

EXECUTIVE SUMMARY

The goal of this report is to establish an effective management plan for stormwater in San Juan County (County) to benefit our water supplies, protect property, and support critical natural resource areas such as wetlands and streams, and the species dependent on them. Effective stormwater management means protective stormwater management that is cost effective. Towards this goal, this report initially provides background information on stormwater such as regulatory and planning drivers as well as general characteristics in the County that influence stormwater impacts such as climate, topography, geology, soil types, groundwater and aquifers. Based on a combination of these factors, the report summarizes results from a countywide infiltration assessment to guide future stormwater management opportunities. It then presents a detailed inventory of characteristics for 37 watersheds identified by the County for this study that covers existing and future land use, existing stormwater infrastructure, documented presence of critical natural resources, and detailed information on water quality where data is available. Using this information, specific watersheds are then recommended for additional stormwater management. This report represents Volume 1 of the County's stormwater management plan and addresses stormwater issues countywide. A Volume 2 report will also be prepared to address stormwater issues in the following five watersheds that were previously identified as high priority for stormwater management planning: Garrison/Westcott Bay and False Bay on San Juan Island, Mud Bay and Fisherman Bay on Lopez, and the watershed of the town of Eastsound on Orcas.

In the County, the dominant land use is residential development (37 percent) followed by almost equal areas of undeveloped land and water (26 percent) and resource production (farming and forestry) (24 percent). These statistics are telling and lay the framework for the opportunities and challenges we face managing stormwater in San Juan County.

Impervious cover among County watersheds is relatively low overall. The highest percent of impervious area in a watershed is found within the North Shore of Orcas (which includes most of Eastsound) at 10.2 percent, followed by Friday Harbor at 9.5 percent, and Roche Harbor at 9 percent. Virtually all other watersheds have less than 5 percent impervious area. Future buildout estimates indicate that Friday Harbor and the North Shore of Orcas will continue to have the highest percentages of impervious area. Other currently low and more rural watersheds such as Griffin Bay and Westcott Bay on San Juan, and Raccoon Point and West Sound on Orcas will become increasingly impervious predominantly from residential development. All County watersheds will exceed the lowest 5 percent threshold documented as an indicator of stream degradation and approximately half will exceed the higher threshold of 10 percent impervious.

A preliminary assessment of the suitability of particular areas in San Juan County for infiltration of stormwater indicates a number of places where infiltration may be feasible including within the North Shore watershed of Orcas, parts of Mitchell Bay, Garrison Bay, and Griffin Bay on San Juan, and Lopez Village in the Fisherman Bay watershed. However, the

County area with high infiltration potential is significantly reduced when the permeability of the underlying geology is used to further screen infiltration potential, leaving smaller and fewer areas including the North Shore, Griffin Bay, and Lopez Village. Although the method to overlay NRCS soils data with surficial geology likely provides the best regional-scale information available to identify county areas with the greatest infiltration potential, in-depth records research and site specific field explorations would be required to determine whether soil, geologic, and groundwater properties are truly conducive to infiltration; especially given the coarse scale of the databases used. Moreover, other areas not identified in the infiltration assessment may have localized conditions that would in fact support high infiltration.

A number of water quality monitoring programs have been undertaken by San Juan local and regional entities in recent decades. While not fully inclusive, data from these programs provide background information on several of the major pollutants found in stormwater or urban runoff. Review of water quality data for San Juan County suggests that water quality is supportive of Ecology designated beneficial uses regarding water temperature, dissolved oxygen, pH, and turbidity. Exceptions include five locations, which are included on the Ecology 2012 303(d) list as “waters of concern” (Category 2) or “impaired” waterbodies (Category 5) with respect to these parameters. Several common stormwater constituents have been found at low levels or are non-detectable, including total and dissolved metals (arsenic, cadmium, lead, zinc), total petroleum hydrocarbons (TPHs), and three herbicides/pesticides commonly used on the islands (permethrin, MGK-264, and glyphosate). Total copper may be somewhat elevated at particular sites, but overall, is generally similar to recently reported median values for Puget Sound Phase 3 monitoring (Ecology and King County 2011). Based on San Juan County Pilot Stormwater Monitoring Program 2012–2013 data, all dissolved metals are below Ecology acute and chronic numeric criteria for aquatic life toxicity, suggesting a low toxicity potential in San Juan County stormwater with respect to metals. Anionic surfactants are far below USEPA criteria for drinking water sources. Nutrient concentrations are low to moderate compared with values measured in Puget Sound Phase 3 monitoring and reported in three national databases of monitored stormwater concentrations (Stillwater 2014). In contrast to other stormwater constituents, bacteria (i.e., fecal coliform and *Escherichia coli*) are generally elevated in San Juan County stormwater.

San Juan County prepared a web-based site for citizens to report stormwater management problems called the Stormwater Basin Planning Web Map found at <http://sjcgis.maps.arcgis.com/home/item.html?id=cd645b044c5445e3a3799ce94e1d0524>. As of this report, 127 problems were entered into the database. Of these, the vast majority were in the watersheds with urban growth areas. The East Sound watershed had the highest number of stormwater problems with 33 percent of the total reported followed by Friday Harbor with 10 percent. The North Shore of Orcas watershed followed next with 8 percent. The village of Eastsound encompasses portions of both the East Sound and North Shore of Orcas watersheds and accounts for the location of close to 41 percent of all stormwater complaints. Over 70 percent of the problems reported directly related to high stormwater flows and included reports of flooding, erosion, and ponding. Four percent of the complaints related to observed water quality problems. Thirteen percent of the complaints classified their complaint as damage to property; the majority of these were on private property. The

County is concerned over how to solve stormwater problems that are the result of private development not constructed to common or regulatory standards.

Given the existing predominantly rural and semi-rural character of our island landscapes, we have a greater opportunity to provide long-term protection for high value water resources affected by stormwater management than more urbanized communities do. Effective stormwater planning and management support this opportunity. However, most of the development occurring in San Juan County is small, residential, and falls below the current regulatory thresholds for required stormwater treatment or flow control. Development without treatment and flow control contributes to an ongoing challenge: continuing aggregate increases in stormwater flows and the consequent strain on both constructed and natural stormwater, wetland, and stream systems. The planning process offers methods and actions that manage stormwater on a watershed scale that accounts for the aggregate impact.

Adding to that challenge is that incoming development is the focus of regulation; however, existing development may have a far more serious impact on property and the environment. For example, the periodic flooding that occurs in Eastsound after large storms is the product of existing development that occurred under less protective regulations. Jurisdictions large enough to be covered under a National Pollutant Discharge Elimination System (NPDES) permit can require improvements to stormwater flow control and treatment when redevelopment occurs but San Juan County falls below this federal regulatory threshold. Consequently, current opportunities to ensure that existing and future development in the County properly manage stormwater are limited, will likely need to rely heavily on voluntary participation, and improvements will be fueled more by community outreach, education, training, and partnerships rather than by regulation. This report identifies the following countywide recommendations for effective and protective stormwater management.

- **Develop Basin Plans for Priority Watersheds:** We can reasonably expect property owners along those drainages currently experiencing flooding and drainage problems to be further affected by flooding and loss of developable property as additional land is developed. Other nearby wetlands and drainages may have capacity and could benefit from more stormwater flow. Because stormwater management is determined on a project-by-project basis without benefit of a landscape-level understanding of water flow and watershed conditions, there is currently no avenue for watershed-based stormwater management solutions that could relieve stormwater pressure in some areas of a watershed while accommodating it in others. Developing watershed-specific basin plans would help provide that context.
- **Minimize Impervious Cover and Maximize Infiltration:** From a community perspective, each development project that includes impervious cover and ties into the public stormwater system contributes to the potential for water resource impairments and the cost of maintaining public infrastructure. To date, San Juan County has an overall very low impervious cover percentage and with the exception of watersheds with urban areas such as Friday Harbor, Eastsound, and Roche Harbor, impervious area is not yet, in most watersheds, a significant stressor to stream and wetland conditions. However, coastal communities such as ours rely on our proximity to water for economic vitality through fishing, tourism, and water dependent

activities. In addition, shorelines are scenic and desirable places for people to live. Consequently, the marine shoreline areas of our watersheds tend to have higher impervious cover than inland watershed areas. Higher impervious area combined with potentially poor stormwater management in shoreline areas can further compound flooding threats to property and resources during heavy storms. In addition, all aquifers in the County are recharged by the infiltration of precipitation, therefore land use and stormwater management practices that affect runoff, infiltration, and pollutant loading can affect the quality of groundwater resources. Careful management of stormwater to promote infiltration and maintain high surface and groundwater quality is essential.

- **Retrofit Ditches and Ponds:** Ditches are the primary stormwater conveyance in San Juan County. Altering ditches to be wider and flatter would significantly improve their water quality treatment functions and they could be altered to slow flows as well. Poorly designed ditches can increase stormwater flow velocity, which causes erosion and subsequent sedimentation that can adversely affect downstream waterbodies. Ponds can be beneficial in that they detain stormwater and capture some pollutants. They are used for recreation and many are important for livestock watering. However, ponds also allow for higher rates of evaporation, have low plant diversity, which substantially reduces their water quality treatment effectiveness, and they can affect both the timing and volume of instream flows in County creeks. These issues could be improved through strategic purchases of land or drainage easements that would allow the County to retrofit ditches or ponds to improve stormwater treatment and flow conditions within the broader landscape.
- **Maximize Use of Existing Ecological Systems:** Use of natural systems for stormwater management can keep the public cost of stormwater management low through use of existing wetlands, ponds, streams, swales, and ditches to manage stormwater. Connecting wetlands, swales, and ditches can create networks that would sustainably improve water quality treatment and reduce flows at relatively low cost; this could be especially effective in agricultural areas. Use of natural systems for stormwater management can be accomplished without degrading our resources through careful basin planning and monitoring.
- **Acquire Property or Easements to Reduce Impacts on Property Owners and the Environment:** Drainage solutions identified from basin planning efforts may point to acquiring property or drainage easements on private property for improved stormwater management. Drainage easements would allow for County control over stormwater where needed to protect property from flooding or losses to critical area resources from increased frequency of high stormwater flows.
- **Increase Public Outreach and Education Efforts:** Because most land development in the County is for single-family residential housing, proactive outreach to new and existing residential property owners is recommended. Outreach programs could include education, training, and technical assistance on best practices for managing onsite stormwater, pond development, herbicide and pesticide use, home maintenance chemicals, agricultural operations, forestry practices, and animal waste

control. Research has shown public outreach and education can be quite successful (Nowacek et al. 2003).

- **Support Neighborhood-Based Stormwater Management Projects:** Measures that encourage stormwater projects sponsored by neighborhood groups and communities could provide innovative implementation of stormwater management solutions. The County would offer technical assistance and potentially some funding to assist. Neighborhood-based solutions could produce creative projects that provide multiple benefits and meet local needs.

COUNTY-WIDE STORMWATER MANAGEMENT RECOMMENDATIONS

Effective management of stormwater benefits our water supplies, protects property, and supports critical natural resource areas such as wetlands and streams, and the species dependent on them. Effective stormwater management means protective stormwater management that is also cost effective.

In San Juan County, the dominant land use is residential development (37 percent) followed by almost equal areas of undeveloped land and water (26 percent) and resource production and extraction (farming and forestry) (24 percent). These statistics are telling and lay the framework for the opportunities and challenges we face managing stormwater in San Juan County.

Given the existing predominantly rural and semi-rural character of our island landscapes, we have a greater opportunity to provide long-term protection for high value water resources affected by stormwater management than more urbanized communities do. However, most of the development occurring in San Juan County is small, residential, and falls below the current regulatory thresholds for required stormwater treatment or flow control. In comparison to other types of high-use development (such as commercial or industrial), small and residential scale development is generally expected to produce fewer stormwater related problems. However, even though much of this development falls below existing regulatory thresholds for San Juan County, the cumulative effects of these land uses can still add to the County's stormwater problems. Even low-density development without treatment and flow control contributes to an ongoing challenge: continuing aggregate increases in stormwater flows and the consequent strain on both constructed and natural stormwater, wetland, and stream systems. This cumulative effect defines the problem of unmanaged stormwater.

Adding to the challenge of unmanaged stormwater is that incoming development is the focus of regulation; however, existing development may be having a far more serious impact on property and the environment. The frequent flooding problems in Eastsound testify to that issue as the vast majority of development has occurred under less stringent stormwater management standards than would be implemented today. Jurisdictions large enough to be covered under an NPDES permit can require improvements to stormwater flow control and treatment when redevelopment occurs but San Juan County falls below this federal regulatory threshold. Consequently, opportunities to ensure that existing and future development in the County properly manage stormwater are currently limited, will likely need to rely heavily on voluntary participation, at least in the short term, and improvements will be fueled more by community outreach, education, training, and partnerships rather than by regulation. Research has shown these strategies can be quite successful (Nowacek et al. 2003).

Regulation-based alternatives to addressing the problem of unmanaged stormwater could include the County voluntarily entering the NPDES program or it could develop its own

regulations that more effectively address the range of development conditions we see in San Juan County. The County may also be eligible for grants that could fund retrofits of stormwater management systems in problem basins and systematically fix the problems produced by historical development.

The following Countywide recommendations are provided as potential strategies to further the goal of countywide effective and protective stormwater management.

Develop Basin Plans for Priority Watersheds

In some areas of the County, development and growth has increased local flooding due to past drainage practices (G. Bronn, Engineer, Hart Pacific Engineering, personal communication, April 8, 2014), and we can reasonably expect property owners along these drainages to be further impacted by flooding and loss of developable property in the future as additional land is developed. In contrast, other nearby wetlands and drainages may have capacity and could benefit from more stormwater flow. Because stormwater management is determined on a project-by-project basis without benefit of a landscape-level understanding of water flow and watershed conditions, there is currently no avenue for watershed-based stormwater management solutions that could relieve stormwater pressure in some areas of a watershed while accommodating it in others. Developing watershed-specific basin plans would help provide that context. This report provides an overview of County stormwater issues as well as key characteristics of its watersheds and provides much of the context required to begin detailed basin planning that would take into account landscape character and resources.

The next step would be to identify the watershed landscape's natural capacity and limitations for effectively managing stormwater. Critical drainage pathways, especially where flooding problems have been reported, could be evaluated to determine what hydraulic capacity there might be for added flow that would still be protective of biological resources. This would require the development of hydrologic models to facilitate understanding of each watershed studied. Such watershed-specific studies would guide the selection of solutions within the basin and identify projects that should be constructed, and property or drainage easements that should be acquired for the benefit of watershed residents. Specific watershed studies could also identify whether onsite detention and treatment system requirements and impervious surface percent limitations should apply at thresholds that are more stringent for particular watersheds.

Basin planning was completed for Lopez Village and Eastsound in 2005. These basin plans will be updated with recommendations for capital improvement projects in Volume 2 of this report. Recommendations will be provided for other County watersheds with high value ecological resources or serious flooding concerns in Volume 2 as well. Watersheds currently identified for further analysis in Volume 2 of this report are Garrison and False Bay on San Juan Island, Mud Bay and Fisherman Bay on Lopez, and the watershed containing the town of Eastsound on Orcas.

Minimize Impervious Cover and Maximize Infiltration

Conventional stormwater management typically conveys stormwater away from a built site, across pavement to a gutter or drain and into a pipe system that delivers the stormwater to

a local waterbody. From a community perspective, each development project that includes impervious cover and ties into the public stormwater system contributes to the potential for water resource impairments and the cost of maintaining public infrastructure. Communities can reduce the harmful effects of impervious cover in several ways, including avoiding constructing it, disconnecting it from the stormwater infrastructure system, reducing its dimensions, and using alternative pavements. Many of these principles underlie the use of low impact development practices.

San Juan County has overall low impervious cover (Table 2). The highest percent of impervious cover in a watershed occurs in the North Shore of Orcas (which includes most of Eastsound) at 10.2 percent, followed by Friday Harbor at 9.5 percent, and Roche Harbor at 9.0 percent. Virtually all other watersheds have less than 5 percent impervious cover. Research generally indicates that stream quality varies based on watershed impervious cover. Most notably, at between 5 and 10 percent impervious cover, sensitive stream elements are lost from the system and include diminished aquatic diversity and water quality (CWP 2003; May et al. 1997). This evidence suggests that watersheds with urban areas such as Friday Harbor, Eastsound, and Roche Harbor are at greatest risk for stormwater caused degradation of water resources. Impervious area in most other watersheds remains below the 5 percent threshold and is not yet, in most cases, a significant stressor to stream and wetland conditions in San Juan County. The high area of currently undeveloped land and large area of resource lands in the County works to benefit stormwater management efforts in that it reduces stormwater infrastructure needs and maintenance costs.

However, coastal communities such as ours often rely on their location for economic vitality through fishing, tourism, and water dependent activities. In addition, shorelines are scenic and desirable places for people to live. Most of the urban areas and concentrated development occurs along shorelines in San Juan County; examples are Eastsound, Roche Harbor, Lopez Village, and Olga. Moreover, owners of residential shoreline property most always construct their homes near to the shore. Consequently, the marine shoreline areas of our watersheds tend to have higher impervious cover than inland watershed areas. Higher impervious area combined with potentially poor stormwater management in shoreline areas can further compound flooding threats to property and resources from large storms where stormwater flows combine with wave energy to cause damage; this threat will increase in severity with ongoing sea level rise. In addition, there is little area to provide for attenuation of flows or water quality treatment in the shoreline. Thus, stormwater runoff typically flows directly to marine waters without flow control or water quality treatment.

Although the entire watershed can benefit from improving stormwater management, it is imperative that shoreline development use integrated approaches to stormwater management due to the potential harm that storms can cause to public health, property, and environmental resources. In addition, some shoreline properties require careful stormwater analysis because they are in small basins and have unstable bluffs that produce erosion hazards not captured by our databases. For new development, these issues could be addressed through development standards that specifically apply to properties within the County's regulatory shoreline jurisdiction. For existing development, public outreach and education may be most effective.

The County's reliance on groundwater as the primary source of fresh water also has implications for promoting infiltration of stormwater. Because the many aquifers in the County are recharged by the infiltration of precipitation, land use and stormwater management practices that affect runoff, infiltration, and pollutant loading can affect the quality of groundwater resources. Runoff and infiltration rates on steep topography underlain by thin soils or sedimentary deposits on shallow bedrock typical of many of the County's watersheds may be more sensitive to changes in land use and vegetative cover than gently sloping topography underlain by a thick sequence of sedimentary deposits. Likewise, the low water-bearing capacity of the many bedrock aquifers may not buffer water quality impacts from pollutant loading related to roads, and commercial and residential areas. Thus, an understanding of the hydrogeology of the County is important for assessing which areas are more sensitive to various land-use practices and stormwater management alternatives. Careful management of stormwater to promote infiltration and maintain high surface and groundwater quality is essential.

Retrofit Ditches and Ponds

Ditches are the primary stormwater conveyance in San Juan County. Poorly designed ditches can increase stormwater flow velocity, which causes erosion and subsequent sedimentation that can adversely affect downstream waterbodies. Orcas and San Juan islands, in particular, have many narrow steep ditches that continuously erode sending sediment downstream. The standard size of ditches has historically been 12-inches-wide by 12-inches-deep. Altering ditches to be wider and flatter would significantly improve their water quality treatment functions and they could be altered to slow flows as well. Trees and rock outcroppings also restrict ditch size and placement in many areas. As with many of the issues discussed here, these problem ditches often occur on private property limiting the County's ability to address them. Even on public roads, there are areas where the County does not own sufficient right of way to accommodate wider ditches. Nevertheless, where possible, retrofitting ditches to be wider and flatter would significantly improve the water quality treatment they provide.

However, ponds also allow for higher rates of evaporation, have low plant diversity, which substantially reduces their water quality treatment effectiveness, and they can affect both the timing and volume of instream flows in County creeks. These issues could be improved through strategic purchases of land or drainage easements that would allow the County to retrofit ditches or ponds to improve stormwater treatment and flow conditions within the broader landscape.

Ponds proliferate across the San Juan County landscape, and in many areas, ponds have replaced historical wetlands. They are used for recreation and many are important for irrigation and livestock watering. Ponds can be beneficial in that they may act as detention ponds in the landscape slowing stormwater flows and capturing sediment along with other pollutants. However, ponds also allow for higher rates of evaporation during the dry season than wetlands typically would, which can deplete local aquifers. Ponds generally have far lower plant diversity than natural wetlands, which substantially reduces their water quality treatment effectiveness. Moreover, many ponds in our County have significantly affected both the timing and volume of instream flows in County streams. This is because some ponds are designed such that they operate like bathtubs within a stream system, requiring they be filled

before water passes downstream, as illustrated in Figure 132. This has the effect of delaying fish spawning into later fall than under historical conditions and may be directly affecting the viability of historical salmon runs. Reduced and delayed instream flows can directly affect the viability of many aquatic species.

These issues could be improved through strategic purchases of land or drainage easements that would allow the County to alter ponds located in important drainages where a retrofit could reduce flooding, and improve water quality or degraded instream flows, thus benefiting critical areas and protected species. Retrofits would allow some water to pass through an instream pond to allow more downstream flow.

Maximize Use of Existing Ecological Systems

Use of natural systems such as existing wetlands, ponds, streams, swales, and ditches for stormwater management can effectively keep the public cost of stormwater management low. All of the watersheds reviewed for this study have some combination of these water features along drainage flow paths to the sea and they play key roles in providing water quality treatment and flow control. Connecting wetlands, swales, and ditches in a network of small-scale features would allow flow reduction, water treatment, and habitat support to occur throughout a given watershed rather than at the bottom or just prior to discharge into a large receiving water body; this could be especially effective in agricultural areas.

Moreover, based on water quality sampling results, water quality degradation in the County is primarily due to exceedances of water quality standards or guidelines for bacteria and nutrient, rather than high levels of heavy metals or toxic chemicals. Wetlands and swales are naturally effective treatment environments for bacteria and nutrients. Maximizing the use of existing natural systems would be an effective and low cost way to improve the water quality issues of greatest concern in San Juan County.

Use of natural systems for stormwater management would require careful assessment and monitoring to ensure that degradation is not occurring. This could be accomplished within the context of a basin plan that identified opportunities to solve stormwater problems by identifying the capacity of natural systems within the basin to accommodate additional stormwater both from flow and water quality perspectives. Flow and water quality could be monitored with automatic data loggers and the data periodically analyzed to ensure results are within protective thresholds. This approach would best be implemented using an adaptive management approach where contingency measures would be identified in advance and then executed should protective thresholds be exceeded.

Acquire Property or Easements to Reduce Impacts on Property Owners and the Environment

Drainage solutions identified from basin planning efforts may point to acquiring property or drainage easements on private property for improved stormwater management. Drainage easements would allow for retrofits on existing infrastructure such as improved drainage ditch design or alterations to ponds that improve water quality treatment characteristics. Drainage easements would allow for County control over stormwater where needed to protect property

from flooding or losses to critical area resources from increased frequency of high stormwater flows. This strategy has historical roots in the ditch districts, for example one was present in San Juan Valley on San Juan Island, that managed water flow to allow for safe and effective farming, protected against flooding, and provided water to agricultural operations where needed.

The prospect of drainage easements may interest potential partners including conservation organizations such as the San Juan County Land Bank, which carries protection of potable water in its mandate. If a public amenity such as a trail were added as an element of a drainage easement, that may also draw interest, support, and funding from local island trail groups such as San Juan Trails Committee and Lopez Community Trails Network. Public private partnerships with these and similar organizations could be a vehicle for retrofitting ponds, enhancing wetlands, improving stormwater management, and increasing community trail opportunities.

Increase Public Outreach and Education Efforts

Because most land development in the County is for single-family residential housing, proactive outreach to new and existing residential property owners is recommended. Research has shown public outreach and education can successfully change owner behavior (Nowacek et al. 2003). Outreach programs could include education, training, and technical assistance on best practices for managing onsite stormwater, pond development, herbicide and pesticide use, home maintenance chemicals, agricultural operations, forestry practices, and animal waste control. Many of these suggested outreach efforts would have logical partners in the San Juan County Health Department (which successfully handles training for onsite septic system inspection and maintenance) and San Juan Islands Conservation District (which already offers workshops on low impact development stormwater management practices). Certain of these efforts may qualify for grant funding, particularly fencing assistance to farmers and pond retrofits that improve instream flows for salmon.

Support Neighborhood-Based Stormwater Management Solutions

Measures that encourage stormwater projects sponsored by neighborhood groups and communities could provide innovative implementation of stormwater management solutions. The County would offer technical assistance and potentially some funding to assist communities in solving local stormwater management problems in ways that are cost effective and meet local needs. Neighborhood-based solutions could produce creative projects that provide multiple benefits to the neighborhood such as a constructed wetland for flood control and treatment that also has a neighborhood trail and meeting area. Projects may be driven by the desire to protect a critical natural resource, restore a drainage network, or a trailblazing neighborhood may wish to solve ongoing flooding problems using environmentally sustainable solutions. Areas of the County with a high percentage of private roads constructed without common standards, and with ongoing flooding problems are good candidates for this type of support; an example would be the Rosario neighborhood on Orcas Island. Innovation can be a bumpy road but conditions that encourage the broad community to learn about more effective stormwater management with the help of technical experts are likely to be successful. Developing private public partnerships that support citizens voluntarily

solving their stormwater problems will allow for more innovative solutions and help move a community forward faster.