HOOD CANAL COORDINATING COUNCIL

HOOD CANAL LANDSCAPE ASSESSMENT AND PRIORITIZATION TOOL

Pilot Phase – Final Report

April 1, 2020

Summary:	The Hood Canal Coordinating Council (HCCC) developed the Landscape Assessment & Prioritization (LAP) Tool to determine gaps, effectiveness of projects, and identify opportunities to align or improve consistency across jurisdictional boundaries to improve protection and stewardship of Hood Canal natural resources. A variety of planning and environmental information was analyzed to identify prioritized pilot areas based on ecological function and local pressures, which will inform tailored and effective solutions to ecosystem recovery challenges on the ground.

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INTRODUCTION

The [Hood Canal Coordinating Council](#) (HCCC) is a council of governments whose mission is to work with partners and communities to advance a shared regional vision to protect and recover Hood Canal's environmental, economic, and cultural wellbeing. The Hood Canal watershed comprises a large area, dissected by many local jurisdictions' boundaries. This creates a unique challenge for ecosystem recovery, where species and habitats ignore jurisdictional boundaries, but land use policies and land management activities have a direct impact on the landscape. The HCCC Board of Directors envisioned a tool to compile and visualize a variety of land use and other data on the landscape, juxtaposed with priority areas for habitat protection and restoration, in order to highlight the specific policy or conservation actions needed in precise locations. The development of the Hood Canal Landscape Assessment and Prioritization (LAP) Tool has been a longstanding priority action in HCCC's [Integrated Watershed Plan](#) (IWP) – the strategic priorities to recover Hood Canal's social-ecological system (learn more about the IWP at [OurHoodCanal.org](#)).

In the LAP Tool's initial pilot phase, HCCC set out to develop and test the concept at a reduced scale, with the following objectives:

- Develop the LAP Tool's conceptual approach to compile and analyze land use data in the Hood Canal region
- Pilot the tool to assess its utility and identify next steps for advancement
- Convene an advisory committee of local land use experts to guide the tool's development and inform planning efforts

Once expanded to include the entire Hood Canal watershed, the LAP Tool will be a landscape analysis tool that compiles and displays a variety of relevant data to inform land use and project development decisions. It is envisioned to be used by HCCC member governments (Jefferson, Kitsap, and Mason counties; Port Gamble S'Klallam Tribe; Skokomish Indian Tribe) to identify opportunities to align and improve protection and stewardship of Hood Canal's natural resources and human wellbeing – its social-ecological system - across jurisdictional boundaries.

HCCC formed an Advisory Group made up of land use and environmental planners from HCCC member governments throughout the pilot phase to inform and contribute to the LAP Tool's conceptual development. HCCC worked with a Geographic Information Systems (GIS) consultant (PetersonGIS) to turn the LAP Tool vision into a reality. The Advisory Group suggested relevant data to include (land use, habitat, and other Hood Canal ecological data), and HCCC worked closely with the GIS analyst to incorporate their suggestions into the LAP Tool's design and build. The end product is an interactive web map application with an attractive and intuitive user interface.

Ultimately, the results of the LAP Tool's analysis will be used to re-diagnose the state of Hood Canal's ecosystems and improve the consistency of HCCC's Integrated Watershed Plan goals across jurisdictional boundaries. The long-term goals of the LAP Tool are to:

- Determine gaps and effectiveness of land use policies and conservation actions
- Identify opportunities for prioritized recovery focus areas based on ecological function and local pressures
- Inform tailored, precise, effective, and strategic solutions that maximize ecological and social outcomes

- Adaptively manage and incorporate new land use data and environmental attributes as our knowledge expands and new resources arise

This report describes the sequential development of the LAP Tool: its conceptual approach, the methods used to develop, design, and build the tool, a description of its analysis, and a discussion of what the next phase of the LAP Tool could entail. The HCCC Board will guide decisions regarding direction and applications of the LAP Tool as its development continues.

ADVISORY GROUP

HCCC staff convened the Advisory Group to obtain expert feedback, and recommendations for the following LAP Tool components:

- Conceptual approach/design
- Usefulness of the LAP Tool to member governments' planning efforts
- Prioritization criteria and an analytical approach for incorporating desired data inputs
- Pilot focus areas to prioritize for the LAP Tool's application
- Policy areas of focus and opportunities for habitat restoration, protection, and science-based tools to assist land use decision-making to align with Hood Canal IWP goals
- Objectives for the next phase of this effort

Advisory Group members were convened for a series of three meetings to share their perspectives on the above topics and to provide feedback on the LAP Tool as it was developed. Participants are shown in Table 1

Table 1: LAP Tool Advisory Group participants

HCCC Member Jurisdiction	Representative
Jefferson County	Patty Charnas, Director, Community Development
Kitsap County	Jim Bolger, Assistant Director, Department of Community Development Kathy Peters, Natural Resources Coordinator, Department of Community Development
Mason County	Kell Rowen, Planning Manager
Port Gamble S'Klallam Tribe	Paul McCollum, Natural Resources Director (HCCC board member)
Skokomish Indian Tribe	Dave Herrera, Policy Advisor (HCCC board member)

LAP TOOL CONCEPTUAL APPROACH

To initiate the build out of our early conceptual approach, HCCC first gathered information from partners. Consultation with local and regional experts was conducted in tandem with research into past Hood Canal land use planning work and general land use issues affecting Hood Canal. The goal for this information gathering was to ensure that the LAP Tool respects and is applicable and compatible with the current land use context of each HCCC member government.

This background information built on a previous assessment of Hood Canal land use planning policies that provides context for the current state of land use planning in Hood Canal.[1] All of this information provided a foundation for the Advisory Group to begin to shape the LAP Tool's conceptual approach, and set the stage for determining its scope, scale, functionality, design, and potential applications.

Partner Interviews

Interviews were initially held with Advisory Group participants to begin to understand the land use issues and realities important to each member government.

Feedback received is organized by the four broad questions posed to the interviewees:

1. What should be the LAP Tool's conceptual approach?
2. What criteria of the Hood Canal landscape should be prioritized by the LAP Tool for study?
3. Where in Hood Canal should the LAP Tool be piloted?
4. How can the LAP Tool be used to assist policies and planning efforts affecting Hood Canal?

Below is a summary of recommendations gathered from Advisory Group members that specify preferences for the LAP Tool.

1. Conceptual Approach

- Prioritization is important
  - o Member governments have limited resources and capacity to address every identified issue
  - o The value of this tool is in visualization of the existing data; there is an abundance of data already: don't create new data, intuitively visualize existing data in a user-friendly way
  - o Identify high priority areas for conservation; protection of high priority habitat is an important element to incorporate
- Focus on protection
  - o Focus on avoidance of impacts to prioritized areas
  - o Focus on protecting undisturbed areas rather than restoring degraded areas. Protection is a cheaper, more effective strategy
  - o For the pilot, focus more on currently undeveloped land that is projected to be developed in the future, rather than minimizing/mitigating impacts on already developed land

2. Prioritization Criteria[2]

- Summer chum salmon distribution
- Forage fish spawning areas and their associated habitats

3. Pilot Focus Areas

- Biological hotspots related to the prioritized criteria that are in areas of existing or planned development
- One pilot area in each HCCC member county (Jefferson, Kitsap, Mason)

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[1] Mentor Law Group PLLC. *Hood Canal Policy Inventory*. 2016

[2] For the pilot phase, the Advisory Group was intentionally selective on which ecological criteria would be included for prioritization. These two criteria strike a balance of having quality available data salient to current emphases on summer chum salmon recovery and nearshore habitat issues, while not cluttering the tool with many disparate data layers.

4. Policy Analysis

- Land use regulations are not easily changed; do not assume that the LAP Tool will inform land use regulations/recommendations
- Consider how the LAP Tool can assist potential non-regulatory policy approaches to land use, such as transfer of development rights, easements, acquisitions, outreach, education, best management practices (BMPs), etc.
- The LAP Tool should show where pressures are impacting prioritized ecological areas and let local planners decide what to do based on locally acceptable options
- Use the LAP Tool to identify where current ecological protections (i.e. Critical Area Ordinances, easements, and restoration projects) are adequate, and where they are not
- To determine future development, focus on future-oriented policies and analyses such as the zoning codes (i.e. what is allowed to be built where), county Comprehensive Plans (i.e. where growth is being planned for), population growth projections, and projected climate change impacts (i.e. sea level rise)

Assessment of Hood Canal Land Use Planning Policies

In addition to the Advisory Group feedback used to inform the development of the LAP Tool, a variety of land use plans, policies, and regulations affecting Hood Canal were also reviewed. Much of this research was compiled in the Hood Canal Policy Inventory, completed by Mentor Law Group PLLC in 2015.[3]

Hood Canal Policy Inventory

The three HCCC member counties' various land use and natural resource-related planning policies are compared with the central question: do Jefferson, Kitsap, and Mason Counties' codes support the counties' goals to protect the Hood Canal watershed?

The acknowledgement of inconsistencies between HCCC member counties was incorporated into the LAP Tool's conceptual approach. It provides a foundational impetus for the LAP Tool to analyze Hood Canal land use context and provides an opportunity to investigate and discover potential solutions to align these differences to improve protection and stewardship of the Hood Canal ecosystem across jurisdictional boundaries.

Land Use Planning Resources

Research of general land use planning resources, such as Tax Assessor parcel data, county Comprehensive Plans, zoning codes, and the identification of specific land uses of interest (such as parks and conservation areas) helped refine our conceptual approach by broadly showing where development is (and is not) planned to occur. Additionally, research of where ecological land management tools (i.e. regulated critical areas and restoration work) are occurring and where and what types of important habitats exist helped provide further context of the current land use picture of Hood Canal. Further analysis of this data can be found in the Methods and Results chapters.

Following the recommendations of the Advisory Group and based on research into Hood Canal land use planning policies, HCCC refined the LAP Tool conceptual approach to focus on one pilot area in each

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[3] Aliment, Ruby. *Memorandum: Hood Canal Area County Code Differences*. Mentor Law Group PLLC. January 4, 2016.

HCCC member county based on an analysis of prioritized ecological lands facing the highest concentration of projected change. Analyzing landscape changes in priority areas will help determine where the most important areas are to avoid impacts, provide necessary protection, and allow for effective ecological restoration. This, in turn can help identify opportunities to align HCCC member counties' land use policies and programs with IWP goals.

The LAP Tool's conceptual approach will continue to be refined and expanded following this pilot phase.

LAP TOOL METHODS

The methods used to develop the LAP Tool were derived from a combination of research on related mapping exercises, HCCC staff expertise, conversations with the Advisory Group, and consultation with a contracted geospatial analyst (PetersonGIS) who was hired to build the LAP Tool.

Data Layers

The LAP Tool is primarily a landscape analysis tool that utilizes geospatial analysis methods, including the processing and analysis of GIS data layers. The GIS layers used in the LAP Tool are a mixture of specific data identified by the Advisory Group and other data that HCCC staff chose to provide context for the analysis of current and future land use. When applied on the landscape, the GIS layers visualize prioritized areas in Hood Canal, and their interaction with a variety of environmental criteria and human activities.

The GIS layers used in the LAP Tool analysis are listed below. Each layer includes a brief description, its underlying data source, processing methods, and how it was applied in the LAP Tool.

Ecological Criteria Data Layers

Areas with important ecological attributes.

Prioritized Summer Chum Salmon Stocks

Description

The distribution of spawning and rearing habitat for the top ten summer chum salmon stocks within the Hood Canal and Eastern Strait of Juan de Fuca populations on which to focus recovery efforts, as prioritized in HCCC's "Guidance for Prioritizing Salmonid Stocks, Issues, and Actions for the Hood Canal Coordinating Council," a 2015 document providing guidance on salmonid recovery priorities and actions for HCCC and salmon recovery partners.[4]

Hood Canal and Strait of Juan de Fuca Summer Chum Salmon are a rare success story among Pacific Northwest salmon populations. As they are nearing recovery, and potential removal from the Endangered Species List, HCCC (as the regional recovery organization) has emphasized this final phase of efforts to confidently return and sustain these populations to their past abundance.

Data Source

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[4] Lastelle, Larry. *Guidance for Prioritizing Salmonid Stocks, Issues, and Actions for the Hood Canal Coordinating Council*. Biostream Environmental. March 2015.

Documented summer chum salmon spawning and rearing habitat in Hood Canal and the Eastern Strait of Juan de Fuca was pulled from the 2019 Northwest Indian Fisheries Commission's Statewide Integrated Fish Distribution (SWIFD) data.[5] Documented spawning and rearing habitat data, rather than documented presence data, was used due to the potential for variations in presence over the years (i.e. summer chum may be observed in one area one year but not the next year). Spawning and rearing habitat was deemed to be a more reliable long-term indicator of summer chum presence, because if the underlying habitat conditions that attract summer chum to spawn and rear are conserved or restored, then it is more likely that they will continue to return spawn in these areas into the future.

Processing

The spawning and rearing distribution layer was clipped to just the top ten prioritized summer chum salmon stocks in Hood Canal and Eastern Strait of Juan de Fuca.

The result is a layer showing the reaches of specific rivers and streams that have spawning and rearing habitats for the top ten summer chum salmon stocks in Hood Canal and Eastern Strait of Juan de Fuca. The SWIFD dataset does not include summer chum data for the Skokomish River, so its fall chinook salmon distribution was used as a proxy. This resulted in three chinook salmon stocks being added to the map as well.

Application

This layer was used to determine where areas of developed land and undeveloped lands intersect with prioritized summer chum salmon stocks. This layer served as foundational information to identify pilot areas, as it highlights areas of potential compatibility and conflict between land uses and important summer chum salmon habitats.

Prioritized Forage Fish Habitats for Conservation/Restoration

Description

Forage fish spawning areas and their associated habitats was the second ecological criterion emphasized by the Advisory Group. Similarly to the Prioritized Summer Chum Salmon Stocks layer, forage fish habitat data was used instead of presence data to show a more reliable long-term indicator of forage fish presence.

This layer is based on data showing beach forming geomorphic processes (such as sediment supply, accretion shoreforming, etc.) that create forage fish habitat, and prioritizes them based on their importance for restoration or conservation. The result is a layer showing sections of Hood Canal shoreline that are the highest priority for conservation and restoration of forage fish habitats.

Data Source

Beach Strategies dataset produced by Coastal Geologic Services, Inc.[6]

Processing

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[5] Northwest Indian Fisheries Commission. *Statewide Integrated Fish Distribution (SWIFD) Web Map*.
[6] Coastal Geologic Services, Inc. *Beach Strategies Phase 1 Summary Report Identifying Target Beaches to Restore and Protect Estuary and Salmon Restoration Program Learning Project #14-2308*. October 25, 2017.

The layer was clipped to the Hood Canal and Eastern Strait of Juan de Fuca Summer Chum Evolutionarily Significant Unit (ESU) boundary to show the most relevant stretches of shoreline for Hood Canal analysis purposes.

<u>Application</u>

Like the prioritized summer chum salmon layer, this layer was used to determine where areas of developed land and undeveloped lands intersect with prioritized forage fish habitat, further identifying and refining the selection of pilot areas, as it highlights areas of potential compatibility and conflict between land uses and prioritized forage fish habitat.

Prioritized Parcels Data Layers

Parcels that intersect the areas with our priority ecological criteria.

Highest Priority Parcels

<u>Description</u>

The highest priority parcels border the prioritized ecological criteria and are currently less developed but projected to be more developed in the future. They were extracted from areas projected to experience the highest concentration of development change. The Advisory Group limited this analysis to one pilot area in each county (Jefferson, Kitsap, Mason). More discussion of these pilot areas can be found in the "LAP Tool Pilot Results" section.

<u>Data Source</u>

This layer was derived using a series of feeder layers to yield the final Highest Priority Parcels layer, including:
- Parcel locations: Tax Assessor data from each county was used to visualize individual tax parcels, and identify those intersecting the priority ecological criteria.[7]
- Current level of development: A layer was created from Tax Assessor data to determine each parcel's current level of development, based on its land use category.
- Future level of development: A separate data layer was created to determine the parcel's future level of development, based on its land use zoning.

The process to develop this layer and the feeder data layers is described in detail below.

<u>Processing</u>

To identify the "highest priority" parcels, analytical layers were created displaying current land use designations, and current and future development occurring on lands with the prioritized ecological criteria.

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[7] Jefferson County Central Services Department. *Public Land Records*; Kitsap County Information Services. *Data Download*; Mason County WA GIS. *Tax Parcel Map Viewer*.

These layers are not included as standalone layers in the LAP Tool, but their analysis and resulting outputs were used to build the featured layer. Each "back end" analytical layer is described further below.

Land Management Layer

Current land use designation and ownership (per the Tax Assessor's data) was analyzed to determine the likely primary land use occurring on a given parcel. In some cases, the land use designations were not descriptive enough to glean the parcel's current land management. In these cases, a combination of county land use designation, ownership, and aerial imagery (i.e. visual analysis of what is occurring on the land) were used to determine land management. After considering these factors, a broad land management category was assigned to each parcel:

- Residential
- Conservation
- Public timber
- Private timber
- Agriculture

- Recreation
- Mining and related
- Military
- Other undeveloped
- Other developed

See Appendix A for further discussion of this framework and descriptions of each category.

Current Development Levels Layer

Each land management category developed in the previous process was assigned a development level to show the relative impact of the activity on the landscape (Table 2). These development levels are a simple, common-sense categorization used to start discussions about appropriate responses to development impacts occurring on high priority lands.

Table 2: Land Management Categories Organized by Current Development Level

Current Development Level	Land Management Category
Less Developed	Conservation
	Other undeveloped
	Private timber
	Public timber
Semi-Developed	Agriculture
	Recreation
More Developed	Military
	Mining and Related
	Other developed
	Residential

When land use is analyzed this way across the entire Hood Canal watershed, a picture begins to emerge of which type of <u>current</u> land management activities may be having an impact on the ecological criteria prioritized by the Advisory Group.

To assess the level of impact that <u>future</u> land management activities may have on the ecological criteria, a Future Development Level layer was created.

Future Development Levels Layer

The zoning codes from each HCCC member county were assigned a future development level based on how much development is allowed in the future (Appendix B). The same three categories are used (i.e. Less, Semi-, More Developed), and their design and purpose are the same: a simple, common sense categorization to be used as a starting point for further land management discussions.[8]

This is a coarse method of determining future development, and an area that needs further exploration in future phases of LAP Tool development. Given the significant caveat that we cannot predict or assume that parcels will indeed be built out to the extent that is allowed, this layer provides a glimpse of future development conditions. Varying degrees of build out analyses and population projections have been completed by the three counties and were explored for inclusion in this analysis, but the information is not yet precise enough to inform this tool.

Highest Priority Parcels Selection

The current and future development levels data were added as attributes to the Tax Assessor parcel data, and then intersected with the summer chum salmon and forage fish layers that make up the priority ecological criteria. The resulting layer displays only those parcels directly intersecting, and likely interacting with, the prioritized ecological criteria. The parcels are then filtered to include only those where the landscape is currently less developed, or semi-developed, and projected to be more developed in the future. These are the priority parcels that are the focus of the LAP Tool.

A two-step process was used to select the parcels included in the Highest Priority Parcels layer. A hotspot analysis was completed to identify the areas within the Hood Canal watershed projected to see the most change. One area was selected in each county with the densest concentration of change (see page 22 for more discussion of the LAP Tool Pilot Areas).

The priority parcels within each pilot area were then extracted and made into a separate data layer. A quality control process was implemented to remove parcels unlikely to be developed (i.e. under ownership by entities such as homeowner associations, municipalities, land trusts, etc.); parcels with current land uses that are unlikely to change (i.e. park lands, community greenbelts, etc.); and parcels with inconclusive land uses (i.e. variations between ownership, current land use, and/or aerial imagery). As a result, not all priority parcels within the densest areas of projected change in pilot areas are included in the Highest Priority Parcels layer.

The remaining parcels after the quality control process make up the highest priority parcels.

Figure 1 shows a summary flow chart of the analytical process and methods used to develop the Highest Priority Parcels and Other Important Parcels layers.

Application

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[8] For Tribal and military lands with no zoning information, conversations with the appropriate entity are necessary to discuss future plans for their parcels intersecting the priority ecological criteria. The Advisory Group recommended assigning all military lands to the More Developed category to reflect the intensity of development. However, not all military lands in Hood Canal are developed.

The analytical process described above ultimately identifies *the parcels in ecologically prioritized areas that are most susceptible to future development within our pilot areas*. These are the parcels where our attentions should be focused to ensure the continuation of the ecological benefits that are provided by these properties.
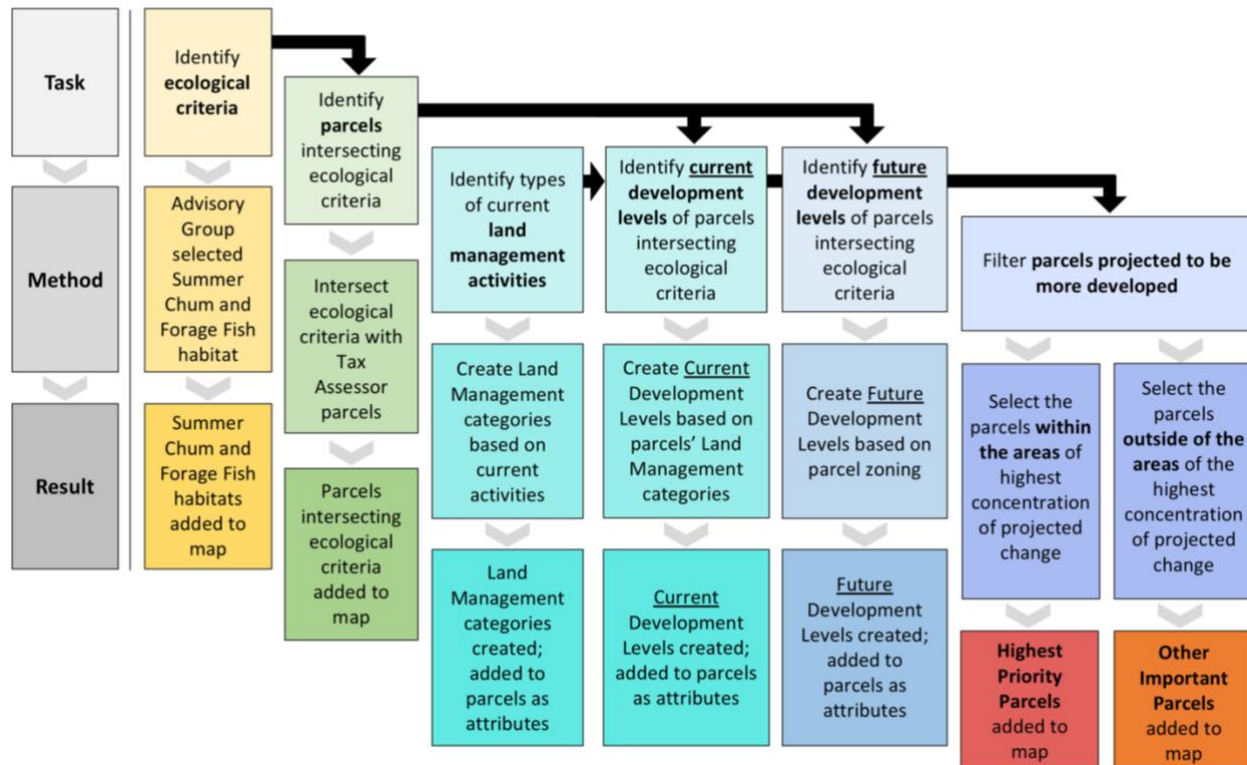
Figure 1: LAP Tool analytical process and methods

Other Important Parcels

Description

The Other Important Parcels layer is similar to the Highest Priority Parcels layer in that they consist of the currently less or semi-developed lands that intersect the prioritized ecological criteria and are projected to experience more development in the future. However, these parcels are located outside of the densest concentration of projected change, and thus outside of any pilot area, so they are considered a lower priority. Yet, they are still considered to be important because they are under the threat of increased development, but they are not concentrated in a way that suggests an obvious pilot area of focus for this phase of LAP Tool development.

Data Source

This layer uses the same feeder data as described in the Prioritized Parcels layer section above: Tax Assessor data from each county, prioritized ecological criteria, Land Management, Current Development Levels, and Future Development Levels.

Processing

This layer was created from the same analysis described in the Highest Priority Parcels section (Figure 1). The only difference is that this layer includes all of the parcels that intersect the prioritized ecological criteria rather than just those parcels which are located in the pilot areas.

Application

These parcels expand the analysis of the LAP Tool to show the broader context of projected development change across the entire Hood Canal watershed. This layer includes the same attributes as the Highest Priority Parcels layer, so it can be used for comparison purposes (i.e. to see the properties up/downstream or up/down the shoreline that are just outside of the pilot areas where projected change is most concentrated).

The remaining layers described below provide context and broader consideration of other ecological and land use factors affecting the Hood Canal landscape and the prioritized parcels. Viewing these additional layers overlaid on the landscape can lead to further investigation about how these factors are influencing land use on a regional scale.

Ecological Land Management Data Layers

Land management approaches, strategies, actions, tools, etc. that provide ecological benefit

Summer Chum Evolutionarily Significant Unit Boundary

Description

The boundary line delineating the Hood Canal and Eastern Strait of Juan de Fuca Summer Chum Evolutionarily Significant Unit (ESU). This line delineates the boundary where the distinct populations of Hood Canal and Eastern Strait of Juan de Fuca Summer Chum live.

Data Source

National Oceanic and Atmospheric Administration (NOAA) Protected Resources App.[9]

Processing

No processing of the data occurred.

Application

This layer shows the broad context of where summer chum salmon recovery efforts by HCCC and other partners is occurring in Hood Canal. In the context of the LAP Tool, it is used to show the land use activities occurring within the range of Hood Canal and Eastern Strait of Juan de Fuca summer chum salmon habitat.

Salmon Restoration Projects

Description

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[9] National Oceanic and Atmospheric Administration. *Protected Resources App*.

The status of salmon recovery habitat improvement projects implemented throughout Hood Canal and Eastern Strait of Juan de Fuca. Each project's status is shown as: completed, active, proposed, conceptual, and dormant.

Data Source

Washington State Governor's Salmon Recovery Office's Salmon Recovery Portal (Habitat Work Schedule), an online mapping and project tracking tool that allows Salmon Recovery Lead Entities to share habitat protection and restoration projects with funders and the public.[10]

Processing

Salmon recovery projects were clipped to the Hood Canal and Eastern Strait of Juan de Fuca Summer Chum Salmon ESU to show only the salmon recovery projects occurring or planned in the broader Hood Canal watershed.

Application

The Advisory Group recommended showing where environmental improvements are occurring on the landscape. This layer was used to provide context for where specific habitat restoration is occurring when considering land use in a precise area.

Critical Areas

Description

Hood Canal county-designated critical areas that are legally defined by WA state law: Wetlands, areas with a critical recharging effect on aquifers used for potable water, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas.

Data Source

Each county's online data portals. If needed, supplemental data was requested from county GIS departments.[11]

Processing

The individual Critical Area layers from each county had differing degrees of detail, with some counties mapping the five required critical areas, while others breaking down each into subcategories. To make the layers uniform, each county's critical area data was classified into the five required categories. The result is a single layer of varying detail reflecting each county's originally listed critical areas.

Application

The Advisory Group recommended showing where current land use regulations protect natural resources, to demonstrate and assess where these protections are successful, or where gaps exist.

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[10] Washington State Governor's Salmon Recovery Office. *Salmon Recovery Portal*.
[11] Jefferson County Central Services Department. *Public Land Records*.; Kitsap County Information Services. *Parcel Map Search*.; Mason County WA GIS. *Tax Parcel Map Viewer*.

Conservation Easements

<u>Description</u>

Conservation easements throughout Hood Canal and Eastern Strait of Juan de Fuca. The easements shown include those from land trusts and public agencies.

<u>Data Source</u>

The National Conservation Easement Database (NCED).[12]

<u>Processing</u>

This layer was clipped to the Hood Canal and Eastern Strait of Juan de Fuca Summer Chum Salmon ESU.

<u>Application</u>

This layer is included to provide context on the regional scope of conservation efforts and how they interact with the prioritized parcels, ecological criteria, and land use activities.

Olympic National Park/Olympic National Forest

<u>Description</u>

Boundary lines of Olympic National Park and Olympic National Forest

<u>Data Source</u>

The National Park Service Open Data website and United States Department of Agriculture (USDA) Forest Service Automated Lands Program (ALP).[13]

<u>Processing</u>

No processing of the data occurred.

<u>Application</u>

To provide context for where federal land management interacts with local and regional land use and restoration activities.

Future Pressures Data Layers

Pressures that forecast potential future impacts in the priority areas

Rural Areas Designated for Growth

<u>Description</u>

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[12] National Conservation Easement Database. *NCED Mapping Application*. Not all conservation easements may be included in the NCED database. The completeness of the dataset relies on the participation of property owners to input their own data into the database.

[13] National Park Service. *Open Data.*; United States Forest Service. *Automated Lands Program (ALP) Land Status and Encumbrance Viewer*.

Rural areas designated for growth by county Comprehensive Plans. The areas identified represent a variety of land use designations (i.e. Limited Areas of More Intensive Rural Development (LAMIRDs), Rural Activity Centers (RACs), Rural Village Centers, (RVCs), or Hamlets), depending on the county.

Data Source

Each county's Comprehensive Plan datasets via their online data portal.[14]

Processing

This layer was created by combining and clipping all of the aforementioned land use designations related to rural area development to the Hood Canal and Eastern Strait of Juan de Fuca summer chum salmon ESU.

Application

The Advisory Group recommended illustrating where planned-for growth in rural areas may conflict with the prioritized ecological criteria and priority parcels identified by the LAP Tool.

Population Growth (Percentage, 2010-2018)

Description

The average percent population growth between the years 2010 and 2018 for each census block group in the Hood Canal and Eastern Strait of Juan de Fuca summer chum salmon ESU.

Data Source

The Washington Office of Financial Management's Small Area Estimates Program (SAEP) GIS data page.[15] SAEP estimates are generated for census areas and other areas of statewide significance and are meant to provide a consistent set of small area population and housing data for statewide applications.

Processing

Census block group data for 2010-2018 was selected for these areas within the summer chum ESU that have human populations (i.e., a few of the block groups are water only, with zero population, and those were not included in this dataset).

Application

The Advisory Group recommended showing where growth has occurred in the recent past, to provide context for where growth may occur in the future. Particular attention should be given to locations where past growth overlaps with the highest priority parcels, prioritized ecological criteria, and other areas of interest.

Sea Level Rise

Description

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[14] Jefferson County Central Services Department. *Public Land Records.;* Kitsap County Information Services*. Parcel Map Search.;* Mason County WA GIS. *Tax Parcel Map Viewer*
[15] Washington Office on Financial Management. *Small area estimates program*.

Projected sea level rise in Hood Canal and Eastern Strait of Juan de Fuca. Each of the ten layers represent one foot of sea level rise and the entire dataset represents 1-10 feet of rise.[16]

Data Source

"Projected Sea Level Rise for Washington State – A 2018 Assessment" by Miller, et al. Report and data map viewer pulled from NOAA's Digital Coast coastal management website.[17]

Processing

The data was transformed using Esri's JavaScript API that dynamically shows 1-10 ft of sea level rise by moving a slider bar along a scale.

Application

This layer was included to add consideration of future climate change pressures on the landscape. For example, this layer can show which of the highest priority parcels, and other areas of interest, are projected to be inundated with seawater at various sea level rise projections. This analysis can enrich discussions about potential adaptation responses, and other mitigation measures to prepare for this expected pressure.

Jefferson, Kitsap, Mason County Zoning

Description

The zoning maps for each Hood Canal county.

Data Source

Each county's online GIS portals.[18]

Processing

No processing of the data occurred.[19]

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[16] The exact amount of sea level rise that Hood Canal (and Puget Sound, broadly) is expected to experience is uncertain. Ten feet is considered an upper limit, so a range of heights (1-10ft) is offered for users to choose based on their application of the tool.

[17] Miller, I.M., Morgan, H., Mauger, G., Newton, T., Weldon, R., Schmidt, D., Welch, M., Grossman, E. 2018. Projected Sea Level Rise for Washington State – A 2018 Assessment. A collaboration of Washington Sea Grant, University of Washington Climate Impacts Group, Oregon State University, University of Washington, and US Geological Survey. Prepared for the Washington Coastal Resilience Project. *updated 07/2019*

[18] Jefferson County Central Services Department. *Public Land Records.;* Kitsap County Information Services*. Parcel Map Search.;* Mason County WA GIS. *Tax Parcel Map Viewer*

[19] There are many different zoning codes across the three counties. The zoning codes for each county were kept unaltered, resulting in the same colors being used for different zone codes between the counties. A separate data legend for each county is included in the LAP Tool listing the respective zone codes.

This layer was included to show a proxy for future buildout conditions. It is assumed that a parcel will be developed to the full extent that its zone code allows. This helps to understand where potential development could occur in the future, and provides context to consider alternative management strategies where currently less developed lands zoned for future development intersect prioritized summer chum salmon waters and forage fish habitats.[20]

PILOT LAP TOOL RESULTS

This chapter discusses the final GIS layers and pilot areas of focus that result from the analysis described in previous sections.

Pilot Areas

This section discusses the three pilot areas resulting from synthesis of the LAP Tool Advisory Group's guidance with the final GIS layers created, processed, and analyzed by HCCC and PetersonGIS. Below is a description of our pilot area selection process, followed by a description of each pilot area.

Following the Advisory Group's guidance, one pilot area was selected in each HCCC member county (Figure 2) in order to provide each jurisdiction an area of relevance in developing and exploring applications of the LAP Tool. The specific locations of pilot areas were chosen by identifying the highest concentration of ecologically important lands that are projected to face future development. Areas of the highest concentration of projected change are shown in a hotspot-style map, with darker hues of purple representing a higher density of parcels with projected change. The pilot areas described below determined the parcels included in the Highest Priority Parcels layer (see the Highest Priority Parcels Selection section for more info).

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[20] For Tribal and Military lands where zoning-type information (i.e. planned development) is not readily available, conversations with the appropriate entity are necessary to discuss future plans for their parcels intersecting the priority ecological criteria.
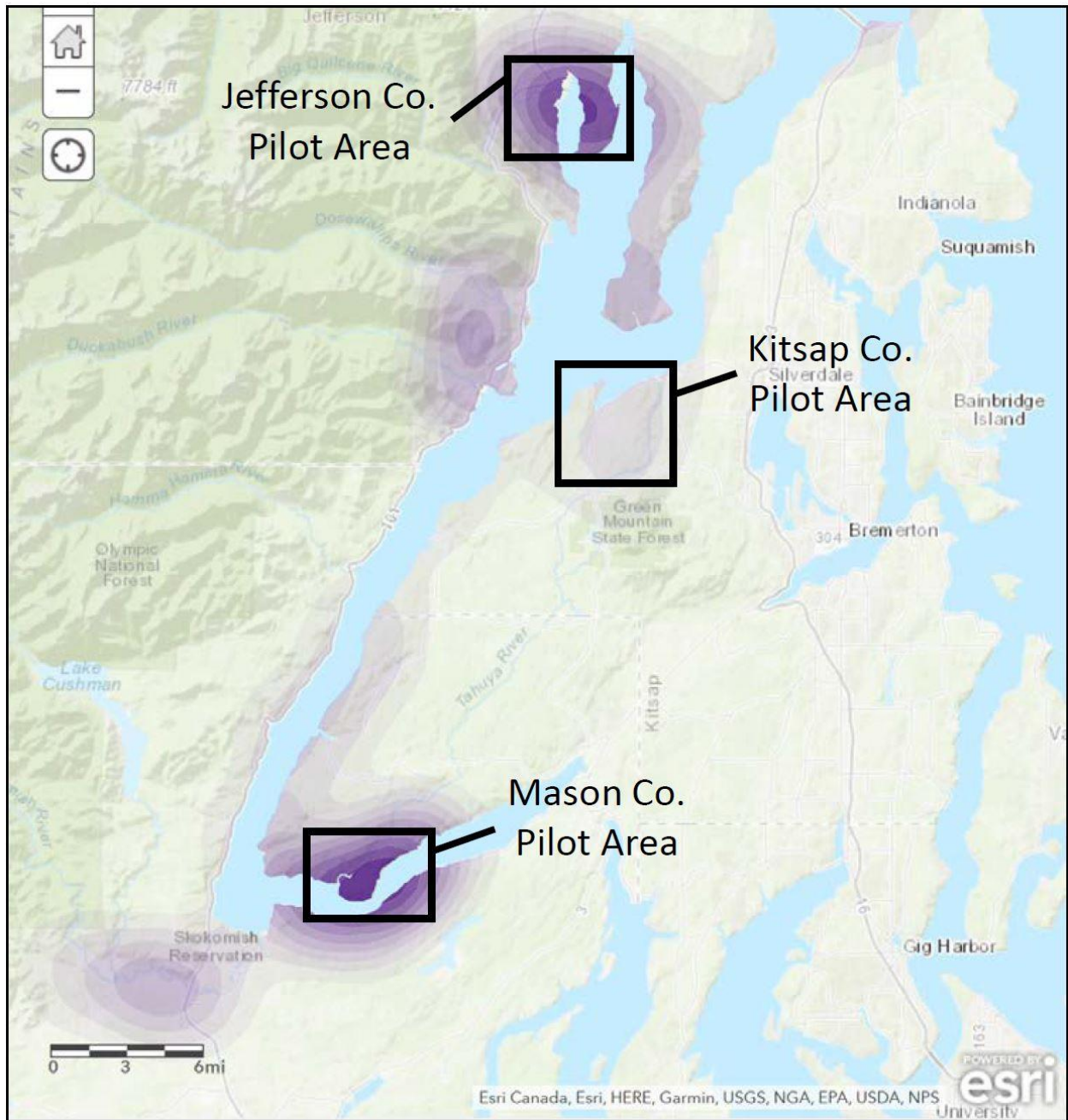
Figure 2: Map of LAP Tool Pilot Areas

Highest Priority Parcels

The LAP Tool pilot area highest priority parcel analysis in each county in shown in detail in Figure 3. The images on the left show the currently less or semi-developed parcels that are projected to be semi- or more developed in the future, and the purple overlay shows where the highest concentration of this change is expected.
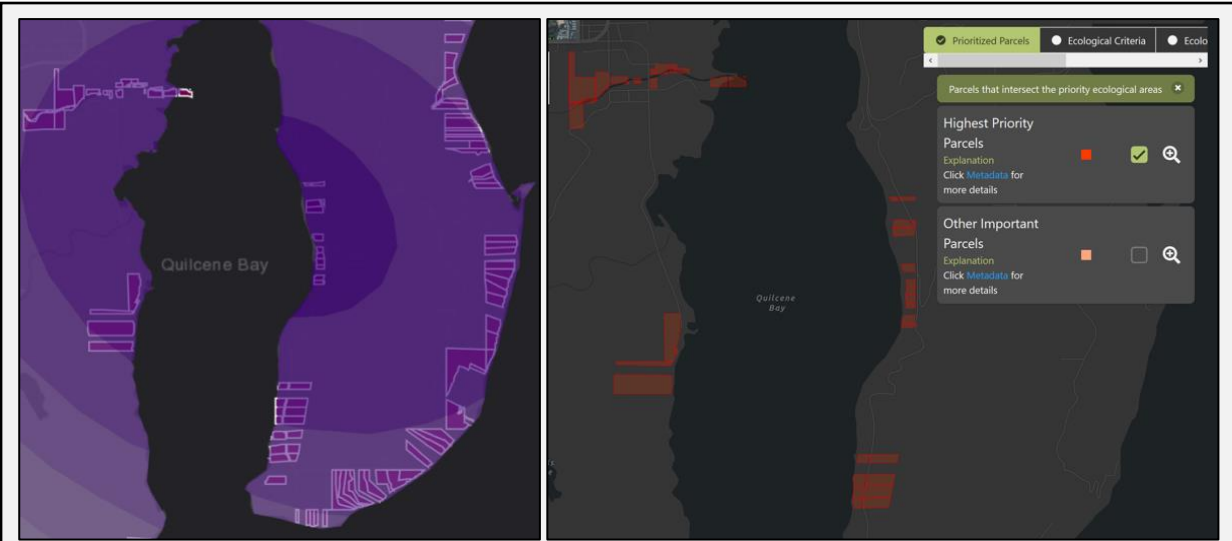
Figure 3a: Jefferson County Pilot Area around Quilcene

Figure 3b: Kitsap County Pilot Area around Big Beef Creek

Figure 3c: Mason County Pilot Area around Tahuya

Figure 3: LAP Tool Pilot Areas analysis showing the concentration of projected change (left) and the highest priority parcels (right).

Note in Figure 3b that the purple hue representing the concentration of change in the Kitsap County pilot area is lighter, indicating that there is not expected to be as much change as in the darker purple concentrations in the Jefferson and Mason County pilot areas. This is the highest concentration of change in Kitsap County, making it the default pilot area.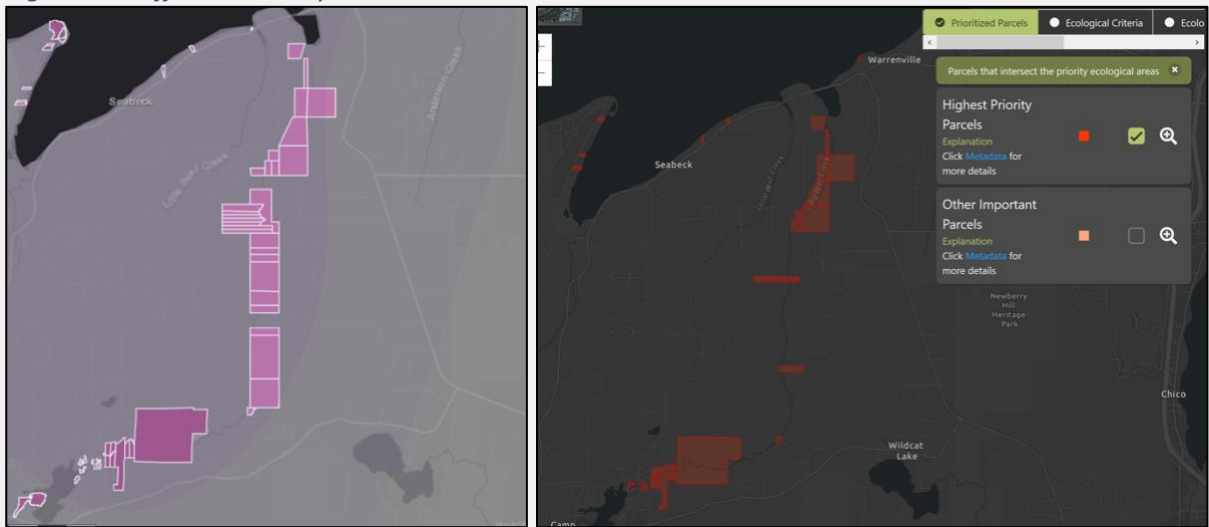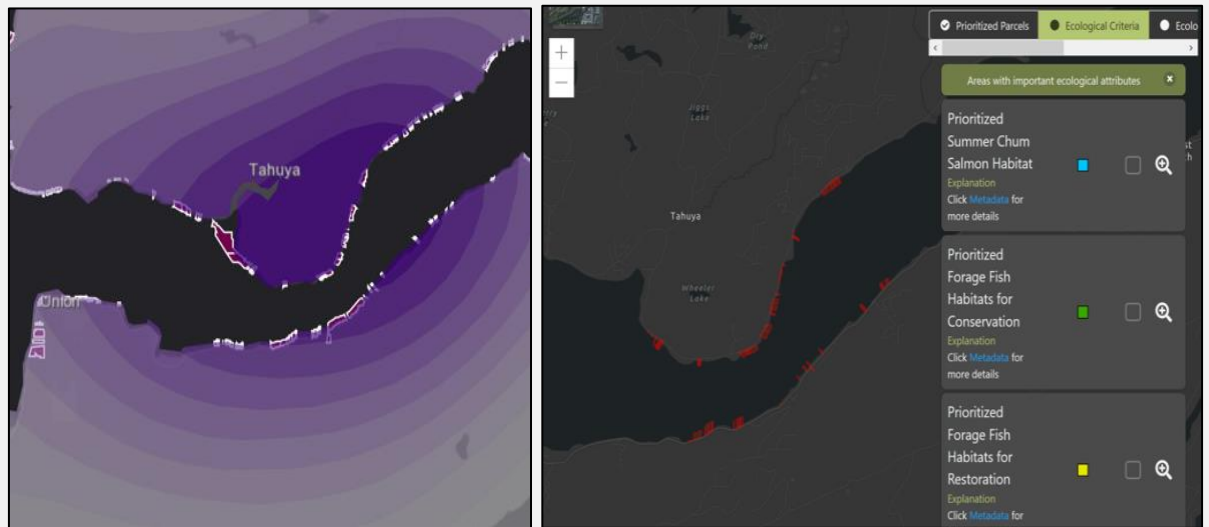 The images on the right extract the parcels that are located in the densest concentration of change (i.e. the darkest purple area) and identifies these as the highest priority parcels. Note again in Figure 3b that some parcels were removed from the initial analysis during the quality control process, leaving fewer parcels extracted as highest priority parcels.

Table 3 summarizes the current development levels and land management categories for the highest priority parcels in each pilot area and Table 4 summarizes the future development levels and respective county zoning for the parcels, providing a snapshot of the type of development pressure the area may face in the future.

Table 3: Pilot Areas Land Management Summary

Current Development Level	Land Management Category	Number of Parcels
Jefferson County Pilot Area		
Less Developed	Other undeveloped	35
Kitsap County Pilot Area		
Less Developed	Conservation	6
	Other undeveloped	28
	Public timber	3
Mason County Pilot Area		
Less Developed	Other undeveloped	66
	Private timber	2

Table 4: Pilot Areas Parcel Zoning Summary

Future Development Level	County Zone	Number of Parcels
Jefferson County Pilot Area		
More Developed	RR-10 - Rural Residential	4
	RR-20 - Rural Residential	9
	RR-5 - Rural Residential	21
Semi-Developed	AP-20 - Commercial Agriculture	1
Kitsap County Pilot Area		
More Developed	Rural Residential (1 DU/5 Ac)	22
Semi-Developed	Rural Protection (1 DU/10 Ac)	12
	Rural Wooded (1 DU/20 Ac)	3
Mason County Pilot Area		
More Developed	Rural Residential 5 Acres	68

Using the LAP Tool's additional contextual data layers, the ongoing protection and restoration work and other pressures in each area can be visualized to consider how to leverage or refine approaches in precise locations.

The pilot areas identified by the LAP Tool provide geographic specificity to prioritize the implementation of ecological protection and restoration strategies and actions, and valuable information to inform land use decisions in important ecological areas facing future pressures. The pilot areas provide a starting point for further discussion about appropriate land use where it is most needed in Hood Canal.

DISCUSSION

The pilot phase of LAP Tool development was a learning process for the project team and Advisory Group. It presented many challenges, requiring creative thinking and expert contributions from geospatial analysts and web developers to arrive at nuanced solutions. Some solutions were not completely satisfying, as they were limited by data availability, or capacity for further data analysis or web development to illustrate the data the way the team envisioned.

Generally, the goals of this initial phase were accomplished – a framework was developed to identify priority ecological areas facing highest development pressures. An Advisory Group was convened of local land use planners who eagerly engaged in the process. Throughout this phase, the project team started with many questions and uncertainties, learned lessons as we collaboratively problem solved, and ended with optimism, eager to continue advancing the LAP Tool's capabilities.

It is still too early to tell if the LAP Tool will perform as envisioned. In order to test its performance and usability, the LAP Tool must be expanded to include the entire Hood Canal watershed and applied in real world applications.

LAP Tool Development Challenges

Which Data?

The consistent challenge throughout the LAP Tool development process was a basic question of which data to include. In a world of data saturation, much of it contained in disparate places and varying condition, significant effort and decision-making is required to decipher what data exists, if it is accessible and available (publicly or at cost), if it is in a usable state, if it requires extensive pre-processing, if it is up to date (or if is there something newer and/or better), if it is too new and untested, and if its caveats are acceptable for our application (among other questions). The project team utilized the Advisory Group's guidance and our GIS analyst's expertise to answer these questions as we investigated each data source of interest. Sometimes mock-ups and iterations were used to visualize how data could be illustrated.

Each data layer required its own unique investigation and considerations. In the case of the Beach Strategies dataset, the project team was in contact with the researchers who developed the dataset, to gain access to brand new data and solicit feedback on our novel application.

In another example, the ten priority summer chum salmon streams identified in the 2015 guidance document utilized had to be updated late in the LAP Tool development process. Additional streams have been added to the priority list (Union River and Tahuya River) as their importance has emerged in the

time since the 2015 document was published. Union River was added to the Priority Summer Chum Stocks data layer, but capacity limitations did not allow Tahuya to be added. However, the Tahuya shoreline area was already a pilot area of focus due to its important forage fish habitat.

Additional consideration must be given to the combination of all datasets utilized. A limited portfolio of datasets had to be selected in order to not overload the tool. A primary LAP Tool goal is for it to be user-friendly. If the user must constantly wait for data to load, it is not a useful resource. GIS analyst support was instrumental in guiding LAP Tool development in this regard.

The LAP Tool's analytical approach was intentionally kept simple. There are many other potential ecological criteria, for example, that could be included to identify priority habitats needing protection. Besides biological and biophysical components, and beyond the aquatic and fish--centric lens used in the pilot phase, there are human wellbeing components that could tell a richer story of how we value the ecosystem. The project team hopes to explore these additional criteria to expand and deepen the LAP Tool's analysis in future phases.

A Clear Understanding of Land Use Activities is More Difficult than Expected

The project team explored multiple approaches to the question of how land is being used, and ultimately decided that the most reliable and defensible approach was the most basic –Tax Assessor data. This presented its own challenges, however, as it is not as up to date as desired and is not always an accurate portrayal of the land use activities on the ground. The project team did some quality control of the data, described in the Data Layers section above, but was limited by capacity and time. More research could be done to investigate individual parcels and confirm assumptions, but it is a very time-consuming activity. The Advisory Group advised to use the Tax Assessor data as a starting point for finer tune analysis once parcels of interest are identified for a particular application of the LAP Tool.

The project team explored using the Puget Sound High-Resolution Change Detection dataset (WA Dept. of Fish and Wildlife) to determine land cover change but found that its land cover categories were too general and difficult to crosswalk with the land use categories in other datasets. Also, as it is an assessment of past change, it couldn't be used in a predictive way. However, it could be useful as additional context to identify current land management on specific parcels of interest.

County land use zone codes are inconsistent across jurisdictions, making it difficult to illustrate and utilize for comparison and analysis. Likewise, the use of Critical Area Ordinances varies, making the data inconsistent and less useful for this purpose. The Advisory Group discussed using critical area designations to determine specific protections in place on a given parcel, and identify successes and gaps in their application, but the data could only be used across the entire project area as contextual information, without any further analysis at this time.

There is no comprehensive conservation easements database. Information on easements must be pieced together from multiple sources, which the project team did not have the capacity to do in this phase. The national database used is incomplete; it does not capture easements on individual private properties well, as it relies on property owners to voluntarily enter their data.

Projecting Future Pressures is Uncertain and Full of Caveats

Some counties have conducted varying degrees of a buildout analysis as a component of their Comprehensive Plans, but the Advisory Group was inconclusive how accurate and useful they could be

for the LAP Tool. In some cases, they could make land use zoning more granular, as it is not realistic to assume that all parcels included in a zone are homogenous. It was decided that county buildout analyses would not be used in this pilot phase but could be explored more in the future to determine how to apply this information to the tool.

Significant GIS analyst time was invested in determining how to use population growth data to project future development pressure. The best available data found was an ESRI proprietary dataset titled "2019-2024 USA Population Growth." However, in the end, access to the raw data in order to analyze it or clip it to the Hood Canal watershed was not possible so it could not be used during this phase.

Developing an Interactive and User-Friendly Mapping Tool is Very Complex and has Technical Limitations

The project team envisioned many functionalities of the LAP Tool that simply could not be developed in the pilot phase due to either technical or capacity limitations. Some aspects could be possible with further investment of time and resources, but the team must weigh the benefits of each investment. Workarounds were developed in cases where complex mechanisms could not be realized, such as the ability for the user to filter datasets, and other customizations. Instead, a pop-up table displays all data attributes for a selected parcel.

Advisory Group Recommendations

In addition to the Pilot Areas described above, the Advisory Group developed a set of recommendations regarding how the LAP Tool could be specifically used to assist member governments' protection and restoration efforts in Hood Canal. The HCCC Board of Directors will consider the recommendations for future applications and provide direction for the LAP Tool's next phases.

Land Use Discussions (Zoning, Critical Areas Ordinances, Shoreline Master Programs, etc.)

HCCC plans to follow up the LAP Tool pilot results with further discussions with Hood Canal jurisdictions about how to best address the change projected for the prioritized parcels. Using the LAP Tool to analyze change through this lens can help determine the most important areas to avoid development, identify opportunities to align HCCC member counties' land use policies with the IWP, and pursue adaptive management of local jurisdictions' policies and programs.

Conservation Acquisitions

The Advisory Group recommended using the LAP Tool to identify priority parcels to acquire for conservation purposes. By highlighting prioritized parcels in pilot areas of focus, further analysis can be done to assess their conservation value and determine if they are ripe for acquisition and protection.

Restoration

Similar to acquisitions, the Advisory Group recommended using the LAP Tool to identify priority parcels for restoration activities. The prioritized parcels identified by the LAP Tool could be evaluated for the endemic habitat attributes that might make them good candidates for restoration.

Best Management Practices

The Advisory Group recommended that the LAP Tool be used to inform Best Management Practices for property owners. For example, efforts could be made to educate property owners that their property

intersects important ecological criteria, and provide resources (i.e. Shore Friendly program information) for how they can voluntarily steward their land.

Education/Outreach

The Advisory Group recommended exploring opportunities to use the LAP Tool for education and outreach purposes. For example, the LAP Tool could be modified to include other ecological attributes so that an owner of given parcel could know what unique and interesting ecological attributes exist on their property and need protection.

Transfer of Regional Development Rights

The Advisory Group recommended that the LAP Tool be explored as part of a regional transfer of development rights (TDR) program. For example, the pilot areas identified by the LAP Tool can be used as the basis for determining transfer and receiving areas for development rights from other parts of Hood Canal. In addition to extinguishing development rights in ecologically prioritized areas that are projected to experience future development, this approach could have the added benefit of increasing density in the areas of Hood Canal designated for urban development, which can relieve development pressures outside of urban areas.

Streamflow Restoration Planning

The Advisory Group recommended that the LAP Tool's approach to identifying pilot areas and prioritized parcels can also assist streamflow restoration planning and implementation efforts resulting from the Hirst Decision. For example, recent analyses to map the well potential for rural areas can be added to the LAP Tool's current and future development analysis for a more robust consideration of the expected growth impacts on water supplies.

These discussions, and any potential application of the LAP Tool, necessarily involve the cooperation and participation of various partners. Efforts will be made to increase awareness and utilization of the LAP Tool amongst these groups.

Next Steps

Pending funding and capacity, HCCC plans to build on the progress of the LAP Tool pilot phase in the following ways:

Refine Analytical Approach

In developing the LAP Tool HCCC explored many different ways of thinking about land use. In future phases, HCCC plans to refine our analysis by exploring the addition of new datasets to improve and enrich the accuracy and application of our analysis and pursue technical updates to ensure the long-term relevancy of the LAP Tool. For example, most of the data used in the pilot phase is static, meaning that it will not be automatically updated when the underlying data is updated. A future framework could dynamically download and process the source data used in the LAP Tool's analysis whenever it is updated to ensure that is produces the most accurate and up-to-date results.

Integrate Summer Chum Salmon Recovery

HCCC plans to integrate the LAP Tool into its summer chum salmon recovery work. Summer chum salmon are in the homestretch of recovery, and the LAP Tool can be used to identify remaining priority parcels important to the long-term health and viability of summer chum that are at risk of development. This knowledge can aid strategic planning for acquisitions and other protection and restoration actions for the final phase of recovery.

Collaborate with Regional Partners

Collaboration with partners on other regional land use analysis efforts is already underway, and HCCC plans to meet with these partners and other interested parties to share and learn lessons from our collective work. Some of the most important partners for this collaboration are the HCCC member governments, and a "roadshow" is planned to introduce the LAP Tool to their respective planning staffs. These roadshow meetings will be aimed at getting partners interested and engaged in a cross-jurisdictional exchange of strategic land use policies, strategies, goals, and ideas. This feedback will be incorporated into the LAP Tool's next phase of development and its future applications.

Pursue the Advisory Group's Recommendations

HCCC will continue to explore the feasibility and effectiveness of implementing the Advisory Group's recommendations by working with the HCCC Board and pursue further discussions with regional partners regarding the ideas proposed.

CONCLUSION

The pilot phase of the Hood Canal LAP Tool development successfully developed a conceptual approach and analytical framework for a new, more precise and accurate way to assess how our activities on the landscape impact our priority ecological components and habitats. A fully built out LAP Tool will produce results to re-diagnose the state of Hood Canal's ecosystem based on ecological function and local pressures and identify prioritized recovery focus areas and other tailored and effective solutions to the challenges faced by the region. The ultimate goal of the LAP Tool is to determine strategic gaps, effectiveness of projects, identify opportunities to align or improve consistency with IWP goals across jurisdictional boundaries, and improve protection and stewardship of Hood Canal's ecosystem. The conceptual approach developed in this pilot phase and the recommendations for future developments of the LAP Tool will spur continued exploration of its applications and frame HCCC's adaptive management of IWP strategies and their implementation.

APPENDIX A: LAP TOOL LAND MANAGEMENT DATA LAYER – LAND USE CATEGORIES

The types of common county Tax Assessor land use designations and ownership that compose the LAP Tool land management categories are defined in more detail below. These land management classifications are meant to be a starting point for further analysis. The land management of priority parcels should be revisited to confirm the assumptions about the uses and activities occurring on the landscape.

LAP Tool Land Management Category	Common County Land Use Categories	Common Ownership
Residential	Cabins	Companies
	Mobile homes	Homeowners associations
	Single family residence	Individual owners
		Property management companies
Conservation	Common areas	Environmental Organizations
	Fishing and related services	Government
	Open Space	Individuals
	Undeveloped land	
Public Timber	Forest land	Government
	Non-commercial forest	
	Open Space timber	
Private Timber	Forest land	Companies
	Open Space timber	Individuals
Agriculture	Open Space agriculture	Companies
		Individuals
Recreation	Parks	Companies
	Recreational	Government
	Undeveloped land	Homeowners Associations
Mining and Related	Mining and related services	Companies
		Individuals
Military	Governmental services	Government
Other Developed*	Undeveloped land	Community groups
		Companies
		Government
Other Undeveloped*	Undeveloped land	Individuals
		Government

*Other Developed Lands

The Other Developed land management category demonstrates why the project team looked closely at county land use designations, parcel ownership, and aerial imagery together to determine how the land is currently being managed. In this case, most of the county land use designations in this category are "undeveloped land." It is only by looking at the ownership and aerial imagery that the extent of development activities occurring on the site were determined. For example, if a parcel has a county land use designation as "Undeveloped land," but is owned by an LLC and appears to be built on, altered, or otherwise developed from viewing aerial imagery, the parcel was considered developed.

These individual cases are difficult to generalize, so as a result, this land management category is a catch all for other types of development not specified in other categories.

*Other Undeveloped Lands

Similarly, in the Other Undeveloped land management category most of the county land use designations are also "undeveloped land", so a parcel's ownership and aerial imagery were analyzed to determine the extent of development activities occurring on the site. For example, if a parcel has a county land use designation as "Undeveloped land" and is owned by a school district, but appears unaltered from viewing the aerial imagery, then it is considered undeveloped.

These individual cases are difficult to generalize, so as a result, this land management category is a catch all for other types of less developed land not specified in other categories.

APPENDIX B: FUTURE DEVELOPMENT DATA LAYER - COUNTY ZONE CODES ASSIGNED TO LAP TOOL DEVELOPMENT LEVELS

The following table lists the zone codes for each HCCC member county and their corresponding LAP Tool Development Levels. They are categorized as either Less Developed, Semi-Developed, or More Developed. Development Levels were assigned based on interpretation of the permissible uses allowed in each zone code. The zoning ordinance descriptions of each county were researched to understand the type of development and development intensity allowed in each zone code. Links to the referenced county zoning ordinances are included below.

County Zone Code	County Zone Name	LAP Tool Development Level
Jefferson County ([Chapter 18.15: Land Use Districts](#))		
MPR-OSR	Master Planned Resort - Open Space Reserve	Less Developed
P/OS	Park or Open Space (City)	
PPR	Parks, Preserves, and Recreation	
CF-80	Commercial Forest	
IF-20	Inholding Forest	
RF-40	Rural Forest	
AL-20	Local Agriculture	Semi-Developed
AP-20	Commercial Agriculture	
MPR-RA	Master Planned Resort - Recreation Area	
P/OS(B)	Public / Mixed Use (City)	
CC	Convenience Crossroad	More Developed
CF-80/MRLO	Commercial Forest Mineral Resource Land Overlay	
C-I	Neighborhood Commercial (City)	
C-I/MU	Neighborhood Mixed Use Center (City)	
C-II	General Commercial (City)	
C-II(H)	Hospital Commercial (City)	
C-II/MU	Community Mixed Use Center (City)	
C-III	Historic Commercial (City)	
EPF-A	Essential Public Facility-Airport	
EPF-WM	Essential Public Facility-Waste Management	
GC	General Crossroad	
HI	Heavy Industrial	
LI	Light Industrial	
LI/C	Light Industrial/Commercial	
LI/M	Light Industrial/Manufacturing	
M-C	Mixed Commercial - Light Manufacturing (City)	
MPR-MF-10	Master Planned Resort - Multiple Family	

MPR-RC/CF	Master Planned Resort - Resort Complex/Community Facilities	
MPR-SF-4	Master Planned Resort - Single Family	
MPR-SFT	Master Planned Resort - Single Family Tracts (1:2.5)	
MPR-VC	Village Commercial Center	
NC	Neighborhood/Visitor Crossroad	
P-I	Public Infrastructure (City)	
RI	Forest Resource-Based Industrial	
R-I(SF)	Single Family Residential (City)	
R-II(SF)	Single Family Residential (City)	
R-III(MF)	Multifamily Residential (City)	
R-IV(MF)	Multifamily Residential (City)	
RR-5	Rural Residential	
RVC	Rural Village Center	
UGA-C	Urban Growth Area - Urban Commercial	
UGA-HDR	Urban Growth Area - High Density Residential 13-18	
UGA-LDR	Urban Growth Area - Low Density Residential 4-6	
UGA-LI	Urban Growth Area - Urban Light Industrial	
UGA-MDR	Urban Growth Area - Moderate Density Residential 7-12	
UGA-P	Urban Growth Area - Public	
UGA-VC	Urban Growth Area - Visitor Oriented Commercial	
RR-10	Rural Residential	
RR-20	Rural Residential	
M-II(A)	Marine Related Uses - Boat Haven (City)	
M-II(B)	Marine Related Uses - Point Hudson (City)	
MPR-PH	Master Planned Resort - Pleasant Harbor	
Kitsap County ([Title 17: Zoning](#))		
T	Tribal Land	*
P	Parks	Less Developed
FRL	Forest Resource Lands (1 DU/40 Ac)	
RP	Rural Protection (1 DU/10 Ac)	Semi-Developed
RW	Rural Wooded (1 DU/20 Ac)	
UR	Urban Restricted (1-5 DU/Ac)	
BC	Business Center	More Developed
CITY	Incorporated City	
IND	Industrial	
MRO/I	Mineral Resource Overlay	
MRO/R	Mineral Resource Overlay	
MRO/T	Mineral Resource Overlay	

MRO/U	Mineral Resource Overlay	
NC	Neighborhood Commercial (10-30 DU/Ac)	
RCO	Rural Commercial	
REC	Rural Employment Center	
RHTC	Rural Historic Town Commercial	
RHTR	Rural Historic Town Residential	
RI	Rural Industrial	
RR	Rural Residential (1 DU/5 Ac)	
TTEC	12 Trees Employment Center	
UL	Urban Low Residential (5-9 DU/Ac)	
MIL	Military	More Developed*
Mason County ([Title 17: Zoning](#))		
IR	Indian Reservation	*
ONP	Olympic National Park	Less Developed
ONF	Olympic National Forest	
LTCF	Long Term Commercial Forest	
IH	Inholding Lands	
AGR	Agricultural Resource Lands	Semi-Developed
RC1	Rural Commercial 1	More Developed
RC2	Rural Commercial 2	
RC3	Rural Commercial 3	
RC5	Rural Commercial 5	
RI	Rural Industrial	
RMF	Rural Multi-Family	
RNR	Rural Natural Resource	
RR2.5	Rural Residential 2.5 Acres	
RR5	Rural Residential 5 Acres	
RT	Rural Tourist	
RTC	Rural Tourist-Campground	
UGA	Urban Growth Area	
RR10	Rural Residential 10 Acres	
RR20	Rural Residential 20 Acres	
CITY	City	

* For Tribal and military lands with no zoning information, conversations with the appropriate entity are necessary to discuss future plans for their parcels intersecting the priority ecological criteria. The Advisory Group recommended assigning all military lands to the More Developed category to reflect the intensity of development. However, not all military lands in Hood Canal are developed.