

Kitsap County Department of Community Development
Toward a Natural Resources Asset Management Plan for Kitsap County
 Workshop Agenda

Date: February 28, 2018

Location: Kitsap County Public Works, 507 Austin Avenue, Port Orchard WA 98366

Meeting Room: 3rd Floor Public Works Conference Room

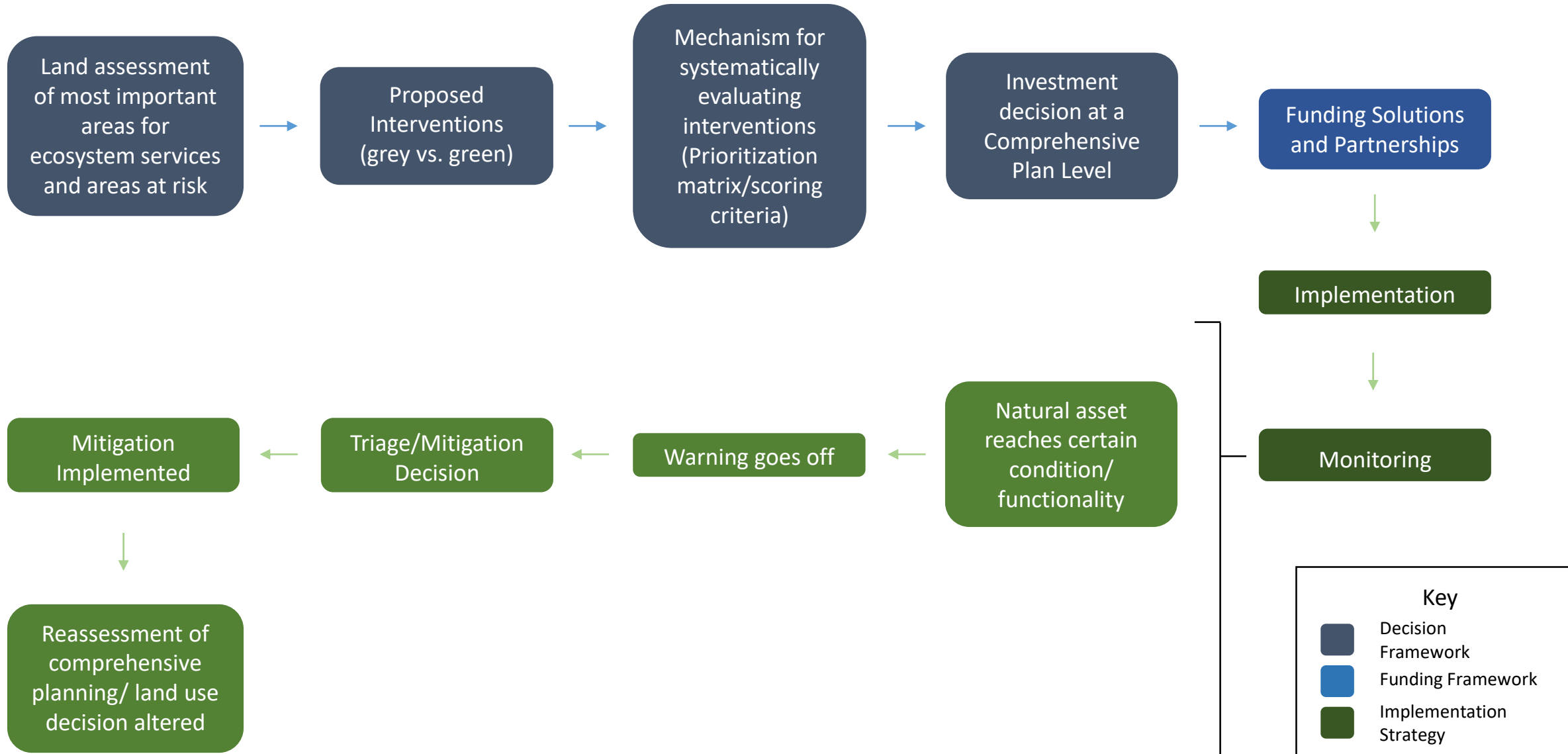
Goals:

1. Develop a shared understanding and common vision for implementation of a Natural Resource Asset Management Program in Kitsap County
2. Explore the ecosystem services that the program should prioritize, scale, and preferred levels of service

9:00 AM	<p>Welcome and Updates - Elizabeth McManus, Facilitator, Ross Strategic & Dave Ward, Kitsap County, & Mindy Roberts, WEC</p> <ul style="list-style-type: none"> • Acknowledge memo feedback • NTA update from Dave Ward
9:15 AM	<p>Shared Values and Vision for Success in a Natural Resources Management Program - Melia Paguirigan, Washington Environmental Council</p> <ul style="list-style-type: none"> • What we've heard so far • Walk through NRAMP Vision and Processes • Additions and thoughts: <ul style="list-style-type: none"> ○ Suquamish Tribe ○ Port Gamble S'Klallam Tribe ○ Kitsap County <p><i>Material: NRAMP Vision and Processes Visual Aid</i></p>
9:35 AM	<p>Suquamish Tribe Priorities and Thoughts on What would Make a Successful Natural Resources Management Program – Tom Ostrom, Port Gamble S'Klallam Tribe</p>
9:50 AM	<p>An Example: City of Shoreline Stormwater Asset Management Program – Melia Paguirigan, Washington Environmental Council</p> <ul style="list-style-type: none"> • Example of mechanisms for systematically evaluating grey versus green interventions <p><i>Material: City of Shoreline Summary & Prioritization Matrix</i></p>
10:10 AM	<p>Levels of Service, Scale, and Data Assessment Options – All, Max Webster, Washington Environmental Council</p> <ul style="list-style-type: none"> • Share options for land assessment of most important areas for ecosystem services and areas at risk - Max Webster, Washington Environmental Council

	<ul style="list-style-type: none"> • What ecosystem services and indicators that address shared needs and interests should the Program prioritize? • How to define adequate services at the watershed level? • What are the challenges and opportunities working at this scale? What are the implications for planning? What are implications for individual land use decisions? <p><i>Materials: GIS at Work: Creating an Ecosystem Services Index to Assess Landscape Performance</i> <i>We can take a 10 minute break during this time</i></p>
11:20 AM	<p>What We Want to Achieve Through Implementation - Elizabeth McManus, Facilitator, Ross Strategic, All</p> <ul style="list-style-type: none"> • Develop a shared understanding of how to implement a Natural Resource Asset Management Program and how to incorporate the program into county planning and individual land use decisions • Discuss tools for memorializing the Program and planning for the long term • Discuss options to ensure two-way communication between the County and jurisdictions/Tribes across the Program's development and implementation phases
12:30 PM	<p>Funding Solutions and Partnerships – Max Webster and Lisa Remlinger, Washington Environmental Council</p> <ul style="list-style-type: none"> • Discuss creative options for creating long term funding <p><i>Materials: Funding and Financing Sources for Payments for Ecosystem Services</i></p>
12:50 PM	<p>Next Steps, Planning Workshop 3, April 12, 2019</p>
1:00 PM	<p>Adjourn</p>

Kitsap County Natural Resources Asset Management Program: Vision and Processes Visual Aid



The City of Shoreline Stormwater Asset Management Framework

In a nutshell

The Surface Water Utility of the City of Shoreline Public Works Department incorporated an asset management and level of service framework into their Comprehensive Surface Water Master Plan. The framework was used to optimize life-cycle costs of assets and meet customer needs through a level of service model. It allowed the utility to educate the City Council for making informed investment decisions.

Background of the Natural Asset Management Framework

Between 2009 and 2016 the City completed their Drainage Basin Plans (Basin Plans). The Basin Plans showed residents' expectations of stormwater systems and identified different activities and projects to address the needs of the system. 116 projects totaling \$50 million dollars were identified.

An asset management framework enabled the city to prioritize projects and develop a financial plan. 105 of the 116 original projects were prioritized using the Level of Service criteria (Table 1). Rates and funding was based on the prioritized projects and included in the Comprehensive Surface Water Management Master Plan.

Defining a Level of service

The city worked with Brown and Caldwell and FCS Group to conduct surveys and open houses to capture user expectations for defining a desired level of service. Key findings from the web based survey showed users ranked "Manage public health, safety and environmental risks from impaired water quality, flooding, and failed infrastructure" as the highest priority, and "Engage in transparent communication through public education and outreach" as their lowest priority. The survey also found that general concerns about stormwater services were relatively evenly distributed between flooding, water quality/pollution, and impacts to streams and wetlands.

Funding and Implementation

The Surface Water Utility implements the Comprehensive Surface Water Management Plan. The asset management framework within the plan was meant to inform investment decisions by educating residents and the City Council about system needs and ensuring proper allocation and acquisition of funding for construction, operations and long term maintenance of the stormwater system. The Utility is also solely responsible for funding all program and capital costs associated with the projects. The primary source of funding is the Surface Water Management (SWM) fee, which is billed to King County property tax statement. The SWM Fee is based on the amount of "hard surfaces" on a property. The Utility presented three rate options "minimum," "proactive," and "optimum," to the City Council and they approved the "proactive" management strategy. A web-based survey also found that 49.18% of residents approved of the "optimum" rate.¹ The total operating costs in addition to current operating cost is \$2.3 million; the capital cost for the 6-year plan is \$11.1 million and the total capital cost is \$51.9 million.²

¹ <https://foresternetwork.com/stormwater-magazine/sw-water/sw-stormwater-management/asset-management/>

² <http://www.shorelinewa.gov/home/showdocument?id=41309>

Table 1. Prioritization matrix for the City of Shoreline Storm water Asset Management Program

Level of Service (LOS)		Prioritization System				Maximum Scores												
LOS	Expectations	Targets	Evaluation Criteria	Scoring														
				0	1	2												
A- Surface Water Impacts	Manage public health, safety and environmental risks from impaired water quality, flooding, and failed infrastructure	A. Flooding and Erosion No verifiable health and safety issues or environmental damage caused by flooding or erosion outside of an accepted risk tolerance	<p>A.1 System Capacity Addresses capacity needs</p> <p>A.2 Hazard Reduction Addresses an apparent (observed and recurring) public safety hazard</p> <p>A.3 Erosion Control Addresses erosion problems related to public stormwater conveyance</p> <p>B. Water Quality Improve the quality of stormwater discharged to impaired receiving waters to mitigate environmental damage</p> <p>B.1 Stormwater Treatment Add stormwater treatment in accordance with applicable regulatory standards.</p> <p>B.2 Low Impact Development (LID) Supports or encourages LID principles.</p> <p>B.3 Impaired Water Impacts Provides cost effective opportunity for stormwater treatment</p> <p>C.1 Habitat Protection Protects aquatic habitat from degradation to minimize the loss of ecosystem function and diversity.</p> <p>C.2 Habitat Restoration Restores ecosystem function and diversity, is cost-effective, and provides multiple benefits.</p> <p>D.1 System Preservation (Asset Management) Supports reliable service by maximizing the useful life of assets and reducing life cycle costs.</p> <p>D.2 Operations and Maintenance Reduces and/or avoids operations, maintenance and administrative costs</p> <p>D.3 Financial Planning Supports sound financial planning and/or helps the utility qualify for alternative funding sources.</p> <p>D.4 Future growth Supports future population and/or economic growth.</p> <p>D.5 Customer service Improves customer service and addresses observed public issues</p> <p>E.1 Workforce Increases/retains the capabilities of City staff.</p> <p>F.1 Communication and Education Provides opportunities to enhance public understanding of surface water issues and/or utility services.</p> <p>G.1. Regulatory Addresses current and future regulatory requirements.</p>	No direct benefit	Provides moderate benefit	Provides substantial benefit												
				80	80	320												
				B- Equitable Service	Provide consistent, equitable standards of service to the citizens of Shoreline at a reasonable cost, within rates and budget	D. Responsible Stewardship Provide equitable services through cost-effective planning and management of utility assets, sound fiscal planning, and efficient operations.	<p>D.2 Operations and Maintenance Reduces and/or avoids operations, maintenance and administrative costs</p> <p>D.3 Financial Planning Supports sound financial planning and/or helps the utility qualify for alternative funding sources.</p> <p>D.4 Future growth Supports future population and/or economic growth.</p> <p>D.5 Customer service Improves customer service and addresses observed public issues</p> <p>E.1 Workforce Increases/retains the capabilities of City staff.</p> <p>F.1 Communication and Education Provides opportunities to enhance public understanding of surface water issues and/or utility services.</p> <p>G.1. Regulatory Addresses current and future regulatory requirements.</p>	No direct benefit	Provides moderate benefit	Provides substantial benefit								
								20	20	480								
								C- Communication and Outreach	Engage in transparent communication through public education and outreach	E. Internal Resources Manage internal resources to provide adequate resources, training, and support; maintain workforce diversity, and retain institutional knowledge.	<p>D.2 Operations and Maintenance Reduces and/or avoids operations, maintenance and administrative costs</p> <p>D.3 Financial Planning Supports sound financial planning and/or helps the utility qualify for alternative funding sources.</p> <p>D.4 Future growth Supports future population and/or economic growth.</p> <p>D.5 Customer service Improves customer service and addresses observed public issues</p> <p>E.1 Workforce Increases/retains the capabilities of City staff.</p> <p>F.1 Communication and Education Provides opportunities to enhance public understanding of surface water issues and/or utility services.</p> <p>G.1. Regulatory Addresses current and future regulatory requirements.</p>	No direct benefit	Provides moderate benefit	Provides substantial benefit				
												20	20	40				
												D- Regulatory Impacts	Comply with regulatory requirements for the urban drainage system	G. Regulatory Compliance Meet state and federal regulatory requirements for stormwater utilities.	<p>D.2 Operations and Maintenance Reduces and/or avoids operations, maintenance and administrative costs</p> <p>D.3 Financial Planning Supports sound financial planning and/or helps the utility qualify for alternative funding sources.</p> <p>D.4 Future growth Supports future population and/or economic growth.</p> <p>D.5 Customer service Improves customer service and addresses observed public issues</p> <p>E.1 Workforce Increases/retains the capabilities of City staff.</p> <p>F.1 Communication and Education Provides opportunities to enhance public understanding of surface water issues and/or utility services.</p> <p>G.1. Regulatory Addresses current and future regulatory requirements.</p>	No direct benefit	Provides moderate benefit	Provides substantial benefit
																200	200	400

Maximum Score: 1480

DRAFT FOR DISCUSSION PURPOSES ONLY

GIS at Work: Creating an Ecosystem Services Index to Assess Natural Resources Performance

Background

This paper walks through a test case of what it looks like to create such an index within the Chico Creek Watershed. Additional examples of various other types of indexes created using GIS tools and descriptions of their utility can be found in the previous memo from the January 7th workshop in the section titled, ‘Aggregating Land Use Characteristics to Determine Levels of Service for Terrestrial Ecosystems.’

Goals for an Ecosystem Service Index

At any scale, it is difficult to assess the impact that an activity will have when it comes to the overall function of an ecosystem without complex, regular and costly eco-hydrological modeling. This can be especially challenging when working within the timeframe of an individual building permit or forest practices application.

An ecosystem service index attempts to address this challenge by mapping and aggregating landscape characteristics as a proxy for ecosystem service function. In this way, the land manager can reasonably determine what areas of the landscape are doing the best and what areas are doing the worst at providing the greatest ecosystem service benefit. Once these factors are mapped on the landscape, decision makers can make assessments about the expected impacts of certain activities on ecosystem health as well as plan project work to improve ecosystem service function in those areas that are currently at risk or operating below minimally acceptable levels.

Parameters: Low Cost, Easy to Use, Replicable and Adaptive

An Ecosystem Service Index uses an aggregation of raster-based GIS data to make a prediction about ecosystem function on the landscape. For the purposes of this project, it is important that this data be free and easily accessible by users. It is also important that the data is reliable and that there is reasonable certainty that it will continue to be there and be updated into the future. For these reasons, this assessment relies on spatial data produced by the Multi-Resolution Land Characteristic Consortium (MRLCC). The MRLCC comprises a group of federal agencies that produces land cover data for a wide variety of modeling applications, with regular data updates every five years. Critically, all data created by the MRLCC is free and open source.

For this test, the following parameters were used to see how they could be interpreted to predict what areas of the landscape were best for producing a wide variety of ecosystem service values. This test case represents an adapted model for assessing ecosystem services for water quantity and quality and habitat based on a similar tool created by the World Resources Institute.

Parameter	Source	Guidance	Ranking
Percent Canopy Cover	National Land Cover Database	Millennium Ecosystem Assessment (United Nations)	% Canopy 80-100 =5 % Canopy 60-80 =4 % Canopy 40-60 =3

			% Canopy 20-40 =2 % Canopy 00-20=1
Percent Slope	U.S. Geological Service Slope Map	Kitsap County Critical Areas Ordinance & World Resources Institute	Slopes >30% =5 Slopes 15-30% =4 Slopes <15% =3
Vegetation Height	U.S. Forest Service & Department of Interior-LANDFIRE	Site Class Estimates for Western WA & Millennium Ecosystem Assessment (United Nations)	Height > 50m =5 Height 25-50m =4 Height 10-25m =3 Height 5-10m =2 Height <5m =1
Percent Canopy Cover within 200ft Riparian area	National Land Cover Database	<i>Natural Infrastructure: Investing in Forested Landscapes for Source Water Protection in the United States, 2013</i> (World Resources Institute)	% Canopy 80-100 =5 % Canopy 60-80 =4 % Canopy 40-60 =3 % Canopy 20-40 =2 % Canopy 00-20=1

**Current data is on hand to also incorporate soil characteristics as well as vegetation cover type. Those factors were omitted from this test due to time constraints only and will be incorporated into a more complete model. Additionally, an update to all MRLCC data is expected early this year.*

Example: Chico Creek Test

The study area for this test consisted of the Chico Creek Watershed. After gathering the data, a modeling process was followed in the ArcGIS environment to convert existing spatial data for forest canopy cover, slope, vegetation height and riparian forest into comparable data to create ecosystem service index. This process assumed that these factors were the most important for determining the presence of a wide variety of ecosystem services including: wildlife habitat, watershed protection and carbon sequestration.



Starting map with initial land cover data, wetlands and watercourses. The Chico Creek watershed boundary is outlined in black.

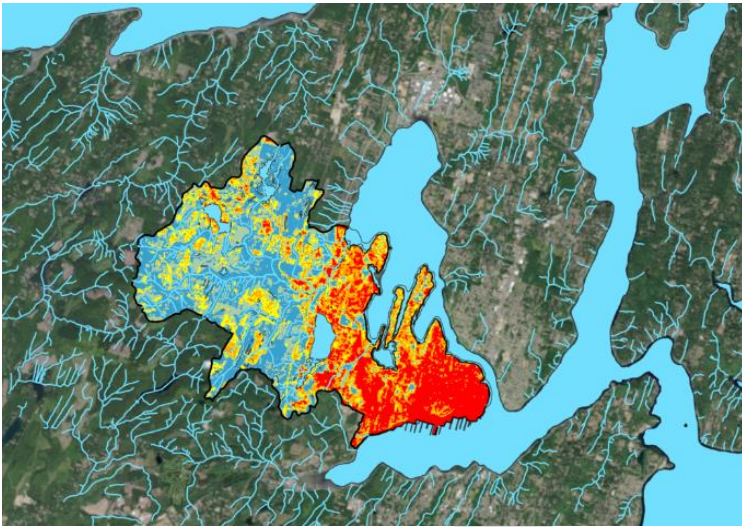
A simplified version of this modeling process is described by figure x. This process covers data gathering, reclassifying raster data values and aggregating those values to create the index. The value behind each pixel for the parameters described in the previous section were reclassified from their land cover classification to reflect the ranking guidance that was determined from a literature review. Those values were then averaged together using the ArcGIS cell statistics function. This produced a test ecosystem



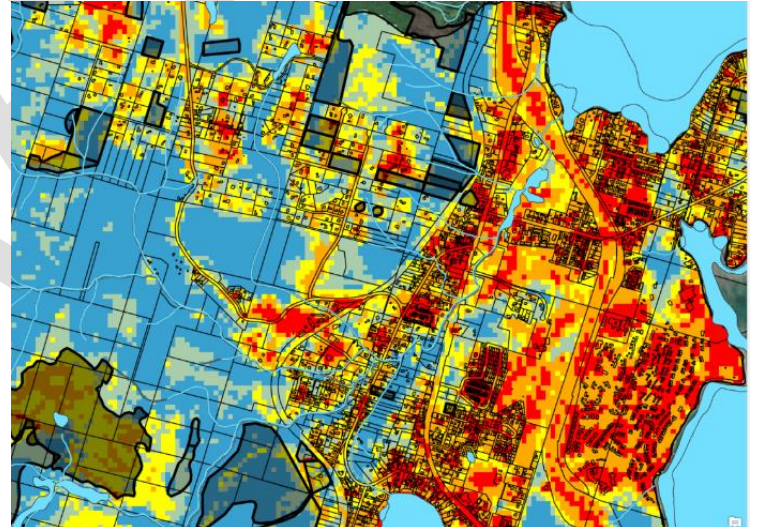
service index on a scale of 1-5, with high performing sites averaging a value close to 5 and lower performing sites averaging a value lower than 3. These values were then color coded on the map so that higher performing sites are shown in blue and green, middle performing sites showing in yellow and low performing sites showing in orange and red.

With this ecosystem service index in place, it is then possible to layer on additional vector based data and make interpretations about the impact of certain activities on landscape function. For this test application, these data layers included: forest practices applications, building footprints, tax parcels, forestland ownership, roads and forest health impacts.

Vector Processing Data	Source
National Wetlands Inventory (Hydro)	U.S. Fish and Wildlife
Chico Creek Watershed Boundary (Watershed)	U.S.G.S
Kitsap County Outline (County)	Kitsap County



The result of the modeling framework to assess ecosystem service function on the landscape. High performing areas are shown in blue, low performing areas are shown in red.



Adding additional interpretive data to the map, it is possible to see potential impacts to ecosystem service function at a parcel scale. Addition to parcel tax boundaries, this map also shows roads, building footprints and forest practices (grey with areas with solid black outline).

Vector Interpretation Data	Source
Forest Practices Applications (Past 25 years)	WA Department of Natural Resources
Parcels	Kitsap County
Forest Landownership	WA Department of Natural Resources
Building Footprints	Kitsap County
Roads	TIGER/U.S. Census
Forest Health Impacts	U.S. Forest Service

Additional Applications

Just as a raster-based index can be used to determine current ecosystem service function on a landscape, complimentary indexes can also be put together to reflect other conditions important for decision making.

For example, using similar data, an index could be created for possible or reference ecosystem service conditions to see potential opportunities for ecosystem service potential across the landscape or within a given watershed.

Potential Data for Ecosystem Service Reference Index

- **Biological Setting (Historic Ecosystem Type, LANDFIRE)**
- **Slope & Soil (USGS)**
- **50 or 100 year Site Class for Forests (Converted from Vector Data, DNR)**

Additionally, an index could also be created to evaluate risks on the landscape or expected future impacts to ecosystem service function.

Potential Data for Ecosystem Service Risk Index

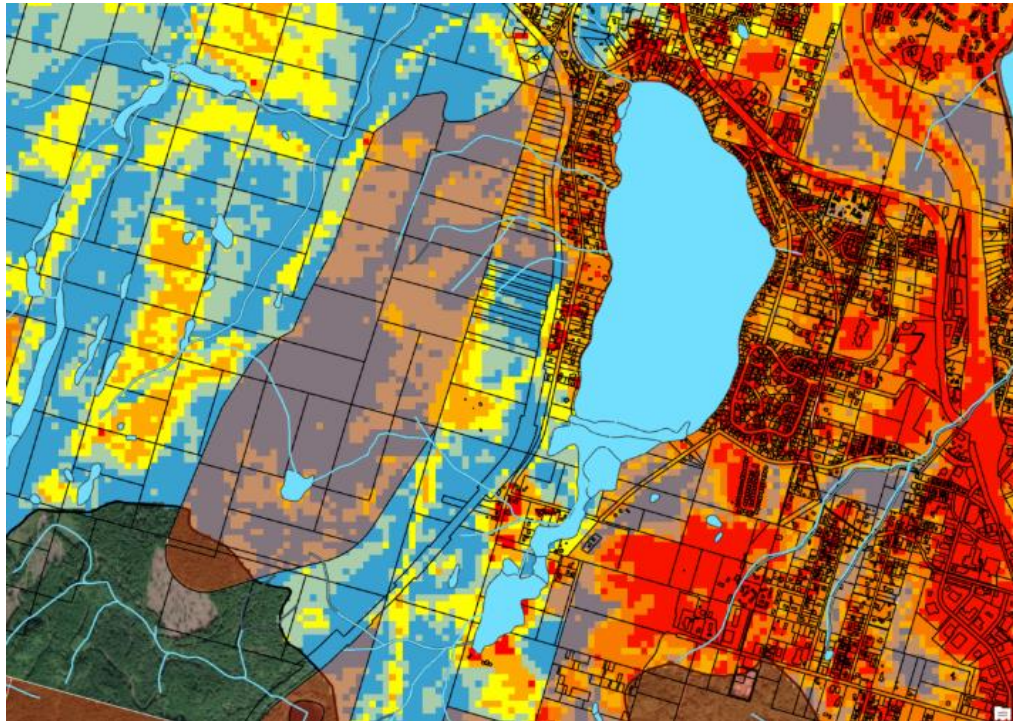
- **Forest Health Impacts (U.S. Forest Service)**
- **Slope & Soil (USGS)**
- **Population Growth Projections (Commerce)**
- **Logging History (Converted from Vector Data, DNR)**

These represent a few suggestions. The available attributes within the data sets propose many different options that can be tailored to the types of issues that the land manager is working to address.

Integration with Asset Management System (Cartegraph)

An ecosystem service index is capable of being integrated into an existing vector based asset management software system such as Cartegraph. An example of what this integration might look like follows. Based upon the results of the ecosystem service index, the map below shows a high performing area which intersects with the urban growth boundary. This area could therefore be interpreted as being at decreasing ecosystem services. In order to limit these risks, the land manager could target this area for an intervention such as the purchase of a conservation easement. That intervention could then be listed and monitored within the cartegraph interface.

Similarly, low performing riparian areas could be targeted for restoration activities, urban areas lacking in tree canopy could be targeted for tree plantings or forest practices could be adjusted to balance the needs of a specific watershed in meeting its ecosystem service goals. Over time, these interventions could be tracked in Cartegraph and would be reflected in future spatial data, increasing the mappable function of ecosystem services overtime.



The Urban Growth Area (UGA) is applied as a red overlay on the ecosystem service index and other areas. An area of relatively high ecosystem service function within the UGA. This land is privately held and currently unprotected. Within an asset management framework, this area could be targeted for a conservation easement or other incentive-based approach.

Funding and Financing Sources for Payments for Ecosystem Services

Forest Legacy Program

Overview: Provides federal grant funding for the Department of Natural Resources to purchase conservation easements on forestland at risk of being developed in order to protect water quality, fish and wildlife habitat, cultural resources and recreation.

Administrator: U.S. Forest Service

Eligibility: Local Governments and Non-profit organizations in partnership with the Department of Natural Resources

More information: <https://www.dnr.wa.gov/leaving-legacy-forests>

The Community Forest and Open Space Conservation Program

Overview: Full fee title acquisition is required. Conservation easements are not eligible. The program pays up to 50% of the project costs and requires a 50% non-federal match. Lands acquired through the program are actively managed in accordance with a community forest plan to provide community benefits.

Administrator: U.S. Forest Service

Eligibility: Community Forests can be owned by local governments, tribal governments, and qualified nonprofit entities.

More information: <https://www.fs.fed.us/managing-land/private-land/community-forest/program>

Land and Water Conservation Fund (LWCF)

Overview: This program provides grants to states to permanently protect forested properties through conservation easements or by outright purchases. Recovery Land Acquisition grants under Cooperative Endangered Species Conservation Fund "Section 6" are funded through LWCF.

Administrator: U.S. Forest Service

Eligibility: Non-federal lands

More information: <https://www.lwcfcoalition.com/lwcf-programs/>

Clean Water State Revolving Fund Loan Program

Overview: Provides low-interest, long-term loans for projects that reduce non-point source pollution and improve water quality. Rules changes made in 2017 allow for these funds to be used to purchase working forest land or conservation easements in order to achieve water quality benefits.

Administrator: Department of Ecology

Eligibility: Local Governments, Tribes and Special Purpose Districts

More information: <https://ecology.wa.gov/About-us/How-we-operate/Grants-loans/Find-a-grant-or-loan/Water-Quality-grants-and-loans>

Clean Water Act Section 319 Clean Grants

Overview: Provides grants for up to \$500,000 for non-point source pollution control projects; including the purchase of working forest land or conservation easements which result in water quality benefits.

Administrator: Department of Ecology

Eligibility: Local Governments, Tribes, Special Purpose Districts and Non-Profit Organizations

More information: <https://ecology.wa.gov/About-us/How-we-operate/Grants-loans/Find-a-grant-or-loan/Water-Quality-grants-and-loans>

Washington Wildlife and Recreation Program-Forestland Preservation Grant Program

Overview: Provides up to \$350,000 to purchase a conservation easement on working forestland to protect it from development or to support efforts in conjunction to restore stream corridors, clean water and fish habitat.

Administrator: Recreation and Conservation Office

Eligibility: Local Governments, State Conservation Commission, Non-profit Organizations

More Information: <https://www.rco.wa.gov/grants/ForestlandPreservation.shtml>

Conservation Futures

Overview: Allows for funding for land acquisition or the purchase of conservation easements to protect threatened open space, timberlands, wetlands, farmlands or important habitat areas.

Administrator: County Government

Eligibility: Landowners with sponsorship from a non-profit or local government without a direct interest in the land

More information: <https://www.co.pierce.wa.us/1477/Conservation-Futures-Program>
<http://scc.wa.gov/wp-content/uploads/2018/03/2018-OFP-Conservation-Futures-Report.pdf>

Kitsap Conservation District

Overview: Local conservation districts are a good resource for information about programs such as the Environmental Quality Incentives Program (EQIP) and Conservation Reserve Enhancement Program (CREP). EQIP provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits. CREP pays an annual rental rate in

exchange for removing environmentally sensitive land from production and establishing permanent resource conservation.

Administrator: Local Conservation District through the US Department of Agriculture

Eligibility: Voluntary participation, focused on management not acquisition.

More information: <http://kitsapcd.org/programs>

Carbon Markets

Overview: By agreeing to sequester additional carbon in their forests through improved forest management or avoided conversion, landowners can sell credits to entities wanting to offset their own carbon pollution.

Administrator: California Air Resources Board or Voluntary Market Project Developer

Eligibility: Private Landowners, Local Governments, Tribes and Non-profit Organizations

More information: <https://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm>

Bridge Funders

Overview: Group like Lyme Timber and EFM provide a bridge funding option for forest projects. They are private investment managers that focus on the acquisition and sustainable management of lands with unique conservation values. They can collaborate on projects selling/buying conservation easements and acquisitions. Each project is unique but the goal is for these entities to *not* be the long-term owner of the property. They can also loan funds to entities like land trusts, with a moderate interest rate on the loan.

Administrator: Varies – Lyme Timber and EFM are examples

Eligibility: Private Landowners, Tribes, and Non-profit Organizations (local government could be a partner)

More information: <https://efmi.com> or <https://lymetimber.com/about/>

Impact Investing

Overview: Program-related investments (in the form loan below-market-rate loans) and mission-related investments.

Administrator: Various Foundations

Eligibility: Private Landowners, Local Governments, Tribes and Non-profit Organizations can all partner for projects. Investments need to have revenue streams for return payment.

More information: <https://www.seattlefoundation.org/communityimpact/impact-investing> or <http://www.trff.org/impact-investing/>