# Wetland Mapping Data Sources

Desktop wetland mapping typically requires the use of four (4) types of data as references, these include: aerial imagery, contours, hydrology information, and vegetation information. DOWL has investigated many different sources for these resources to determine the best available data for use in the wetland mapping effort for the Ambler Mining District Industrial Access Road Project (AMDIAP). Specifically, this memo describes that data sources proposed for mapping the proposed Communities Corridor alignment.

The Corps of Engineers Wetlands Delineation Manual (1987) recommends obtaining wetland-related data from the following sources (when available):

- USGS quadrangle maps [1:24,000 *preferred*, 1:62,500 (1:63,360 in Alaska) if 1:24,000 not available, provided 1:63,360 is available]:
    - Topography
    - Drainage patterns
    - General land uses
    - Delineation of wet areas, such as swamps and marshes (when available)
    - Other natural features
- National Wetlands Inventory (NWI):
    - Wetland areas typically mapped at a scale of 1:24,000 (if USGS maps are not at this scale then mapped at 1:62,500 or 1:63,360 in Alaska)
    - Cowardin et al. classification.
- Soil Surveys provide:
    - General information (e.g., climate, natural resources, geology, vegetation types)
    - Soil properties [frequency, duration, and timing of inundation (when present), water table characteristics, and soil permeability coefficients]
    - Soil classification
- Hydrology data:
    - Drainage patterns (National Hydrology Dataset 1:63,360)
    - Stream or tidal gauges (if available)
- State, Borough, or Local government maps:
    - Area characteristics such as flood zones
- USGS land use and land cover maps:
    - Dominant growth forms (e.g., tree, shrub, herbaceous)
    - General geology, hydrology, and disturbance regimes

DOWL has investigated all readily available sources of data (including those listed above) to complete the desktop wetland delineation for the Communities Corridor. A desktop wetland delineation would classify wetlands using four available wetland-related data types (described in more detail below):

- Aerial imagery,
- Topography,

- Hydrology, and
- Vegetation.

## Wetland-related Data

1. Aerial Imagery

Aerial imagery for this effort has been acquired from Bing, ESRI World Imagery, and Alaska Department of DNR (GeoNorth_OIM_BDL) for the project corridor. Imagery quality varies from each source and changes throughout the project corridor. ESRI World Imagery has the best coverage of "Good" quality imagery which has a pixel size of approximately 6 feet. In those areas where the ESRI aerial image has lesser quality, the other data sources would be used to provide additional information.

2. Topography

The contour data used for the corridor is provided from ESRI and Alaska Department of Natural Resources (ADNR) in 20-foot contours. Although USGS 1:63,360 quadrangles are available for reference, contour intervals vary from 25-foot to 100-foot intervals. No LiDAR is available, leaving the 20-foot contours the best publicly available data.

3. Hydrology

USGS provides comprehensive surface water data through the National Hydrography Dataset (NHD) at a 1:63,360 scale in Alaska. For areas with adequate aerial imagery, streams with visible banks will be mapped. Where streams without visible banks are identified by NHD data, each will have a 2-foot buffer applied to create Riverine polygons for the delineation.

http://dnr.alaska.gov/lrisservices/ls_proxy/document?static_pickup=hydro_63360_lyr.zip

4. Vegetation

Although NWI data is the most comprehensive wetland data set available in the U.S., it is limited in Alaska and the nearest NWI data available is limited to areas east of Tanana and a small section to the southeast of Hughes (Figure 1).

Other Alaska vegetation data is available from the Alaska Center for Conservation Science (ACCS) and University of Alaska Fairbanks (UAF). The ACCS created a vegetation data layer for the entire state and depicts both vegetation at a 30-meter resolution. The UAF satellite layer uses remote sensing to delineate wetland/upland boundaries at a 100-meter resolution.

NWI https://www.fws.gov/wetlands/data/data-download.html

ACCS https://alaskaconservationscience.org/

UAF https://www.asf.alaska.edu/wetlands/

The table below summarizes the data sources described and whether or not they will be used in the AMDIAP wetland mapping study.

**Data Source Information Summary**

| Data Type | Source | Availability/Resolution | Other Notes |
|---|---|---|---|
| Aerial Imagery | ESRI | Available; Resolution Varies | Typically the best imagery for the corridor. |
| | Bing | Available; Resolution Varies | This imagery would be used in areas where it is better than ESRI. |
| | DNR | Available; Resolution Varies | This imagery would be used in areas where it is better than ESRI or Bing. |
| Contours/Topo | ESRI | Available; 20-foot contours | Digitized USGS Topo Maps would be used to identify changes in slope and extent of riverine wetlands. |
| | DNR | Available; resolution varies | Hill-shade available but no better than ESRI data; not expected to add value; not proposed to be used. |
| Hydrology | DNR | Available; 1:63,360 | Shapefiles based on USGS data. Will use this data for to identify streams and riverine wetlands. |
| | USGS | Available; 1:63,360 | Source for DNR data layer. |
| Vegetation/Wetlands | NWI | Limited availability (see Figure 1); 1:63,360 | Will be used to supplement aerial interpretation where available. |
| | ACCS | Available; 30-meter pixel | Scale is too coarse to match aerial interpretation. |
| | UAF | Available; 100-meter pixel | Scale is more coarse than ACCS data. |
| | Aerial Imagery (as noted above) | Available as noted above in Aerials; Anticipated 10-foot pixel | Vegetation will be identified from aerial interpretation. Expected to yield more detailed delineation than other vegetation data. |

Kobuk

Hughes

Tanana

Sources: Esri, Garmin, USGS, NPS

Communities

NWI Wetlands

**Aerial Quality**

Good

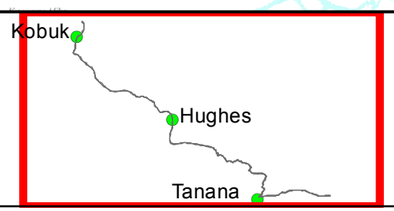
OK

Poor

Snow

0 10 20 Miles

N




AMBLER MINING DISTRICT
INDUSTRIAL ACCESS ROAD

DOWL

AIDEA
Alaska Industrial Development and Export Authority

# Aerial Imagery Quality and NWI Availability

Ambler Mining District
Industrial Access Road

December 07, 2018

Figure 1

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