Council Meeting: 11/19/2013
Agenda: Approval of Agreements
Item #: 8. g. (4).

CITY OF KIRKLAND
Department of Public Works
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MEMORANDUM

To: Kurt Triplett, City Manager

From: Pam Bissonnette, Interim Public Works Director
Jenny Gaus, Surface Water Engineering Supervisor
Stacey Rush, Senior Surface Water Utility Engineer

Date: November 5, 2013

Subject: Options for Conducting Monitoring under the 2013 NPDES Municipal Stormwater Permit

RECOMMENDATION:

Staff recommends that the City Council approves the attached resolution authorizing the City Manager to sign the Interagency Agreement (IAA) in Spring 2014 to participate in and fund the Regional Stormwater Monitoring Program, thereby meeting monitoring requirements of our 2013 National Pollutant Discharge Elimination Systems (NPDES) Municipal Stormwater Permit (Permit). The agreement obligates Kirkland to pay $34,175 per year toward the program (a total of $136,700 under the current permit cycle for 2013-2018).

BACKGROUND AND DISCUSSION:

The Western Washington NPDES Phase II Stormwater Permit – Monitoring Required

The overall intent of the NPDES program, which is authorized under the Federal Clean Water Act, is to reduce pollution in our nation's waterways by requiring entities discharging stormwater to streams and lakes to reduce pollutants in those discharges. Permits that require specific pollution-reduction actions for various types of discharges are the main tool of the NPDES program. Failure to comply with the conditions of an NPDES permit creates liability for the entity discharging to a stream or lake. NPDES allows for third party lawsuits in addition to fines and penalties from EPA.

The current NPDES Permit was issued by the State Department of Ecology (acting as the Washington State agent for the US EPA) and became effective August 1, 2013. Similar to our first NPDES permit effective in 2007, the 2013 Permit requires the City to control discharge of pollutants from the municipally owned stormwater system by taking and documenting actions in six key areas:

1. Public Education and Outreach
2. Public Involvement
3. Illicit Discharge Detection and Elimination
4. Controlling Runoff from New Development, Redevelopment, and Construction Sites
5. Pollution Prevention and Operations and Maintenance for Municipal Operations
6. Monitoring

(For further background on the Permit, please see: NPDES Western Washington Phase II Stormwater Permit)

In addition to requirements in the previous 2007 NPDES permit, the 2013 Permit contains additional requirements which will be described in more detail in the Surface Water Master Plan. One of the most significant changes in this permit is the requirement for Phase II jurisdictions to conduct monitoring. The Permit gives two options for monitoring: (1) pay into a regional monitoring fund (opt-in), or (2) conduct our own Kirkland-specific monitoring. Kirkland must notify Ecology by December 1, 2013 as to which option we will choose for the two types of monitoring (Status and Trends and Effectiveness). If we choose to participate in the regional program, the City will need to sign an interagency agreement in spring of 2014, and would need to submit the first annual payment by August 15, 2014.

Monitoring – History and Background

Phase I jurisdictions (municipalities with populations greater than 100,000) were required to perform monitoring in the previous 2007 Permit cycle. The result was very expensive data that was not very useful for anything; partly due to issues with consistency of data between organizations.

Because of the impending monitoring requirement for Phase II jurisdictions in this second round of permits, a group of Phase II jurisdictions have been working for almost 5 years to develop a regional monitoring program that would provide more useful data at a lower cost. The regional program would conduct random testing of small, stormwater-influenced streams and near shore marine waters within the greater Puget Sound area with the premise that results will allow generalizations to be made on water quality conditions and Permit effectiveness. This means that even though the regional monitoring program may not test streams within every jurisdiction, the information collected will still be useful to all. The following types of required monitoring are in the 2013 permit:

- Status and Trends – water quality and habitat in streams
- Effectiveness – water quality and flow of stormwater
- Source Identification Information Repository – there is not an option to do this on our own as it is a regional data-sharing effort. Cost to Kirkland will be $1,872 annually.

Costs/Benefits of Regional vs. Individual Monitoring

Status and Trends – Kirkland has already performed some monitoring of water quality and habitat of our streams, but not to the full standards or at the frequency required in the Permit for the Water Quality Index (WQI). The Surface Water Master Plan will recommend consideration of collecting the data needed for the WQI, but is not funded in our current stormwater program. Conducting our own monitoring would yield valuable local data, but would be significantly more expensive than opting-in to the regional monitoring. Attachment A contains the cost comparison for individual jurisdiction monitoring versus participating in regional monitoring.

To summarize, the cost to perform our own monitoring would be approximately $155,800 over the current Permit cycle (2013-2018), while agreeing to participate in the regional monitoring would cost a total of $48,464 over the same time period. Attachment B contains the detailed costs if Kirkland performed the monitoring.

Recommendation: Staff recommends participating in the regional status and trends monitoring program. Staff will request to have some regional sites in Kirkland since the final list of locations will not be determined until early next year (8 of the potential regional monitoring locations are in Kirkland). In addition, staff will continue to conduct benthic invertebrate and habitat monitoring in

Kirkland at a lower level than the Permit requirement (the costs and recommendations will be in the updated Surface Water Master Plan).

Effectiveness – Kirkland does not currently perform this level of monitoring, except for isolated studies (usually grant-funded) such as the Juanita Basin Retrofit study. The cost is prohibitive to set up our own program to include the level of monitoring required in the Permit (see program requirements: Appendix 9 - Stormwater Discharge Monitoring). Attachment A contains the cost comparison for individual jurisdiction monitoring versus participating in regional monitoring. Individual monitoring includes a mix of one-time costs (equipment purchase and installation, downloading and analysis of one-year flow data) and annual costs (sample collection and analysis, annual reporting to Ecology, etc.). To summarize, the cost to perform our own effectiveness monitoring would be approximately $312,000 over the current Permit cycle (2013-2018), while agreeing to participate in the regional monitoring would cost a total of $80,748 over the same time period. Attachment C contains the detailed costs if Kirkland performed the monitoring.

Recommendation: Staff recommends participating in the regional effectiveness monitoring program.

Liability and Permit Compliance – Participating in the regional programs provides certainty that Kirkland is in compliance with the Permit. This removes the local liability for independently meeting the conditions. For example, if Kirkland chooses to perform monitoring on our own and a third party alleges we are not conducting monitoring to the proper standards, Kirkland could be liable for a Permit violation and/or a third party lawsuit.

Next Steps

If Council chooses to participate in regional monitoring and authorize the City Manager to sign the IAA in spring of 2014, staff will prepare (via budget adjustment) to make the first payment in August 2014 and annually thereafter (the annual amount listed in the permit is binding for the length of the permit, 2013-2018). In the next 5-year permit cycle beginning in 2018, Kirkland's annual cost may increase significantly, as the current annual cost was based on the pre-annexation population of the city.

If Council chooses to have Kirkland conduct individual monitoring, staff will increase funding for the additional staff and/or consultant and new equipment in the 2014 budget (monitoring must begin by 7/1/2014).

Attachment A: 2013 NPDES Permit required Monitoring Cost Comparison Table
Attachment B: Status and Trends Monitoring Cost is performed by the COK
Attachment C: Effectiveness Monitoring Cost if performed by the COK
Attachment D: Regional Stormwater Monitoring Program Scope of Work
Exhibit A: Template of Interagency Agreement for Regional Stormwater Monitoring Program

Attachment A: 2013 NPDES Permit Required Monitoring Costs Comparison Table

	2013-2018 Costs over 5 year permit cycle	
Permit Requirement	COK Monitoring	COK Portion Towards Regional Monitoring
Status and Trends Monitoring for Small Streams	$155,800	$48,464
Effectiveness Studies Monitoring	$312,000	$80,748
Source Identification Information Repository	$7,488	$7,488
Toal Cost over 5 year permit cycle	**$475,288**	**$136,700**

Attachment B: 2013 NPDES Permit required Status and Trends Monitoring Costs if performed by the City of Kirkland

Task	Sub task	Project Component	Subcomponent	Subtotal	Notes
Status and Trends Monitoring for Small Streams					
	1. Prepare for Status and Trends Monitoring for Small Streams				
		A. Prepare to manage small stream status and trends monitoring data		**$ 500**	
		B. Confirm sites and procure sampling equipment (start 7/2014)		**$ 2,000**	
	2. Conduct monitoring according to Ecology approved QAPP				
		A. Collect and report monthly water quality index and instantaneous flow monitoring at 12 sites for one year (Oct 2014 through Sept 2015)	Monthly stream WQ and flow monitoring	**$ 48,000**	WQI Parameters: total phosphorus, total nitrogen, turbidity, TSS, specific conductance, pH, chloride, fecal coliform, temperature, DO ($4,000/site)
		B. Collect and report annual stream benthos, habitat monitoring, and stream sediment chemistry at 12 sites (must be done one time in summer of 2015)			
			Collect and analyze benthos samples	**$ 9,600**	Benthos Prameters: aquatic macroinvertibrates and periphyton ($800/site)
			Analyze WQ parameters during benthos collection	**$ 3,600**	WQ parameters: chlorophyll a, ammonia, nitrate-nitrite, TSS, hardness, total phosphorus, total perchlorate nitrogen, chloride, and turbidity ($300/site)
			Habitat monitoring	**$ 9,600**	Habitat: slope, bearing, habitat unit presence, wetted width, bankfull width, bar width, substrate size, substrate depth, shade, human influence, riparian vegetation, LWD, grain size ($800/site)

			Streams sediment collection and analysis	$ 69,000	Sediment: Metals and PAHs ($5,750/site)
	3. Ensure quality assurance and quality control, data reporting, and data analysis and interpretation are conducted according to the QAPP			**$ 2,000**	
		A. Participate in interlaboratory comparison study		**$ 2,000**	
	4. Enter the results to EIM and/or other appropriate databases			**$ 2,000**	
		A. Enter stream benthos data into King County's stream benthos database		**$ 500**	
		B. Enter habitat data into Ecology Status & Trends: Riverine Ecology and Assessment Monitoring (STREAM) database		**$ 1,000**	
	5. Make recommendations for future status and trends monitoring in the March 31, 2017 annual report			**$ 1,000**	
	6. Project Management			**$ 5,000**	
	Total Cost over permit life (2013-2018) for Status and Trends Monitoring of Small Streams if performed by COK			**$ 155,800**	

Assumptions used to create table above

1. Monitoring parameters are based on the 2013 RSMP SOW and the Ecology approved QAPP.
2. Cost estimates are based on Kirkland staff experience, and estimates from Jim Simmonds at King County (provided to Dan Smith at Federal Way).
3. Status and Trends monitoring is required for one year (Oct 2014 through Sept 2015) under this permit cycle (2013-2018).

Attachment C: 2013 NPDES Permit required Effectiveness Monitoring Costs if performed by City of Kirkland

Task	Sub task	Project Component	Subcomponent	One-time Cost	Annual Cost	Total Cost (2013-2018)	Notes
Effectiveness Studies Monitoring							
	1. Prepare for Stormwater Discharge Monitoring						
		A. Prepare a QAPP, submit to Ecology for review and approval by 2/2014		**$ 8,000**		**$ 8,000**	80 hours x $100
		B. Confirm 3 locations and procure sampling equipment (Flow monitoring start 10/2014, Water Quality monitoring start 10/2015)		**$20,000**		**$ 20,000**	Purchase of 3 autosamplers and associated other equipment
	2. Conduct Stormwater Discharge Monitoring according to approved QAPP						
		A. Install and maintain flow monitoring equipment at 3 locations		**$ 2,500**		**$ 2,500**	25 hours x $100
		B. Download data from flow monitoring equipment for one year. Collect hourly precipitation data from nearby rain gauge.	1 year of continuous flow recording starting 10/2014	**$ 9,000**		**$ 9,000**	11 storms, 2 hours each, 3 locations plus 8 hours data download/graphing management (30 hours x $100 x 3)
		C. Install and maintain autosamplers at discharge locations for water quality monitoring at 3 locations for 4 years.	Starting 10/2015		**$ 2,500**	**$ 10,000**	25 hours x $100
		D. Retrieve samples and deliver to lab, 11 storm events per year for each location (33 water samples per year)	use flow-weighted composite sampling techniques		**$ 6,600**	**$ 26,400**	11 storms, 2 hours each, 3 locations (22 hours x $100 x 3). We would need contract help because of limited holding times for samples during storm events.
			Analyze water samples		**$ 33,495**	**$ 133,980**	TSS, turbidity, conductivity, chloride, BOD5, hardness, MBAS, nutrients, metals, organics ($1,015 per sample)
		E. Collect Grab samples, 11 storm events per year at each location	33 water samples		**$ 6,600**	**$ 26,400**	11 storms, 2 hours each, 3 locations (22 hours x $100 x 3)

			Analyze Grab samples		$ 7,755	$ 31,020	Fecal coliform bacteria, TPH (NWTPH-Gx, NWTPH-Dx, BTEX) ($235 per sample)
		F. Collect Sediment samples, one per year at each site	3 sediment samples		$ 600	$ 2,400	2 hours x $100 x 3 sites
			Analyze Sediment samples		$ 3,075	$ 12,300	TOC, metals, organics, total volatile solids, total phosphorus, percent solids, grain size ($1025 per sample)
	3. Ensure quality assurance and control, data reporting, and data analysis and interpretation are conducted according to the QAPP.				$ 2,000	$ 8,000	Calculate EMCs, total annual and seasonal pollutant loads by parameter
		A. Prepare and submit Annual Monitoring Reports to Ecology	40 hrs x $100		$ 4,000	$ 16,000	Drainage basin summary, description of each sampled storm event, hyetographs, hydrographs, runoff volume in gallons, rainfall/runoff relationship table, EMCs, pollutant loads, results discussion, and description of SWMP activities potentially affected by results.
	4. After 3 years of data, make recommendations for trend analyses, evaluate data as it applies to the SWMP, and evaluate stormwater management activities identified that can be adjusted to respond to data.			**$ 1,000**		**$ 1,000**	
	5. Project Management			**$ 5,000**		**$ 5,000**	
			Totals	**$45,500**	**$ 66,625**	**$ 312,000**	**Total Cost over permit life (2013-2018) for Effectiveness Studies Monitoring if performed by COK**

Assumptions used to create table above

1. Monitoring parameters are based on Appendix 9 of the 2013 NPDES permit and the 2013 RSMP SOW.
2. Cost estimates are based on Kirkland staff experience, and sampling costs from AMTest Laboratories.
3. Effectiveness Flow monitoring is required for one year (Oct 2014 through Sept 2015), and Water Quality monitoring is ongoing for 4 years (2015-2018) under this permit cycle (2013-2018).

Regional Stormwater Monitoring Program (RSMP) Scope of Work (SOW)

Date: July 22, 2013

Purpose: The RSMP is the cumulative regional monitoring effort collectively funded by the Phase I and II Municipal Stormwater Permittees. The purpose of this SOW is to define and describe the RSMP activities and products that will be delivered to permittees and the public by Ecology and contractors from September 2013 through June 2019. The RSMP is divided into three main program components: S8.B Status and Trends, S8.C Effectiveness Studies, and S8.D Source Identification Information Repository.

The anticipated timeline and estimated maximum costs for each program component are presented in Tables 1-3 below. Because the RSMP is being jointly funded by all of the permittees who choose to participate, the final budgets for Tasks 0-3 will be known after all permittees have notified Ecology as to their decision to opt in or out of each component of the RSMP. Permittees are required to notify Ecology of their decisions by December 1, 2013. Check Ecology's RSMP website for updated information.

S8.B Status and Trends

Table 1. Tasks, Timeline and Estimated Costs* for RSMP Status and Trends Monitoring

Task	Implemented by	Anticipated Timeline	Estimated Maximum Costs
0. Program administration	Ecology	Begins in October 2013 with Phase I permittees decisions	$171,000 (about 5% of the total costs)
1. Puget lowland small streams monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring in 2015	$2,515,000
2.1 Marine nearshore sediment monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring in summer 2016	$220,000
2.2 Marine nearshore bacteria monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring October 2015 through September 2016	$67,000
2.3 Marine nearshore mussel contaminant monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring in winter 2015-2016	$619,000
TOTAL RSMP Status and Trends Monitoring Effort*			$3,592,000* over four years

* Final budget will be known in January 2014.

Task 0. Program Administration, Requests for Proposals, and Contracting

1. Develop a budget for status and trends monitoring based on collective decisions by permittees to opt in or out of the RSMP. The budget will be reviewed by the stakeholder oversight committee
2. Track costs associated with all RSMP fund-sharing program components
3. Participate in a project management oversight process
    a. Manage process to facilitate adaptive management to contracts, monitoring, databases and communication materials (websites, reports, etc)
    b. Inform and receive external stakeholder group recommendations
4. Facilitate an open process to determine who will conduct each of the tasks listed below for status and trends monitoring in small streams in Puget Lowlands and in urban marine nearshore areas of Puget Sound. Contractors may include permittees and/or other stakeholders.
5. Ensure contractors are qualified to conduct RSMP tasks according to approved Quality Assurance Project Plans (QAPPs)
6. Write, enter into, and manage agreements for data collection, management, analysis, and reporting
7. Provide project management oversight to ensure that quality data and products are produced, and data are entered into appropriate databases within the timeframes specified in the QAPPs
    a. Facilitate a process to inform permittees and stakeholders of project needs, schedule changes, or other unforeseen circumstances
    b. Coordinate interlaboratory comparison studies
8. Coordinate an annual review and reporting of results and information generated by the RSMP. In addition to the data interpretation tasks listed below:
    a. Summarize and distribute findings
    b. Cross-walk with information published by other key monitoring programs in western Washington
    c. Recommend new standard methods and protocols to be developed

Task 1. Status and Trends Monitoring in Small Streams in Puget Sound Lowlands

1. <u>Status and trends monitoring for small streams</u>
    a. Prepare to manage data
        i. Work out agreement with King County to store data in Puget Sound Stream Benthos database.
        ii. Create EIM account for water quality, sediment chemistry, and periphyton data
        iii. Confirm that data management tools are available to handle all RSMP data and that all data will be quality controlled, stored and accessible to the public
    b. Confirm sites and prepare for sampling in 2015. Up to 100 sites will be selected for sampling. The number of sites sampled will depend upon the final RSMP budget.

i. Use the site list in the Draft Quality Assurance Project Plan (QAPP). The QAPP is expected to be finalized in 2014. The lists of Master Sample Sites for Puget Lowland streams inside and outside the UGAs have been generated, sorted by county, and are available on Ecology's RSMP website.
ii. Confirm sites and prepare for sampling to begin by January 2015.
    1. For each site that is not accessible or is documented according to the QAPP as otherwise unsuitable, the next sequential site on the list of will be assessed for suitability. Proceed down the lists until required number of sites is found.
    2. Up to 100 sites will be assessed (up to 50 within the UGA, and up to 50 outside the UGA), plus up to 10 reference locations.
    3. The RSMP will not sample sites that are sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2.
    4. The RSMP will not re-sample sites that are monitored as part of Ecology's state EMAP program in 2013. The RSMP will use data collected for Ecology's 10 reference locations.
iii. Procure sample collection equipment necessary to produce data according to the QAPP.
iv. Procure accredited laboratories for analysis.
v. Procure staff for seasonal field work.

c. Prepare to manage small stream status and trends monitoring data
    i. Confirm that data management tools are available to handle all data and that all data will be quality controlled, stored and accessible to the public
    ii. Ensure data quality is evaluated and report all data to the required databases according to the QAPP

2. Conduct status and trends monitoring. Sampling protocols and procedures detailed in the Draft Quality Assurance Project Plan (QAPP) are from previously-approved QAPPs and may be adaptively managed:
    a. Collect and report monthly water quality index (WQI) and instantaneous flow monitoring at the RSMP sites for one year (January through December 2015).
        i. WQI Parameters: total phosphorus, total nitrogen, turbidity, total suspended solids, specific conductance, pH, chloride, fecal coliform, temperature, and dissolved oxygen.
        ii. Estimate streamflow following Ecology SOP #EAP024.
    b. Collect stream benthos and habitat monitoring data at the RSMP sites in summer 2015.
        i. Benthos parameters: aquatic macroinvertebrates and periphyton.
        ii. Water quality parameters: chlorophyll a, ammonia, nitrate-nitrite, total suspended solids, hardness, total phosphorus, total perchlorate nitrogen, chloride, and turbidity
        iii. Habitat monitoring: slope, bearing, habitat unit presence, wetted width, bankfull width, bar width, substrate size, substrate depth, shade, human

influence, riparian vegetation, large woody debris and grain size estimation.

iv. Sediment chemistry parameters
    1. Metals: copper, lead, arsenic, and zinc
    2. PAHs: naphthalene, 2-methylnaphthalene, 1-methylnaphthalene, 2-chloronaphthalene, acenaphthylene, acenaphthene, dibenzofuran, fluorene, anthracene, carbazole, phenanthrene, fluoranthene, pyrene, retene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(ghi)perylene, chrysene, benzo(b)fluoranthene, and benzo(a)anthracene

v. Additional sediment chemistry parameters subject to available funding:
    1. Pesticides: 2,4-D, triclopyr, diclobenil, diuron, carbaryl, chlorpyrifos, and imidacloprid
    2. Phthalates: Bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, diethyl phthalate, dimethyl phthalate, di-n-butyl phthalate, and di-n-octyl phthalate
    3. PBDEs: 47, 49, 66, 71, 99, 100, 138, 153, 154, 183, 184, 191, 209
    4. PCBs: all 209 congeners
    5. Hormone disrupting chemicals: PPCPs (EPA Method 1694) and hormones and steroids (EPA Method 1698)

3. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP.
    a. Participate in interlaboratory comparison studies.
    b. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation.
4. Enter the results to EIM and/or other appropriate databases.
    a. Enter stream benthos data into King County's stream benthos database.
    b. Enter habitat data into Ecology Status & Trends: Riverine Ecology & Assessment Monitoring (STREAM) database.
5. Make recommendations for future status and trends monitoring.

Task 2. Status and Trends Monitoring in Marine Nearshore Areas of Puget Sound

1. <u>Marine sediment chemistry monitoring and assessment</u>
    a. Prepare to manage data.
        i. Create account and enter data into EIM for sediment chemistry data.
    b. Confirm sites and prepare for sampling in summer 2016.
        i. The draft QAPP for this monitoring is expected to be finalized in 2014.
        ii. Select and confirm marine nearshore sites
            1. Up to 40 sites will be selected for sampling. The list of randomly selected sites is being generated. A new nearshore GIS sampling frame is being developed for the 0 to 1 fathom (-1.8m) depth

zone of the nearshore that is adjacent to Urban Growth Areas (UGAs). The nearshore sediment sample site list will be available at Ecology's RSMP website in summer 2013.

2. The RSMP will not sample sites that are sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2.
3. For each nearshore sediment sample site that is not accessible or is documented according to the QAPP as otherwise unsuitable, the next sequential site on the list of alternates will be chosen and must be confirmed

iii. Procure necessary sampling equipment.
iv. Procure accredited laboratories for analysis.
v. Procure staff for seasonal field work.

c. Conduct marine nearshore sediment chemistry sampling during summer 2016 according to the approved QAPP.
   i. Marine sediment chemistry parameters:
      1. Grainsize and total organic carbon.
      2. Metal and metalloids: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, tin, and zinc.
      3. LPAHs: 1,6,7-trimethylnaphthalene, 1-methylnaphthalene, 1-methylphenanthrene, 2,6-dimethylnaphthalene, 2-methylnaphthalene, 2-methylphenanthrene, acenaphthene, acenaphthylene, anthracene, biphenyl, dibenzothiophene, fluorene, naphthalene, phenanthrene, and retene.
      4. HPAHs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(e)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, perylene, and pyrene.
   ii. Additional marine sediment chemistry parameters subject to available funding:
      1. Phthalates: bis(2-Ethylhexyl) phthalate, butylbenzylphthalate, diethylphthalate, dimethyl phthalate, di-n-butylphthalate, di-n-octyl phthalate.
      2. PBDEs: 47, 49, 66, 71, 99, 100, 138, 153, 154, 183, 184, 191, 209
      3. PCB Congeners: all 209 congeners
d. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP.
   i. Participate in interlaboratory comparison studies.
   ii. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation.
e. Enter the results to EIM.
f. Make recommendations for future status and trends monitoring.

2. Mussel contamination monitoring and assessment
    a. Prepare to manage data
        i. Create EIM account for mussel contamination data
        ii. Confirm that data management tools are available to handle all RSMP data and that all data will be quality controlled, stored and accessible to the public
    b. Prepare to conduct monitoring in winter 2015-2016.
        i. The QAPP for this monitoring is expected to be finalized in 2014 is expected to be based upon either NOAA Mussel Watch protocols or the Ecology-approved QAPP for WDFW's Mussel Watch Pilot Expansion Study.
        ii. Confirm sites. Up to 40 sites will be selected for sampling.
            1. The list of randomly selected sites in nearshore areas adjacent to Urban Growth Area boundaries is being generated according to the same protocols as the sediment chemistry sites (see 1.B.i above) but limited to the shoreline or to grid cells located along the 0 depth contour. The list of mussel and bacteria sampling sites, plus alternates, will be available at Ecology's RSMP website in summer 2013.
            2. The RSMP will not sample sites that are sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2.
            3. For each site that is not accessible or is documented according to the QAPP as otherwise unsuitable, the next sequential site on the list of alternates will be chosen and must be confirmed.
        iii. Develop sampling schedule to facilitate sampling, laboratories and troubleshoot logistics
        iv. Procure necessary sampling equipment
    c. Coordinate with WDFW, NOAA Mussel Watch and networks of volunteers
        i. Conduct volunteer trainings and facilitate communication
    d. Conduct mussel tissue sampling at RSMP sites during winter 2015-2016 according to the approved QAPP.
        i. Mussel habitat sampling parameters: water temperature, salinity, station location, distance between sub-stations at each site, tidal cycle, height above waterline.
        ii. Mussel biotic measures: %mortality, condition index, lipids, gonadal index and histopathology.
        iii. Mussel chemistry parameters:
            1. PAHs:
                a. LPAHs: naphthalene, fluorene, acenaphthylene, acenaphthene, anthracene, dibenzothiophene, phenanthrene, and retene
                b. HPAHs: dibenzoanthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene,

benzo[e]perylene, benzo[a]pyrene, benzo[z]pyrene, chrysene, fluoranthene, indeno-pyrene, perylene, and pyrene

c. Substituted PAHs: dibenzothiophenes(C1-,C2-,C3-), fluorenes((C1-,C2-,C3-), naphthalenes(C1-,C2-,C3-,C4-), phenanthrenes+anthracene(C1-,C2-,C3-,C4-), chrysenes (C1-,C2-,C3-,C4-), and fluoranthene/pyrene (C1-,C2-,C3-,C4-)

2. Chlorinated pesticides: 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, trans-chlordane (gamma), trans-nonachlor, cis-nonachlor, nonachlor III, heptachlor, heptachlor epoxide, oxychlordane, alpha-hexachlorohexane, beta-hexachlorocyclohexane, delta-hexachlorocyclohexane, hexachlorobenzene, aldrin, dieldrin, mirex, and endosulfan I
3. Metals: arsenic, cadmium, copper, lead, mercury, and zinc
4. PBDEs: 28, 47, 49, 66, 85, 99, 100, 153, 154, 155, 183
5. PCB congeners:17, 18, 28, 31, 33, 44, 49, 52, 66, 70, 74, 82, 87, 95, 99, 101, 105, 110, 118, 128, 138, 149, 151, 153, 156, 158, 170, 171, 177, 180, 183, 187, 191, 194, 195, 199, 205, 206, 208, 209
6. Conventionals: total lipids, total solids, δ15 nitrogen, and δ13 carbon

e. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP
   i. Participate in interlaboratory comparison study
   ii. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation.

f. Enter the results to appropriate state and federal databases
   i. Mussel Watch at NOAA, and WDFW Toxics in Biota database
   ii. Chemistry data to EIM database

3. <u>Bacteria sampling and assessment</u>
   a. Prepare to manage data
      i. Create EIM account for bacteria data
   b. Prepare to conduct monthly monitoring beginning in October 2015. Up to 40 sites will be sampled.
      i. The QAPP for this monitoring is expected to be approved in 2014. It will be based upon former PSAMP and current BEACH monitoring program protocols.
         1. Sites identified and confirmed for mussel contamination monitoring will be sampled for bacteria, if suitable.
            a. Mussel sites that are not suitable for bacteria sampling due to holding time or other requirements will not be

sampled for bacteria. Additional bacteria sites will not be added

2. Develop sampling schedule to facilitate sampling, laboratories and troubleshoot logistics

ii. Develop contracts with local accredited laboratories (near sites)
iii. Procure and prepare necessary sampling equipment
iv. Procure volunteers and coordinate sampling
v. Conduct volunteer trainings

c. Conduct and coordinate monthly bacteria sampling during October 2015-September 2016 and according to the approved QAPP
   i. Parameters: fecal coliform by multiple tube fermentation (9221E)
d. Interpret and report the results as specified in the QAPP
e. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP
   i. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation
f. Enter the results to EIM and notify Ecology's BEACH Program of known water quality violations
g. Make recommendations for future status and trends monitoring

S8.C Effectiveness Studies

Table 2. Tasks, Timeline and Estimated Costs* for RSMP Effectiveness Studies

Task	Implemented by	Anticipated Timeline	Estimated Maximum Costs
0. Program administration	Ecology	Begins in December 2013 when permittees decide if they will participate; RFP process in 2014	$350,000 (about 5% of the total costs)
3. Effectiveness studies	Contractors, including permittees	Begin studies in August 2014 after first permittee payments submitted to Ecology	$7,000,000
TOTAL RSMP Effectiveness Studies Effort*			$7,350,000* over four years

* Final budget will be known in January 2014.

Task 0. Program Administration, Requests for Proposals, and Contracting

1. Develop a budget for effectiveness studies based on collective decisions by permittees to opt in or out of the RSMP. The budget will be reviewed by the stakeholder oversight committee.
2. Write, enter into, and manage agreements with contractors for data collection, management, analysis, and reporting
3. Track costs associated with all RSMP fund-sharing program components
4. Participate in a project management oversight process
    a. Manage process to facilitate adaptive management to contracts, monitoring, databases and communication materials (websites, reports, etc)
    b. Faciliated process to inform and receive external stakeholder group recommendations
5. Facilitate an open process to determine who will conduct each of the tasks listed below for effectiveness studies in Western Washington
6. Develop detailed scopes of work to ensure contractors are qualified to conduct RSMP tasks according to approved Quality Assurance Project Plans (QAPPs). Ensure robust scientific method and quality control procedures are included
    a. Identify opportunities to revise or develop Standard Operating Procedures (SOPs) that apply to multiple studies
7. Contract with successful applicants and provide project management oversight to ensure that quality data and other products are produced and entered into appropriate databases within the timeframes specified in the QAPPs
    a. Facilitate a process to inform permittees and external stakeholders of project needs, schedule changes, or other unforeseen circumstances
8. Coordinate an annual review and reporting of results and information generated by the RSMP or independent monitoring. In addition to the data interpretation tasks listed below:
    a. Summarize and distribute findings
    b. Cross-walk with information published by other key monitoring programs in western Washington
    c. Recommend new standard methods and protocols to be developed

Task 3. Effectiveness Studies

1. Conduct regionally relevant studies on topics that have been recommended through the external stakeholder process and using criteria pursuant to stakeholder group recommendations
    a. For each study, develop a QAPP that includes, as appropriate: site selection; sampling protocols; quality assurance and control procedures; laboratory analytical methods; data storage; data analysis; reporting methods; peer review requirements; and deadlines for publications
    b. Studies will be conducted from August 2014 through August 2018
        i. Some studies may not be completed by the expiration date of the permit; appropriate interim deliverables will be defined
2. Develop standard methods as needed across multiple studies
3. Enter quality-assured data into appropriate databases as required by the approved QAPPs
4. Make results and findings available to the public
5. Recommend future effectiveness studies

S8.D Source Identification Information Repository (SIDIR)

Table 2. Tasks, Timeline and Estimated Costs for SIDIR

Task	Implemented by	Anticipated Timeline	Estimated Maximum Costs
0. Program administration	Ecology	Begins in January 2014 with RFP process	$32,250 (about 5% of the total RSMP costs)
4. Source Identification Information Repository (SIDIR)	Contractors, including permittees	Begin in August 2014 after first permittee payments are submitted to Ecology	$645,000
TOTAL RSMP SIDIR effort			$677,250 over four years

Task 0. Program Administration, Requests for Proposals, and Contracting

1. Write, enter into, and manage agreements with contractors for subtasks listed in Task 4 below
2. Track costs associated with SIDIR program component
3. Participate in a project management oversight process
    a. Manage process to facilitate adaptive management to contracts, monitoring, databases and communication materials (websites, reports, etc)
    b. Faciliated process to inform and receive external stakeholder group recommendations
4. Facilitate an open process to determine who will conduct each of the tasks listed below for creating the SIDIR. Contractors may include permittees and/or other stakeholders
5. Develop detailed scopes of work to ensure contractors will conduct high quality work
6. Contract with successful applicants and provide project management oversight to ensure that quality products are produced and shared within the specified timeframes
    a. Facilitate a process to inform permittees and external stakeholders of project needs, schedule changes, or other unforeseen circumstances
7. Coordinate an independent annual review and reporting of results and information generated by the RSMP or independent monitoring. In addition to the data interpretation tasks listed below:
    a. Summarize and distribute findings
    b. Cross-walk with information published by other key monitoring programs in western Washington
    c. Recommend new standard methods and protocols to be developed

Task 4. Source Identification Information Repository (SIDIR)

1. Develop a *SIDIR Methods and Approaches* webpage or build on another platform as appropriate:
    a. Determine what tools for permittees and others are most needed to identify and remove illicit discharges from stormwater
    b. Identify existing standard operating procedures (SOPs) and protocols for source identification and diagnostic monitoring to include in the repository

   c. Prioritize new standard operating procedures (SOPs) and protocols for source identification and diagnostic monitoring to include in the repository
      i. Recommend GROSS grant or other funding for development of these tools
   d. Develp a QAPP library with data quality objectives and report templates
2. Develop a *SIDIR Results and Findings* database and analyze information from permittees:
   a. Determine data fields and specific information needed to support regional analyses
   b. Propose permittee reporting approaches to populate the database
      i. Develop a format that is easy to use and fulfills annual reporting requirements specified in the permits
   c. Design, develop, and populate the database
      i. Populate the database with information for 2014 that will be provided by permittees in their March 2015 Annual Reports
   d. Conduct the first regional analysis and report results before the end of 2016
3. Conduct further analyses with subsequent annual report data and report results in 2017 and 2018 and include with the third report

Council Meeting: 11/19/2013
Agenda: Approval of Agreements
Item #: 8. g. (4).

RESOLUTION R-5018

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KIRKLAND APPROVING AN INTERAGENCY AGREEMENT FOR FUNDING THE REGIONAL STORMWATER MONITORING PROGRAM BETWEEN THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY AND THE CITY OF KIRKLAND AND AUTHORIZING THE CITY MANAGER TO EXECUTE THE INTERAGENCY AGREEMENT.

WHEREAS, the City Council desires to have the City of Kirkland participate in and assist in funding the Regional Stormwater Monitoring Program in order to meet the monitoring requirements of the City's 2013 National Pollutant Discharge Elimination System (NPDES) Permit; and

WHEREAS, alternatively, under the NPDES Permit, the City would have to conduct its own Kirkland-specific monitoring; and

WHEREAS, participation in the regional monitoring program would provide more useful data at a lower cost; and

WHEREAS, the City must notify the Washington State Department of Ecology by December 1, 2013, as to whether it will participate in the regional program although the City will not need to execute the interagency agreement until the spring of 2014;

NOW, THEREFORE, be it resolved by the City Council of the City of Kirkland as follows:

Section 1. The City Council approves the "Interagency Agreement for Funding the Regional Stormwater Monitoring Program Between the State of Washington, Department of Ecology and the City of Kirkland."

Section 2. The City Manager is authorized to execute on behalf of the City of Kirkland an "Interagency Agreement for Funding the Regional Stormwater Monitoring Program Between the State of Washington, Department of Ecology and the City of Kirkland," substantially similar to that attached as Exhibit "A," in spring of 2014.

Passed by majority vote of the Kirkland City Council in open meeting this _____ day of _____, 2013.

Signed in authentication thereof this ____ day of _____, 2013.

_____
MAYOR

Attest:

_____
City Clerk

DEPARTMENT OF
ECOLOGY
State of Washington

IAA No.

INTERAGENCY AGREEMENT (IAA) FOR

FUNDING THE REGIONAL STORMWATER MONITOIRNG PROGRAM

BETWEEN

THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY

AND

"MUNICPAL STORMWATER PERMITEE"

THIS INTERAGENCY AGREEMENT is made and entered into by and between the STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, hereinafter referred to as "ECOLOGY," and the _____ hereinafter referred to as the "_____" pursuant to the authority granted by Chapter 39.34 RCW.

IT IS THE PURPOSE OF THIS AGREEMENT to provide a share of the funding required to conduct a Regional Stormwater Monitoring Program (RSMP) as defined in the _____(Phase I **or** Western Washington Phase II, *select whichever permit applies*) Municipal Stormwater National Pollutant Discharge Elimination System (NPDES) Permit sections S8.B1, S8.C and S8.D, and in **Attachment A – Scope of Work**. The project is being jointly funded by all of the permittees who choose to participate in the RSMP.

THEREFORE, IT IS MUTUALLY AGREED THAT:

1) STATEMENT OF WORK

Ecology agrees to manage the funds, participate in an oversight committee, solicit requests for proposals, conduct an open and transparent process to rank applications, and enter into contracts with other entities to perform the activities described in **Attachment A – Scope of Work**, attached hereto by reference.

2) PERIOD OF PERFORMANCE

Subject to its other provisions, the period of performance of this IAA shall commence on the date on which both parties have signed this Agreement, or date of execution, whichever comes later, and be completed by June 30, 2019, unless extended longer or terminated sooner as provided herein.

3) PAYMENT

"_____"agrees to pay Ecology the total sum of "_____" dollars as its share for accomplishing the work required by this Agreement. This sum shall be paid "(*use only if applicable*) in a first payment of _____ and," in annual installments of"_____" dollars.

This includes the sum of _____ dollars annually as "_____"share for **Sub Fund 2: S8B Status and Trends Monitoring** in Puget Sound receiving waters; _____ dollars annually as "_____"share for **Sub Fund 3: S8C Regional Effectiveness Studies**; and _____ dollars annually as "_____"share **for Sub Fund 4: S8D Source Identification Information Repository (SIDIR).**

4) BILLING PROCEDURE

Each invoice will reference the Agreement number. An invoice "(*use only if applicable*) for the first payment will be mailed between September 1 and 15, 2013, and thereafter" will be mailed between June 15 and July 1 of each year of the Agreement to the following address:

Jurisdiction contact
[Jurisdiction]
Jurisdiction address
Jurisdiction city, WA zip

Annual payments will be due to Ecology on or before August 15 of each year of the Agreement. Payments will be mailed to one of the following:

USPS address:	Or	**UPS or FedX address:**
Department of Ecology		Department of Ecology
Cashiering Section		Cashiering Section
Regional Stormwater Monitoring Program		Regional Stormwater Monitoring Program
P.O. Box 47611		300 Desmond Drive
Olympia, WA 98504-7611		Olympia, WA 98503

5) COST TRACKING AND ACCOUNTING:

Ecology will separately track the budgets for status and trends monitoring in Puget Sound receiving waters; regional effectiveness studies; and SIDIR. Excess funds remaining for any one of these three activities will not be allocated towards either of the others.

6) COST OVERRUNS:

Neither Ecology nor [Jurisdiction] will be responsible for cost overruns. The total project cost estimate for which [Jurisdiction]'s share has been determined includes a 10% contingency. If the project budget is determined insufficient to accomplish Attachment A – Scope of Work then the parties will agree which reductions or other adjustments to Attachment A – Scope of Work will be made.

7) EXCESS FUNDS:

If after the completion date of this project, excess funds remain in Ecology's project account, Ecology will refund a pro-rated refunded amount to [Jurisdiction], based on the same rate payments were made, no later than six months following the completion date of the agreement.

8) AGREEMENT ALTERATIONS AND AMENDMENTS

This Agreement may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

9) GOVERNANCE AND PRECEDENCE

This Agreement is entered into pursuant to and under the authority granted by the laws of the state of Washington and any applicable federal laws. The provisions of this Agreement shall be construed to conform to those laws.

In the event of an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

a. Applicable Federal and State of Washington statutes, regulations and rules.
b. Mutually agreed written amendments to this Contract.
c. Statement of Work and Budget.
d. Any other provisions of the Agreement, including materials incorporated by reference.

10) INDEPENDENT CAPACITY

The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.

11) RECORDS MAINTENANCE

All records supporting every request for payment shall be maintained by Ecology in a manner which will provide an audit trail to the expenditures for which state support is provided. Original source documents shall be maintained by Ecology and made available to [Jurisdiction] or a duly authorized representative upon request.

12) RIGHTS IN DATA

Unless otherwise provided, data which originates from this Agreement shall be "works for hire" as defined by the U.S. Copyright Act of 1976 and shall be owned by Ecology. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, register, and the ability to transfer these rights.

13) SEVERABILITY

If any provision of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement, and to this end the provisions of this Agreement are declared to be severable.

14) TERMINATION

_____agrees to be bound to the terms and conditions of this agreement until July 31, 2018, or the expiration date of the Municipal Stormwater Permit, whichever is later.

15) TERMINATION FOR CAUSE

If for any cause, either party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either party violates any of these terms and conditions, the aggrieved party will give the other party written notice of such failure or violation. The responsible party will be given the opportunity to correct the violation or failure within 15 working days. If failure or violation is not corrected, this Agreement may be terminated immediately by written notice of the aggrieved party to the other.

16) WAIVER

A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement

unless stated to be such in a writing signed by an authorized representative of the party and attached to the original Agreement.

17) AGREEMENT MANAGEMENT

The representative for each of the parties shall be responsible for and shall be the contact person for all communications and billings regarding the performance of this Agreement.

The ECOLOGY Representative is:	The Representative is:
Name: Address: Phone: Email: Fax:	Name: Address: Phone: Email: Fax:

18) ALL WRITINGS CONTAINED HEREIN

This Agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties hereto.

The signatories to this Agreement represent that they have the authority to bind their respective organizations to this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement.

State of Washington
Department of Ecology

Signature Date

Print Name

Title

Jurisdiction
(Municipal Permittee Name)

Signature Date

Print Name

Title

Approved as to form:

Attorney General's Office

APPENDIX A

STATEMENT OF WORK AND BUDGET

Attachment A – Scope of Work (SOW)

Purpose: The Regional Stormwater Monitoring Program (RSMP) is the cumulative regional monitoring effort collectively funded by the Phase I and II Municipal Stormwater Permittees. The purpose of this SOW is to define and describe the RSMP activities and products that will be delivered to permittees and the public by Ecology and contractors from September 2013 through June 2019. The RSMP is divided into three main program components: S8.B Status and Trends, S8.C Effectiveness Studies, and S8.D Source Identification Information Repository.

The anticipated timeline and estimated maximum costs for each program component are presented in Tables 1-3 below. Because the RSMP is being jointly funded by all of the permittees who choose to participate, the final budgets for Tasks 0-3 will be known after all permittees have notified Ecology as to their decision to opt in or out of each component of the RSMP. Permittees are required to notify Ecology of their decisions by December 1, 2013. Check Ecology's RSMP website for updated information.

S8.B Status and Trends

Table 1. Tasks, Timeline and Estimated Costs* for RSMP Status and Trends Monitoring

Task	Implemented by	Anticipated Timeline	Estimated Maximum Costs
0. Program administration	Ecology	Begins in October 2013 with Phase I permittees decisions	$171,000 (about 5% of the total costs)
1. Puget lowland small streams monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring in 2015	$2,515,000
2.1 Marine nearshore sediment monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring in summer 2016	$220,000
2.2 Marine nearshore bacteria monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring October 2015 through September 2016	$67,000
2.3 Marine nearshore mussel contaminant monitoring and assessment	Contractors, including permittees	Ramp-up in 2014, conduct monitoring in winter 2015-2016	$619,000
TOTAL RSMP Status and Trends Monitoring Effort*			$3,592,000* over four years

* Final budget will be known in January 2014.

Task 0. Program Administration, Requests for Proposals, and Contracting

1. Develop a budget for status and trends monitoring based on collective decisions by permittees to opt in or out of the RSMP. The budget will be reviewed by the stakeholder oversight committee
2. Track costs associated with all RSMP fund-sharing program components
3. Participate in a project management oversight process
    a. Manage process to facilitate adaptive management to contracts, monitoring, databases and communication materials (websites, reports, etc)
    b. Inform and receive external stakeholder group recommendations
4. Facilitate an open process to determine who will conduct each of the tasks listed below for status and trends monitoring in small streams in Puget Lowlands and in urban marine nearshore areas of Puget Sound. Contractors may include permittees and/or other stakeholders.
5. Ensure contractors are qualified to conduct RSMP tasks according to approved Quality Assurance Project Plans (QAPPs)
6. Write, enter into, and manage agreements for data collection, management, analysis, and reporting
7. Provide project management oversight to ensure that quality data and products are produced, and data are entered into appropriate databases within the timeframes specified in the QAPPs
    a. Facilitate a process to inform permittees and stakeholders of project needs, schedule changes, or other unforeseen circumstances
    b. Coordinate interlaboratory comparison studies
8. Coordinate an annual review and reporting of results and information generated by the RSMP. In addition to the data interpretation tasks listed below:
    a. Summarize and distribute findings
    b. Cross-walk with information published by other key monitoring programs in western Washington
    c. Recommend new standard methods and protocols to be developed

Task 1. Status and Trends Monitoring in Small Streams in Puget Sound Lowlands

1. <u>Status and trends monitoring for small streams</u>
    a. Prepare to manage data
        i. Work out agreement with King County to store data in Puget Sound Stream Benthos database.
        ii. Create EIM account for water quality, sediment chemistry, and periphyton data
        iii. Confirm that data management tools are available to handle all RSMP data and that all data will be quality controlled, stored and accessible to the public
    b. Confirm sites and prepare for sampling in 2015. Up to 100 sites will be selected for sampling. The number of sites sampled will depend upon the final RSMP budget.

i. Use the site list in the Draft Quality Assurance Project Plan (QAPP). The QAPP is expected to be finalized in 2014. The lists of Master Sample Sites for Puget Lowland streams inside and outside the UGAs have been generated, sorted by county, and are available on Ecology's RSMP website.
ii. Confirm sites and prepare for sampling to begin by January 2015.
    1. For each site that is not accessible or is documented according to the QAPP as otherwise unsuitable, the next sequential site on the list of will be assessed for suitability. Proceed down the lists until required number of sites is found.
    2. Up to 100 sites will be assessed (up to 50 within the UGA, and up to 50 outside the UGA), plus up to 10 reference locations.
    3. The RSMP will not sample sites that are sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2.
    4. The RSMP will not re-sample sites that are monitored as part of Ecology's state EMAP program in 2013. The RSMP will use data collected for Ecology's 10 reference locations.
iii. Procure sample collection equipment necessary to produce data according to the QAPP.
iv. Procure accredited laboratories for analysis.
v. Procure staff for seasonal field work.

c. Prepare to manage small stream status and trends monitoring data
    i. Confirm that data management tools are available to handle all data and that all data will be quality controlled, stored and accessible to the public
    ii. Ensure data quality is evaluated and report all data to the required databases according to the QAPP

2. Conduct status and trends monitoring. Sampling protocols and procedures detailed in the Draft Quality Assurance Project Plan (QAPP) are from previously-approved QAPPs and may be adaptively managed:
    a. Collect and report monthly water quality index (WQI) and instantaneous flow monitoring at the RSMP sites for one year (January through December 2015).
        i. WQI Parameters: total phosphorus, total nitrogen, turbidity, total suspended solids, specific conductance, pH, chloride, fecal coliform, temperature, and dissolved oxygen.
        ii. Estimate streamflow following Ecology SOP #EAP024.
    b. Collect stream benthos and habitat monitoring data at the RSMP sites in summer 2015.
        i. Benthos parameters: aquatic macroinvertebrates and periphyton.
        ii. Water quality parameters: chlorophyll a, ammonia, nitrate-nitrite, total suspended solids, hardness, total phosphorus, total perchlorate nitrogen, chloride, and turbidity
        iii. Habitat monitoring: slope, bearing, habitat unit presence, wetted width, bankfull width, bar width, substrate size, substrate depth, shade, human

influence, riparian vegetation, large woody debris and grain size estimation.

iv. Sediment chemistry parameters
    1. Metals: copper, lead, arsenic, and zinc
    2. PAHs: naphthalene, 2-methylnaphthalene, 1-methylnaphthalene, 2-chloronaphthalene, acenaphthylene, acenaphthene, dibenzofuran, fluorene, anthracene, carbazole, phenanthrene, fluoranthene, pyrene, retene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(ghi)perylene, chrysene, benzo(b)fluoranthene, and benzo(a)anthracene

v. Additional sediment chemistry parameters subject to available funding:
    1. Pesticides: 2,4-D, triclopyr, diclobenil, diuron, carbaryl, chlorpyrifos, and imidacloprid
    2. Phthalates: Bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, diethyl phthalate, dimethyl phthalate, di-n-butyl phthalate, and di-n-octyl phthalate
    3. PBDEs: 47, 49, 66, 71, 99, 100, 138, 153, 154, 183, 184, 191, 209
    4. PCBs: all 209 congeners
    5. Hormone disrupting chemicals: PPCPs (EPA Method 1694) and hormones and steroids (EPA Method 1698)

3. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP.
    a. Participate in interlaboratory comparison studies.
    b. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation.
4. Enter the results to EIM and/or other appropriate databases.
    a. Enter stream benthos data into King County's stream benthos database.
    b. Enter habitat data into Ecology Status & Trends: Riverine Ecology & Assessment Monitoring (STREAM) database.
5. Make recommendations for future status and trends monitoring.

Task 2. Status and Trends Monitoring in Marine Nearshore Areas of Puget Sound

1. <u>Marine sediment chemistry monitoring and assessment</u>
    a. Prepare to manage data.
        i. Create account and enter data into EIM for sediment chemistry data.
    b. Confirm sites and prepare for sampling in summer 2016.
        i. The draft QAPP for this monitoring is expected to be finalized in 2014.
        ii. Select and confirm marine nearshore sites
            1. Up to 40 sites will be selected for sampling. The list of randomly selected sites is being generated. A new nearshore GIS sampling frame is being developed for the 0 to 1 fathom (-1.8m) depth

zone of the nearshore that is adjacent to Urban Growth Areas (UGAs). The nearshore sediment sample site list will be available at Ecology's RSMP website in summer 2013.

2. The RSMP will not sample sites that are sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2.
3. For each nearshore sediment sample site that is not accessible or is documented according to the QAPP as otherwise unsuitable, the next sequential site on the list of alternates will be chosen and must be confirmed

iii. Procure necessary sampling equipment.
iv. Procure accredited laboratories for analysis.
v. Procure staff for seasonal field work.

c. Conduct marine nearshore sediment chemistry sampling during summer 2016 according to the approved QAPP.
   i. Marine sediment chemistry parameters:
      1. Grainsize and total organic carbon.
      2. Metal and metalloids: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, tin, and zinc.
      3. LPAHs: 1,6,7-trimethylnaphthalene, 1-methylnaphthalene, 1-methylphenanthrene, 2,6-dimethylnaphthalene, 2-methylnaphthalene, 2-methylphenanthrene, acenaphthene, acenaphthylene, anthracene, biphenyl, dibenzothiophene, fluorene, naphthalene, phenanthrene, and retene.
      4. HPAHs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(e)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, perylene, and pyrene.
   ii. Additional marine sediment chemistry parameters subject to available funding:
      1. Phthalates: bis(2-Ethylhexyl) phthalate, butylbenzylphthalate, diethylphthalate, dimethyl phthalate, di-n-butylphthalate, di-n-octyl phthalate.
      2. PBDEs: 47, 49, 66, 71, 99, 100, 138, 153, 154, 183, 184, 191, 209
      3. PCB Congeners: all 209 congeners
d. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP.
   i. Participate in interlaboratory comparison studies.
   ii. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation.
e. Enter the results to EIM.
f. Make recommendations for future status and trends monitoring.

2. Mussel contamination monitoring and assessment
    a. Prepare to manage data
        i. Create EIM account for mussel contamination data
        ii. Confirm that data management tools are available to handle all RSMP data and that all data will be quality controlled, stored and accessible to the public
    b. Prepare to conduct monitoring in winter 2015-2016.
        i. The QAPP for this monitoring is expected to be finalized in 2014 is expected to be based upon either NOAA Mussel Watch protocols or the Ecology-approved QAPP for WDFW's Mussel Watch Pilot Expansion Study.
        ii. Confirm sites. Up to 40 sites will be selected for sampling.
            1. The list of randomly selected sites in nearshore areas adjacent to Urban Growth Area boundaries is being generated according to the same protocols as the sediment chemistry sites (see 1.B.i above) but limited to the shoreline or to grid cells located along the 0 depth contour. The list of mussel and bacteria sampling sites, plus alternates, will be available at Ecology's RSMP website in summer 2013.
            2. The RSMP will not sample sites that are sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2.
            3. For each site that is not accessible or is documented according to the QAPP as otherwise unsuitable, the next sequential site on the list of alternates will be chosen and must be confirmed.
        iii. Develop sampling schedule to facilitate sampling, laboratories and troubleshoot logistics
        iv. Procure necessary sampling equipment
    c. Coordinate with WDFW, NOAA Mussel Watch and networks of volunteers
        i. Conduct volunteer trainings and facilitate communication
    d. Conduct mussel tissue sampling at RSMP sites during winter 2015-2016 according to the approved QAPP.
        i. Mussel habitat sampling parameters: water temperature, salinity, station location, distance between sub-stations at each site, tidal cycle, height above waterline.
        ii. Mussel biotic measures: %mortality, condition index, lipids, gonadal index and histopathology.
        iii. Mussel chemistry parameters:
            1. PAHs:
                a. LPAHs: naphthalene, fluorene, acenaphthylene, acenaphthene, anthracene, dibenzothiophene, phenanthrene, and retene
                b. HPAHs: dibenzoanthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene,

benzo[e]perylene, benzo[a]pyrene, benzo[z]pyrene, chrysene, fluoranthene, indeno-pyrene, perylene, and pyrene

c. Substituted PAHs: dibenzothiophenes(C1-,C2-,C3-), fluorenes((C1-,C2-,C3-), naphthalenes(C1-,C2-,C3-,C4-), phenanthrenes+anthracene(C1-,C2-,C3-,C4-), chrysenes (C1-,C2-,C3-,C4-), and fluoranthene/pyrene (C1-,C2-,C3-,C4-)

2. Chlorinated pesticides: 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, trans-chlordane (gamma), trans-nonachlor, cis-nonachlor, nonachlor III, heptachlor, heptachlor epoxide, oxychlordane, alpha-hexachlorohexane, beta-hexachlorocyclohexane, delta-hexachlorocyclohexane, hexachlorobenzene, aldrin, dieldrin, mirex, and endosulfan I
3. Metals: arsenic, cadmium, copper, lead, mercury, and zinc
4. PBDEs: 28, 47, 49, 66, 85, 99, 100, 153, 154, 155, 183
5. PCB congeners:17, 18, 28, 31, 33, 44, 49, 52, 66, 70, 74, 82, 87, 95, 99, 101, 105, 110, 118, 128, 138, 149, 151, 153, 156, 158, 170, 171, 177, 180, 183, 187, 191, 194, 195, 199, 205, 206, 208, 209
6. Conventionals: total lipids, total solids, δ15 nitrogen, and δ13 carbon

e. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP
   i. Participate in interlaboratory comparison study
   ii. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation.

f. Enter the results to appropriate state and federal databases
   i. Mussel Watch at NOAA, and WDFW Toxics in Biota database
   ii. Chemistry data to EIM database

3. <u>Bacteria sampling and assessment</u>
   a. Prepare to manage data
      i. Create EIM account for bacteria data
   b. Prepare to conduct monthly monitoring beginning in October 2015. Up to 40 sites will be sampled.
      i. The QAPP for this monitoring is expected to be approved in 2014. It will be based upon former PSAMP and current BEACH monitoring program protocols.
         1. Sites identified and confirmed for mussel contamination monitoring will be sampled for bacteria, if suitable.
            a. Mussel sites that are not suitable for bacteria sampling due to holding time or other requirements will not be

sampled for bacteria. Additional bacteria sites will not be added

2. Develop sampling schedule to facilitate sampling, laboratories and troubleshoot logistics

ii. Develop contracts with local accredited laboratories (near sites)
iii. Procure and prepare necessary sampling equipment
iv. Procure volunteers and coordinate sampling
v. Conduct volunteer trainings

c. Conduct and coordinate monthly bacteria sampling during October 2015-September 2016 and according to the approved QAPP
   i. Parameters: fecal coliform by multiple tube fermentation (9221E)
d. Interpret and report the results as specified in the QAPP
e. Ensure quality assurance and quality control (QA/QC), data reporting, and data analysis and interpretation are conducted according to the approved QAPP
   i. Include results from sites sampled by permittees who opt to conduct individual monitoring according to Phase I permit condition S8.B.1.b or Phase II permit condition S8.B.2 in data analysis and interpretation
f. Enter the results to EIM and notify Ecology's BEACH Program of known water quality violations
g. Make recommendations for future status and trends monitoring

S8.C Effectiveness Studies

Table 2. Tasks, Timeline and Estimated Costs* for RSMP Effectiveness Studies

Task	Implemented by	Anticipated Timeline	Estimated Maximum Costs
0. Program administration	Ecology	Begins in December 2013 when permittees decide if they will participate; RFP process in 2014	$350,000 (about 5% of the total costs)
3. Effectiveness studies	Contractors, including permittees	Begin studies in August 2014 after first permittee payments submitted to Ecology	$7,000,000
TOTAL RSMP Effectiveness Studies Effort*			$7,350,000* over four years

* Final budget will be known in January 2014.

Task 0. Program Administration, Requests for Proposals, and Contracting

1. Develop a budget for effectiveness studies based on collective decisions by permittees to opt in or out of the RSMP. The budget will be reviewed by the stakeholder oversight committee.
2. Write, enter into, and manage agreements with contractors for data collection, management, analysis, and reporting
3. Track costs associated with all RSMP fund-sharing program components
4. Participate in a project management oversight process
    a. Manage process to facilitate adaptive management to contracts, monitoring, databases and communication materials (websites, reports, etc)
    b. Faciliated process to inform and receive external stakeholder group recommendations
5. Facilitate an open process to determine who will conduct each of the tasks listed below for effectiveness studies in Western Washington
6. Develop detailed scopes of work to ensure contractors are qualified to conduct RSMP tasks according to approved Quality Assurance Project Plans (QAPPs). Ensure robust scientific method and quality control procedures are included
    a. Identify opportunities to revise or develop Standard Operating Procedures (SOPs) that apply to multiple studies
7. Contract with successful applicants and provide project management oversight to ensure that quality data and other products are produced and entered into appropriate databases within the timeframes specified in the QAPPs
    a. Facilitate a process to inform permittees and external stakeholders of project needs, schedule changes, or other unforeseen circumstances
8. Coordinate an annual review and reporting of results and information generated by the RSMP or independent monitoring. In addition to the data interpretation tasks listed below:
    a. Summarize and distribute findings
    b. Cross-walk with information published by other key monitoring programs in western Washington
    c. Recommend new standard methods and protocols to be developed

Task 3. Effectiveness Studies

1. Conduct regionally relevant studies on topics that have been recommended through the external stakeholder process and using criteria pursuant to stakeholder group recommendations
    a. For each study, develop a QAPP that includes, as appropriate: site selection; sampling protocols; quality assurance and control procedures; laboratory analytical methods; data storage; data analysis; reporting methods; peer review requirements; and deadlines for publications
    b. Studies will be conducted from August 2014 through August 2018
        i. Some studies may not be completed by the expiration date of the permit; appropriate interim deliverables will be defined
2. Develop standard methods as needed across multiple studies
3. Enter quality-assured data into appropriate databases as required by the approved QAPPs
4. Make results and findings available to the public
5. Recommend future effectiveness studies

S8.D Source Identification Information Repository (SIDIR)

Table 2. Tasks, Timeline and Estimated Costs for SIDIR

Task	Implemented by	Anticipated Timeline	Estimated Maximum Costs
0. Program administration	Ecology	Begins in January 2014 with RFP process	$32,250 (about 5% of the total RSMP costs)
4. Source Identification Information Repository (SIDIR)	Contractors, including permittees	Begin in August 2014 after first permittee payments are submitted to Ecology	$645,000
TOTAL RSMP SIDIR effort			$677,250 over four years

Task 0. Program Administration, Requests for Proposals, and Contracting

1. Write, enter into, and manage agreements with contractors for subtasks listed in Task 4 below
2. Track costs associated with SIDIR program component
3. Participate in a project management oversight process
    a. Manage process to facilitate adaptive management to contracts, monitoring, databases and communication materials (websites, reports, etc)
    b. Faciliated process to inform and receive external stakeholder group recommendations
4. Facilitate an open process to determine who will conduct each of the tasks listed below for creating the SIDIR. Contractors may include permittees and/or other stakeholders
5. Develop detailed scopes of work to ensure contractors will conduct high quality work
6. Contract with successful applicants and provide project management oversight to ensure that quality products are produced and shared within the specified timeframes
    a. Facilitate a process to inform permittees and external stakeholders of project needs, schedule changes, or other unforeseen circumstances
7. Coordinate an independent annual review and reporting of results and information generated by the RSMP or independent monitoring. In addition to the data interpretation tasks listed below:
    a. Summarize and distribute findings
    b. Cross-walk with information published by other key monitoring programs in western Washington
    c. Recommend new standard methods and protocols to be developed

Task 4. Source Identification Information Repository (SIDIR)

1. Develop a *SIDIR Methods and Approaches* webpage or build on another platform as appropriate:
    a. Determine what tools for permittees and others are most needed to identify and remove illicit discharges from stormwater
    b. Identify existing standard operating procedures (SOPs) and protocols for source identification and diagnostic monitoring to include in the repository

   c. Prioritize new standard operating procedures (SOPs) and protocols for source identification and diagnostic monitoring to include in the repository
      i. Recommend GROSS grant or other funding for development of these tools
   d. Develp a QAPP library with data quality objectives and report templates
2. Develop a *SIDIR Results and Findings* database and analyze information from permittees:
   a. Determine data fields and specific information needed to support regional analyses
   b. Propose permittee reporting approaches to populate the database
      i. Develop a format that is easy to use and fulfills annual reporting requirements specified in the permits
   c. Design, develop, and populate the database
      i. Populate the database with information for 2014 that will be provided by permittees in their March 2015 Annual Reports
   d. Conduct the first regional analysis and report results before the end of 2016
3. Conduct further analyses with subsequent annual report data and report results in 2017 and 2018 and include with the third report