May 7, 2024

MEMO TO: ADEPT-1(18) File

F R O M: Gabe Johnson, Chair
Agriculture, Diversification, Environment, and Public Transportation Committee

SUBJECT: **TRANSMITTAL OF INFORMATIONAL DOCUMENT RELATING TO WETLANDS OVERLAY MAP** (ADEPT-1(18))

The attached informational document pertains to Item 1(18) on the Committee's agenda.

adept:ltr:001(18)afile01:sgt

Attachment

Maui County Wetlands Overlay Map DRAFT

4/30/2024

State Conservation District Zones
State Parks, Reserves and Sanctuaries
Wetlands DRAFT
Anchialine pool
Area with Wetland Function
Conservation Area
Fishpond
Forest/Shrub Wetland and/or Mangrove Swamp
Freshwater or Brackish Pond
Herbaceous Wetland/Marsh
Reservoir or Other Artificial Water Body
Riverine Feature
Wetland Complex
Wetlands Buffer (100ft)
Streams, Non Perennial
Streams, Perennial
Streams Buffers (Non Perennial = 35ft, Perennial = 100ft)
Roads
Highways
World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Citations
150m Resolution Metadata

1:748,240

0 5 10 20 mi

0 5 10 20 km

Earthstar Geographics, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, USFWS

Link to draft Wetlands Overlay Map

Maui County Wetland Overlay Map Draft for Public Review

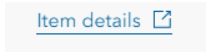
Project Background and Purpose

Wetlands are important for the many benefits they provide us, such as clean air, greenhouse gas regulation, flood protection, drought recovery, erosion control, soil formation, pollution control, regulation of hydrological flows, species habitat, pollination, and food production. The County of Maui (the County) has a new law – Maui County Code Chapter 19.47 – Wetlands Overlay District – to restore and protect wetlands in the County. "Overlay district" means an area where certain additional requirements are superimposed upon a base or underlying zoning district (e.g., agricultural district). To comply with this law, the County's Planning Department is required to produce a *wetland overlay map* that shows the approximate location of wetlands and other waters in the County, which will serve as a tool for the Department when executing its planning and permitting responsibilities.

Over the past year, the County's Department of Planning, the University of Hawai'i Sea Grant Program, and the County's wetland consultants H. T. Harvey & Associates have prepared a Wetland Overlay Map showing the approximate location of wetlands and other water features on Moloka'i, Lāna'i, and Maui. The County seeks your input on this draft map: Is the wetland that you know of or work with depicted on this map? Is the approximate location of the wetlands that you know of shown on the map accurately? The feedback we receive will be used to finalize the Wetland Overlay Map. Don't see your wetland? Then please tell us about it, but also know that even after this map is 'finalized' it will continue to be updated as additional information becomes available.

This document is also available through the ArcGIS Online map here.

Click on 

then on 

How to provide input on this wetland overlay DRAFT map?

To provide input email **mauiwetlandoverlay@harveyecology.com** with your comments.

1) To comment on a specific wetland feature on the map please include the "Wetland Polygon ID" number. When you click on a wetland polygon on the map, a pop-up window opens with the Wetland Polygon ID" number. Please use this number when referencing a particular wetland, you are commenting about.
2) If the wetland you know of and are commenting on is not on this map, then we suggest you take a screen shot of the location and email us the picture showing the area you think is a wetland or just call us at 808-441-2082 and we can talk through a specific location with you.
3) **Please submit comments by May 15, 2024.**

Important Note: The feedback you provide by May 15, 2024, will be used to create the final wetland overlay map. However, it is important to note that this "final map" is intended to be a living document that the Planning Department will continue to improve and amend over time as new data becomes available. After June 30, 2024, you can provide wetland updates to the Planning Department by emailing longrangedivision@mauicounty.gov

About this Wetland Overlay Draft Map

Almost all wetland loss and degradation in Hawai'i over the years has occurred in the lowland coastal areas as a direct result of modern agricultural practices, urbanization, and development. Hawai'i has lost about 44 percent of its coastal wetlands. Given the limited project time and budget, it was decided to prioritize mapping wetlands outside of protected areas such as State conservation district zones, parks, sanctuaries, and reserves. The premise being that most upland wetlands, e.g. bogs, already occur within conservation or protected areas high in the watershed or in areas that are not likely to be compromised by development. As such, the scope of this wetland overlay map mostly encompassed mapping wetlands in lowland urban and agricultural areas.

The approach taken to prepare this Wetland Overlay Map is summarized below.

- Per the County Code wetland criteria, the presence of two out of the three ([1]wetland hydrology, [2]hydric soils, and/or a [3]hydrophytic vegetation community) parameters listed in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region, was used to define and determine wetlands for this project.
- As a first step, a wetland determination model was developed to digitally identify potential wetlands based on spatial data available for hydrology, hydric soils, and hydrophytic vegetation. Spatial data used to create this model included:
    - *National Wetland Inventory (NWI) data – primarily for looking at wetland locations, current and historical*
    - *Natural Resource Conservation Services' (NRCS) soils data (filtered attributes for hydric potential, historic flooding, depth to water table, particle size)*
    - *National Hydrography Dataset (NHD) – for existing and historic stream and waterbody data*
    - *State of Hawai'i Division of Aquatic Resources Streams data*
    - *Groundwater data (from NRCS soils layer)*
    - *Digital Elevation Model – filtered for slope and change in slope*
    - *Hydrology layer – used digital elevation model, slope, and aspect to generate potential water collection areas*
    - *Distance from roads raster (generated from county roads data)*
    - *Distance from dams and ditches (raster generated from county vector data)*
    - *Existing land use and landcover data (where it exists, and reclassified by wetland potential)*

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[1] The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions.

[2] A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

[3] Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

- Meetings were organized with wetland experts across various agencies and organizations, and the spatial data, firsthand information, and feedback on the mapping process gathered from them was incorporated to prepare this map.
- Extensive desktop spatial assessment was conducted using Google Earth and Pictometry/Eagle Viewer to identify wetland parameters of hydrophytic vegetation and hydrology and determine wetland boundaries on aerial maps.
- Targeted field work was also conducted on Molokaʻi, Lānaʻi, and Maui to ground truth the presence of wetland parameters and functions and determine wetland boundaries.
- Valuable knowledge on local and historic wetland resources gathered from cultural Hawaiian practitioners and community members is also incorporated into this Wetland Overlay Map. The project team will continue to reach out to and seek input from cultural Hawaiian practitioners till the end of May 2024.

Notes About Wetland Types

There are many different types of wetlands that occur across a wide range of elevations in Hawaiʻi. We considered the detailed wetland classification system developed by Cowardin et al. (1979) is used in National Wetland Inventory, as well as some classifications developed specially for wetlands in Hawaiʻi by Maciolek (1977), Polhemus et al. (1992) and Erickson and Puttock (2006). The goal of this Planning Department Wetland Overlay Map project is to identify the approximate location of wetlands and not so much to identify the wetland type. As such we have grouped many different types of wetlands into broad categories described below.

Type of Wetland or Water Body	**Description**
Herbaceous Wetlands/Marshes	These include Palustrine wetlands mostly in lowland areas that are perennial or seasonal, freshwater or brackish, that have emergent vegetation but little to no shrubs and trees. Hydrologically they are supported by either surface or ground water such as streams, springs, and seeps. Examples of herbaceous hydrophytic vegetation encountered in this wetland type include pickleweed (*Batis maritima*), California grass (*Urochloa mutica*), akulikuli (*Sesuvium portulacatrum*), and sedges, often co-occurring with scattered upland trees like kiawe (*Prosopis pallida*). This wetland type also includes agricultural wetlands, e.g., loʻi, loʻi kalo and rice paddies.
Forest/Shrub Wetlands and/or Mangrove Swamps	These include wetlands mostly in lowland areas and can be perennial or seasonal, freshwater or estuarine, and may be dominated by shrubs such as marsh fleabean (*Pluchea* spp.) and trees such as hau (*Taliparitiliaceum).* Water depth often fluctuates on a seasonal basis due to influxes of water from streams. This category includes a range of botanically diverse coastal plain and riparian forested wetlands and mangrove swamps with species such as red (*Rhixophora mangle*) and black (*Avicennia germinans*) mangroves.
Wetland Complex	Large areas that include more than one type of wetland, for example a collection of ponds, marshes, mangrove swamps etc. E.g., Kealia Pond and the surrounding area on Maui.
Riverine Features	This includes all lotic or flowing water features – streams - perennial and non-perennial, ditches, drainages, etc. These features may collect runoff from storms or may have a connection to groundwater, either through springs and seeps, or a groundwater table that intercepts the streambed.

Fishpond	Built manually by Hawaiians, fishponds or loko iʻa are unique aquaculture systems that existed throughout ancient Hawaiʻi. This category includes currently operating as well as dormant fishponds – inland, estuarine, and marine types.
Anchialine Pool	These are naturally occurring standing water bodies or pools that occur in coastal lava fields. There is no surface connection to the ocean and the salt or brackish water fluctuates with the tides.
Reservoir or Other Artificially Created Water Body	This includes bodies of water that were artificially created to hold water, e.g., reservoirs, golf course ponds, agricultural water basins, etc. These features are only considered wetlands under the ordinance if they have replaced a historic stream or wetland feature, have some natural hydrological input, have developed wetland vegetation, and/or are not concrete lined.
Freshwater or brackish Pond	This includes naturally occurring impounded water bodies and can be either freshwater or estuarine.
Area with Wetland Function	These are areas that were known to be wetlands but have been modified (e.g. filled in or blocked from natural hydrology) but have the potential to be restored as mitigation sites or functioning wetlands. Many of these areas are identified by wetland experts and Hawaiian cultural practitioners with knowledge about wetland resources.