RECOMMENDATIONS FOR FUNDING AND DATA MANAGEMENT FOR IMPLEMENTATION OF THE HOOD CANAL STREAM AND RIVER MONITORING PLAN

Prepared for
WRIA 16/14b Planning Unit

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Introduction

The Water Resource Inventory Area (WRIA) 16 planning group and other interested parties are considering implementing a long-term river and stream monitoring plan for the Hood Canal watershed.

Data management and funding stability are two important components of monitoring programs, and are directly related to their success and utility. The purpose of this technical memorandum is to describe how water quality monitoring activities in the Hood Canal watershed are currently funded, summarize how data collected through these efforts is being managed, and to describe funding and data management options that would better meet the needs of a long-term monitoring program.

Funding

Table 1 summarizes the key funding sources for entities conducting significant water quality or flow monitoring within the Hood Canal drainage. Table 2 compares these sources. Current funding for stream monitoring falls into three categories: grant derived sources, state or federal budget items, and local utility fees.

Grant Derived Sources

Washington State Department of Ecology (Ecology) and the US Environmental Protection Agency (EPA) are the primary grant funding sources for monitoring in the Hood Canal drainage, with additional funding from the governor's appropriation fund and the Washington Conservation Commission.

Ecology administers three funding sources in the annual integrated funding cycle for water quality projects. The award process for a grant or loan from these programs is highly competitive. The amount of money available for each funding cycle is also highly variable, dependent upon state and federal budgets, and typically has a matching amount requirement. The three funding programs are:

- **Centennial Clean Water Grant Program** (Centennial Grant). This program received money from the Water Quality Account (from a cigarette tax dedicated to water quality) through 2008, but is now funded though state bonds. Projects funded by this program typically range from 2 to 4 years in duration, and aim to address specific water quality problems (e.g., failing septic systems) or are short-term studies.

- **Federal Clean Water Act Section 319 Nonpoint-Source Grant Program** (Section 319 grants). The EPA provides this grant, which targets

control of nonpoint pollution. The EPA allocates these funds biennially to States and Tribal governments. The portion of funds that are allocated to the state is then allocated to local projects by Ecology through their grant program.

- **Washington State Water Pollution Control Revolving Fund Loan Program** (Revolving Fund). This program's primary purpose is to help fund larger capital improvement projects such as new or upgraded wastewater treatment facilities. It is funded by a federal EPA capitalization grant; however, it requires matching funds from the state or local government and interest and loan repayments.

- All three programs are now integrated into one funding cycle/decision matrix. Therefore, the funding of much larger capital improvement projects can directly impact the funds available through the other programs.

Table 1. Summary of existing funding and data management strategies for Hood Canal monitoring.

Organization	Primary Funding	Secondary Funding	Data Storage Location
Mason County	Ecology Centennial and 319 Grants	Mason County Public Health / Governor's appropriation fund	Access database at Local office and Ecology EIM database
WRIA 16 Planning Unit	Ecology Centennial Grants		Ecology EIM database
Jefferson County Conservation District	Ecology Centennial Grants (via Jefferson Co.)	WA Conservation Commission Grants	Microsoft Access database Maintained at Local Office
Kitsap Health District	Utility Fees (via Kitsap Public Works)	Ecology / US EPA Grants	Database at local office and Ecology EIM database
Port Townsend Public Works	Utility Fees		Database at Local Office
Bremerton Public Works and Utilities	Utility Fees		Database at Local Office
Department of Ecology	Washington State General Fund	Other State Programs	Ecology EIM database and Streamflow database
HCDOP	U.S. Navy through University of Washington Applied Physics Lab	University of Washington Puget Sound Regional Synthesis Modeling fund	Spreadsheets kept at the University of Washington
U.S.G.S.	USGS Cooperative Water Program	Matching Partners	National Water Information System (NWIS) database
Skokomish Tribe	US EPA 106 Grant	EPA 319 Grant	National Park Service STORET database

Table 2. Comparison of existing funding sources for Hood Canal monitoring.

Funding Sources	Competitiveness	Match Requirements	Outlook For Funding Continuity	Reliability as a Long Term Funding Source
Centennial Grants	Competitive	25%	Moderate	Not Reliable
319 Grants	Competitive	25%	Moderate	Not Reliable
EPA 106 Grants	Competitive	5%	Good for Tribal Monitoring	Somewhat reliable For Tribal Water Monitoring
State Revolving Fund	Competitive	Loan Program	Moderate	Not Applicable
Utility Fees	Not Competitive	None	Excellent	Not reliable (under existing fee structure)
Ecology Monitoring Budget	Not Competitive	Variable	Very Good	Reliable
USGS Gaging Budget	Not Competitive	Partnership gages require as much as 50%	Very Good	Reliable
Washington Conservation Commission Grant	Competitive	None	Poor	Not Reliable
Governor's Appropriation Fund	Not Competitive	None	Moderate	Unknown
U.S. Navy	Not Competitive	None	Poor	Not Reliable

Ecology grants for Hood Canal monitoring come primarily from the Centennial grant program. This is the funding source for much of the work being done by Mason and Jefferson Counties. EPA funding for Hood Canal monitoring comes primarily from the Clean Water Act Section 319 Non Point Source Management Program and the Section 106 Tribal Water Pollution Control Grant Program. As described above, the Section 319 program funds are allocated to both state and tribal governments, so in Hood Canal the Skokomish Tribe receives Section 319 grants directly from EPA and local governments have received Section 319 grants via Ecology's funding program. Section 106 program funds are limited to water quality activities pertaining to tribal reservation water resources. For Hood Canal, this means monitoring would be limited to Skokomish and Port Gamble S'Klallam tribal lands, and upstream portions of the Skokomish River.

State and Federal Budgets

Ecology and the U.S. Geological Survey (USGS) receive funding from state and federal program budgets, respectively. These programs have served as a fairly reliable resource for long-term water quality and flow monitoring but have been consistently reduced over the past 30 years, indicating that the funding for these programs, while reliable, is not guaranteed. For example, the

number of stream gages the USGS maintains has decreased substantially since the early 1970s. Currently, 55% of their funding comes from matching funds through their cooperative partnering program rather than their own budget. Ecology has experienced similar reductions in the number of stations they maintain through their ambient monitoring program. These reductions have directly affected Hood Canal. USGS has abandoned three flow gauging stations in Hood Canal, while Ecology has abandoned eight water quality monitoring stations.

Local Utility and Public Works Fees

Much of the monitoring performed by county and city public works departments or utility agencies is funded by utility fees. There are at least six existing local jurisdictions with revenue generating authority in Hood Canal that have water resource protection or monitoring responsibilities. These include Kitsap PUD, Jefferson PUD, Kitsap County's stormwater utility district, the Mason Conservation District, Bremerton Public Works and Utilities, and City of Port Townsend Public Works. Monitoring can be an integral part of these agencies' operations, so it is included as part of their annual operating budget to help ensure a reliable funding source. Monitoring funded through utility fees typically must meet specific (and sometimes limited) objectives associated with the fee (e.g., monitoring drinking water system influent). Therefore, although these are a reliable funding source, they are not necessarily appropriate for use in a more comprehensive, watershed-based monitoring program.

Special Assessments for Natural Resource Conservation

Another locally generated fee is through Special Assessments to finance the activities of local conservation districts to conserve natural resources (including soil and water). The state code RCW 89.08.400 (for Revised Code of Washington, Chapter 89.08, Section 400) allows a county the legislative authority to impose an assessment for up to 10 years to finance the activities of a conservation district. A local example of this occurs in Mason County where a $5.00 fee is charged to landowners of parcels over 1 acre in size. Revenues from this assessment are allocated such that Mason Conservation District receives 33.5% and Mason County Health Department receives 66.5% for water quality protection.

Long-term Funding Options

Grant and Loan Programs

These programs have been helpful for funding much of the recent monitoring and should continue to be a source of funds for research and effectiveness monitoring activities. However, they are not appropriate for a long-term monitoring program largely because the funding would be variable and unreliable. If these are the only identified funding sources, then a different approach to monitoring should be developed (e.g., a series of short-term problem specific studies).

State or Federal Budget Line Item

A federal or state budget line item for Hood Canal monitoring may be a viable way to obtain long-term funding. In recent years, an unprecedented amount of federal money was devoted to maintaining and improving the environmental integrity of Puget Sound. Hood Canal has been identified as a particularly important and vulnerable part of Puget Sound through the establishment of RCW 90.88 (for Revised Code of Washington Chapter 90.88) which designates Hood Canal as an *Aquatic Rehabilitation Zone*.

There is already a funding mechanism and precedence in place through establishment of the Hood Canal Coordinating Council (HCCC). Through RCW 90.88, the HCCC received $100,000 per year for general operation until 2009, when budget cuts reduced it to $90,000 (Scott Brewer, personal communication, June 9, 2010). RCW 90.88 was created to specifically address the dissolved oxygen problem in Hood Canal. Because the watershed stream monitoring program proposed by the WRIA 16/14b planning unit is not focused on assessing or improving Hood Canal's low dissolved oxygen problem, seeking funding through RCW 90.88 may not be appropriate. Since Hood Canal improvement is a priority of the state, a new funding mechanism or expansion of the scope of RCW 90.88 may be feasible.

Establish a New Special Purpose Assessment District

Establishing a new special purpose assessment district would also be a reliable way to fund a long-term monitoring program. Special assessment districts are local government units formed to perform a single function. Special assessment districts that might be appropriate for supporting watershed planning related projects (such as watershed wide water quality monitoring) include:

- Flood control and drainage districts (RCW 86.09.001-930) (for Revised Code of Washington Chapter 86.09, Sections 001-930)
- Stormwater utility districts (RCW 36.89.085) (for Revised Code of Washington, Chapter 36.89, Section 085)
- Special assessments for resource conservation districts (RCW 89.08.400) (for Revised Code of Washington, Chapter 89.08, Section 400)
- Shellfish protection districts (RCW 92.72.040) (for Revised Code of Washington, Chapter 92.72, Section 040)
- Aquifer protection districts (RCW 36.36.010) (for Revised Code of Washington chapter 36.36, Section 010)

All five of these special purpose district types were developed under different state statutes and therefore have different requirements and limitations. For example, flood and drainage districts and aquifer protection districts require voter approval before they can be established, while a shellfish protection district can be approved by county legislators. Of the five, a shellfish

protection district may be the most applicable to Hood Canal needs. These are typically set up to address contamination by such things as stormwater runoff, septic systems, and agriculture and can encompass all nonpoint pollution threats to tidelands. (Nisqually Watershed Planning Unit, 2009) Shellfish protection districts are created via County legislative authority. They do not require a public vote or voter approval of assessment fees, but often local advisory committees are formed to help with preparing and implementing the programs.

Expand Existing Assessment District Authority or Revenue

Existing assessment districts (such as PUDs) provide an opportunity to use revenue generated by these districts to support monitoring needs. Depending upon the type of assessment district and its underlying authority, this might require legally expanding the authority and responsibility of the district and increasing rates to meet additional budget needs. The increase in assessment rate would likely require a vote by ratepayers. Generally, these assessment districts could not generate or expend revenue outside of the immediate boundary of their districts without having an interlocal agreement in place.

Interlocal Agreements

Interlocal agreements or ILAs provide a mechanism for public agencies to contract with each other. Public agencies can include federal, tribal, state and county governments, and existing special purpose districts and utilities. RCW 39.34.190, and RCW 29.34.200 (for Revised Code of Washington, Chapter 39.34, Section 190, and Chapter 29. 34, Section 200) allows each cooperator to spend up to 10% of each jurisdiction's water-related revenues on watershed management activities. In this scenario, existing agencies (e.g., the counties, tribes and others) and utilities (e.g., Kitsap PUD) would form a watershed management partnership to implement the watershed plan. An approach like this would be reliable and would enforce a shared cost among agencies and utilities as well as provide a way of formally recognizing and crediting the work already being done through a defined allocation strategy.

The Hood Canal Coordination Council represents an already existing partnership set up by an interlocal agreement. The interlocal agreement that formed the council is comprised of Jefferson, Kitsap, and Mason counties, the Port Gamble S'Klallam Tribe, the Skokomish Tribe, and state and federal agencies. Initially these government entities made financial contributions to the HCCC, but the council now relies on state funding such as the RCW 90.88 and grants.

Funding Recommendation

Continuous and reliable funding is required before a commitment can be made to a long-term monitoring program. There are two options that seem most practical for funding a long term monitoring program as well as other watershed protection needs:

- Take advantage of the existence of the HCCC and its many partners and increase its operating budget by requiring partners to contribute funds to the HCCC to cover monitoring needs.

- Establish a new shellfish protection district covering the entire Hood Canal watershed, and collect revenue through an assessment on properties.

The additional financial burden of both approaches has important implications. Perhaps the optimal solution would be a blend of these two options; that is, a shellfish protection district could be established to collect some revenue to support these activities, but this district would become a partner in the HCCC. Then, all partners in the HCCC would contribute funds to cover monitoring and other needs. This last option would spread the burden across multiple agencies and residents. Clearly, all of these options would require development of an allocation strategy, and also likely require public outreach to build support. Regardless of the option chosen, proper research with private, state, and or legal counsel of each jurisdiction involved needs to be undertaken to address the legal justification and ramifications.

Data Management

Existing Approaches

Table 3 summarizes how data is stored by the more significant data gathering efforts in the watershed. As shown, data from existing monitoring efforts on Hood Canal is currently stored in multiple locations and formats. There are two publicly owned water quality databases in use in the watershed: Ecology's Environmental Information Management (EIM) database and the federal STORET database (i.e., National Park Service STORET). Much of the remaining water quality data being collected is still being stored in spreadsheets that are vulnerable to loss and not easily accessible to the public. Flow data is stored in either the USGS National Water Information System ((NWIS)) or in Ecology's streamflow database. Data from the USGS database is accessible to the public, but flow data cannot be easily uploaded to the database if it is not specifically collected through a USGS-sanctioned program.

The data that is of most interest—but not currently accessible—is the data collected through the HCDOP program and currently held by the University of Washington. This data is highly valuable to future evaluations of water quality trends. Acquiring this data and including it in a central database (e.g., EIM) should be a high priority for the watershed.

Table 3. Summary of Data Management Systems Currently Used By Hood Canal Monitoring Groups.

Storage System	Organization	Relative Amount of Data Stored	Ease of Use	Public Accessibility	Vulnerability to Data Loss	Notes
Spreadsheets or Access files at local office	University of Washington, Jefferson County, Kitsap County, Mason County, Bremerton Public Works, Port Townsend Public Works	High (Amount varies depending on organization and study)	Very simple	Not Easily Accessible	High	
National Park Service STORET database	Skokomish Tribe	High	More difficult	Easily accessible	Low	No time series capability
Environmental Information Management System (EIM)	Mason County, Kitsap Health District, Ecology, and others	High	More difficult	Easily accessible	Low	Time series capability available soon
Ecology's Streamflow Database	Ecology	High	More difficult	Easily accessible	Low	Only used for Ecology flow monitoring programs
National Water Information System (NWIS)	USGS	High	Unavailable	Easily accessible	Low	Available only for USGS sanctioned monitoring

Data Management Recommendations for a Long-term Monitoring Program

A consistent data management plan that includes a central database and clear, assigned responsibilities is a critical component of a long-term monitoring program. Ecology's EIM database and the National Park Service STORET system could serve as data repositories for this monitoring effort. Both databases are well-suited to handling the water quality data (site information and parameters) generated by this study. The interface of EIM is considered to be more user friendly than STORET, but in terms of water quality data there are few technical criteria by which to differentiate the two systems. Neither system is currently capable of handling time series data (e.g., flow). This problem has been addressed, albeit unsatisfactorily, in the past by using separate databases for flow (e.g. USGS's NWIS, or Ecology's stream flow database). Ecology is actively developing times series data capability for the EIM database, and hopes to release it by the summer of 2011 (Chris Neumiller, personal communication, May 14, 2010).

Given that these two well-established databases exist and are well-suited to the needs of this program, there is no justification for the added expense and work of creating a new database. Considering the ease of use, the level of familiarity, congruent usage by ongoing programs and the future ability to handle time series data, EIM is recommended for managing data from this project. EIM is typically only available for Ecology funded projects because there is significant amount of Ecology staff time associated with each project that utilizes EIM. Past arrangements between WRIA groups and Ecology have allowed the groups to use EIM for non-Ecology funded projects, and it is likely that a similar exception could be made for this project (Chris Neumiller, personal communication, May 14, 2010). Some provision should be made to cover Ecology data management costs, if funding for this project is not provided through Ecology grants.

Assuming a central database such as EIM is selected as the primary storage location for watershed data, the task of ensuring that appropriate data is uploaded to the database still remains. Though specific monitoring roles have not been assigned, it is likely that many different entities will conduct or participate in some aspect of this project. The inherent decentralization of data under this scenario dictates that a clear data management pathway needs to be defined. One potential way of handling this is to assign or hire a single data manager for the project. This person would be responsible for gathering, quality assurance (QA) verification, and compiling the data collected by the individual monitoring groups on a regular (semi-annual or annual) basis. This person would also be responsible for uploading all project data into EIM. Having one party who is an expert at uploading data to EIM removes a significant burden from Ecology by reducing their need to assist multiple users with the upload process. It also removes a significant burden from the monitoring groups who are not familiar with the EIM upload process. Centralizing data management also reduces additional data upload tasks from monitoring groups that are already required to enter their data into other databases (for example, the Skokomish Tribe is required to input their data into STORET and the USGS will continue to input their flow data into NWIS).

Regardless of how the task of data management is accomplished, it is critical that each group understands its individual responsibilities. It is also important that an assessment is made at the onset of all future Hood Canal monitoring efforts as to whether the data generated should be included in the central database. Over the long-term there may also be additional data collected as part of research or evaluation studies that should be included in the database; the HCDOP monitoring data is a good example.

Summary

Data from existing monitoring efforts on Hood Canal is currently stored in multiple locations and formats, making it challenging and inefficient to acquire and organize data for evaluation. However, data storage and management for this project does not need to be a complicated or costly task. The existing EIM database lends itself well to this project as a data storage and management tool. The user friendly interface, familiarity that many monitoring groups already have with EIM, and the fact that it already holds data for many Hood Canal sites, makes it the preferred choice. The fact that it may soon be able to handle time series data is also critical.

Having a database in place is only the first step to managing the data; additional steps need to be taken to ensure that monitoring data is in fact being uploaded to the EIM database in a timely fashion. This can be accomplished by hiring or delegating a data manager who assumes responsibility for this and by enforcing a specific timeline through assigning an annual deliverable (e.g., an annual data memorandum). Centralizing the data management process and using EIM as a database ensures the level of consistency and oversight needed to facilitate the success of a long-term monitoring program for Hood Canal.

References

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