield valuable information on PCB concentrations and particle ratios in stormwater in two Priority Margin Unit (PMU) watersheds. The study areas include the major subwatersheds draining into the Emeryville Crescent, and one subwatershed draining into San Leandro Bay. The subwatershed draining into San Leandro Bay is downstream of a recently remediated hotspot, the former General Electric (GE) transformer and electrical equipment facility, where PCB contamination was severe. The goals of the study are to better estimate current PCB loads into these PMUs (a critical component of the PMU mass budgets) and to support tracking of the effectiveness of the major remediation action on the GE property. Sampling will be completed over two years, as storms allow.	Stormwater sample collection (WY 2019 & 2020) (April 2020)

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Study Name	Budget	Summary	Deliverables
PCB Strategy Coordination and Technical Support	\$10,000	<p>The 2014 update of the PCB Strategy called for a multi-year effort to implement the recommendations of the PCB Synthesis Report (Davis et al. 2014) pertaining to:</p> <ol style="list-style-type: none"> 1. identifying margin units that are high priorities for management and monitoring, 2. development of conceptual models and mass budgets for margin units downstream of watersheds where management actions will occur, and 3. monitoring in these units as a performance measure. <p>A thorough and thoughtful planning effort is warranted given the large expenditures of funding and effort that will be needed to implement management actions to reduce PCB loads from urban stormwater. The goal of RMP PCB Strategy work over the next few years is to inform the review and possible revision of the PCB TMDL and the reissuance of the Municipal Regional Permit for Stormwater (MRP), both of which are tentatively scheduled to occur in 2020.</p>	Update PCB Multi-year plan (June 2019)
Selenium Strategy Coordination & Technical Support	\$10,000	These funds will support SFEI coordination and technical support for workgroup activities and continuing development of the Selenium Strategy.	Update Selenium Multi-Year Plan (June 2019)

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Study Name	Budget	Summary	Deliverables
North Bay Clam and Water Part I - Monitoring	\$75,000	<p>Following the development of the North Bay Selenium TMDL, the San Francisco Bay Water Board asked the Selenium Workgroup to develop a long-term monitoring design for North Bay. The goal of this proposal</p> <p>Concurrent Asian clam (<i>Potamocorbula amurensis</i>) and water samples will be collected from two USGS long-term clam monitoring stations in Suisun Bay in July-September 2019 and December 2019-February 2020. These two sampling periods precede (1) the fall sturgeon muscle plug study and (2) the sturgeon pre-spawning period, when reproductive females are particularly sensitive to selenium toxicity. Clam tissues collected during these preceding months will (1) inform the linkage between dietary selenium patterns and observed sturgeon tissue selenium concentrations, and (2) provide information about selenium exposure patterns that can inform expectations of sturgeon selenium concentrations during the sensitive pre-spawning period when sturgeon will not be sampled directly. Composite clam samples will be collected at each site each month and analyzed for total selenium. A single grab sample will be collected at each site each month, and analyzed for dissolved, particulate, and total selenium, as well as TSS, TOC, and chlorophyll a. Samples will be analyzed by the laboratory selected during the selenium laboratory intercomparison study.</p>	Collect and analyze water and clam samples (June 2020)
Sturgeon Muscle Plug Part I - Monitoring	\$22,000	<p>In March 2016, the State Water Resources Control Board approved a Selenium TMDL for North San Francisco Bay, which established a white sturgeon muscle tissue target of 11.3 ug/g dry weight as a basis for evaluating impairment. From 2014-2017, the RMP conducted annual monitoring of selenium in sturgeon muscle plug tissue, through a collaboration with the California Department of Fish and Wildlife (CDFW) and other partners. Power analyses indicate that long-term monitoring of 60 samples per year at a biennial frequency is needed to detect long-term trends driven by changes in environmental selenium sources within a 20 year period. Selenium monitoring in sturgeon was last conducted in 2017, and is not planned for 2019. This study proposes to continue this sampling in 2019, to continue tracking condition relative to the TMDL target and to evaluate long-term trends.</p> <p>Muscle plugs will be collected in August-October 2019 from 60 sturgeon collected during the CDFW sturgeon population study in North Bay. Samples will be analyzed by the laboratory selected during the selenium laboratory intercomparison study. Funding for data management and reporting is requested and prioritized separately.</p>	Collect and analyze muscle plug samples (March 2020)

Appendix C: Selenium Laboratory Intercomparison Study