

DATA SUMMARY

Wetlands Map

Purpose

This data summary is an initial step in the development of the proposed alternative corridors for the Parks Highway Planning and Environmental Linkages (PEL) Study. It is intended to confirm data for identifying the characteristics of the existing environment for wetlands in the project study area. The study area boundaries or Probable Limits of the Alternatives (PLA), where the proposed alternative highway corridors will be located, is shown in Figure 1. The PLA is broadly bordered by the Parks Highway to the north (+500-1000 feet), Hyer Road interchange to the east, West Hawk Lane to the west, and Palmer Slough to the south, and includes 43,827 acres.

This data summary includes data collection methods, analysis methods, mapping methods, and a summary of the key findings for the existing characteristics of the resource.



Figure 1: Probable Limits of the Alternatives

Data Collection Source

Wetland data assembled in this memorandum is derived from the following sources¹:

- Matanuska-Susitna Borough (MSB)
 - Wetlands Viewer² (Cook Inlet wetland)
- U.S. Fish and Wildlife Service (USFWS)
 - National Wetlands Inventory³ (NWI)
- Environmental Systems Research Institute (ESRI) World Imagery Service Layer⁴
- U.S. Geologic Survey
 - National Hydrologic Database⁵
- U.S. Department of Agriculture
 - Web Soil Survey⁶

Mapping Methods

- Data from each source was compiled into ArcGIS and spatially compared to determine likely extents of wetlands, within the PLA, based on data wetland characteristics and aerial signature. Comparison of wetland mapping by source is used since mapping serves different purposes and is created on varied scales of accuracy and methods.
- Cook Inlet wetland maps were created from high-altitude aerial photography and topographic maps at a 1:24,000 scale. These maps were created for planning purposes and are not intended for regulatory purposes (permitting). Cook Inlet wetland mapping classifies wetland habitats by Hydrogeomorphic unit.
- USFWS NWI wetland maps were created from high-altitude aerial photography and topographic maps at a 1:63,360 scale. These maps were created for planning purposes and are not intended for regulatory purposes (permitting). NWI map data are not intended to be used to identify wetland boundaries for wetland permitting purposes. NWI data classifies wetlands by Cowardin categories and are shown on Figure 2 as follows:
 - \circ $\,$ Palustrine are mapped as wetland, except for ponds which are mapped as waterbodies

¹HDR prepared a memorandum in 2009 using Cook Inlet wetland, National Wetland Inventory, National Hydrologic Database, and Web Soil Survey. Differences in mapping appear to be associated with areas mapped in Cook Inlet wetland as Discharge Slopes. Based on best professional judgement, Discharge Slopes are more likely to contain wetlands than not. Discharge slopes were included in this mapping but were excluded from HDR mapping. ² https://www.arcgis.com/home/item.html?id=15658472427f459ab6d73b1d3ca5ab77

³ https://www.fws.gov/wetlands/data/Mapper.html

⁴ ESRI World Imagery Wayback: <u>https://livingatlas.arcgis.com/wayback/</u> (imagery dated 2019)

⁵ <u>https://www.usgs.gov/core-science-systems/ngp/national-hydrography/national-hydrolgraphy-dataset?qt-science_support_page</u>

⁶ <u>https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx</u>

- Riverine are mapped as waterways.
- Lacustrine are mapped as waterbodies (equal to 20 acres or greater).
- \circ Estuarine are mapped as wetland and waterbodies based on:
 - Areas located above the ordinary high-water mark are mapped as wetlands.
 - Areas located below the ordinary high-water mark are mapped as waterbodies
- ESRI GIS Aerial is a mosaic of aerials stitched together by ESRI. It provides the basis for identification and interpretation of the 'aerial signature⁷' of wetland habitats. This method is known as using 'Best Professional Judgement'. This skill is developed over years interpreting field data with maps. The scale of the aerial maps is 1:24,000.
- The USGS National Hydrologic Dataset (NHD) is mapped at a scale of 1:24,000 or larger (1:63,360 or larger in Alaska). NHD does not name all waterbodies and does not follow the Cowardin classification system as it identifies several waterbodies less than 20 acres is size as lakes. The Cowardian systems classifies lakes at 20 acres or greater in size.
- USDA Web Soil Survey (WSS) provides a detailed description of soil units at a large scale (1:63,360) and is typically based on topographic maps. One of the soil properties provided by this dataset is a hydric rating, which is based on how well drained the area is, the landform, slope, and depth to water table. WSS data with a hydric rating of 75 percent or greater was determined to indicate a wetland.

The five datasets (Cook Inlet, NWI, ESRI GIS Aerial, NHD, and WSS) were used as follows to determine if an area was a wetland or an upland.

- Removed developed areas (i.e., roads, buildings) from mapping.
- Identified areas not mapped as wetlands by Cook Inlet wetlands or NWI, but that have vegetation and hydrology signature consistent with wetlands.
- Examined aerial signature in areas identified as wetlands by both the Cook Inlet and NWI data as areas where Cook Inlet wetland and NWI overlap are considered wetlands.
- Further assessed areas where Cook Inlet and NWI data do not overlap using ESRI GIS Aerial and WSS data.
- Used best professional judgement (i.e., aerial signature of vegetation, hydrology) to determine modifications to wetland boundaries or identification of unmapped wetlands by other data sources, and to determine if non-overlapping areas are wetland or upland.
- Coded wetland polygons without Cowardin classification (i.e., Cook Inlet wetlands or newly mapped wetlands) to Cowardin System, Class, and Subclass based on aerial signature of vegetation community.
- NWI wetland mapping does not use the same projection or reference system (i.e., state plane coordinates) as the Cook Inlet wetland mapping or ESRI GIS Aerial. Therefore, there may be a visible shift in wetland boundaries. This shift is most noticeable around lakes and ponds.

⁷ An aerial signature uses aerial interpretation to identify vegetation communities by comparing each with known wetland areas (i.e., NWI and Cook Inlet wetlands) based on similarities and differences and identifying hydrologic features (i.e., lakes, streams) which may influence vegetation communities (i.e., upland versus wetland).

Used NHD database to identify lakes, ponds, and streams.

Mapping consists of wetlands, waterbodies, and waterways within the PLA; these features shown on Figure 2 (attached) may be jurisdictional under the Clean Water Act per 33 CFR 328.3, and includes the following:

- Merged wetlands into a single polygon based on the results of steps in bullets 2, 3, 4, and 5 above.
- Classification of as lakes and ponds as waterbodies and streams as waterways.

Assumptions

- No field verification or assessment of locational reliability was performed for mapped areas.
- Downloaded data and mapping is assumed to be accurate.
- A wetland delineation meeting U.S. Army Corps of Engineers standard will be completed prior to project construction to evaluate and mitigate for project impacts.

Summary of Characteristics

Figure 2 (attached) shows the location of wetlands, waterbodies, and waterways identified within the PLA. The PLA is approximately 43,827 acres in size and contains approximately 6,305 acres (approximately 14 percent) of wetlands, and 1,139 acres (approximately 3 percent) of waterways and waterbodies (i.e., streams, lakes), and 36,383 acres of uplands.

- Wetlands include:
 - Palustrine Forested consists of approximately 1,090 acres
 - Palustrine Scrub-Shrub consists of approximately 3,063 acres
 - Palustrine Emergent consists of approximately 2,123 acres
 - Estuarine Intertidal consists of approximately 21 acres
 - Estuarine Subtidal consists of approximately 8 acres
- Waterbodies include numerous un-named lakes and, ponds, and waterways include streams The following named waterbodies/waterways are within the PLA:

- o Cottonwood Creek
- o Crocker Creek
- o Little Meadow Creek
- o Lucille Creek
- o O'Brien Creek
- o Wasilla Creek
- o Black Lake
- o Bruns Lake
- \circ Jacobsen Lake
- o Lucille Lake
- o Lucy Lake
- o Wallace Lake
- o Wasilla Lake
- o Whale Lake
- o Zak Lake