

Draft Chapter 7
Critical Areas Assistance Handbook
Monitoring and Adaptive Management
6-28-17

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Introduction: Why Monitoring and Adaptive Management?

All counties and cities in the state have adopted critical areas regulations and permitting procedures under the Growth Management Act and the Shoreline Management Act. They have adopted these regulations to facilitate protection of critical areas. But, a local government doesn't have any way of knowing if they are achieving that goal without looking at the permit process and the on-the-ground results of critical areas regulation. They need a feedback loop to help determine whether goals are being met, and if the goals are not being met, how to improve the process.

This chapter provides a process for starting a permit monitoring program that can help local governments begin to address that gap in knowledge, and to improve permit implementation to protect critical areas. The chapter also provides a number of case studies of counties and cities (and state and federal agencies) that have adopted and are implementing monitoring programs – why they set up a program, what they are monitoring, and what changes they are making in response to the information they have gathered.

Increasing Fairness, Transparency, Accountability and Ecological Outcomes

All interest groups have a common interest in a critical areas regulatory process that is fair, effective and efficient. Residents want to know that regulations are achieving their goals for the community. Developers and consultants want to improve the quality and speed of the permit process. Advocacy groups, whether environmental or private property rights, want transparency in the process. Tribes seeking to assert their treaty rights want to reduce risk from land use impacts.

“Adaptive Management”

Adaptive Management, for purposes of this handbook, is a systematic process for continually improving management policies and practices by learning from the outcomes of implementation.

The goals of a monitoring and adaptive management program are increased fairness, transparency, accountability and improved ecological outcomes from regulations for critical areas protection. Monitoring tracks whether application requirements are being applied consistent with the regulations. This ensures applicants are being treated consistently and therefore fairly. Monitoring allows a local government to track the implementation of the permit system and to produce regular status reports for the public to review. It provides accountability to the public and applicants when they see that all applicants are being treated fairly and consistently in compliance with the regulations. Effectiveness monitoring determines if the intended outcomes or goals of fairness, transparency and accountability are being achieved over time.

Adaptive management is a commitment by a local government to respond to monitoring and effectiveness results by changing approaches for protecting and managing critical areas, and to redirect resources as warranted by new information. A willingness to make improvements to address issues identified through this process is important.

Monitoring is often low on the list of priorities for local jurisdictions. Lack of funding, staff capacity, and technical issues can make developing and implementing a monitoring program difficult. It can also expose perceived failures in the permit system, and may require changes that are difficult or unpopular.

However, the benefits of a successful critical areas monitoring program can be substantial, and even a modest program can be worthwhile.

Assessing permit implementation and effectiveness of critical areas regulations under the Growth Management Act (GMA) and the Shoreline Management Act (SMA) can help counties and cities determine if their permit system is reaching desired outcomes for protecting critical areas and accommodating appropriate uses.

Monitoring and adaptive management can improve the delivery of government services around critical areas protection. The focus of a monitoring and adaptive management program is to evaluate the effectiveness of solutions identified to protect critical areas and actions taken, and to make changes as needed. The process is iterative as shown in the figure below. A monitoring program can result in recommended process improvements in implementation of the critical areas regulations.

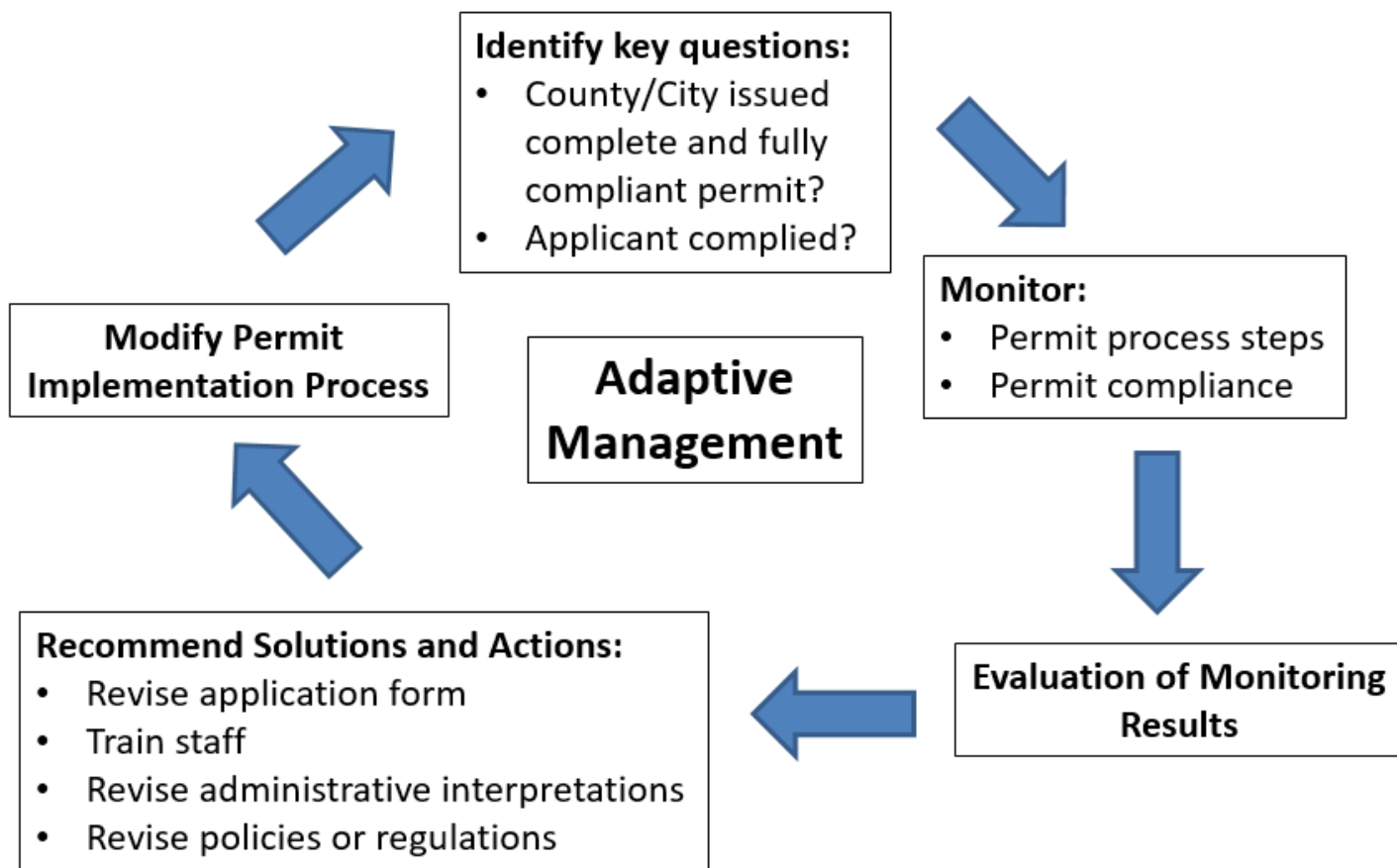


Figure X. Conceptual representation of how implementation monitoring can be used to improve the permit process

This chapter describes different levels of monitoring, outlines the components of a monitoring program, and provides local and state examples of permit monitoring programs. Permit monitoring for purposes of this guidance means any version of review that includes application of regulations to development regardless of whether a separate permit for shoreline or critical areas is required under the development regulations.

Regulatory Context

For monitoring purposes, no distinction is made in this document between critical areas regulations adopted under the Growth Management Act versus the Shoreline Management Act. Critical areas protection is required by both Acts, and many jurisdictions have adopted their critical areas ordinance by reference in their Shoreline Master Program (SMP).¹ The information gathered from monitoring should inform critical areas protection regardless of where critical areas are located. For example, the lessons learned from wetlands mitigation monitoring is beneficial regardless of whether wetlands are in shoreline jurisdiction. The rules for both of these closely related statutes recognize the importance of monitoring as described below.

Counties and cities may choose to incorporate lessons learned from monitoring as part of their periodic reviews of critical areas or shoreline programs under either the GMA or the SMA, though there is no requirement to follow that schedule, and no reason to wait for scheduled reviews to improve permit processes.

Growth Management Procedural Criteria

Critical areas protections adopted under the Growth Management Act have been in place in most jurisdictions for decades. Most jurisdictions have reviewed and updated, where needed, their regulations at least once. Monitoring can help to ensure these regulations achieve no net loss of critical areas functions and values. Commerce recognizes the importance of no net loss in the protection of functions and values in the Procedural Criteria:

Although counties and cities may protect critical areas in different ways or may allow some localized impacts to critical areas, or even the potential loss of some critical areas, development regulations must preserve the existing functions and values of critical areas. If development regulations allow harm to critical areas, they must require compensatory mitigation of the harm. Development regulations may not allow a net loss of the functions and values of the ecosystem that includes the impacted or lost critical areas.²

The Department of Commerce's Best Available Science rules help local governments determine which information is the "best available science." The rule encourages counties and cities to monitor and evaluate their efforts in critical areas protection and incorporate new scientific information, as it becomes available.³ Where there is an absence of valid scientific information, or incomplete scientific information, the rule recommends using a "precautionary approach," or an effective adaptive management program as an interim approach.⁴

No court decisions have held that local governments are required to adopt a monitoring and adaptive management program. However, the Supreme Court found that if Skagit County was going to rely on monitoring and adaptive management to protect critical areas in agricultural lands, it needed to

¹ RCW 36.70A.480; RCW 90.58.610

² WAC 365-196-830(4)

³ WAC 365-195-905(6)

⁴ WAC 365-195-920.

establish benchmarks for monitoring.⁵ The Growth Management Hearings Boards have addressed the value of a monitoring and adaptive management program, and required it in certain circumstances as follows:

- Jefferson County was required to adopt a monitoring strategy that includes stricter development regulations that will be implemented at once if the less stringent protection standards prove to be inadequate to protect against seawater intrusion after considering the best available science and adopting less stringent protection standards that balance the need for protection of potable water supplies against the chilling effect of regulation against development.⁶
- San Juan County was required to adopt an adaptive management program recommended by an advisory group because limitations in its ground water model and the data assembled to date did not conclusively show that increased densities in the urban growth area would not result in saltwater intrusion into the water supply.⁷
- Island County's monitoring and adaptive management program for the Natural Resource Conservation Service best management practices that it adopted to regulate farming activities in critical areas was found to meet the scientific standards for such programs.⁸ The Board subsequently found that, because Island County was well along in establishing a baseline for certain wetland parameters, had adopted a system of protective buffers, and was following Ecology's recommendations on what kind of information to collect and report, an adaptive management and monitoring program with benchmarks and triggering mechanism that the Board found necessary in previous was not critical at this stage of the County's monitoring and adaptive management program.⁹
- Because the City of Anacortes adopted precautionary measures based on best available science to protect wetlands, the Board did not reach the issue of whether its adaptive management problem complies with RCW 36.70A.172.¹⁰

Voluntary Stewardship Program

Many counties have opted in to the Voluntary Stewardship Program (VSP) to protect critical areas from existing and ongoing agricultural activities. The VSP requires local watershed groups to develop a work plan to protect critical areas while maintaining the viability of agriculture in designated priority watersheds.¹¹ The work plan must include a monitoring and adaptive management program with goals and benchmarks for the protection and enhancement of critical areas. The Voluntary Stewardship Program is a non-regulatory alternative that does not rely on permits, but the principles of monitoring are the same and could be modified for VSP. Also, VSP monitoring is not the level of monitoring that is most of the focus of this chapter. This chapter encourages permit implementation monitoring, and VSP requires more of a form of validation monitoring. See Levels of Monitoring below for a description of each type of monitoring.

⁵ *Swinomish Indian Tribal Community. v. W. Washington Growth Mgmt. Hearings Board*, 161 Wn.2d 415 (2007)

⁶ *Olympic Environmental Council, et al. v. Jefferson County*, 01-2-0015 (Compliance Order, 12-4-02).

⁷ *Stephen F. Ludwig v. San Juan County*, Case No. 05-2-0019c (FDO, Compliance Order, April 19, 2006).

⁸ *WEAN v. Island County*, Case No. 98-2-0023c (2006 Order Finding Compliance of Critical Areas Protections in Rural Lands, September 1, 2006).

⁹ *WEAN/CARE v. Island County*, 08-2-0026c, FDO at 75 (Nov. 17, 2008).

¹⁰ *Evergreen Islands/Futurewise, et al v. Anacortes*, Case No. 05-2-0016, Compliance Order, at 5 (April 9, 2007).

¹¹ RCW 36.70A.720

Shoreline Management Rules

In approving a comprehensive SMP update, Ecology formally concludes that the SMP will result in “no net loss of ecological functions necessary to sustain shoreline natural resources.”¹² Monitoring can help a local government determine whether implementation of their Shoreline Master Program is achieving no net loss requirements as well as the policy goal to plan for and foster reasonable and appropriate uses. Monitoring can do this by demonstrating that permits are being issued consistent with the approved SMP requirements.

Ecology shoreline rules call on local governments to “monitor actions taken to implement the master program and shoreline conditions to facilitate appropriate updates of master program provisions to improve shoreline management over time.” The key “actions and conditions” are those associated with authorized developments. The shoreline rule also directs local governments to identify a process for periodically evaluating the cumulative effects of authorized development on shoreline conditions, which could involve a joint effort by local governments, state resource agencies, affected Indian tribes, and other parties.¹³ An example of a joint effort would be a local government working with Ecology and WDFW to employ High Resolution Change Detection data to track cumulative land use changes over time. The rules pledge that Ecology will “compile information concerning the effectiveness and efficiency of the guidelines and SMPs” and this may inform future updates to state rules.¹⁴

Levels of Monitoring

Monitoring does not have to be complicated. Simply choosing to monitor permit implementation can provide key information for permit process improvement. Generally speaking, there are three levels of monitoring discussed in this chapter:

Permit implementation monitoring asks: (1) whether the local government issued a permit consistent with the regulations; and (2) did the projects as built comply with all of the conditions noted in the permit. Data is about individual permits.

Effectiveness monitoring continues to ask the two permit implementation monitoring questions noted above over a longer period of time – are permits being issued that are consistent with all regulatory requirements and are projects continuing to meet permit requirements. Effectiveness monitoring can also address procedural improvements to improve efficiency of the permit system. The data is not about the individual permit, but whether and how to adaptively manage the system.

Validation monitoring asks general ecosystem questions about whether critical areas functions and values are being protected, and whether we are achieving no net loss of the ecosystem. Another term for this type of monitoring is status and trends monitoring. Validation

Monitoring does not have to be complicated. Simply choosing to monitor permit implementation can provide key information for permit process improvement.

¹² WAC 173-26-18 6(8)

¹³ WAC 173-26-201(2)(b); WAC 173-26-191(2)(a)(iii)(D)

¹⁴ WAC 173-26-171(3)(d) and WAC 173-26-201(2)(b)

monitoring requires extensive scientific research that is probably beyond the resources of most local governments.¹⁵

Levels of monitoring are most easily understood as a continuum. Implementation monitoring is easier, can be done in a short time frame, and can eventually lead to effectiveness monitoring. This document focuses primarily on these first two levels, because there is not always a bright line between implementation and effectiveness monitoring. Many jurisdictions do them together.

This chapter does not profile validation monitoring, which is typically conducted regionally or as part of a particular scientific study. One example is the Puget Sound Ecosystem Monitoring Program (PSEMP). PSEMP is a collaboration of state, federal, tribal, local government agencies, non-governmental organizations, watershed groups, business, academic researchers, local integrating organizations, and other private and volunteer groups and organizations. PSEMP has a number of work groups that monitor various populations and environmental conditions in Puget Sound, such as birds, mammals, salmon, and freshwater and marine waters. Over time, monitoring results will hopefully eventually be able to link observed changes in natural resources more closely with regulatory systems.

Steps in Developing a Monitoring and Adaptive Management Program

Step 1. Determine the Reasons for Monitoring

Clarify the reasons for monitoring and how monitoring results will inform land use or implementation decisions. A decision to develop a monitoring program should start with a review of core plans or policy documents. Has the local government adopted specific direction to conduct certain kinds of monitoring? If not, determine the area of focus by addressing community concerns. Reasons for monitoring could include:

- Are there specific critical areas that the jurisdiction is concerned are not adequately protected or that appear to have a high level of unpermitted activity?
- Are there complaints from the community that compliance or enforcement is not adequate or is perceived as unfair?
- Is there a desire to improve permit transparency, accountability and speed of permit processing?

Step 2. Establish Key Objectives and Study Questions

In order to be effective, a local government needs to establish clear objectives for the monitoring program, and develop questions that address those objectives. Is the objective to determine whether permits are being correctly issued in compliance with the regulations, and to refine the process if that objective is not being met? If so, an example of a clear objective might look like “permit provisions will be applied consistently and in compliance with the shoreline regulations”. Or, “applicants are complying with permit requirements”. The objectives will help determine which level of monitoring is required.

¹⁵ As noted above, the Voluntary Stewardship Program relies on a form of validation monitoring. Participation in the program is dependent upon funding, which is currently being provided by the state.

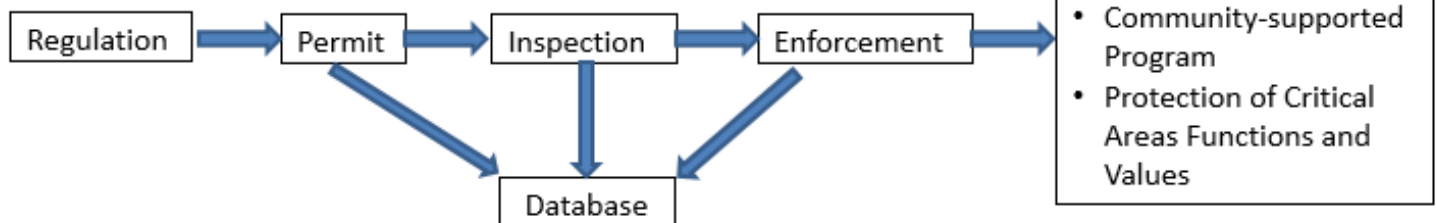
A local government should choose to monitor permit implementation if process improvement is the objective. Two entities are involved in implementation of a development permit, the local government and the applicant. The success or failure of permit implementation depends on the performance of both entities. Permit implementation monitoring collects information that could be used to improve the performance of the local government and the actions of the applicant.

Effectiveness monitoring looks at permit implementation over time. Monitoring the outcome of permitting and enforcement of critical areas regulations over time begins to answer the question of whether regulations are applied accurately and consistently, and whether permit conditions are maintained.

Monitoring of any of the stages of the permit process - permit, inspection, or enforcement of permit conditions and requirements - can be used to evaluate implementation and effectiveness of a critical areas regulatory program, depending on identified goals and resources. A database for gathering information on each stage is a critical tool for creating a complete system of accountability. Each stage is worth evaluating.

The success or failure of permit implementation depends on the performance of both the local government and the applicant.

A Complete System of Accountability



For each stage of the permit process, some basic questions are recommended. The questions would be the same for all critical areas that require protection (versus critical areas that require risk management, i.e., landslide hazard areas).

Stage in Critical Areas Permit/Review Process	Key study questions to evaluate permit implementation
Permit	<p>Did the local government issue a complete and fully compliant permit:</p> <ol style="list-style-type: none"> 1. Does the permit identify the critical area and what needs to be protected? 2. Does the permit follow the code? 3. If a variance was granted, is the reason for the variance clearly stated? 4. Does the permit provide all the specific information necessary for the applicant to be in compliance? 5. Does the permit clearly state and quantify the work being authorized? <p>Does the permit clearly state and quantify any critical areas impacts authorized by the permit decision?</p>
Inspection	<ol style="list-style-type: none"> 1. Pre Visit: Were all of the required technical reports, documentation, and information submitted? 2. Post-Visit: Did the applicant comply with the permit? This may require field measurements of permit provisions or requirements. If the permit requires quantifiable measures and the permit provisions are not measurable (quantitative), then the local government issued an incomplete permit.
Enforcement	<ol style="list-style-type: none"> 1. Are enforcement actions resulting in actions by the applicant that change conditions to comply with the permit and/or the regulations?

An example of the types of questions that might be asked for monitoring of frequently flooded areas based on this framework might include the following.

Permit: Are permits being properly documented per the building code?

- Were buildings required to be elevated properly?
- Has development been required to be properly flood vented?
- Were the utilities required to be properly elevated or flood proofed?
- For development in the Puget Sound Region, was compliance with the Puget Sound Biological Opinion for the NFIP documented in the permit via a Habitat Assessment or other means?

Inspection: Did the applicant comply with the permit?

- Have buildings been elevated properly?
- Has development been properly flood vented?
- Were the utilities properly elevated or flood proofed?
- For development in the Puget Sound Region, were Habitat Assessment requirements in permits followed?

Step 3. Design the Monitoring Program

There are a number of considerations for designing a monitoring program to ensure that the results are unbiased and actionable.

Design of the permit system: An initial consideration is the design of the permit system itself. For example, does it sort actions into discreet enough categories that they can be reasonably compared to one another?

An effective permit tracking system: Is the permit tracking system set up to collect the information that will be used to evaluate its effectiveness? An essential foundation for a monitoring program is a thorough and reliable way of tracking permits and permit conditions. It will be impossible to implement an effective monitoring system without such a system.

Ideally, the permit tracking system should be reviewed for whether it provides the information needed to answer the key monitoring questions. Each step of the permit process should be documented. A basic spreadsheet or database should be set up to track the permit process and provide data that answers these questions regarding permits, inspections and enforcement. Planning and enforcement staff should be trained to gather and enter data in a consistent manner.

An example of a very simple tracking system is an Excel spreadsheet used by the City of Kirkland. Kirkland monitors compliance with the Shoreline Master Program by tracking a number of permit requirements, such as shoreline setback, vegetation, stabilization, overwater coverage, lighting, and uses. An example based on Kirkland's spreadsheet is provided in Appendix A.

Other jurisdictions use database software available on the market, such as Snohomish County. Snohomish County tracks every step of the permit process in its database, including permit requirements and copies of documents.

The screenshot displays the AMANDA permit tracking database interface. At the top, there is a menu bar with options: Fee/Charge, Process, Process Select, Document, File, Inspection Req., Comment, and Attachment. Below this is a header section with fields for Permit Number (20 07 110588), Issued Date (Sep 4, 2007), Expires (Nov 13, 2009), and Property Address (12106 14TH STREET, NE, LAKE STEVENS). The form is divided into several sections: 'Property' (House, Pole, Street, Type, Location, Use Type, Unit), 'Indicators' (Violations, Properties, Permit, Child, Due), 'References' (By, Issued, Priority), 'Sub' (Single Family Res-Combo), 'Work' (None), 'Priority' (3), 'Description' (Temporary residence with attached garage), 'Conditions' (List of requirements), and 'Group' (Residential). The 'Conditions' section lists several requirements, including: 1. 25-ft snow load area, 2. All activity authorized by this permit shall comply with Chapters 30.034 and 30.108 SCC, 3. Engineer's stamp (P.E. #30771) (Issued), and 4. Permit fee (see fee schedule) (Paid) (amount).

Snohomish County permit tracking database, AMANDA

Sample size: Is the sample size large enough to be of value to monitor? Some jurisdictions issue a very limited number of permits for some activities. Knowing that you improperly issued 50 percent of a given type of permit doesn't help much if only two were issued during the monitoring period.

Random sample selection: If a jurisdiction issues a large number of permits each year, the monitoring question can be answered by reviewing some subset of the total number of permits for consistency in application of and compliance with the regulations. Implementation and effectiveness monitoring programs generally do not sample all permits, and in fact sampling all units may be inefficient unless only a small number of permits are issued each year¹⁶. Most permit monitoring programs focus on sampling a limited number of permits in order to make inference to all permits. In order to say something about all permits (those that you can sample and those you cannot), you need to employ some type of random selection process of all permits. A random selection of permits avoids bias. Randomization can be achieved by adding a random element to the selection process. The cardinal rule is to make inference to all permits - each individual permit must have an equal chance of being chosen to review.

An approach to choosing the sample permits you want to monitor could involve the following:

- What is your specific question you want answered?
- How are you defining your study population - i.e., how are you defining all permits? For example, all permits issued in 2014? Or, all building permits between 2010 and 2015?
- If you have large numbers of different development permit types, you may want to consider sampling by permit type – e.g. agriculture, forest practices, or single-family residence versus commercial or subdivision. (See the Snohomish County case study for an example of this).
- How will you add a randomization element to the sample of permits that you choose from all permits? For example, will you choose the first permit issued each month over the last 5 years?
- Which permit stages are to be monitored – permit, inspection or enforcement?
- What types and sources of data are to be collected - what exactly will be measured of all the things that could be measured? For example, permit conditions for land cover, water quality, shoreline conditions, etc.
- What sampling methodology will be used - what defined criteria will be used to review each permit type?
- Determine if there is baseline monitoring that can be used to measure results against. What will the jurisdiction compare ongoing results against? This is not always applicable to all monitoring types - it may not be applicable to permit implementation. But to understand progress, establishing a baseline and monitoring over time will be helpful.

Selection bias/access to information: Are there provisions in the program to allow equal access to sampling results? For example, if the program relies on willing landowners to grant access to their property to perform follow up inspections it may not produce reliable results. Unless post permit monitoring inspections are required by binding permit conditions or code requirements to compel access, the results will be biased toward access by willing landowners.

¹⁶ This is in the context of monitoring for permit implementation or effectiveness. If a jurisdiction is monitoring for mitigation compliance, prioritization of permits and/or monitoring of all permits will be more effective. See the Wetlands Compliance Mitigation and USACE Compliance Mitigation examples on pages 22 and 24.

Step 4. Determine the Monitoring Time Frame

In some cases, a monitoring and evaluation program is an ongoing effort, though there should be specific periods for reporting. If a monitoring effort has a defined period, how many years before a report is generated should be informed by the scope of the monitoring questions. In order to have sample sizes big enough to summarize, several years at a minimum should be monitored prior to reporting. For example, a county or city may want to prepare a report on a priority area every eight years to inform their periodic reviews under the Growth Management or Shoreline Management Acts.

Step 5. Evaluate Results and Make Recommendations

Local governments using a monitoring program should produce periodic reports that clearly answer the questions and objectives identified at the start of the program. The report should also identify any weaknesses in the program that could affect the quality of the results.

Examples of the kinds of results a monitoring effort can identify:

- i) Are accurate, complete and clear permits being issued?
- ii) Are critical area requirements being applied consistently in permits?
- iii) How is data summarized to provide useful feedback to interested stakeholders?

Results from a monitoring study should include recommendations for revising or adaptively managing the permit process to increase critical areas protection effectiveness or compliance with the regulatory requirements.

Local and State Case Studies of Implementation and Effectiveness Monitoring

A number of counties and state agencies have conducted monitoring of their critical areas programs. For many of them, the focus of monitoring was on both implementation and effectiveness. Implementation and effectiveness monitoring are very closely related, and often overlap. The case studies presented here provide some ideas for what a local government might choose to monitor, and the types of process improvement recommendations that could result from monitoring.

Snohomish County Monitoring and Adaptive Management Program

1. Determine the Reasons for Monitoring

The County adopted a critical area protection program in 2007 consisting of three principle tools: regulations, non-regulatory environmental programs, and a monitoring and adaptive management program. The monitoring plan outlined an approach for measuring indicators of critical area functions and values (for wetlands and FWHCAs), evaluating changes, and informing adaptive management decision-making regarding what adjustments may be needed to regulations or other County programs to protect critical area functions and values.

Snohomish County chose to include a monitoring element as a precautionary approach, taking into consideration growth management hearing board rulings regarding critical area protection and monitoring in other counties. The County developed an adaptive management approach for sections of their critical areas regulations. This effort began in 2008 in accordance with the requirements contained in the Monitoring and Adaptive Management provisions of Part 700 of Snohomish County Code¹⁷, the “no net loss” policies contained in the County’s comprehensive plan¹⁸, and the Growth Management Act. The monitoring program was primarily intended to monitor wetlands and fish and wildlife habitat conservation areas.

The second phase¹⁹ of the Monitoring and Adaptive Management Plan analyzed the effectiveness and implementation of permits and enforcement in protecting certain critical areas and their buffers ([Critical Areas Monitoring Report: Analysis of the Effectiveness and Implementation of Permitting and Enforcement to Protect Critical Areas in Snohomish County](#), December 2014). The study was to provide data on whether the County was meeting its no net loss goals, and to provide recommendations for improving the permit process to meet those goals. This case study focuses on this second phase of the program.

¹⁷ Part 700 of Chapter 30.62A of Snohomish County Code.

¹⁸ Natural Environment Policies: NE 3.B.10, NE 5.A.7© and NE 7.B.1.

¹⁹ The first phase investigated changes in land cover, shoreline conditions long major rivers and lakes at a county-wide scale that occurred between 2007 and 2009; and an assessment of select ecological indicators to evaluate the effectiveness of code provisions in protecting aquatic environments. The results were published in the [“Critical Areas and Shorelines Monitoring Status Report”](#) (SWM, March 2012). That report did not analyze the effectiveness or implementation of permitting or enforcement in any depth.

2. Establish Key Objectives and Study Questions

Snohomish County was interested in understanding how well their critical areas regulations were being implemented. The County uses a Critical Areas Site Plan (CASP) to identify all critical areas, buffers and restricted areas occurring in close proximity to the development area. The County's study looked at properties with a number of permit types subject to the critical areas regulations and clearing, grading and building enforcement cases.

Two of the key questions that the County asked were:

- What were the land cover change losses in wetlands, F&WHCA's and their buffers?
- Were there elements of the county's permit processing and tracking that contributed to the losses?

3. Design the Monitoring Program

For this phase of the County's program, the emphasis was on analyzing the effectiveness and implementation of permitting and enforcement using high resolution aerial photography at a parcel scale. Specific tasks were developed and investigated pertaining to the study questions:

- Evaluate land cover changes in critical areas and buffers on a random sample of 335 of the 839 properties with permits subject to the County's critical area regulations that have Critical Areas Site Plans (CASPs).
- Evaluate land cover changes in critical areas and buffers on all 900 of the clearing, grading and building code enforcement properties that were subject to the County's critical area regulations.
- Evaluate land cover changes in critical areas and buffers on all 49 of the properties with Class IV forest practices permits subject to the County's critical area regulations.
- Evaluate land cover changes in critical areas and buffers on a random sample of 300 of the 797 properties with permits subject to the County's critical area regulations that did not have critical areas that were documented.
- Evaluate the implementation and effectiveness of the monitoring procedures in the County's permit tracking system (AMANDA) used to track the presence and impacts of critical areas. Buffer and wetland area alteration options were used 485 times on 642 permit properties that had critical areas or buffers documented.

The County used land cover data from aerial photography to map critical areas as part of the permit process. It then used subsequent land cover data to determine whether critical area site plan requirements were met by permittees – area of critical area and buffer impacts.

The County also evaluated its permit process through its permit tracking system (AMANDA). Most critical areas reviews are documented in one or more AMANDA process lines that must be filled out or deleted before a permit can be issued. The County used AMANDA process line information to determine whether or not a permit review occurred, and why. This information was also used to determine whether critical areas reviews were being done consistently.

4. Determine the Monitoring Time Frame

The time frame for the study was November 1, 2007 through April 2013.

5. Evaluate Results and Make Recommendations

Some specific conclusions and recommendations related to the permit process for this report were:

- Critical area site plan (CASP) documentation was generally poor. There were problems with the accuracy of the scale, dimensions, structure locations, and locations of critical areas that create difficulties with the interpretation and application of CASP requirements by permittees.

Recommendations

- Provide clear written CASP document instructions for staff and applicants.
 - Develop aerial photo template with parcel boundaries to assist staff and applicants (permittees).
 - Develop consistent method of documenting recording CASPs in AMANDA.
- Apparent misunderstandings of the applicability and exemptions in the critical areas regulations and other development codes have led to inconsistencies – e.g. cases where critical areas and buffers were present that should have been identified and recorded on CASPs, and others where the critical areas or buffers have been impacted without any reviews by the Department of Planning and Development Services (PDS).

Recommendations

- Provide additional critical areas regulations training to staff on development permit thresholds, exemptions and applicability.
- Inconsistent and poor documentation in the permit tracking system AMANDA made it difficult to draw conclusions why many of the permits were not reviewed for critical areas, or what transpired in the reviews that did occur.

Recommendations

- Improve documentation in AMANDA of critical areas regulation review; e.g., consistent use of process lines, vesting dates.
- Critical areas regulation monitoring data collected in AMANDA documenting impacts and mitigation was inconsistently provided. Missing data and misunderstandings of how to input the data created unreliable information on critical area and buffer impacts that could not be used to summarize impact trends over time.

Recommendations

- Provide additional staff training to assure permit technicians, planners, engineers and environmental reviewers understand the data needs for critical areas regulation Monitoring.
- Review and refine data monitoring fields in AMANDA.

San Juan County Initiative

San Juan County looked at the effectiveness of their shoreline permit process. The San Juan Initiative, a partnership of the Puget Sound Partnership, Surfrider Foundation, and San Juan County formed in 2006 to determine what was working and what was not in protecting sensitive shoreline resources (See Amy H. Windrope, Timothy Quinn, Kurt L. Fresh, Andrea J. MacLennan & Joseph K. Gaydos (2016): [*Marine Shoreline Management – A 35-Year Evaluation of Outcomes in San Juan County, Washington*](#), US, Coastal Management). The goal of the Initiative was to provide a scientifically defensible, community-based process to evaluate and improve shoreline protection through citizen-supported changes to local and state policy.

1. Determine the Reasons for Monitoring

The Initiative conducted this study to determine whether shoreline management requirements were adequately protecting feeder bluffs, shoreline vegetation and forage fish beaches.

2. Establish Key Objectives and Study Questions

There were two components to the study: shoreline characterization and policy/permit review. The shoreline characterization asked the following questions:

- What construction had occurred along the shoreline that would likely have impacted shoreline vegetation, feeder bluffs or forage fish beaches?
- Was there a difference in on the ground outcomes from permitted or non-permitted structures and was there a difference in the impact of structures over time as shoreline regulations became more protective?

The evaluators also review of County permit databases for all records of overwater and shore armor permits after 1977. County permit review asked four questions:

- Was there a permit for the activity?
- Were sensitive resources identified (i.e., eelgrass beds, feeder bluffs, or forage fish beach spawning habitat) that could be negatively impacted by the activities?
- Did permits contain provisions to protect those sensitive resources? and
- Were dimensions of field-measured armor and overwater structures compliant with permit conditions

3. Design the Monitoring Program

The study describes how state and local policies were implemented in San Juan County, particularly how ecological outcomes relate to implementation challenges. Because counties must comply with the Growth Management Act and the Shoreline Management Act, the Initiative did not differentiate between the requirements of the two acts. Five elements of the initiative were reported on:

- Characterization of shoreline construction during three time periods reflecting three different regulatory regimes;
- Review of policy, regulations, and permitting processes;
- Evaluation of the affected publics' perceptions on shoreline protection;
- Documentation of actions taken by the San Juan County Council in 2008 in response to Initiative findings; and

- Measuring of changes in shoreline management in 2012 after implementation of Initiative recommendations in 2008.

4. Determine the Monitoring Time Frame

The evaluators reviewed the County permit databases for all records of overwater and shore armor permits in three time periods: pre-SMA, post-SMA and post- 1993 which reflected post –GMA changes. These time periods were chosen as they reflected significant changes in shoreline regulations. .

5. Evaluate Results and Make Recommendations

Among other findings, the study found issues with county implementation under the Shoreline Management Act (SMA), and with permit tracking. Permit process findings included:

- The county lacked basic maps showing the location of sensitive resources;
- Permit information was stored in three separate databases and was not easily searchable, and more recent permits were recorded on note cards; and
- Permits lacked essential information necessary to determine compliance.
- There was not significant difference between permitted and non-permitted shoreline structures impact (size, location)
- The permitting rate for shoreline armor, after 1977, was less than 10% (meaning that greater than 90% of the armor did not have a permit record) and for docks it was 78%.
- There was no enforcement mechanism nor inspections.
- Many community members believed the permitting and enforcement system to be arbitrary and unfair.

Recommendations at the local government and state levels:

- Establish clear and unambiguous decision criteria;
- Develop effective tracking databases and inspection programs; and
- Monitor for compliance and effectiveness.

Another critical component of adaptive management is adequate community engagement. The San Juan Initiative actively engaged shoreline property owners with neighborhood meetings. They also held lunches several times a year for builders, landscapers and contractors that work along the shoreline to understand their concerns and to develop solutions through collaboration.

Jefferson County Shoreline Permitting

1. Determine the Reasons for Monitoring

Jefferson County received a US Environmental Protection Agency grant as a subawardee through Clallam County. The purpose of the overall grant to Clallam and Jefferson Counties was to enhance shoreline protection through shoreline permitting. Under this grant, Clallam County developed policies and regulations pertaining to no net loss of shoreline functions during their Shoreline Master Program (SMP) update process, while Jefferson County assessed implementation of policies and regulations intended to achieve no net loss that had been incorporated into the updated SMP. This case study is based on the work completed by Jefferson County. As part of the grant, Jefferson County developed tools for implementing and monitoring the County's Shoreline Master Program (SMP). The grant allowed the County Department of Community Development (DCD) to evaluate permit activity under the County's updated SMP for use in future decision-making, and provided an opportunity to determine whether the County's SMP implementation was achieving no net loss of shoreline functions.

2. Establish Key Objectives and Study Questions

The study asked two basic questions:

- Are shoreline application proposals complying with the SMP regulations?
- Are shoreline permittees complying with the shoreline permit requirements?

The overall goal of the grant was to develop tools for implementing and monitoring adopted SMPs. The objectives were:

- Develop tools to assist planners reviewing shoreline applications;
- Identify and monitor indicators of shoreline function;
- Track and review permitting decisions;
- Conduct monitoring site visits to verify compliance with shoreline permit conditions and the approved site plan;
- Prepare written guidance and templates for applying no net loss indicators that could be used by other local jurisdictions; and
- Provide technical assistance to property owners and some local professionals, including realtors, contractors, and consultants.

3. Design the Monitoring Program

Technical Assistance: Jefferson County DCD used the grant to improve its technical assistance to shoreline property owners through guidance and outreach. To identify the most effective outreach strategy, DCD and the consulting team made 24 monitoring site visits during summer 2015. Monitoring site visits evaluated permit compliance with permit conditions and assessed no net loss indicators of shoreline function on a Shoreline Development Field Form. The 24 monitoring site visits represented approximately 50 percent of the shoreline applications that had been approved at that time, and the information collected from these site visits were then used to target outreach activities in the County.

Compliance Monitoring/Enforcement: To ensure that shoreline applications were consistent with all applicable shoreline regulations, DCD prepared a No Net Loss Checklist for use in planner review. Checklists prepared for each application recorded the application number, application information, project information, and shoreline permitting information. The checklist was used by the planner

reviewing the shoreline application to confirm that all supporting information was submitted and that the proposal complied with all applicable SMP regulations. Completed checklists were entered into a database that tracked all shoreline permits issued under the updated SMP.

Monitoring site visits were made to properties in which the permitted work had either started or had recently been completed. As noted above, monitoring information was recorded on a Shoreline Development Field Form. This form evaluated the pre-development conditions and the post-development conditions for each applicable indicator of shoreline function. The results of this assessment would indicate whether or not permitted projects were affecting shoreline functions. The form was also used to record whether or not the implemented project was consistent with approved plans. The data collected during monitoring site visits were also entered into a database that tracked the following for each shoreline permit:

- No Net Loss Checklist Information: application number, landowner name, project address, parcel number, type of land ownership, development type, development summary description, shore type, waterbody name, shoreline reach, and shoreline designation;
- NNL Indicators: identified each indicator by shore type, pre-development conditions, and post-development conditions;
- Monitoring Site Visit Information: describe any variations from permit, describe mitigation (if required), identify whether or not application was for restoration, describe development implications for NNL, and general comments.

Shoreline Permit Review: Shoreline applications received by DCD and compiled in the database were also used to track shoreline permitting and no net loss indicators, and to evaluate this activity relative to future shoreline permitting decisions in Jefferson County.

4. Determine the Monitoring Time Frame

The updated Jefferson County SMP went into effect in February 2014, and all shoreline permits issued between the SMP effective date and December 2016 (grant end date) were tracked in a database. During this timeframe, Jefferson County received 142 shoreline applications. County planners completed 118 No Net Loss Checklists, issued 105 shoreline permits, and monitored 64 projects for compliance with permit conditions and the approved site plan.

5. Evaluate Results and Make Recommendations

A compilation of the monitoring results of permitted shoreline projects showed that the majority of the applicants complied with permit conditions. The indicators of shoreline function used by the county suggest that permitted projects are not likely to be negatively affecting shoreline ecological processes. These results indicate that county permitting is generally effective at maintaining baseline shoreline conditions. There were a few cases where there was (1) insufficient or inadequate information submitted by the applicant, (2) insufficient or inadequate review of the application by the project planner, or (3) lack of compliance with permit condition by the applicant (or hired workers).

Monitoring showed that, for the most part, the no net loss provisions of the SMP are being met and that the indicators evaluated demonstrate that baseline shoreline ecological conditions are not being negatively affected by permitting activities. That said, monitoring did indicate that additional or better enforcement may be needed in some cases to achieve full compliance with SMP requirements. A list of

key issues below identifies some actions that the county could take to better enforce the permitting process for those who come in for applications.

- Issue: Shoreline approval for repair of existing modifications/uses where repair to original condition results in impacts to ecological functions.
Potential options:
 - Encourage planners to carefully review maintenance and repair exemptions relative to the exemption requirements.
 - Encourage planners to pull old files (when available) from archiving to better compare what was previously approved with the current proposal.
 - Encourage planners to make more site visits to review existing site conditions relative to the proposed work shown on submitted site plans.
- Issue: Unauthorized expansion of existing modifications/uses that commonly occurs through maintenance/repair require shoreline exemption approval.
Potential options:
 - Actions to address this key issue are similar to those listed above.
 - New mapper tool with better imagery may assist planners with review of on-site conditions.
- Issue: Loss of canopy cover and vegetation beyond approved clearing limits.
Potential options:
 - Require all site plans to show limits of clearing.
 - Require all site plans to show trees to be removed during construction.
 - Require submittal of a stormwater worksheet that states how much clearing is proposed with each shoreline application. Require all applications to include photographs of project area.
 - Encourage better communication between DCD planner and Jefferson County Environmental Health sanitarian (who ultimately issues septic permits).
 - Add permit conditions requiring applicants to install orange construction barrier fencing at clearing limits and require a site visit to review the location of the fencing prior to beginning any earthwork.
 - Provide additional training to septic designers and septic installers (to increase consistency between county-approved plan sheets and site development activities).
 - Consider using performance bonds for permitted projects to encourage greater compliance with permit conditions.
- Issue: Mitigation approved without maintenance/monitoring requirements.
Potential options:
 - Encourage planners and staff biologist to review mitigation plans more thoroughly.
 - During next SMP update, provide regulatory requirements for preparing 'No Net Loss' reports; add specific reporting criteria that must be addressed to show that the proposal complies with all regulatory requirements and ensure that no net loss of shoreline ecological functions is met for all permitted projects.
- Issue: Permitted building setbacks and other allowed modifications adjacent to coastal geologically hazardous areas, with immediate or future risk to shoreline ecological functions.

DCD does not have geologists on staff and the department currently relies on information in geotechnical reports prepared by geologists (or engineers) with a state stamp to make permitting decisions. Work completed during the course of this grant indicates that, in some cases, the reports may need further evaluation by an independent third-party expert prior to issuing a shoreline permit.

Potential options:

- Send reports out for third-party review, as needed (mapper tool guidance provided by the consulting team will assist DCD in determining if third-party review may be appropriate).
- Encourage DCD planners to provide handouts pertaining to slope stability and vegetation retention to property owners to increase understanding of potential hazards to human health and safety as well as the shoreline environment.

Thurston County/WDFW Shoreline Master Program

In 2015, Thurston County Long Range Planning and Washington Department of Fish and Wildlife (WDFW) utilized a National Estuary Program (NEP) grant to quantify shoreline vegetation and land cover change and evaluate land use permit compliance within Thurston County's shoreline regulatory jurisdiction.

1. Determine the Reasons for Monitoring

Thurston County used WDFW's High Resolution Change Detection (HRCd) data to monitor compliance and effectiveness within the County's Shoreline Master Program (SMP) jurisdiction. This project developed a protocol manual for using HRCd that could be used by any jurisdiction within the Puget Sound region.

2. Establish Key Objectives and Study Questions

The project was designed as a pilot to answer several related sets of questions for both Thurston County and WDFW.

For Thurston County:

- What land cover change is happening within designated marine SMP areas? What change is happening throughout the Deschutes River watershed (WRIA 13)?
- How does the change known by Thurston County permit records compare with detected changes by the HRCd?
- What changes, if any, can be made to the land use permits or process that could increase the relevancy or effectiveness in utilizing the HRCd in compliance monitoring?

For WDFW:

- How well can the HRCd detect changes relative to land use permit records?
- Using Thurston County's marine SMP area as an example test area, what land cover changes are happening not captured by the HRCd?
- With the development of a HRCd user manual, can the HRCd be effectively utilized by other entities in the absence of further assistance by WDFW?

3. Design the Monitoring Program

The exercise was designed to quantify the increase in impervious surfaces and decrease in canopy within Thurston County's marine SMP area. The project consisted of five phases:

Phase 1: Initial SMP Change Analysis: WDFW Habitat program staff and Thurston County's long range planning staff intersected the HRCD dataset with Thurston County's marine SMP area and parcel data for the three time periods of HRCD available (2006 to 2009, 2009 to 2011, and 2011 to 2013) within ArcGIS. With known areas of change found, those locations were compared with land use permit records from Thurston County. The intent was to find locations of observed change via HRCD without any permit record. This wasn't meant to be a direct means of enforcement, but an initial analysis of undocumented change that could provide a pared-down set of locations for further investigation. This phase would also produce land cover change statistics, including area of change and counts of land cover change events, by SMP designation and parcel.

Phase 2: Learning What the HRCD Misses: Using the SMP marine area in Thurston County, WDFW staff manually looked for land cover changes not captured by the HRCD. This was intended to help WDFW understand rates of omission in the HRCD using an area under some developmental pressure with relatively small changes. This was done by manually finding and digitizing changes using the NAIP imagery that were not captured by the HRCD dataset.

Phase 3: Developing a Standardized Method for Utilizing the HRCD: A major goal of this project was to develop support materials for others to utilize the HRCD to answer their land use management questions in the absence of in-person WDFW staff assistance. Using the lessons learned in Phase 1 & 2, WDFW and Thurston County cooperated on composing a manual for a recommended method to applying the HRCD to a specific land use management question. This phase also included the development of a web-based service for users to download the HRCD dataset, detail the methodology of HRCD construction, find contact information, and more. This is located at www.pshrcd.com.

Phase 4: Testing the Manual through Remaining SMP Analysis in WRIA 13: Using only the HRCD dataset and the manual produced in Phase 3, Thurston County planning staff developed an application and utilized the HRCD successfully. For their application, they examined the land cover change within the remaining SMP areas within WRIA 13 for the three time periods of HRCD data available.

Phase 5: Training and Outreach: With the lessons learned and products derived from Phases 1 through 4 of the project, WDFW and Thurston County staff, working in conjunction with the Coastal Training Program, developed a workshop for planning staff with other state agencies, local governments, and some non-governmental organizations. WDFW also used this opportunity to train internal staff on the benefits, limitations, and uses of HRCD.

4. Determine the Monitoring Time Frame

The evaluators analyzed land cover change within Thurston County's SMP area between 2006 and 2013. At the time of the project (2015), three iterations of the HRCD dataset were available for analysis for the study area, 2006 to 2009, 2009 to 2011, and 2011 to 2013. Permit records were pulled that corresponded to these timeframes.

5. Evaluate Results and Make Recommendations

Currently, the only way the County has knowledge of unpermitted activity is through public complaints (i.e. neighbor complaining about the construction of something). This is an unreliable way to assess compliance. The county found that HRCD data, while not perfect, can be used to assess compliance and find above-ground unpermitted activity.

Overall, the data showed that less than half of one percent (0.39%) of the marine SMP area had change identified by HRCD from 2006 to 2013.²⁰ Approximately two-thirds of this was due to canopy loss, with one-third due to new impervious surfaces. The project did not find any developments that were out of compliance, though it did find unpermitted events in each of the time periods (e.g., tree removal).

The Thurston HRCD project demonstrated the utility of the HRCD in analyzing the patterns of land cover change in a specific geographic area of concern. However, Thurston County found that measuring compliance with HRCD data was “tedious and difficult” because of the capacity of the county’s current AMANDA database. In many cases land use permits did not include enough information to determine conclusively that a parcel with observed change via HRCD was out of compliance or determine that the parcel had a permit record during the study’s timeframe in question.

Improvements in methods of development permit tracking could improve the capacity to use HRCD data in pairing with permitting to track compliance. This result was not entirely unexpected, as the HRCD can serve as a starting point and help local governments find otherwise unknown changes, understand patterns, and investigate unexpected changes more closely. Furthermore, the HRCD proved to be a relatively simple dataset to use. With the development of standard application methods, Thurston County was able to complete an analysis of their remaining SMP area without any further assistance from WDFW.

²⁰ The land use change excludes over 25 acres of change occurring in the Billy Frank Jr Nisqually National Wildlife Refuge, because the loss of vegetation there was due to a saltmarsh restoration project.

City of Kirkland Shoreline Tracking

The City of Kirkland tracks shoreline permits and exemptions, building permits, and enhancement projects to ensure compliance with Shoreline Master Program permit conditions and maintain an ongoing record of shoreline changes.

1. Determine the Reasons for Monitoring

Kirkland adopted a new Shoreline Master Program (SMP) in August 2010 that covers ~ 10 miles of Lake Washington shoreline. The tracking program is intended to track how the program is achieving “no net loss of ecological functions.”

2. Establish Key Objectives and Study Questions

The key question is how SMP requirements are being met. The city maintains checklists for key indicators of ecological function. For example:

- Shoreline stabilization: How many linear feet of hard shoreline have been added, removed, repaired, or altered? Was a geotechnical report and needs assessment required. How much “soft stabilization” was added, removed, was used to replace hard structures?
- Shore setbacks: how many square feet of structures have been removed from shore setbacks through mitigation?
- Overwater structures: How many new piers or docks added, how much new grating has been installed?
- Vegetation: how many trees removed, retained, planted for mitigation? How many square feet of lawn have been replaced with native plants?
Have In-water enhancement projects: are spawning gravels added? Have structures been removed?

3. Design the Monitoring Program

The City fills in simple spreadsheets for each indicator area through the permit review. The City confirms final project numbers at final inspection, reviews “as-built” plans, and ensures any recorded agreements are placed on title.

4. Determine the Monitoring Time Frame

This is an on-going permit tracking system that began in August 2010 with adoption of the City’s new SMP.

5. Evaluate Results and Make Recommendations

The City’s tracking to date has revealed overall improvements in function accompany development and redevelopment. An example of measurable results from tracking spreadsheets from 8/2010 -3/2016:

- 4800 SF of structures removed from shoreline setback
- 74 Native Trees Planted (20 Permits)
- 4455 SF Lawn removed (7 Permits)

- 11,200 SF of Native Vegetation Planted along shoreline (18 Permits)
- 143 LF of Bulkhead Removed (4 Permits)
- 17,218 SF of Solid Pier Decking Removed
- 19,608 SF Grated Pier surface installed
- 1513 SF of Overwater Structures Removed
- 233 SF of in water Structures Removed
- 6000 SF Spawning Gravel Installed (6 parcels)
- 46 Old Piles Removed

Washington State Department of Fish and Wildlife Hydraulic Project Approvals

The Washington State Department of Fish and Wildlife (WDFW) is monitoring its hydraulic project approval (HPA) program. WDFW's [Year-One Progress Report: Implementation and Effectiveness Monitoring of Hydraulic Projects](#), February 2015, addresses implementation monitoring for process improvement and effectiveness monitoring for desired habitat conditions.

1. Determine the Reasons for Monitoring

WDFW is monitoring its HPA program to help ensure that hydraulic projects are compliant with current rules, and that current rules effectively protect fish habitats. The main purpose of monitoring is to provide information that, over time, helps the Department improve both implementation of the hydraulic code rules and the effectiveness of those rules at protecting fish life.

2. Establish Key Objectives and Study Questions

The focus of WDFW's implementation monitoring is on improvement of the performance of both WDFW as the permittor, and permittees. In 2013 WDFW limited the scope of its monitoring to new and replacement culverts on fish-bearing streams in western Washington and new and replacement marine shoreline armoring in Puget Sound. The study asked four key questions:

- Did the permittor issue a complete permit, that is, one that contains provisions and/or project plans for all critical structural dimensions?
- Did the permit or application materials contain the information needed to determine consistency with Chapter 220-660 WAC?
- Did the permittee comply with the permit?
- Does the completed hydraulic project comply with the hydraulic code rules?

3. Design the Monitoring Program

In 2013 WDFW conducted implementation monitoring on 54 culverts in Western Washington. Implementation monitoring focused on four critical structural dimensions: culvert width at streambed, culvert slope, countersunk depth at outlet, and culvert length. The Department also estimated bankfull width at each site. The 2013 monitoring attempted to answer two questions about the HPA permitting process: 1) Did permittees comply with their HPA permits; and 2) Did hydraulic structures comply with hydraulic code rules?

4. Determine Monitoring Time Frame

The monitoring study is ongoing. The one-year progress report was issued in February 2015, and results from 2014 and 2015 will be available in July 2017.

5. Evaluate Results and Make Recommendations

Key findings from monitoring culverts were:

- The most important parameter for culvert design is channel width. Yet, it appears that many permittees do not know what they should be measuring or how they should be measuring it.
- A significant proportion of HPA permits lacked information necessary to determine whether the culvert's dimensions will be consistent with rules and/or design guidelines.
- Basic information essential to the HPA process were difficult to find in the permit, plans, Joint Aquatic Resources Permit Application (JARPA), and other materials submitted by the applicant.
- The permittee compliance rate for the four critical structural dimensions was 76%.
- The permit accordance rate – number of permits that are in accordance with the hydraulic code rules – varied greatly and was found to be unreliable. The lack of a widely accepted, standard procedure for measuring channel width is the likely cause of the variance. There was a discrepancy between the rate of permittee compliance with the HPA permit (76%) and the permit accordance rate (50%). Accordance with the rules is the responsibility of the permittor issuing the permit. The size of this discrepancy may be largely due to different methods for estimating channel width as noted above.

Recommendations and follow up from the report:

- Language referring to stream channel width should be identical in hydraulic code rules, permit provisions, and culvert design guidelines.
- Standard procedures for estimating mean bankfull width and channel slope should be developed by WDFW and widely distributed for use by HPA applicants. The WDFW Habitat Program Science Division is currently developing these procedures.
- Key information – such as bankfull width, channel slope, culvert design type, and culvert dimensions – should be reported and easy to find. We recommend a mandatory form for all HPA applications to be completed by the applicant. Standard permit provisions effective July 1, 2015, now require this information.
- Bankfull width measurements submitted by HPA applicants should be checked by WDFW or some other credible organization. Habitat biologists are now encouraged to confirm all information contained in the plans for fish passage culverts.
- For no-slope culverts, channel slope submitted by HPA applicants should be checked by WDFW or some other credible organization. Habitat biologists are now encouraged to confirm channel all information contained in the plans for fish passage culverts.
- Standard permit provisions for culverts used by WDFW habitat biologists should be reviewed for consistency with hydraulic code rules and design guidelines. Standard permit provisions effective July 1, 2015 were reviewed for consistency with Chapter 220-660 WAC.

State and Federal Mitigation Monitoring Programs

If local governments are also interested in compliance monitoring, two examples from Ecology and the U.S. Army Corps of Engineers are provided.

Washington State Department of Ecology Wetland Regulatory Effectiveness Program

The Washington State Department of Ecology (Ecology) performs compliance reviews of compensatory wetland mitigation projects (i.e., when wetlands are replaced to mitigate for unavoidable fill) to ensure compliance with wetland permit conditions.

1. Reasons for Monitoring Compliance

The goal of compliance is to improve the success rate of wetland mitigation projects; ensure that wetland mitigation is implemented according to permit conditions; and to work collaboratively with applicants to achieve compliance and success at individual sites. At each site the goal is to identify problems with wetland mitigation sites early, and determine corrective actions and adaptive management necessary to ensure a successful mitigation site.

The compliance program was developed after a series of evaluations between 2001 and 2003 found mitigation projects were not consistently replacing wetland acreage and functions, and compliance tracking and follow-up was incomplete and sporadic.

2. Key Program Questions/Objectives

The wetland mitigation compliance program's priority is wetland mitigation projects where Ecology issued a Section 401 Water Quality Certification or Administrative Order for wetland impacts. Key questions include:

- Are compensatory mitigation sites meeting goals, objectives and performance standards?
- Are sites being maintained? Are site conditions improving over time after initial construction?
- Are sites meeting acreage requirements for wetland and buffer?

3. Monitoring Program Design

The program is ongoing. From 2004 – 2016, the program tracked 220 projects with permittee-responsible mitigation requirements, and 60 projects using alternative migration such as mitigation bank credits, advance mitigation, or in-lieu fees.

Ecology provides recommendations in formal follow-up letters from site inspections; reviews reports (as-built and monitoring reports); tracks deadlines; and ensures reports have complete information per Ecology's Order.

The program includes site inspections at several stages: "As-built" stage, after the mitigation project is first completed; midway through the monitoring period; and at project closeout (typically ten years). At closeout, the site inspection informs whether the site has met its goals, objectives, and performance standards.

4. Monitoring Program Time Frame

This is an on-going program that began in 2006. Ecology prepared reports to the Washington State Office of Financial Management on two basic performance measures:

- Within 2 years of permit issuance, determine the status of 100% of wetland mitigation projects.
- For at least 75% of wetland mitigation projects, conduct a site inspection within 18 months of receipt of the “as-built” report (i.e., a site visit should be conducted soon after the project is complete).

5. Evaluation of Results and Recommendations

The wetland mitigation compliance team has identified numerous benefits to date, including:

- Ecology finds an increase in voluntary compliance because applicants know there is oversight (less time needed checking up on every project)
- Key to the improvements is the ability to work with applicants early to address issues that would result in site failure. It is essential to have the consultant or applicant on-site during site reviews. Early follow-up is important.
- Mitigation plans need to have well thought out goals, objectives, performance standards, monitoring, and contingency plans to begin with. However, evaluations must also be flexible and acknowledge that sites are not always going to turn out as planned.
- Coordination between regulatory agencies including the U.S. Army Corps of Engineers and local governments is vital.
- The evaluation program created a feedback loop to improve permitting decisions – lessons learned during site visits can be applied to review of current mitigation proposals. The results of the compliance program have improved consistency and predictability through better standardized requirements (401 conditions, requirements for plans)
- The program has helped target where improvements are needed in guidance and training.

United States Army Corps of Engineers Mitigation Compliance Program

The Washington State Department of Ecology (Ecology) performs compliance reviews of compensatory wetland mitigation projects (i.e., when wetlands are replaced to mitigate for unavoidable fill) to ensure compliance with wetland permit conditions.

1. Reasons for Monitoring Compliance

There are multiple goals for this program, including

- Protect human health and safety by ensuring permit conditions are being met.
- To work towards no net loss of aquatic function, wetland acreage, or river/stream miles.
- To level the playing field by ensuring that everyone complies with their respective permit conditions equally.
- To improve the permitting process by closing the feedback loop between what impacts and mitigation are permitted and how effective and efficient that mitigation is over time at replacing lost functions and values.

2. Key Program Questions/Objectives

Compensatory mitigation for Section 10 permits might include riparian planting, bulkhead removal, pocket beach creation, removal of old pilings, other structures, or debris, and more. Compensatory mitigation for Section 404 permits includes wetland or stream creation, restoration, enhancement, and/or preservation. This program looks at permittee-responsible mitigation. Compliance for mitigation banks and in-lieu fee programs is handled separately. The three key questions are:

- Was the mitigation installed according to the approved drawings and plans?
- Is the mitigation meeting performance standards? If not, what contingency actions must occur to bring the site into compliance with performance standards?
- Has the required documentation been submitted, such as proof of site protection mechanisms?

3. Compliance Monitoring Program Design

With hundreds of projects permitted each year that require compensatory mitigation, Corps staff prioritizes projects for compliance reviews. There are a variety of factors that go into prioritization, including project size, complexity, location, and history, the rareness of the resource impacted, and others. Corps staff coordinate with the Washington State Department of Ecology Wetland Regulatory Effectiveness Program staff, as time allows, to share information and avoid overlap of efforts. Corps staff reviews and approves compliance documents such as as-built reports, monitoring reports, and proof of site protection mechanisms such as deed recordings and protective easements. Corps staff also conduct compliance inspection site visits. Recommendations are provided in emails and letters following reviews and inspections.

4. Monitoring Program Time Frame

Compliance has been ongoing since the inception of the Regulatory Program. However, wetland and stream mitigation started in the mid-1980s, and in 2008. With the implementation of the Federal Mitigation Rule, compliance efforts have increased.

5. Evaluation of Results and Recommendations

The Corps' compliance program has varied over the years. The Corps has hired contractors or term staff to complete compliance reviews but our compliance program mainly is the responsibility of our Project Managers. We do not have a permanent compliance team that evaluates the compliance program's effectiveness or develops recommendations. Instead, as workload allows, project managers meet together and discuss compliance issues, failures, and successes, and internal protocols are developed to improve the effectiveness of the compliance program.

Washington Department of Fish and Wildlife High Resolution Change Detection

WDFW has produced a spatial dataset (GIS layer), High Resolution Change Detection, that shows where change has occurred over a two-year period.



WDFW High Resolution Change Detection

The minimum size of change is 0.05 acres. The data has been developed for Puget Sound as follows:

- 2006 – 2009
- 2009 – 2011
- 2011 – 2013

WDFW is currently seeking funding for 2013 – 2015. For more information, go to WDFW's web site at [High Resolution Aerial Imagery Change Detection](#).

Washington Department of Natural Resources LIDAR

The Washington State Legislature mandated that the Department of Natural Resources (DNR), Washington Geological Survey collect, analyze, and publicly distribute detailed information about our state's geology using the best available technology – Lidar. The main focus of this new push for lidar collection is to map landslides, but there are innumerable additional benefits and applications of this data both inside and outside of the field of geology. For more information about DNR's Lidar program, go to the [Lidar web site](#).

Department of Ecology Wetland Change Analysis

Ecology's Wetland Change Analysis project developed a method for more accurately mapping wetlands. The resulting wetland maps will be used as a wetlands status and trends inventory to help determine if the goal of No Net Loss of wetlands is being achieved in Washington State. For more information on wetlands change analysis and the Wetland Inventory Map, go to [Ecology's Wetland Change Analysis web site](#).

Department of Ecology Environmental Information Management

Ecology maintains an Environmental Information Management (EIM) database. The database contains data collected by Ecology and affiliates such as local governments and cleanup sites. Users can submit and access discrete and time-series environmental data for air, water, soil, sediment, aquatic animals, and plants at the [EIM web site](#).

Ecology and Federal Emergency Management Agency Risk MAP

Ecology partners with the Federal Emergency Management Agency (FEMA) to run the Risk Mapping, Assessment and Planning (Risk MAP) program in Washington. This program delivers high-quality data, risk assessment tools and mitigation expertise to communities, tribes, and State and local agencies in their efforts to reduce the risks from natural hazards including floods, earthquakes, wildfire and landslides. Washington information can be accessed at the Ecology [Risk MAP web site](#).

Conclusions

Monitoring and adaptive management is a logical next step to critical areas protection after years of developing and implementing critical areas and shoreline regulations. All interest groups have a common interest in critical areas permit processes that are transparent, fair and effective. Permit applicants want to be treated fairly. Advocacy groups, whether from an environmental or private property rights perspective, want to know if the process is being applied consistently. Consultants want the opportunity to improve the quality and speed of permits. Tribes asserting their treaty rights are at risk from inadequate land use management want to know if the permits are being applied effectively.

We can only know if we are achieving no net loss through examining implementation over time. We should proceed with humility, recognizing that there is always uncertainty in the face of the complexity of both natural science and human nature. Curiosity should be our guide – we should be open to trying different approaches. We should respect the perspectives of all involved. The natural resources that we manage have many layers, so we must make sure to build partnerships to take advantage of our different roles and expertise.

A feedback loop provides the information a local government needs to determine whether permit requirements are being written consistent with regulations, whether process improvement is needed, or whether staff need training. We hope the information provided in this chapter will help local and state efforts to assess and improve critical areas and shoreline protection permit processes.

DRAFT

APPENDIX A
SAMPLE SPREADSHEET FOR MONITORING

The City of Kirkland developed an excel spreadsheet for entering monitoring data on shoreline management permits. This appendix provides an example of how permit data might be monitored based on the spreadsheet that Kirkland developed. Screenshots of each tab are provided.

Address numbers have been deleted and names changed from the original spreadsheet to protect private property information.

HOW TO ENTER DATA IN THE SHORELINE TRACKING SPREADSHEET

1. Start on the “DEVELOPMENT OR ACTION” tab.

[illegible]

2. Enter your project address, permit or date, applicant name, and initials in required fields. These will carry over to the other tabs (ex. Shoreline Setback, Stabilization, Lighting...).
3. Work across from left to right, starting with "DEVELOPMENT OR ACTION" and fill in all applicable fields. Certain projects will only have data for one or two tabs, others will input data on all tabs.

[illegible]

4. When complete with final inspections or review of project, highlight the row.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	PLEASE READ TUTORIAL TAB FIRST																
2																	
3																	
4	ADDRESS	PERMIT OR DATE	APPLICANT NAME	PLANNER	PROJECT DESCRIPTION	SDP EXEMPT (Y/N)	SF	MF	COMM OFFICE/INST	PUBLIC PARK	PIER SF	PIER MF	PUBLIC PIER/ BOARDWALK	MARINA	SHORELINE STABILIZATION	FILL	LSM
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG	NSFR/W/SUB DEMO	Y	X										PERMIT EXPIRED
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG	PIER REPAIR	Y	X				X						
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG	NSFR/W/SUB DEMO	Y	X								X		
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG	NSFR	Y	X										
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG	SF ADD/ALT	Y	X										
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG	PIER REPAIR	Y	X			X							PIER DECKING REPLACEMENT
11	XXXX SW 166th	BLD11-00350, SHR	JAMES	CPG	BOATHOUSE REPAIR	Y	X										REPAIR NO CHANGE IN COVERAGE
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG	PIER REPAIR	Y	X			X							
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG	NEW BOATLIFT	N	X										
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG	PIER REPAIR	Y	X			X							
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG	PIER REPAIR	Y	X			X							
16	XXX Lake Ave West	BLD11-00462	SIMS	STL	NSFR W/ SUB DEMO	N	X			X							
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG	PIER REPAIR	Y	X			X							
18	Marina Park Pier		City	TJS	PIER REPAIR	Y							x				
19																	
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"DEVELOPMENT OR ACTION" TAB

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	PLEASE READ TUTORIAL TAB FIRST														
2															
3					SHORELINE ENVIRONMENT					PUBLIC ACCESS TRAILS (LINEAR FT)		VIEW CORRIDORS (LINEAR WIDTH, FT)		OTHER DESCRIPTION	
4	ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANNER	R-L	R-M/H	UM	UR	N						
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG											
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG	R-L(A)					0		0			
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG	R-L(A)					0		0			
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG	R-L(E)					0		0			
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG	R-L(G)					0		0			
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG	R-L(E)					0		0			
11	XXXX SW 166th	BLD11-00350	JAMES	CPG	R-L(E)					0		0			
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG	R-L(G)					0		0			
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG	R-L(A)										
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG	R-L(A)					0		0			
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG	R-L(I)					0		0			
16	XXX Lake Ave West	BLD11-00462	SIMS	STL	R-L					0		0			
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG	R-L(B)					0		0			
18	Marina Park Pier	0	City	TJS			UM								
19		0	0	0	0										
20		0	0	0	0										
21		0	0	0	0										
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41		0	0	0	0										
42		0	0	0	0										
	TUTORIAL	DEVELOPMENT OR ACTION			PROJECT DETAILS & MISC.					SHORELINE SETBACK		VEGETATION		STABILIZATION	

"PROJECT DETAILS & MISC" TAB

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	PLEASE READ TUTORIAL TAB FIRST																	
2																		
3					REMOVAL OF TOTAL IMPERVIOUS SURFACE (SQ FT +/-)	STRUCTURE SETBACK/AVERAGE FT. (DEPTH & WIDTH)						SETBACK REDUCTION		ACCESSORY STRUCTURE IF REMOVAL OF STRUCTURES IN SETBACK (SQ FT) (SUCH AS SHEDS, BOAT HOUSE, RESIDENCE)		DESCRIBE MITIGATION FOR 83,550.5 B.S	NOT	
4	ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANN ER		OLD SHORELINE SETBACK	NEW SHORELINE SETBACK	PARCEL WIDTH (FT) LINEAR SHORELINE	NEW SHORELINE SETBACK AREA (SQ FT)	CHANGE FROM EXISTING (FT)	CHANGE IN SHORELINE SETBACK AREA (SQ FT)	USE OF 83,550.5 b.s (10%) SQ FT OF AREA	Y/ N	IF YES: HOW MUCH? (FT)	REDUCTI ON OPTION(S)			
5	XXXX Lake Washington Blvd	BLD10-0050	DOE	CPG					0	0	0							
6	XXX Lake Ave West	BLD10-0031	SMITH	CPG	0				0	0	0		N					
7	XXXX Lake Ave West	BLD11-0018	JONES	CPG		43	22	118	2596	-21	-2478		Y	21	1,5,8,9			
8	XXXXX Holmes Point Road	BLD11-0043	JOHNSON	CPG	-500	0	70	100	7000	70	7000		Y	10	2	500		
9	XXXXX Champagne Pt Rd S	BLD11-0053	TAYLOR	CPG		39.6	31.6	71	2243.6	-8	-568		Y	8	9			
10	XXXX NE 154th St	BLD11-0035	JACKSON	CPG					0	0	0							
11	XXXX SW 166th	BLD11-0035	JAMES	CPG					0	0	0							
12	XXXXX Champagne Pt Rd N	MIS11-0000	DAWES	CPG	0	0	0	0	0	0	0		0	N				
13	XXX Lake Ave West	SHR11-0000	BAILEY	CPG					0	0	0							
14	XXX Lake Ave West	BLD11-0010	BRONSON	CPG	0	0	0	0	0	0	0							
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG					0	0	0							
16	XXX Lake Ave West	BLD11-0046	SIMS	STL	-497	21.08	29.08	90	2617.2	8	720	N/A	N					
17	XXXX Rose Point Lane	BLD11-0068	RIVERA	CPG					0	0	0							
18	Marina Park Pier	0	City	TJS					0	0	0							
19		0	0	0	0													
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51		0	0	0	0													

“SHORELINE SETBACK” TAB

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	PLEASE READ TUTORIAL TAB FIRST															
2																
3					NATIVE VEGETATION (SQ FT) WITHIN SHORELINE SETBACK										MITIGATION FOR TREE REMOVAL	MITIGATION FOR 83.550.5.B.5 (10%) SQ FT
4	ADDRESS	PERMIT# OR DATE	APPLICANT NAME	PLANNER	# OF TREES REMOVED	# TREES RETAINED	# OF TREES PLANTED	SHRUBS	GROUND COVER	LAWN	REMOVAL OF LAWN	REMOVAL OF ORNAMENTAL	REMOVAL OF INVASIVE	AQUATIC VEGETATION		
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG												
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG	0		0	0	0	0	0	0	0	0		
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG		1	3	500	300	809	720	280	0	65		
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG	0		7	600	400	2280	0	0	0	0		
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG	0		3	365	170	950	535	0	0	0		
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG												
11	XXXX SW 166th	BLD11-00350	JAMES	CPG												
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG	0		0	0	0	0	0	0	0	0		
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG												
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG	0		0	0	0	0	0	0	0	0		
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG												
16	XXX Lake Ave West	BLD11-00462	SIMS	STL		6	6	90	632	400	990	0	0	0	Y	N
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG												
18	Marina Park Pier	exemption	City	TJS												
19	0	0	0	0												
20	0	0	0	0												
21	0	0	0	0												
22	0	0	0	0												
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“VEGETATION” TAB

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	PLEASE READ TUTORIAL TAB FIRST													
2														
3					HARD SHORELINE STABILIZATION (LINEAR FT)						SOFT STABILIZATION (LINEAR FT)			
4	ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANNER	ADDED	REMOVED	REPAIRED	ALTERED (STEP BACK)	GEOTECH REPORT (Y/N)	NEEDS ASSESSMENT (Y/N)	ADDED	REMOVED	REPLACED HARD	ALTERED
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG										
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG	0	0	0	0	N	N	0	0	0	0
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG	0	48.5	0	0	Y	N	0	0	48.5	0
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG										
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG										
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG										
11	XXXX SW 166th	BLD11-00350	JAMES	CPG										
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG	0	0	0	0	N	N	0	0	0	0
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG										
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG	0	0	0	0	N	N	0	0	0	0
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG										
16	XXX Lake Ave West	BLD11-00462	SIMS	STL	0	0	0	0	Y	N	0	0	0	0
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG										

"STABILIZATION" TAB

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	PLEASE READ TUTORIAL TAB FIRST															
2																
3					OVERWATER COVERAGE: PIERS, DOCKS, BOATLIFTS, CANOPIES (SQ FT UNLESS OTHERWISE NOTED)											
4	ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANNER	NEW	CHANGE IN SIZE OF REPLACEMENT	CHANGE IN HEIGHT (FT)	AMOUNT OF GRATING	AMOUNT OF SOLID BOARDS REMOVED	LENGTH (FT)	WIDTH IN FIRST 30' (FT)	SKIRTING REMOVED (LINEAR FT)	OVER WATER STRUCTURES REMOVED	ADMINISTRATIVE APPROVAL (Y/N)	BOAT LIFT (Y/N)	JOINT PIER (Y/N)
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG												
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG	NO	0	0	475	475	70	5.85	0			N	N
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG												
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG	NO											
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG	NO											
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG	NO	0	0	254	254		5.41	0				
11	XXXX SW 166th	BLD11-00350	JAMES	CPG												
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG	NO	0	0	240	240	65	8	0	0	N	N	N
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG												
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG	NO	0	0	600	600	100	6	0	0	N	N	N
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG	NO	0	0	240	240	34	6	144	0		N	N
16	XXX Lake Ave West	BLD11-00462	SIMS	STL												
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG	NO	0	0	742	742	117	6	0	1	N		
18	Marina Park Pier	0	City	TJS			0	2600	2600	236	11	0	0	N	N	N

“OVERWATER COVERAGE” TAB

	A	B	C	D	E	F	G	H
1	PLEASE READ TUTORIAL TAB FIRST							
2								
3					LIGHTING (# OF FIXTURES) 83.470			
4	ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANNER	EXISTING UNBAFFLED/ UNSHIELDED	EXISTING BAFFLED/ SHIELDED	NEW BAFFLED/ SHIELDED	OLD REMOVED
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG				
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG				
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG	4	0		4
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG	0	0		0
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG				
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG				
11	XXXX SW 166th	BLD11-00350,	JAMES	CPG				
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG				
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG				
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG				
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG				
16	XXX Lake Ave West	BLD11-00462	SIMS	STL				
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG				
18	Marina Park Pier	0	City	TJS				

◀ ▶ ...	PROJECT DETAILS & MISC.	SHORELINE SETBACK	VEGETATION	STABILIZATION	OVERWATER COVERAGE	LIGHTING	USES
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"LIGHTING" TAB

	A	B	C	D	E	F	G	H	I
1	PLEASE READ TUTORIAL TAB FIRST								
2									
3					USES (IF NO, LEAVE BLANK)				
4	ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANNER	NON-CONFORMING REMOVED	NEW OR EXPANDED WATER DEPENDENT	NEW OR EXPANDED WATER ORIENTED	CUP	VARIANCE
5	XXXX Lake Washington Blvd	BLD10-00500	DOE	CPG					
6	XXX Lake Ave West	BLD10-00314	SMITH	CPG					
7	XXXX Lake Ave West	BLD11-00181	JONES	CPG	YES				
8	XXXXX Holmes Point Road	BLD11-00431	JOHNSON	CPG					
9	XXXXX Champagne Pt Rd SE	BLD11-00534	TAYLOR	CPG					
10	XXXX NE 154th St	BLD11-00351	JACKSON	CPG					
11	XXXX SW 166th	BLD11-00350	JAMES	CPG					
12	XXXXX Champagne Pt Rd NW	MIS11-00006	DAWES	CPG					
13	XXX Lake Ave West	SHR11-00004	BAILEY	CPG					
14	XXX Lake Ave West	BLD11-00109	BRONSON	CPG					
15	XXXXX Holmes Point Road	1/10/2012	GLASS	CPG					
16	XXX Lake Ave West	BLD11-00462	SIMS	STL					
17	XXXX Rose Point Lane	BLD11-00689	RIVERA	CPG					
18	Marina Park Pier	0	City	TJS					

◀
▶
...
PROJECT DETAILS & MISC.
SHORELINE SETBACK
VEGETATION
STABILIZATION
OVERWATER COVERAGE
LIGHTING
USES

“USES” TAB