

**Deadhorse Airport Improvements
Draft Environmental Assessment**

Water Resources Impacts – Wetlands

Appendix G Water Resources Impacts – Wetlands

Project Number: NFAPT00549

To:	Jonathan Hutchinson, P.E.; Project Manager	From:	Zach Baer, PWS
	Alaska Department of Transportation & Public Facilities, Northern Region		Anchorage, AK
File:	Deadhorse Airport Improvements (NFAPT00549)	Date:	November 4, 2022

Reference: Deadhorse Airport Improvements Wetland Mapping

As part of the Environmental Assessment (EA) for the proposed Deadhorse Airport Improvements project in Deadhorse, Alaska, the Alaska Department of Transportation and Public Facilities (DOT&PF) requested Stantec conduct a desktop delineation of the Deadhorse Airport area. National Wetlands Inventory (NWI) mapping is available for the area however, it was mapped using 1982 imagery and has not been updated to include recent infrastructure changes (USFWS 2022).

MAPPING METHODS

Stantec Professional Wetland Scientist Zach Baer created an approximately 1,130-acre study area encompassing the airport, proposed perimeter fence and road embankment, proposed south material site access road, and proposed airport infield fill areas. The project desktop wetland delineation was completed using aerial imagery from the Esri World Imagery layer, collected 7/15/2019 with a resolution of 0.075-meters.

Aerial imagery was used to digitize polygons around wetlands, fill areas, and waters. Polygons were digitized at scales between 1:600 and 1:800. Acreages were calculated in NAD 1983 State Plane Alaska 4 projection.

Mapping polygons were attributed by wetland type, Hydrogeomorphic (HGM) classification (Brinson 1993), Cowardin (NWI) classification (Cowardin et al. 1979) and vegetation, based on the Alaska Vegetation Classification (Vioreck et al. 1992). NWI mapping (USFWS 2022) was referenced for the NWI classifications.

MAPPING RESULTS

Deadhorse is located on the North Slope of Alaska at the end of the Dalton Highway, just south of Prudhoe Bay along the Sagavanirktok River (Figure 1). This location lies within an area of continuous permafrost, which contributes to a landscape dominated by wetlands; all portions of the study area not occupied by fill pads were identified as wetlands or waters (Table 1).

Hydrogeomorphic Classification

Study area wetlands were characterized by hydrogeomorphic (HGM) classification, a system which separates wetlands based on the source of the water supporting them (Figures 2-1 – 2-4). The majority of the wetlands in the study area are Flat HGM wetlands (84 percent). Flat HGM wetlands are maintained primarily by precipitation. These wetlands are underlain by permafrost, allowing precipitation to perch on them for long periods during the growing season. The other class of wetlands in the study area are Depressional HGM wetlands, which are located in topographic depressions. Depressional wetlands make up 2 percent of wetlands and waters in the study area. Within the study area, Depressional wetlands occurred primarily where wetlands have been isolated due to the placement and hydraulic influence of various surface fills. In this mapping, lakes (lacustrine waters) have been classified as Lacustrine in the HGM classification.

Reference: Deadhorse Airport Improvements Wetland Mapping

Table 1: Wetlands and Waters Mapping Results by HGM

HGM	Acres	Percent Wetlands and Waters	Percent Study Area
Wetlands			
Depressional	14.5	2	1
Flat	633.5	84	56
Total Wetlands	647.9	86	57
Waters			
Depressional Ponds	72.2	10	6
Lacustrine**	29.8	4	3
Total Waters	102.0	14	9
Totals			
Total Wetlands and Waters	749.9	100	66
Total Uplands	380.0	-	34
Study Area Total	1,129.9	-	100

*Apparent inconsistencies in sums are the results of rounding.

** Non-HGM classification

Cowardin Classification

Study area wetlands were also characterized using the Cowardin Classification system (Figures 2-1 – 2-4), which was developed for the NWI. Half of the study area was classified as shrub-dominated wetlands, while eight percent was classified as emergent (herbaceous plant-dominated) wetlands. Ponds and Lakes totaled approximately 9 percent of the study area. The uplands within the study area were all fill pads (Table 2).

Table 2: Wetlands and Waters Mapping Results by Cowardin Classification

Cowardin Type	Cowardin Classification	Acres	Percent Study Area
Emergent Wetlands	PEM1	85.7	8
Shrub Wetlands	PEM1/SS1	562.3	50
Ponds	PUB	60.8	5
	PUS	2.7	<0.5
	PUS/EM1	8.7	1
Lakes	L1UB	29.8	3
Total Wetlands and Waters		749.9	66
Uplands		380.0	34
Study Area Total		1,129.9	100

*Apparent inconsistencies in sums are the results of rounding.

Reference: Deadhorse Airport Improvements Wetland Mapping

Vegetation Classification

The study area also characterized vegetation by using a modification of the Viereck Classification system (Figure 2). Shrub-dominated vegetation types are the most common in the study area (50 percent), followed by herbaceous (8 percent) (Table 3).

Other Types include Barren and Open Water. Barren areas have less than 10 percent vegetative cover and represented fill pads, making up 34 percent of the study area. Open Water consists of ponds and one lake and covered 9 percent of the study area.

Table 3: Vegetation Mapping Results

Vegetation Class	Vegetation Type	Upland	Wetland/Water	Total	Percent Study Area
Shrub Types	Open Mixed Shrub-Sedge Tundra	-	562.3	562.3	50
	Shrub Total	-	562.3	562.3	50
Herbaceous Types	Wet Herbaceous	-	85.7	85.7	8
	Herbaceous Total	-	85.7	85.7	8
Other Types	Barren	380.0	-	380.0	34
	Open Water	-	102.0	102.0	9
	Other Total	380.0	102.0	482.0	43
Study Area Total		380.0	749.9	1,129.9	100

*Apparent inconsistencies in sums are the results of rounding.

CONCLUSION

These results can be used to inform impact analysis for the Deadhorse Airport Improvements EA and project permitting. This report does not constitute a full wetland delineation required to make a jurisdictional determination about wetlands and waters within the study area, therefore all wetlands and waters must be considered jurisdictional.

October 21, 2022

Jonathan Hutchinson, P.E.; Project Manager

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Reference: **Deadhorse Airport Improvements Wetland Mapping**

References

Brinson, M.M. 1993. A Hydrogeomorphic Classification for Wetlands. US Army Corps of Engineers Waterways Experiment Station, WRP-DE-4.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior Fish and Wildlife Service.

U.S. Fish and Wildlife Service (USFWS). 2022. National Wetlands Inventory. <https://www.fws.gov/wetlands/>. Accessed September 2022.

Vierick, L.A., C.T. Dyrness, A.R. Batten, K.J. Wenzlick. 1992. The Alaska Vegetation Classification. US Department of Agriculture, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-286.

Stantec Consulting Services Inc.

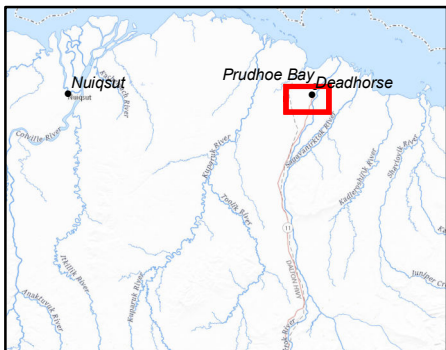
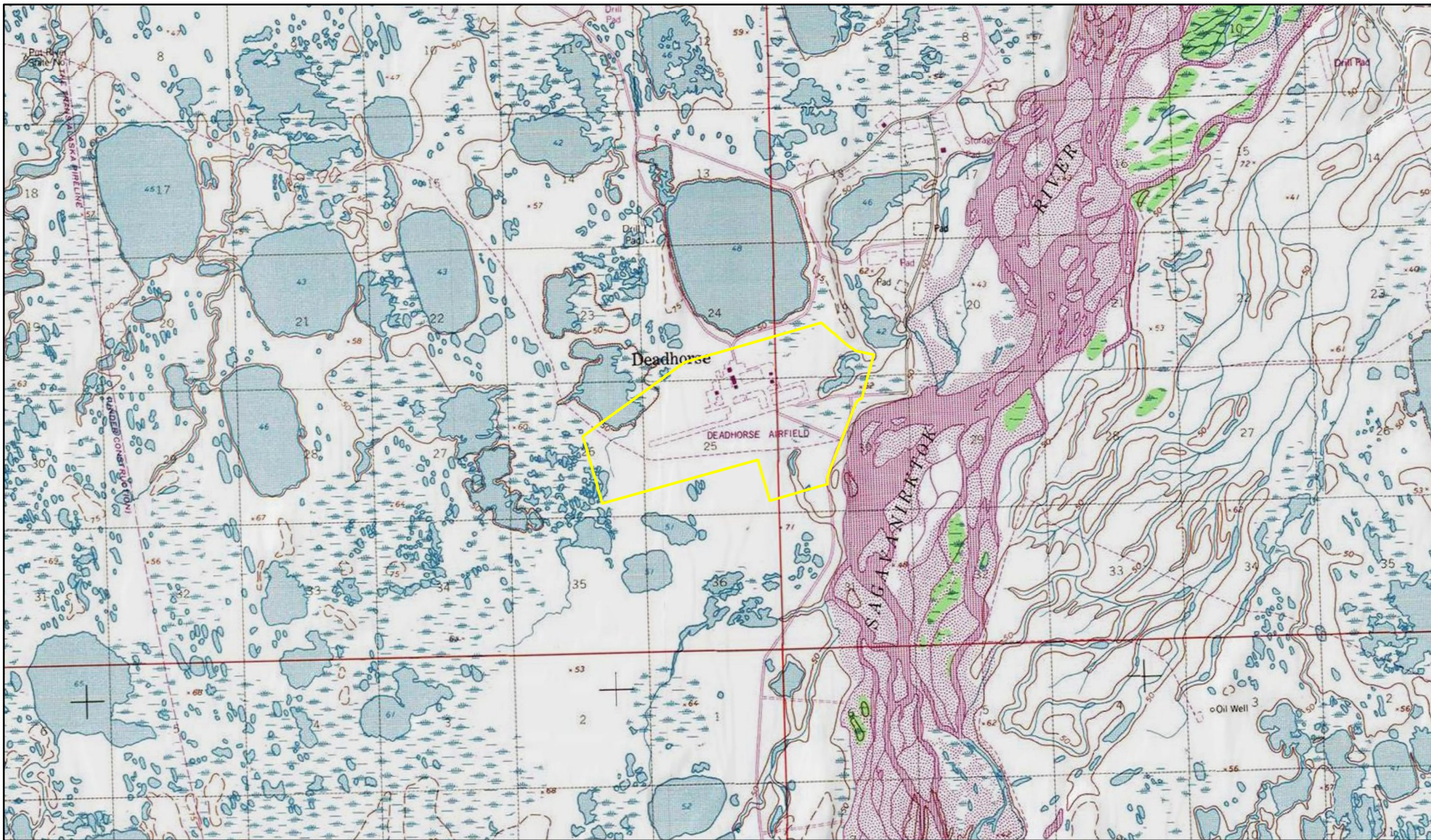



Zach Baer PWS
Environmental Scientist

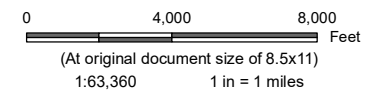
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 Study Area



Project **Deadhorse Airport**

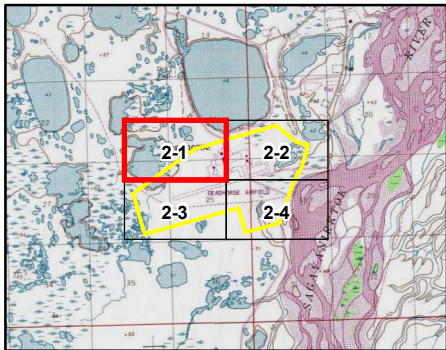
Figure **Location**


Drawn By **ZLB**

Date **10/21/2022**

Figure # **1**

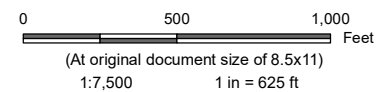




 Study Area

Aquatic Resources by Hydrogeomorphic Classification (labeled by Cowardin Classification)

-  Depressional
-  Flat
-  Lacustrine



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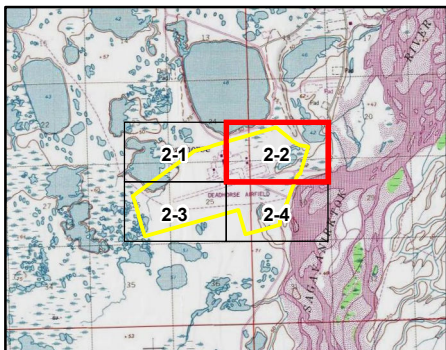
Figure
Desktop Wetland Mapping

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Figure #
2-1

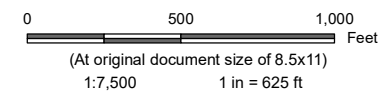




Study Area

Aquatic Resources by Hydrogeomorphic Classification (labeled by Cowardin Classification)

- Depressional
- Flat
- Lacustrine



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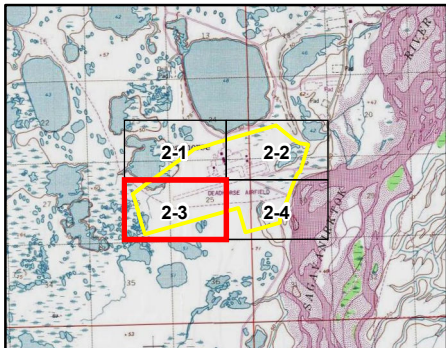
Figure Desktop Wetland Mapping


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Figure # 2-2

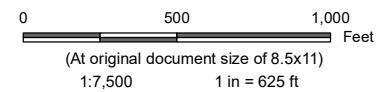




 Study Area

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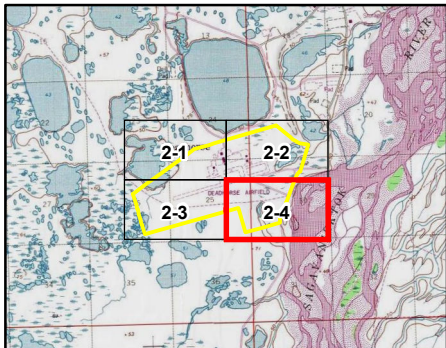
Figure Desktop Wetland Mapping


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Figure # 2-3

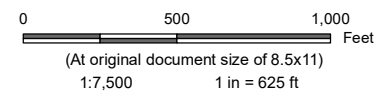




 Study Area

Aquatic Resources by Hydrogeomorphic Classification (labeled by Cowardin Classification)

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-  Flat
-  Lacustrine



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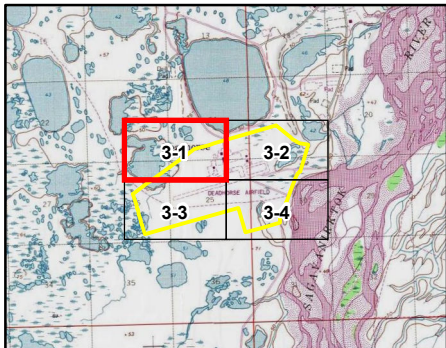
Figure Desktop Wetland Mapping


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Figure # 2-4

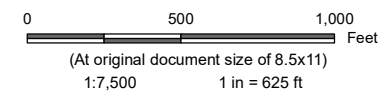




 Study Area

Vegetation Type

-  Barren
-  Open Mixed Sedge-Shrub Tussock Tundra
-  Open Water
-  Wet Herbaceous



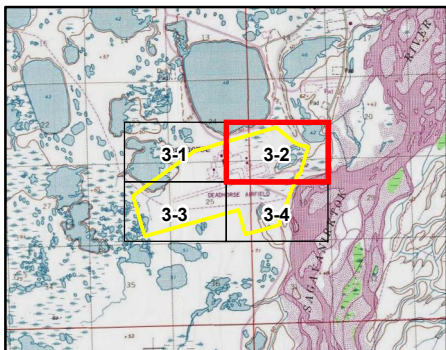
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Figure **Vegetation Classification**

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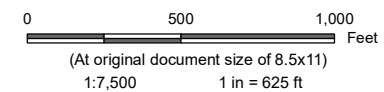
Figure # 3-1



 Study Area

Vegetation Type

-  Barren
-  Open Mixed Sedge-Shrub Tussock Tundra
-  Open Water
-  Wet Herbaceous



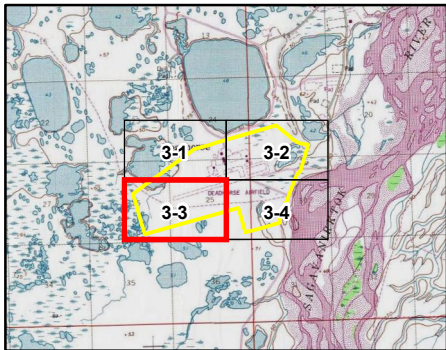
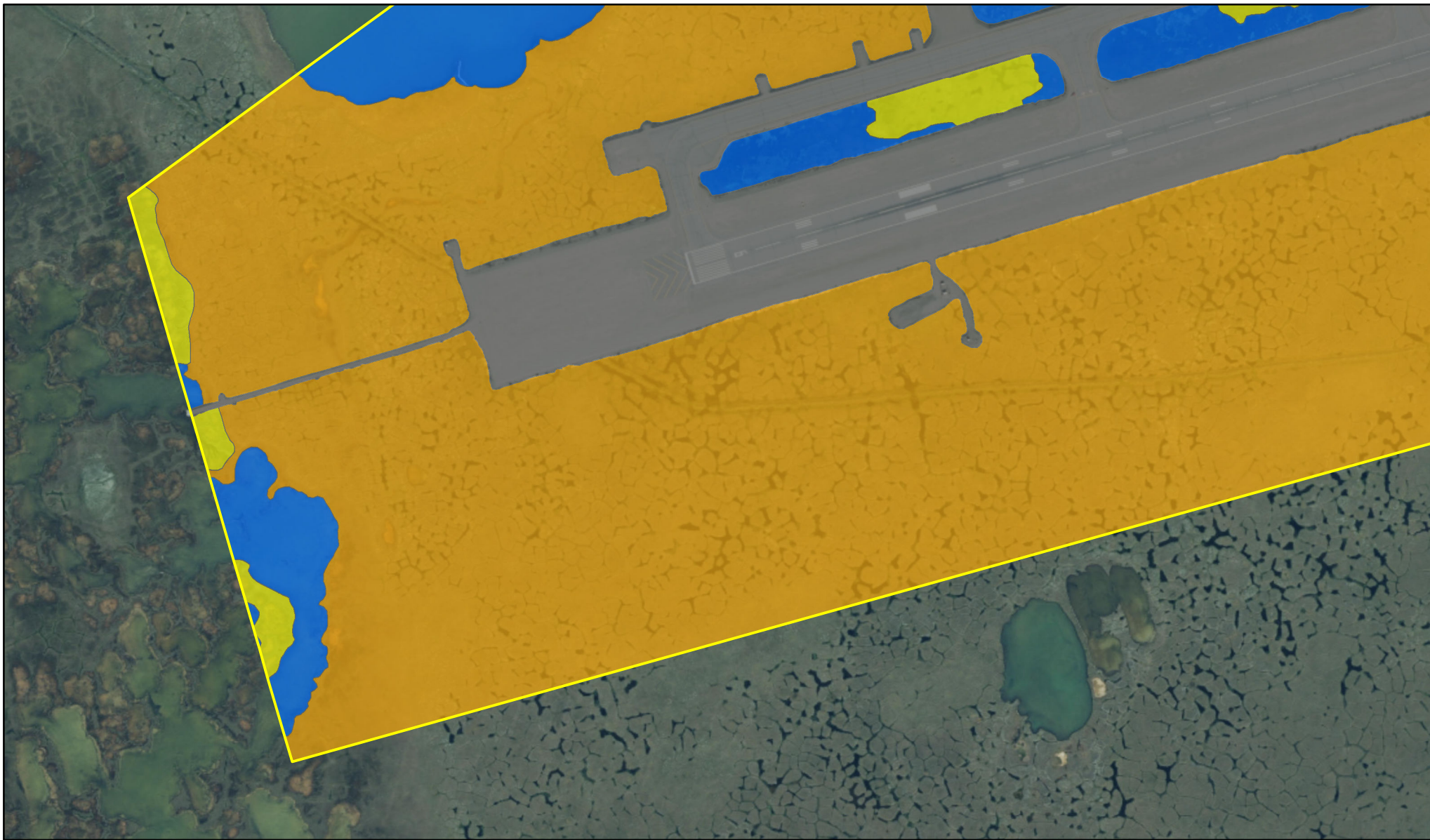
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Figure **Vegetation Classification**

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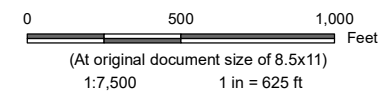
Figure #
3-2



 Study Area

Vegetation Type

-  Barren
-  Open Mixed Sedge-Shrub Tussock Tundra
-  Open Water
-  Wet Herbaceous



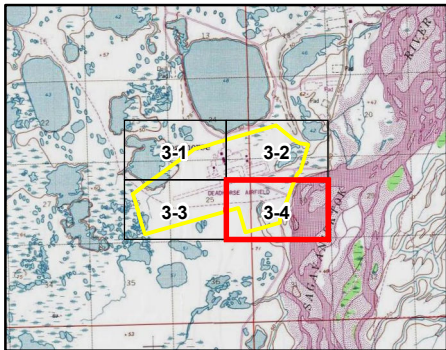
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Figure **Vegetation Classification**

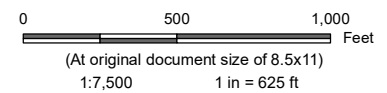
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Figure #
3-3



-  Study Area
- Vegetation Type**
-  Barren
-  Open Mixed Sedge-Shrub Tussock Tundra
-  Open Water
-  Wet Herbaceous



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Figure **Vegetation Classification**

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Figure # **3-4**