

# Airport Field Maintenance Storage Yard Expansion

Project No. CFAPT00131

## Environmental Assessment

### Appendix E

#### U.S. Army Corps of Engineers

#### Permits & Section 404 Permit Application

	Page No.
1. POA-2016-500 Individual Permit.....	1-12
2. POA-2016-500 Section 401 Water Quality Certification.....	13-15
3. Individual Permit application.....	16-85



DEPARTMENT OF THE ARMY  
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS  
REGULATORY DIVISION  
P.O. BOX 6898  
JBER, AK 99506-0898

JUN 09 2017

Regulatory Division  
POA-2016-500

Alaska Department of Transportation and Public Facilities  
Attention: Mr. Mark Boydston  
4111 Aviation Avenue  
Anchorage, Alaska 99519

Dear Mr. Boydston:

Enclosed is the signed Department of the Army permit, POA-2016-500, Hood Creek, which authorizes the discharge of up to 94,900-cubic yards of fill material into 7.67-acres of wetlands in order to expand an existing gravel pad to approximately 485 by 880 feet with a usable surface area of 9.11 acres.

The project site is located within Section 27, T. 13 N., R. 4 W., Seward Meridian; USGS Quad Map Anchorage A-8; west of Helio Place, and south of Lake Hood Drive; in Anchorage, Alaska. Also enclosed is a Notice of Authorization which should be posted in a prominent location near the authorized work.

If changes to the plans or location of the work are necessary for any reason, plans must be submitted to us immediately. Federal law requires approval of any changes before construction begins.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Please contact me via email at [shane.m.mccoy@usace.army.mil](mailto:shane.m.mccoy@usace.army.mil), by mail at the address above, by phone at (907) 753-2715, or toll free from within Alaska at (800) 478-2712, if you have questions. For more information about the Regulatory Program, please visit our website at [www.poa.usace.army.mil/Missions/Regulatory](http://www.poa.usace.army.mil/Missions/Regulatory).

Sincerely,

A handwritten signature in cursive script, reading "Shane M. McCoy", is positioned above the typed name.

Shane McCoy  
Project Manager

Enclosures

# DEPARTMENT OF THE ARMY PERMIT

Permittee: Alaska Department of Transportation and Public Facilities

Permit No.: POA-2016-500

Issuing Office: U.S. Army Engineer District, Alaska

**NOTE:** The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

## Project Description:

Discharge up to 94,900 cubic yards (CY) of fill material into 7.67 acres of wetlands in order to expand an existing gravel pad to approximately 485 feet by 880 feet with a usable surface area of 9.11 acres. Fill slopes will be 4:1, ditch slopes on three sides of the pad will have a 4:1 fore slope, and a 3:1 back slope with a minimum 10-foot wide flat bottom.

All work will be performed in accordance with the attached plan, sheets [1,3-5 dated 8/24/16; and 2 of 5 dated 3/6/2016]

## Project Location:

Within Section 27, T. 13 N., R. 4 W., Seward Meridian; USGS Quad Map Anchorage A-8; Latitude 61.1867°N.; Longitude 149.9809°W.; west of Helio Place, and south of Lake Hood Drive; in Anchorage, Alaska.

## Permit Conditions:

### General Conditions:

1. The time limit for completing the work authorized ends on **May 31, 2022**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. A conditioned water quality certification has been issued for your project. You must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

**Special Conditions:**

1. Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems, and/or other measures to ensure hydrology is not altered.
2. Within 10 days from the date of initiating the work authorized by this permit, the Permittee shall provide a written notification of the date of commencement of authorized work to the Corps.
3. Within 60 days of completion of the work authorized by this permit, the Permittee shall submit as-built drawings of the authorized work and a completed "As-Built Certification By Professional Engineer" form (Attachment 1) to the Corps (U.S. Army Corps of Engineers, Regulatory Division, P.O. Box 6898 JBER, Alaska 99506-0898). The as-built drawings shall be signed and sealed by a registered professional engineer and include the following:
  - a. A plan view drawing of the location of the authorized work footprint, as shown on the permit drawings, with transparent overlay of the work as constructed in the same scale as the permit drawings on 8½-inch by 11-inch sheets or PDF. The plan view drawing should show all "earth disturbance," including wetland impacts and water management structures.
  - b. A list of any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the attached "As-Built Certification By Professional Engineer" form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or "As-Built Certification By Professional Engineer" form does not constitute approval of any deviations by the Corps.
  - c. Include the Department of the Army permit number on all sheets submitted.
4. For the permanent loss of 7.67 acres of palustrine wetlands, the permittee shall be charged 8.15 credits from the Klatt Bog mitigation credit balance. The Klatt Bog mitigation has a remaining balance of 11.52 credits at the issuance of this permit.

**Further Information:**

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

X Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. Limits of this authorization.

- a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Mark Backstone (Environmental Impact Analyst)  
(PERMITTEE) AND TITLE

MAY 31, 2017  
(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Shane McCoy  
FOR (DISTRICT COMMANDER)  
Colonel Michael S. Brooks/  
Shane McCoy  
South Branch, Regulatory Division

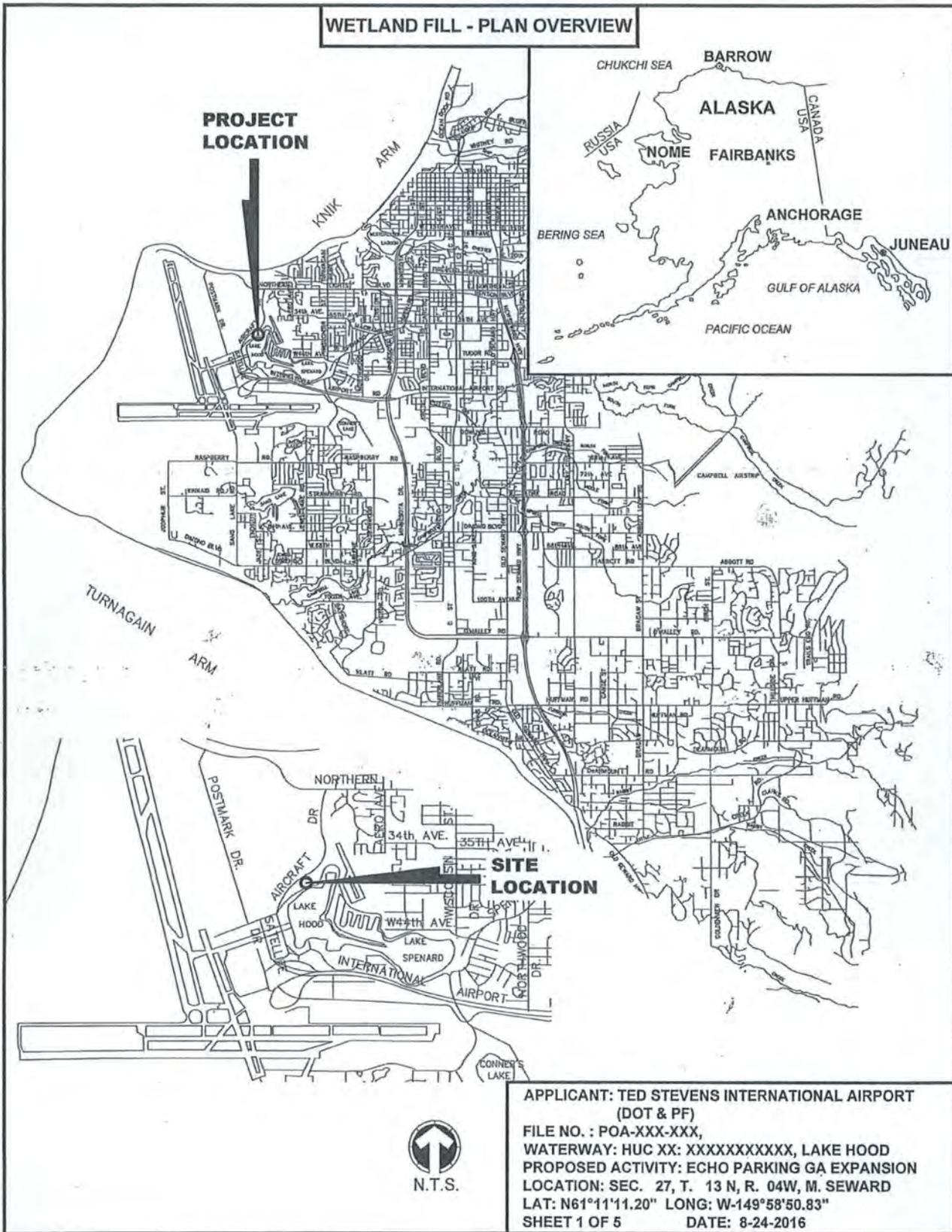
8 June 2017  
(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions have the transferee sign and date below.

\_\_\_\_\_  
(TRANSFEREE)

\_\_\_\_\_  
(DATE)

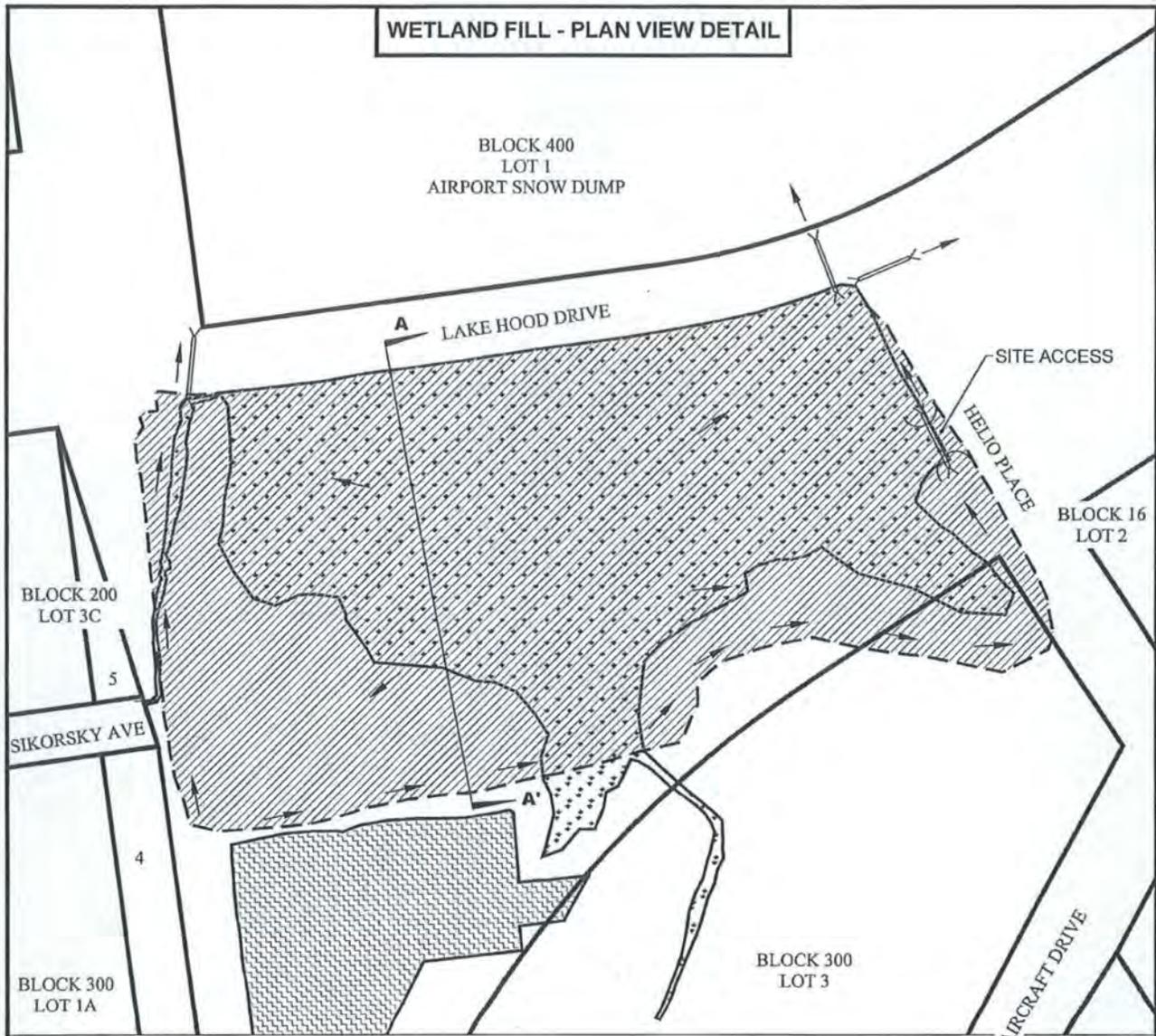
**WETLAND FILL - PLAN OVERVIEW**



**APPLICANT: TED STEVENS INTERNATIONAL AIRPORT (DOT & PF)**  
**FILE NO. : POA-XXX-XXX,**  
**WATERWAY: HUC XX: XXXXXXXXXXXX, LAKE HOOD**  
**PROPOSED ACTIVITY: ECHO PARKING GA EXPANSION**  
**LOCATION: SEC. 27, T. 13 N, R. 04W, M. SEWARD**  
**LAT: N61°11'11.20" LONG: W-149°58'50.83"**  
**SHEET 1 OF 5 DATE: 8-24-2016**

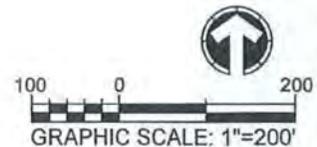


**WETLAND FILL - PLAN VIEW DETAIL**



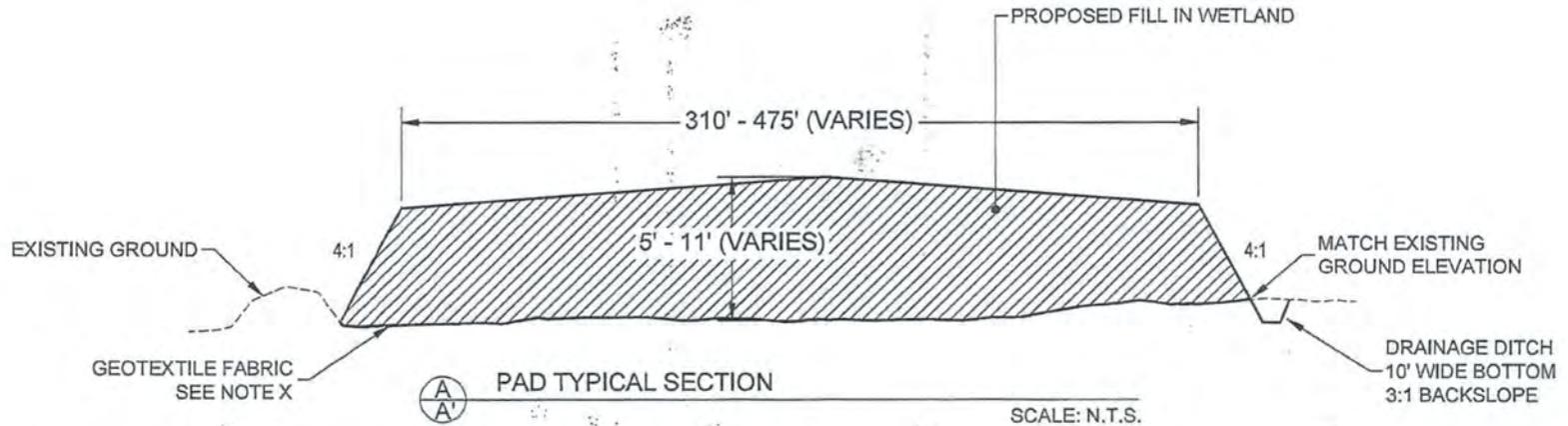
**LEGEND**

-  WETLAND AREA
-  PROPOSED TOTAL FILL AREA (12 ACRES)
-  PROPOSED WETLAND FILL AREA (7.67 ACRES)
-  PROPOSED FILL AREA (NOT THIS PROJECT)
-  24 INCH CMP CULVERTS
-  DRAINAGE DIRECTION
-  LOT LINES



**APPLICANT: TED STEVENS INTERNATIONAL AIRPORT (ADOT & PF)**  
**FILE NO. : POA-XXX-XXX,**  
**WATERWAY: HUC XX: XXXXXXXXXXXX, LAKE HOOD**  
**PROPOSED ACTIVITY: ECHO PARKING GA EXPANSION**  
**LOCATION: SEC. 27, T. 13 N, R. 04W, M. SEWARD**  
**LAT: N61°11'11.20" LONG: W-149°58'50.83"**  
**SHEET 2 of 5**      **DATE: 3-6-2016**

**CROSS SECTION**

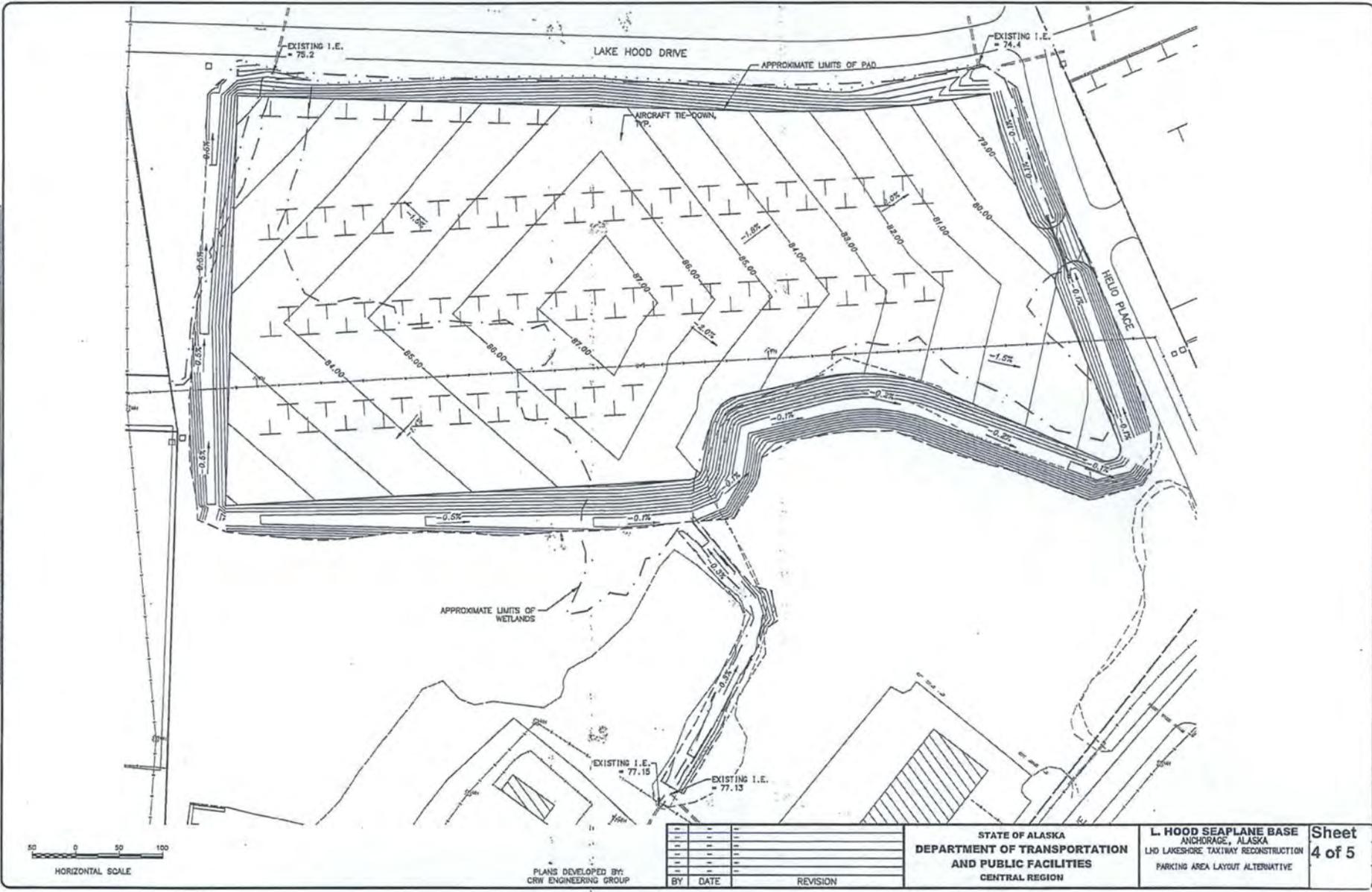


**GENERAL NOTES**

1. LIMITS OF CONSTRUCTION, WORK AREAS, AND FILL AREAS SHALL BE FLAGGED PRIOR TO CONSTRUCTION TO ENSURE THE PROJECT FOOTPRINT IS NOT EXCEEDED.
2. MOVEMENT OF CONSTRUCTION EQUIPMENT WILL BE RESTRICTED TO WITHIN THE IDENTIFIED PROJECT BOUNDARIES.
3. A CONSTRUCTION GENERAL PERMIT (CGP) STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED AND IMPLEMENTED BY THE CONTRACTOR.
4. STOCKPILES, IF USED, WOULD BE COVERED TO PROTECT FROM STORMWATER RUNOFF.
5. BEST MANAGEMENT PRACTICES (BMPs) SHALL BE IMPLEMENTED DURING PROJECT CONSTRUCTION.
6. FILL MATERIAL SHALL NOT INCLUDE ORGANIC, FROZEN, OR OTHER DELETERIOUS MATERIAL. ALL FILLS SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 INCHES AND COMPACTED TO A MINIMUM OF NINETY PERCENT (90%) OF MAXIMUM DENSITY.
7. THE FACES OF CUT AND FILL SLOPES SHALL BE PREPARED AND MAINTAINED TO CONTROL AGAINST EROSION.
8. SEEDING TO BE PROVIDED ON BACKSLOPES TO APPROXIMATELY MATCH EXISTING CONDITIONS.
9. FILL THROUGH WETLAND AREAS WILL BE UNDERLAIN WITH GEOTEXTILE.
10. NO SIDECASTING OF EXCAVATED SOIL INTO WETLAND AREAS IS ALLOWED OUTSIDE OF FILL LIMIT.

**APPLICANT: TED STEVENS INTERNATIONAL AIRPORT**  
 (DOT & PF)  
**FILE NO. : POA-XXX-XXX,**  
**WATERWAY: HUC XX: XXXXXXXXXXXX, LAKE HOOD**  
**PROPOSED ACTIVITY: ECHO PARKING GA EXPANSION**  
**LOCATION: SEC. 27, T. 13 N, R. 04W, M. SEWARD**  
**LAT: N61°11'11.20" LONG: W-149°58'50.83"**  
**SHEET 3 OF 5                      DATE: 8-24-2016**

State of Alaska  
 Department of Transportation  
 Anchorage, Alaska  
 LHD Lakeshore Taxiway Reconstruction  
 Parking Area Layout Alternative  
 100% Final Design  
 10/15/2018, 2:15 PM  
 Drawn By: J. [unclear]  
 Checked By: [unclear]



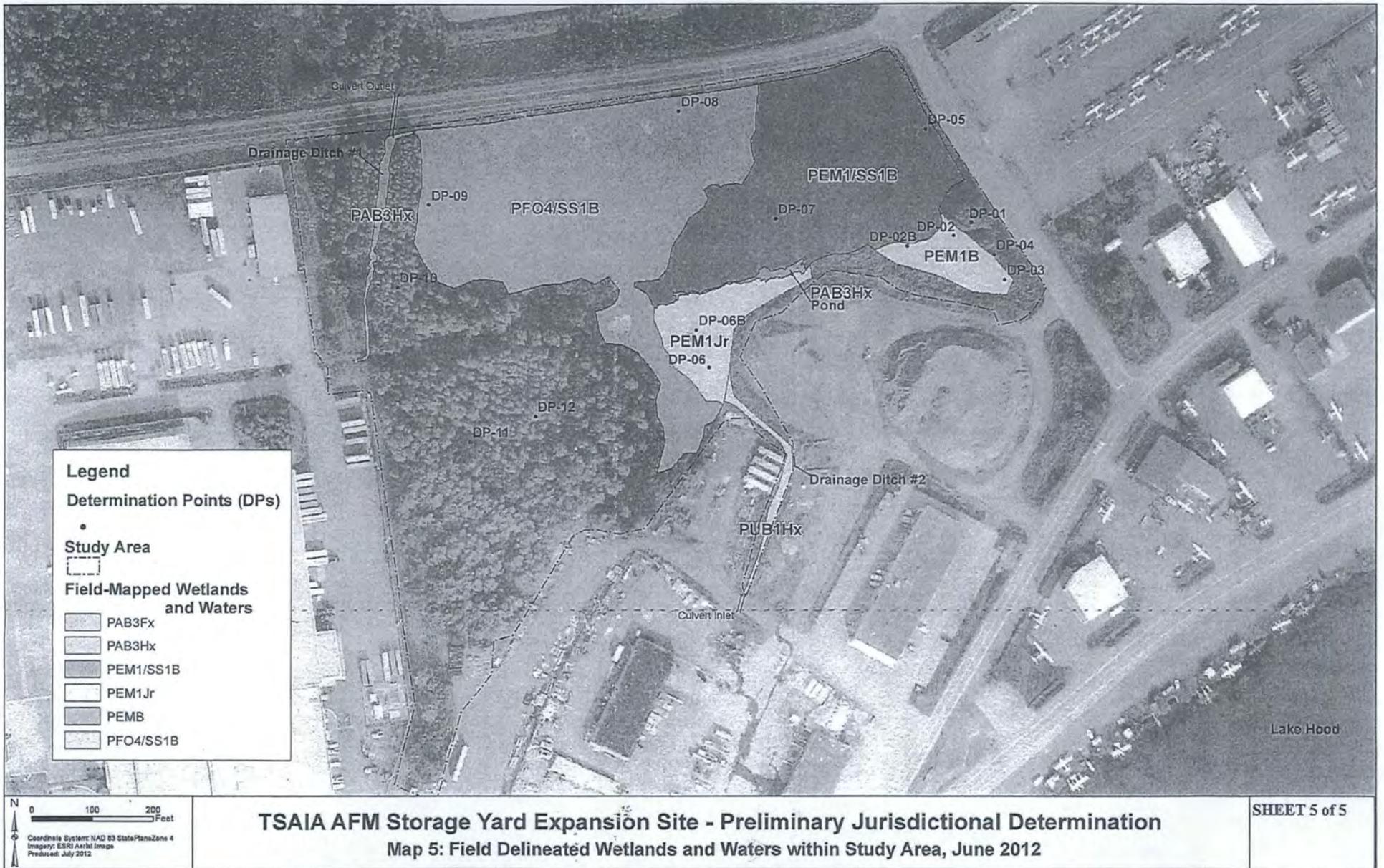
PLANS DEVELOPED BY:  
CRW ENGINEERING GROUP

BY	DATE	REVISION

STATE OF ALASKA  
 DEPARTMENT OF TRANSPORTATION  
 AND PUBLIC FACILITIES  
 CENTRAL REGION

L. HOOD SEAPLANE BASE  
 ANCHORAGE, ALASKA  
 LHD LAKESHORE TAXIWAY RECONSTRUCTION  
 PARKING AREA LAYOUT ALTERNATIVE

Sheet  
4 of 5



**Attachment 1**

**AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER**

Submit this form and one set of as-built engineering drawings to the U.S. Army Corps of Engineers, Attention: Ms. Roberta Budnik, South Section, U.S. Army Corps of Engineers, P.O. Box 6898, JBER, Ak 99506. If you have questions regarding this requirement, please contact the U.S. Army Corps of Engineers at 907-753-2712.

1. Department of the Army Permit Number: POA-2016-500

2. Permittee Information:

Name: Alaska Department of Transportation

Address: 4111 Aviation Ave

Anchorage, Alaska 99519

3. Project Site Identification (physical location/address):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted on the next page. This determination is based upon on-site observation, scheduled, and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

\_\_\_\_\_  
Signature of Engineer

\_\_\_\_\_  
Name (Please type)

\_\_\_\_\_  
(FL, PR, or VI) Reg. Number

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
City

\_\_\_\_\_  
State

\_\_\_\_\_  
ZIP

(Affix Seal)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Telephone Number



January 6, 2017

State of Alaska Department of Transportation and Public Facilities (ADOT&PF)  
Attention: Mark Boydston  
P.O. Box 196900, MS-2525  
Anchorage, AK 99519

Re: ADOT&PF, Lake Hood Anchorage Field Maintenance (AFM) Expansion  
POA-2016-500, Lake Hood

Dear Mr. Boydston:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for placement of dredged and/or fill material in waters of the U.S., including wetlands and streams, associated with the expansion of an ADOT&PF AFM storage yard in Anchorage, Alaska.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 15 days of the permit decision. Visit <http://dec.alaska.gov/commish/ReviewGuidance.htm> for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, PO Box 111800, Juneau, AK 99811-1800, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

By copy of this letter we are advising the U.S. Army Corps of Engineers of our actions and enclosing a copy of the certification for their use.

Sincerely,

  
James Rypkema  
Program Manager, Storm Water and Wetlands

Enclosure: 401 Certificate of Reasonable Assurance

cc: (with encl.)  
Roberta Budnik, USACE, Anchorage  
Megan Marie, ADF&G

USFWS Field Office Anchorage  
Heather Dean, EPA Operations, Anchorage

**STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
CERTIFICATE OF REASONABLE ASSURANCE**

In accordance with Section 401 of the Federal Clean Water Act (CWA) and the Alaska Water Quality Standards (18 AAC 70), a Certificate of Reasonable Assurance, is issued to State of Alaska ADOT&PF, attention: Mark Boydston, at P.O. Box 196900 MS-2525, Anchorage, Alaska 99519, for placement of dredged and/or fill material in waters of the U.S. including wetlands and streams in association with the expansion of a gravel storage yard at the AFM ADOT&PF near Lake Hood, in Anchorage, Alaska.

The expansion of the existing Anchorage Field Maintenance storage yard will provide area for new parking for Group 1 aircraft at the Lake Hood Seaplane Base. The project would also provide parking for relocated aircraft during the Delta and Echo parking lot reconstruction. The project would discharge up to 94,900 cubic yards (CY) of fill material into 7.38 acres of wetlands in order to expand an existing gravel pad to approximately 485 feet by 880 feet with a usable surface area of 9.11 acres.

A state issued water quality certification is required under Section 401 because the proposed activity will be authorized by a U.S. Army Corps of Engineers permit (POA-2016-500) and a discharge of pollutants to waters of the U.S. located in the State of Alaska may result from the proposed activity. Public notice of the application for this certification was given as required by 18 AAC 15.180 in the Corps Public Notice POA-2016-500 posted from November 23, 2016 to December 27, 2016.

The proposed activity is located within Section 27, T. 13 N., R. 4 W., Seward Meridian; Latitude 61.1866° N., Longitude -149.9818° W.; in Anchorage, Alaska.

The Department of Environmental Conservation (DEC) reviewed the application and certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the CWA and the Alaska Water Quality Standards, 18 AAC 70, provided that the following additional measures are adhered to.

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.
2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Central Alaska at (907) 269-3063 during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.
3. Runoff discharged to surface water (including wetlands) from a construction site disturbing one or more acres must be covered under Alaska's General Permit for Storm Water Discharges from Large and Small Construction Activities in Alaska (AKR100000). This permit requires a Storm Water Pollution Prevention Plan (SWPPP). For projects that disturb more than five acres, this SWPPP must also be submitted to DEC (William Ashton, 907-269-6283) prior to construction.

4. During the construction equipment shall not be operated below the ordinary high water mark if equipment is leaking fuel, oil, hydraulic fluid, or any other hazardous material. Equipment shall be inspected and recorded in a log on a daily basis for leaks. If leaks are found, the equipment shall not be used and pulled from service until the leak is repaired.
5. All work areas, material access routes, and surrounding wetlands involved in the construction project shall be clearly delineated and marked in such a way that equipment operators do not operate outside of the marked areas.
6. Natural drainage patterns shall be maintained, to the extent practicable, without introducing ponding or drying.
7. Excavated or fill material, including overburden, shall be placed so that it is stable, meaning after placement the material does not show signs of excessive erosion. Indicators of excess erosion include: gullyng, head cutting, caving, block slippage, material sloughing, etc. The material must be contained with siltation best management practices (BMPs) to preclude reentry into any waters of the U.S., which includes wetlands.
8. Include the following BMPs to handle storm water and total storm water volume discharges as they apply to the site:
  - a. Divert storm water from off-site around the site so that it does not flow onto the project site and cause erosion of exposed soils;
  - b. Slow down or contain storm water that may collect and concentrate within a site and cause erosion of exposed soils;
  - c. Place velocity dissipation devices (e.g., check dams, sediment traps, or riprap) along the length of any conveyance channel to provide a non-erosive flow velocity. Also place velocity dissipation devices where discharges from the conveyance channel or structure join a water course to prevent erosion and to protect the channel embankment, outlet, adjacent stream bank slopes, and downstream waters.
9. Fill material must be clean sand, gravel or rock, free from petroleum products and toxic contaminants in toxic amounts.
10. Any disturbed ground and exposed soil not covered with fill must be stabilized and re-vegetated with endemic species, grasses, or other suitable vegetation in an appropriate manner to minimize erosion and sedimentation, so that a durable vegetative cover is established in a timely manner.

This certification expires five (5) years after the date the certification is signed. If your project is not completed by then and work under U.S Army Corps of Engineers Permit will continue, you must submit an application for renewal of this certification no later than 30 days before the expiration date (18 AAC 15.100).

Date: January 6, 2017

  
\_\_\_\_\_  
James Rypkema, Program Manager  
Storm Water and Wetlands



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

Department of Transportation  
and Public Facilities

DESIGN & ENGINEERING SERVICES  
PRELIMINARY DESIGN & ENVIRONMENTAL

PO Box 196900  
Anchorage, Alaska 99519-6900  
Main: 907.269.0542  
Toll Free: 800.770.5263  
TDD: 907.269.0473

October 5, 2016

Re: Individual Permit Application  
TSAIA Echo Parking GA Expansion  
DOT&PF Project No. TBD

Shane McCoy, Chief  
South Section  
U.S. Army Corps of Engineers, Alaska District  
P.O. Box 6898  
JBER, AK 99506-0898

Shane,

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Federal Aviation Administration (FHWA), is requesting a Section 404 Individual Permit for the proposed Ted Stevens Anchorage International Airport (TSAIA) Echo Parking General Aviation (GA) Expansion project. The proposed project would begin in 2017 and be completed by 2022. The extended timeline is because fill for the proposed project would come from several DOT&PF TSAIA construction projects over that time period.

The proposed project is located west of Helio Place and south of Lake Hood Drive on the north side of the TSAIA Airport Field Maintenance (AFM) Storage Yard in Anchorage, Alaska. The proposed project site is located within Section 27, T. 13 N, R. 04 W, of the Seward Meridian; USGS Quad Map Anchorage A-8; Latitude 61° 11' 11.20" N, Longitude 149° 58' 50.83" W (WGS 1984 Datum) (see enclosed Sheet 1).

### Project Description

The proposed would (see enclosed Sheets 2 through 4):

- Place approximately 94,900 cubic yards (cy) clean gravel fill material in wetlands to construct a 485 feet (ft) by 880 ft gravel pad with a usable surface of 9.11 acres. Maximum pad depth would be 11 ft at the pad's center.
- Construct 4:1 fill slopes and vegetated drainage ditches slopes surrounding the pad on three sides with 4:1 fore slopes and 3:1 back slopes and a minimum 10 ft wide flat bottom. The wide flat bottom would provide retention during storm events. Vegetation would enhance water quality by removing sediment.
- Excavate approximately 19,000 cy to construct the southwest corner and vegetated ditches. Most excavated material would not be useable as fill and would be disposed at the TSAIA upland unclassified material disposal site.
- Construct a new driveway to access the lot from Helio place.
- Pave the final pad area surface with hot mix asphalt.
- Construct the gravel pad abutting the existing AFM Storage Yard pad.

## **Purpose and Need**

The proposed project purpose is to provide new parking for Group I aircraft at the Lake Hood Seaplane Base (LHD). The need is existing parking at LHD is near capacity. Also, existing parking areas Delta and Echo are nearing their design life and additional parking areas would be necessary for relocated aircraft during reconstruction.

## **Section 404 Involvement**

The proposed project would impact approximately 7.4 acres wetlands, approximately 3.7 acres palustrine primarily forested with scrub/shrub (PF04/SS1B) and approximately 3.7 acres palustrine primarily emergent vegetation with scrub/shrub (PEM/SS1B) (see attached Sheet 5 for a wetlands delineation map). The proposed project would place approximately 94,900 cy of clean gravel fill material into wetlands.

## **Avoidance and Minimization**

### **Avoidance**

The proposed project is unable to avoid impacting the surrounding wetlands because there are no practicable alternative locations for the operation pad expansion. TSAIA delineated the area in 2012 (see enclosed Sheet 5) and conducted a wetlands field verification update in July, 2016 (enclosed). Developing another AFM Storage area would be uneconomical as well as impractical for accessing maintenance equipment and materials for airport projects. The existing AFM Storage Yard is in a central location to multiple airport areas.

Wetlands are located within the proposed project property. Avoiding all wetlands is not practicable while still meeting the proposed project purpose and need. DOT&PF evaluated a number of project alternatives, including the proposed project, to identify the most practicable alternative. The alternatives evaluation considered cost, existing technology, site logistics, DOT&PF and FAA construction requirements, and the overall proposed project purpose (see attached Supplemental Project Information for the alternatives analysis).

### **Minimization**

DOT&PF chose the proposed project location based on utilizing the existing AFM Storage Yard. Expanding the existing AFM Storage Yard gravel pad would minimize wetlands impacts compared to developing new access roads and impacting larger wetland areas at another/new location.

DOT&PF proposes the additional following measures to minimize unavoidable impacts to wetlands:

- Construction limits would be clearly identified in the field prior to construction to ensure the permitted project footprint is not exceeded during construction
- The proposed project would follow USFWS recommendations for avoiding disturbance to migratory birds and Threatened or Endangered species
- The contractor would place geotextile fabric prior to the placement of fill to retain sediment
- A single fill discharge would occur in August to minimize any potential impacts to nesting migratory birds
- The new pad would be constructed with 4:1 side slopes to minimize the footprint across wetlands
- Construction equipment would be restricted to within identified project boundaries to minimize disturbance to native vegetation
- Stockpiles would not occur in wetlands that are not proposed for permanent fill placement and would be covered to protect from storm water runoff
- BMPs such as silt fence and fiber rolls would be installed and implemented to minimize the introduction of additional suspended sediment into the wetlands
- Permanent stormwater control measures including vegetated retention ditches would provide for pollutant removal

- The gravel pad would be surfaced hot mix asphalt to reduce sediment from dust or storm water runoff from the gravel pad
- All construction produced refuse, garbage, or debris would be removed and disposed of in an approved facility

### **Compensatory Mitigation**

TSAIA has approximately 21.27 available Klatt Bog wetland credits. DOT&PF would apply a portion to the proposed project if determined applicable by your agency. The last recorded project utilizing Klatt Bog Credits was the TSAIA Taxiway K Reconstruction (POA-2007-1776, Lake Hood).

If you have any questions or require additional information, please contact Jennifer Carle, P.E., Project Manager, at 266-2731 or Mark Boydston, Environmental Impact Analyst, at 269-0524.

Sincerely,



Taylor C. Horne  
Statewide Environmental Program Manager

### Enclosures:

Individual Permit application, Engineering form 4345  
Supplemental project information  
Sheet 1 – Location and Vicinity Map  
Sheet 2 – Project layout plan  
Sheet 3 – Typical sections  
Sheet 4 – Parking plan layout  
Sheet 5 – 2012 Wetlands delineation figure  
Wetlands delineation field verification report July 2016

### cc:

Jennifer Carle, P.E., Project Manager, Aviation Design  
Mark Boydston, Environmental Impact Analyst, PD&E  
Brian Elliott, Environmental Manager, Central Region, PD&E

**U.S. ARMY CORPS OF ENGINEERS  
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT**  
33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -  
OMB No. 0710-0003  
Expires: 30-SEPTEMBER-2015*

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

**PRIVACY ACT STATEMENT**

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

**(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)**

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

**(ITEMS BELOW TO BE FILLED BY APPLICANT)**

5. APPLICANT'S NAME First - Mark                      Middle -                      Last - Boydston Company - Alaska Department of Transportation & Public Facilities E-mail Address - mark.boydston@alaska.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First -                      Middle -                      Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 4111 Aviation Avenue City - Anchorage                      State - Ak                      Zip - 99502                      Country -	9. AGENT'S ADDRESS: Address- City -                      State -                      Zip -                      Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence                      b. Business                      c. Fax	10. AGENTS PHONE NOs. w/AREA CODE a. Residence                      b. Business                      c. Fax

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, \_\_\_\_\_ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

\_\_\_\_\_  
SIGNATURE OF APPLICANT

\_\_\_\_\_  
DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME OR TITLE (see instructions) TSAIA Echo Parking GA Expansion	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Knik Arm - Frontal Cook Inlet (HUC12 190204010808)	14. PROJECT STREET ADDRESS (if applicable) Address City -                      State-                      Zip-
15. LOCATION OF PROJECT Latitude: °N 61 11' 11.20"                      Longitude: °W 149 58' 50.83"	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID                      Municipality Anchorage Section - 27                      Township - T13N                      Range - R4W	

17. DIRECTIONS TO THE SITE

The site is located on the northwest side of Lake Hood, west side of Helio Place and on the south side of Lake Hood Drive (see attached Sheet 2).

18. Nature of Activity (Description of project, include all features)

The purpose of this project is to provide new parking for Group I aircraft at the at the Lake Hood Seaplane Base (LHD). The proposed development would include expanding on the existing gravel pad to approximately 485 feet (ft) x880 ft with a usable surface area of 9.11 acres. Fill slopes will be 4:1. Ditch slopes, which surround three of the pad sides, will have a 4:1 fore slope and a 3:1 back slope with a minimum 10 ft wide flat bottom.

The proposed site development activity would encompass approximately 12 acres of which 7.38 are waters of the U.S. A total of no more than 117,000 cubic yards of clean gravel fill material is proposed to be filled into the entire area; approximately 94,900 cubic yards into 7.38 acres of waters of the U.S. (Supplemental Information is Attached).

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the project is to expand the existing Anchorage Field Maintenance (AFM) Storage Yard located east of the U.S. Post Office. The purpose of this project is to provide new parking for Group I aircraft at the at the Lake Hood Seaplane Base (LHD). Existing parking at LHD is near capacity. Additionally, existing parking areas Delta and Echo are nearing their design life and additional parking areas will be necessary for relocated aircraft during reconstruction. The existing upland areas adjacent to the wetlands are currently being developed as a storage area for maintenance equipment and materials.

(Supplemental Information is Attached).

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**

20. Reason(s) for Discharge

Discharge of fill into Waters of the U.S. is necessary to construct a new gravel pad for expanding the AFM Storage Yard and new parking area for Group I aircraft at the LHD.

(Supplemental Information is Attached).

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
117,000 cy of clean gravel fill		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres 7.38 acres  
or  
Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

The existing AFM Storage Yard is surrounded by development except for the area to the north and northwest which is wetlands. Avoidance of wetlands is impracticable. Other areas to develop have been analyzed and determined to be uneconomical and impractical for accessibility. TSAIA has approximately 21.27 available Klatt Bog wetland Credits remaining after the last permitted wetland project (POA-2007-1776, Lake Hood: Taxiway K Reconstruction). DOT&PF would likely apply a portion of the Credits to the proposed project if the USACE determines the Credits applicable compensation for unavoidable wetlands impacts. (Supplemental Information is Attached)

24. Is Any Portion of the Work Already Complete?  Yes  No IF YES, DESCRIBE THE COMPLETED WORK

The existing upland areas adjacent to the wetlands are currently being developed as a storage area for maintenance equipment and materials. The upland area has been cleared.

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- TSAIA and DOT&PF Property

City - Anchorage State - AK Zip - 99502

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

\* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Mark Boynton      10-6-2016  
SIGNATURE OF APPLICANT      DATE

\_\_\_\_\_  
SIGNATURE OF AGENT      DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

## **ATTACHMENT B**

### **PROJECT INFORMATION**

#### **Echo Parking GA Expansion**

APPLICANT: Ted Stevens Anchorage International Airport; ADOT & PF

LOCATION: The proposed project site is located within Section 27, T. 13 N, R. 04 W, of the Seward Meridian; USGS Quad Map Anchorage A-8; Latitude 61° 11' 11.20" N, Longitude 149° 58' 50.83" W; west of Helio Place and south of Lake Hood Drive, Anchorage, Alaska.

Proposed Project drawings are in Attachment C of this Supplement.

#### **BLOCK 18: NATURE OF ACTIVITY**

The subject property is located north of the existing Airport Field Maintenance (AFM) Storage Yard, east of the U.S. Post Office. The property is a 426,800 square foot (9.8 acre) undeveloped area bounded by Helio Place to the east and Lake Hood Drive to the north.

The Ted Stevens Anchorage International Airport (TSAIA) and Alaska Department of Transportation & Public Facilities (DOT&PF) are proposing to construct a new general aviation parking area, Echo Parking General Aviation (GA) Expansion. The proposed parking area will provide 99 general aviation parking spaces.

The proposed aircraft parking area will be constructed on the undeveloped lot abutting the Anchorage Field Maintenance (AFM) Storage yard, bounded by Heli Place and Lake Hood Drive as shown on the attached drawings in Attachment A and C.

The project will consist of:

- Placement of approximately 94,900 cubic yards of clean gravel fill material in 7.38 acres wetlands for construction of a 485 feet (ft) by 880 ft gravel pad with a usable surface of 9.11 acres. Maximum depth of the pad will be 11 feet at the center of the pad.
- Fill slopes will be 4:1. Vegetated drainage ditch slopes, which surround three of the pad sides, will have a 4:1 fore slope and 3:1 back slope with a minimum 10 ft wide flat bottom. The purpose of the wide flat bottom is to provide retention during storm events. Vegetation will enhance water quality by removing sediment.
- The southwest corner and vegetated ditches will require excavation of approximately 19,000 cy. It is assumed that most of the excavated material will not be useable as fill and will be disposed of at the TSAIA upland unclassified material disposal site.
- A new driveway will be constructed off to access the lot from Helio place.
- The final surface of the pad area will be surfaced with hot mix asphalt.

The proposed project would include construction of a 485 ft by 880 ft (426,800 square (sq.). ft) of usable surface gravel parking pad, including access/taxiway connecting to Helio Place. The proposed gravel pad

would be constructed to abut the existing gravel pad and will extend north to Lake Hood Drive and east to Helio Place. The pad would match the grade of the existing pad and have a 1 to 2% slope north, toward the wetlands with the southwest and south east portions of the pad sloping towards vegetated ditches. The southern ditch will connect to vegetated ditches on the west and east side of the pad that will carry the flow to via 24-inch diameter culverts to wetlands north of the proposed development. Geotextile separation fabric will be placed prior to placement of fill. Fill depth for the pad and access road will have a maximum depth of 11 ft at center, with approximately 10 ft of MOA type II, 6-inches MOA Type IIA, and 6-inches crushed aggregate surface course. The parking area will be surfaced with not mix asphalt pavement upon completion of wetlands fill and pad construction.

The subject property is dissected by the AWWU waterline, with two fire hydrants on site. The water line will be raised to be 10 ft below finished grade and hydrants will be relocated to the edges of the pad. Raising and relocation of the waterline not expected to occur until 2020.

Drainage patterns will generally be preserved around the proposed project with the drainage to existing 24-inch diameter culverts beneath Lake Hood Drive. There will be an approximate 1% down slope from the center of the parking area to the east and to the west. Vegetated drainage ditches will be constructed along the south, east and west toe of the parking area fill slopes. New culverts will be installed with inlet and outlet protection to minimize erosion and allow runoff to convey drainage along Helio Place. See the plan set in Attachment C for full design details.

The project would encompass a total area of 9.8 acres (426,800 sq. ft.) and will have a final useable area of 9.11 acres. Placement of approximately 117,000 cubic yards of clean fill material would be discharged into 7.38 acres of wetlands. The project would be constructed using clean excavated or excess fill material from airport projects. See project drawings in Attachment C.

Construction work will be performed using heavy equipment including excavators, dozers, front-end loaders and compaction equipment. During construction, storm water runoff will be controlled by best management practices (BMPs) as detailed in an Alaska Department of Environmental Conservation (ADEC) Construction General Permit (CGP) Storm Water Pollution Prevention Plan (SWPPP) which will be prepared for the project. The CGP SWPPP will include installation of a stabilized construction entrance, straw wattles to minimize erosion, use of track walking or other slope stabilization techniques where needed, and inlet and outlet protection of culverts. The aircraft parking pad will be constructed in accordance with ADOT&PF and Federal Aviation Administration (FAA) requirements.

Construction and operation of the project would include features to prevent potential impacts to wetlands and aquatic habitats include:

- The limits of construction, work areas, stockpile areas, and access drive areas would be flagged prior to construction to ensure that permitted project footprint is not exceeded during construction;
- Movement of construction equipment would be restricted to within the identified project boundaries to minimize disturbance to native vegetation;
- Stockpiles will be covered to protected from storm water runoff;

- A Storm Water Pollution Prevention Plan would be prepared and implemented by the contractor;
- BMPs will be installed and implemented to minimize the introduction of additional suspended sediment into waterways or wetlands; and
- All refuse, garbage, or debris created in the course of activities would be removed and disposed of in an approved facility.

If the site is of suspected cultural or historical significance are revealed during the project construction, the work that would disturb any resources would stop and the Department of Natural Resources State Historic Preservation Office (DNR/SHPO), the U.S. Army Corps of Engineers, and the Alaska State Troopers will be notified.

#### BLOCK 19: PROJECT PURPOSE

The purpose of this project is to provide additional parking for general aviation at the Lake Hood Seaplane Base. The proposed project will provide new space needed for aircraft parking for up to 99 general aviation aircraft, and be designed to accommodate FAA designated “Primary Category, Design Group I” which includes aircrafts with a wingspan of less than 49 feet (example: Cessna 152-210 or Beechcraft A36). The project supports general aviation parking needs identified in the 2006 Lake Hood and Anchorage International Airport General Aviation Master Plan and the 2014 Ted Stevens Anchorage International Airport Master Plan Update by providing new space to keep up with the forecasted demand for aircraft tenant and transient parking space at the Lake Hood Seaplane Base. Existing parking at Lake Hood Seaplane Base is near capacity and existing parking areas Delta and Echo are nearing their design life and additional parking areas will be necessary for relocated aircraft during reconstruction and to meet required future capacity.

The Lake Hood Seaplane Base is located within the TSAIA Airport boundary in Anchorage, Alaska. The seaplane base includes three seaplane landing areas on Lake Hood and Lake Spenard, as well as a gravel airstrip (Lake Hood Strip) located on the eastern side of the Airport boundary (north of Lake Hood) and a taxiway connection via Taxiway V to the paved runways at TSAIA. Lake Hood is a state-owned seaplane base currently used by general aviation and commercial aircraft. There are year-round and seasonal commercial operators located at the base, which provide services for flightseeing and charter flights. Private airport tenants also occupy existing hangars, plane tie-down spaces, and float slips. The 2013 Alaska International Airport Systems (AIAS) Forecast Technical Report (AIAS Forecast) included a forecast of general aviation activity at the TSAIA and Lake Hood Seaplane Base which forecasted an average annual general aviation operation growth rate of 1.4%.

The 2006 Lake Hood and Anchorage International Airport General Aviation Master Plan was developed for long-term development addresses an array of issues associated with the status and future development needs of the airport to satisfy aviation demand and growth.

**SCHEDULE:** The proposed project will be constructed over an estimated 4 year period from granular material taken from airport project unclassified excavation. In 2017, the Lake Hood Lakeshore Taxiway Reconstruction Project will construct approximately 20% of the parking area. Future projects, including the 2018 TSAIA Runway 15/33 Rehabilitation Project and 2020’s Taxiway F, S and V Reconstruction Projects will construct the remainder of the parking area.

## BLOCK 20: REASON FOR DISCHARGE

As discussed in Block 19: Project Purpose, the project requires placement of fill to prepare for construction of the new general aviation parking to accommodate Group I aircraft. The new aircraft parking area will provide more space the airport needs. Wetlands are located on the north side of the existing AFM Storage gravel pad and bounded by Helio Place to the east and Lake Hood Drive to the north and development surrounding the area and it is not practicable to avoid the wetlands to meet the project purpose.

In total, DOT&PF proposes placement of up to 94,900 cubic yards of fill material into no more than 7.38 acres of wetlands within the proposed 12 acre project area. All work would be performed in accordance with the attached Sheets 1 through 3.

## BLOCK 32: MITIGATION

### AVOIDANCE

The project requires placement of fill into freshwater wetlands to prepare a suitable gravel pad for equipment and material storage for field maintenance operations at the Ted Stevens Anchorage International Airport. The proposed project is unable to avoid the surrounding wetlands because there are no practicable alternatives for the operation pad expansion. The applicant has ownership of the property. The area was delineated in 2012, see Attachment D. Other areas to develop another AFM Storage area would be uneconomical and impractical for accessibility to the maintenance equipment and materials for projects throughout the airport. The existing AFM Storage Yard is in a central location to multiple areas of the airport.

Wetlands are located on the subject property and it is not practicable to avoid all wetlands to meet the project purpose and need. Project alternatives, including the proposed project, were evaluated to identify the most practicable alternative, after taking into consideration cost, existing technology, site logistics, DOT&PF and FAA construction requirements, and the overall project purpose. Alternatives were considered with the current proposed project being the most reasonable and practicable alternative. The alternatives considered included:

#### Alternative 1: No Action

The No Action alternative would not develop any of the property and leave it as it is currently with no general aviation tie-down spaces available. Existing parking at Lake Hood Seaplane Base is near capacity and does not have enough available space to expand parking areas. Additionally, existing parking areas Delta and Echo are nearing their design life which will require additional parking areas to be necessary for relocated aircraft during reconstruction.

#### Alternative 2: Expansion of Existing Echo Parking Area

Echo was previously expanded in 2006 which added an apron for more tiedowns. Additionally, there is only a small area available for additional expansion of the Echo Parking area that cannot meet the parking needs. Further expansion of the echo parking lot may intrude into the flood zone of Lake Hood, and

would require additional flood analysis. The additional flood analysis combined with the lack of required space to meet parking demands make this alternative costly and impractical to meet project objectives.

#### Alternative 3: New parking lot east of Lake Hood Strip

The third alternative analyzed was the creation of a new parking area east of the Lake Hood Strip. The proposed area would have lesser wetland impacts; however, noise associated with the lot would create issues with the adjacent residential community. The additional noise pollution would be a violation of Anchorage noise ordinances, as the parking area may cause a noise disturbance across the residential real property boundary.

#### Alternative 4: New parking lot at AFM Storage Yard (Proposed Development, Echo Parking GA Expansion)

Alternative 4, Echo Parking GA Expansion and expansion of the AFM Storage Yard, requires the fill of 7.38 acres of wetland. The proposed project area will create the required additional parking area for the projected growth of the airport. The construction of the parking area will be combined with previously initiated construction adjacent to the wetlands and will allow for minimal disturbance of airport operations due to construction. Additionally, the proposed area is in a central location which will provide easy access to the parking area.

#### Analysis of Alternatives

The proposed action (Alternative 4) is the preferred alternative for meeting the purpose and need for the project, which is to provide additional general aviation aircraft parking spaces at the Lake Hood Seaplane Base compliant with the ADOT&PF Airport Plan requirements. Alternative 4 is the most practical solution to the meet the parking needs because it will confine construction efforts to single area within the airport facilities, and will allow the new parking area to be in a key central location providing easy of access. This alternative is also the most economically feasible option due to the prior construction is the adjacent area.

#### MINIMIZATION

The location of the proposed project was based on the utilization of the existing AFM Storage Yard and minimize developing an entirely new storage area. Expanding on the existing gravel pad will minimize developing access roads and impacting larger wetland areas. Expansion of the existing AFM Storage Yard will keep the maintenance equipment and materials at one of two central locations within the existing infrastructure minimizing area disruptions due to construction activities.

The existing upland areas adjacent to the wetlands are currently being developed as a storage area for maintenance equipment and materials. The existing AFM Storage Yard is not large enough for sufficient equipment storage space to meet existing and future demand as identified in the TSAIA Master Plan June 2014 Update. The expansion of the AFM Storage Yard will accommodate existing equipment and material storage, as well as additional equipment, maintenance supplies, stockpiled material including everything from landscape mulch to rip rap, and also be utilized for an equipment training area.

Based on current and future airport expansion plans along with required maintenance needs, the proposed area was designed minimizing adjacent wetlands in mind.

To further minimize impacts to waters of the U.S., the project was designed to reduce wetland impacts to the greatest extent practicable. Complete avoidance of wetlands and waters of the U.S. is not practicable to accomplish the purpose and need of this project. To minimize the impact of this project on the environment, the following measures are proposed:

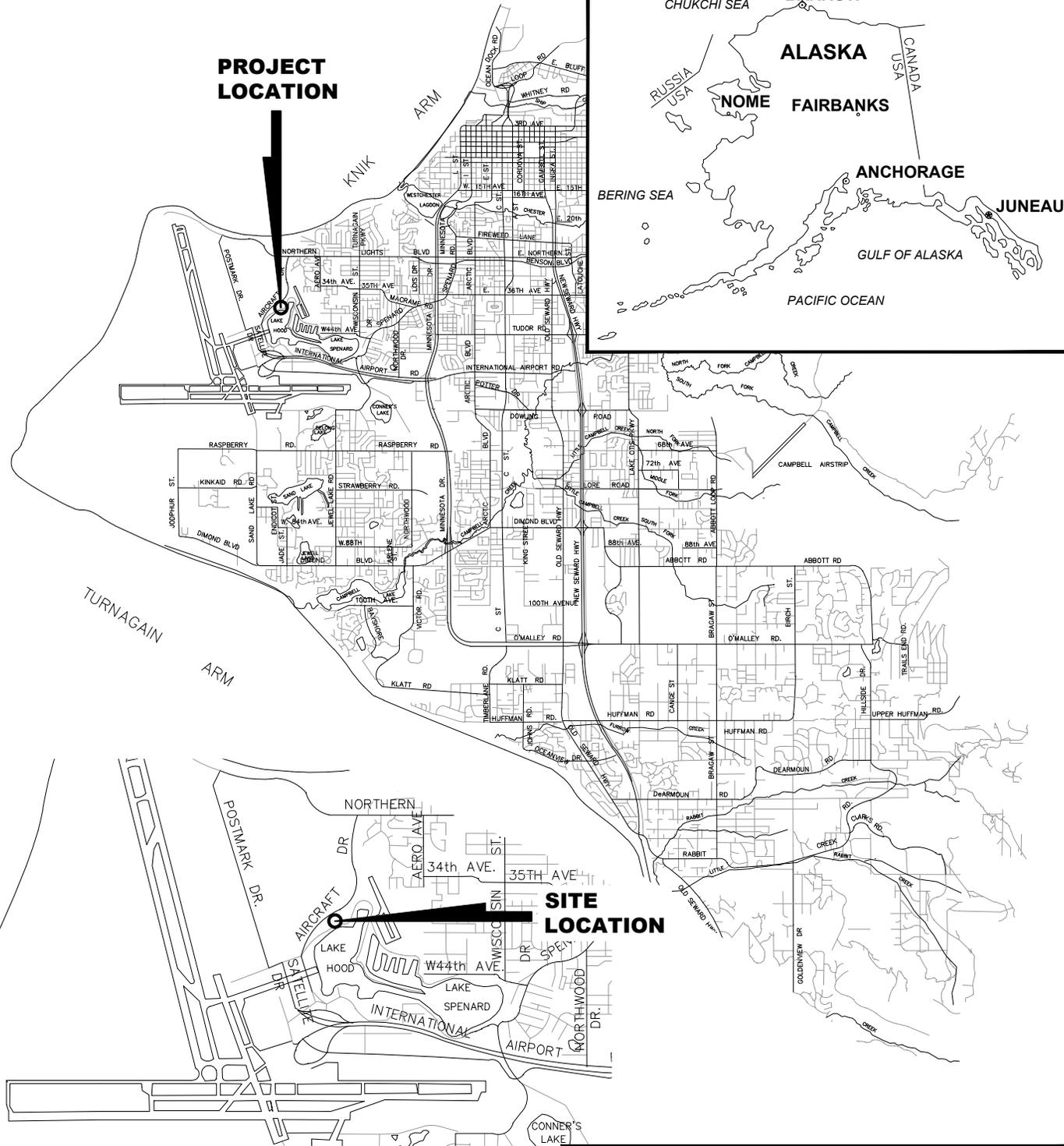
- The proposed project would follow the USFWS recommendations for avoiding disturbance of migratory birds, or Threatened or Endangered species;
- The limits of construction would be clearly identified in the field prior to construction to ensure the permitted project footprint is not exceeded during construction;
- The contractor will place geotextile fabric prior to the placement of fill, and the single discharge of fill will occur in August to minimize any potential impacts to nesting migratory birds;
- A Construction General Permit (CGP) Storm Water Pollution Prevention Plan will be developed and implemented;
- The new pad would be constructed with 4:1 side slopes to minimize the footprint across wetlands;
- Movement of construction equipment would be restricted to within the identified project boundaries to minimize disturbance to native vegetation;
- Stockpiles; if any, would not occur in wetlands that are not proposed for permanent fill placement and would be covered to protect from storm water runoff;
- BMPs such as silt fence and fiber rolls would be installed and implemented to minimize the introduction of additional suspended sediment into the wetlands;
- Permanent stormwater control measures including vegetated retention ditches will be provided for pollutant removal
- The gravel pad will be surfaced hot mix asphalt to reduce sedimentation from dust or storm water runoff from the gravel pad; and
- All refuse, garbage, or debris created in the course of activities would be removed and disposed of in an approved facility. Removal of foreign objects and debris (FOD) are a high concern of airport operations.

#### COMPENSATORY MITIGATION

TSAIA has the necessary wetlands credits available from the Klatt Bog 10 year permit.

**WETLAND FILL - PLAN OVERVIEW**

**PROJECT LOCATION**

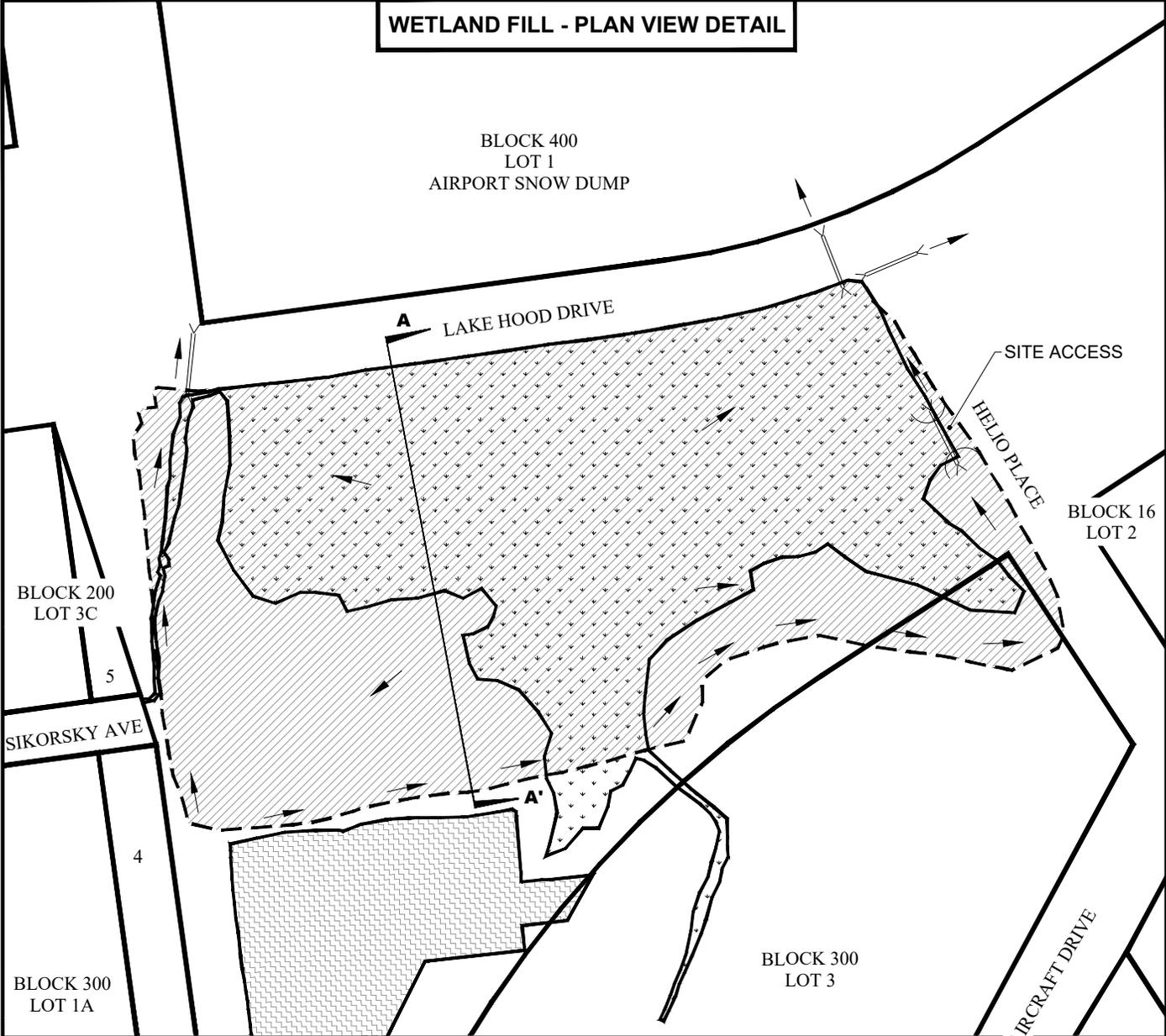


**SITE LOCATION**

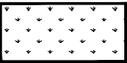
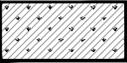
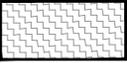


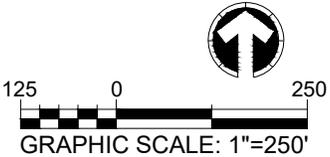
**APPLICANT: TED STEVENS INTERNATIONAL AIRPORT (DOT & PF)**  
**FILE NO. : POA-XXX-XXX,**  
**WATERWAY: HUC XX: XXXXXXXXXXXX, LAKE HOOD**  
**PROPOSED ACTIVITY: ECHO PARKING GA EXPANSION**  
**LOCATION: SEC. 27, T. 13 N, R. 04W, M. SEWARD**  
**LAT: N61°11'11.20" LONG: W-149°58'50.83"**  
**SHEET 1 OF 5 DATE: 8-24-2016**

**WETLAND FILL - PLAN VIEW DETAIL**



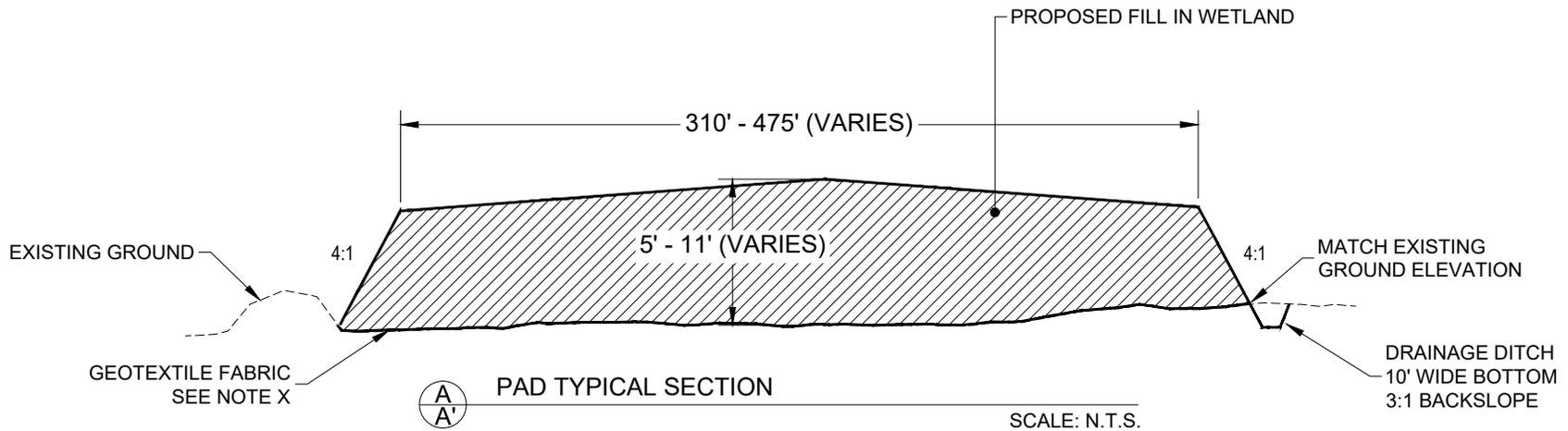
**LEGEND**

-  WETLAND AREA
-  PROPOSED TOTAL FILL AREA (12 ACRES)
-  PROPOSED WETLAND FILL AREA (7.38 ACRES)
-  PROPOSED FILL AREA (NOT THIS PROJECT)
-  24 INCH CMP CULVERTS
-  DRAINAGE DIRECTION
-  LOT LINES



**APPLICANT: TED STEVENS INTERNATIONAL AIRPORT (DOT & PF)**  
**FILE NO. : POA-XXX-XXX**  
**WATERWAY: HUC XX: XXXXXXXXXXXX, LAKE HOOD**  
**PROPOSED ACTIVITY: ECHO PARKING GA EXPANSION**  
**LOCATION: SEC. 27, T. 13 N, R. 04W, M. SEWARD**  
**LAT: N61°11'11.20" LONG: W-149°58'50.83"**  
**SHEET 2 OF 5 DATE: 9-22-2016**

**CROSS SECTION**

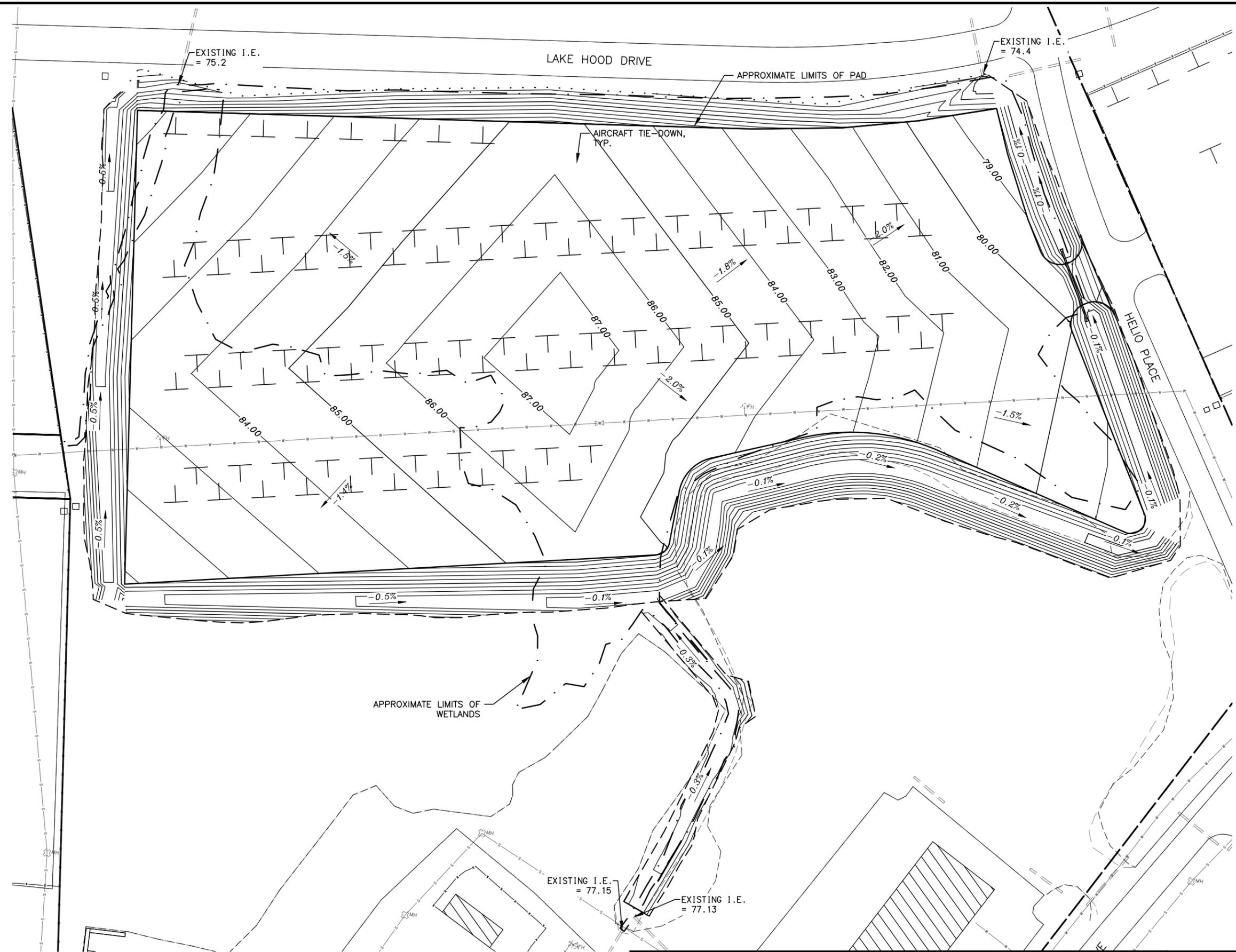


**GENERAL NOTES**

1. LIMITS OF CONSTRUCTION, WORK AREAS, AND FILL AREAS SHALL BE FLAGGED PRIOR TO CONSTRUCTION TO ENSURE THE PROJECT FOOTPRINT IS NOT EXCEEDED.
2. MOVEMENT OF CONSTRUCTION EQUIPMENT WILL BE RESTRICTED TO WITHIN THE IDENTIFIED PROJECT BOUNDARIES.
3. A CONSTRUCTION GENERAL PERMIT (CGP) STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED AND IMPLEMENTED BY THE CONTRACTOR.
4. STOCKPILES, IF USED, WOULD BE COVERED TO PROTECT FROM STORMWATER RUNOFF.
5. BEST MANAGEMENT PRACTICES (BMPs) SHALL BE IMPLEMENTED DURING PROJECT CONSTRUCTION.
6. FILL MATERIAL SHALL NOT INCLUDE ORGANIC, FROZEN, OR OTHER DELETERIOUS MATERIAL. ALL FILLS SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 INCHES AND COMPACTED TO A MINIMUM OF NINETY PERCENT (90%) OF MAXIMUM DENSITY.
7. THE FACES OF CUT AND FILL SLOPES SHALL BE PREPARED AND MAINTAINED TO CONTROL AGAINST EROSION.
8. SEEDING TO BE PROVIDED ON BACKSLOPES TO APPROXIMATELY MATCH EXISTING CONDITIONS.
9. FILL THROUGH WETLAND AREAS WILL BE UNDERLAIN WITH GEOTEXTILE.
10. NO SIDECASTING OF EXCAVATED SOIL INTO WETLAND AREAS IS ALLOWED OUTSIDE OF FILL LIMIT.

**APPLICANT: TED STEVENS INTERNATIONAL AIRPORT  
(DOT & PF)**  
**FILE NO. : POA-XXX-XXX,**  
**WATERWAY: HUC XX: XXXXXXXXXXXX, LAKE HOOD**  
**PROPOSED ACTIVITY: ECHO PARKING GA EXPANSION**  
**LOCATION: SEC. 27, T. 13 N, R. 04W, M. SEWARD**  
**LAT: N61°11'11.20" LONG: W-149°58'50.83"**  
**SHEET 3 OF 5                      DATE: 8-24-2016**

Date Revised: 6/16/2016, 2:36 PM  
 Layout Name: A-ADOT-Layout Plans  
 File Path and Name: Surcharge Area Environmental Figure.dwg  
 Designed By: JCH  
 Drawn By: CMK  
 Checked By: SMB



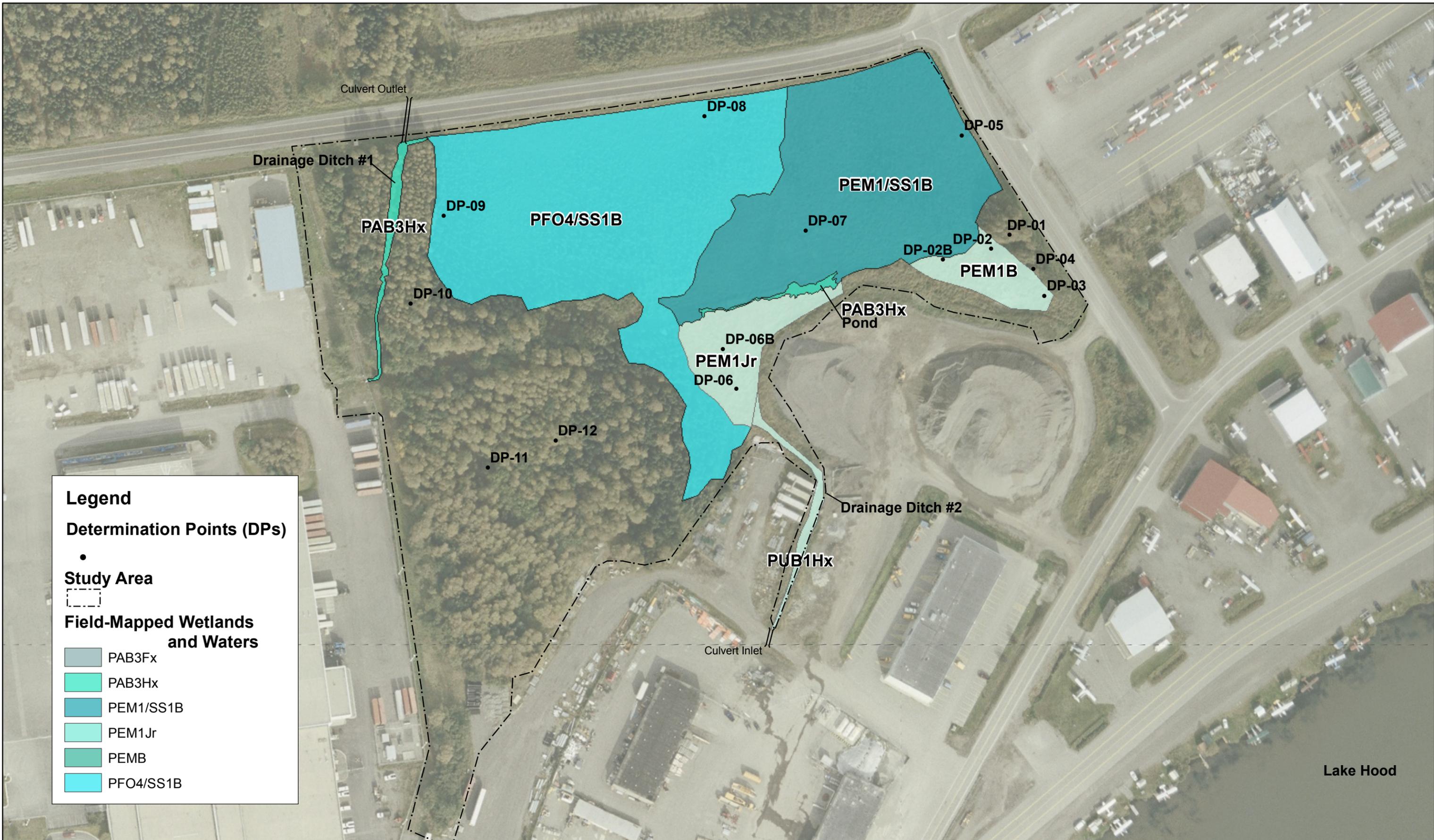
PLANS DEVELOPED BY:  
CRW ENGINEERING GROUP

BY	DATE	REVISION
31		

STATE OF ALASKA  
 DEPARTMENT OF TRANSPORTATION  
 AND PUBLIC FACILITIES  
 CENTRAL REGION

L. HOOD SEAPLANE BASE  
 ANCHORAGE, ALASKA  
 LHD LAKESHORE TAXIWAY RECONSTRUCTION  
 PARKING AREA LAYOUT ALTERNATIVE

Sheet  
 4 of 5



**Legend**

**Determination Points (DPs)**

•

**Study Area**

⋯

**Field-Mapped Wetlands and Waters**

- PAB3Fx
- PAB3Hx
- PEM1/SS1B
- PEM1Jr
- PEMB
- PFO4/SS1B

N

0 100 200 Feet

Coordinate System: NAD 83 StatePlaneZone 4  
 Imagery: ESRI Aerial Image  
 Produced: July 2012

**TSAIA AFM Storage Yard Expansion Site - Preliminary Jurisdictional Determination**  
**Map 5: Field Delineated Wetlands and Waters within Study Area, June 2012**

July 27, 2016

Shane McCoy  
Department of the Army  
US Army Engineer District, Alaska  
Anchorage Field Office CEPOA-RD-SA  
1600 A Street Suite 110  
Anchorage, AK 99501

**RESTORATION**  
**SCIENCE & ENGINEERING, LLC**  
911 W. 8<sup>TH</sup> AVENUE, SUITE 100  
ANCHORAGE, AK 99501  
VOICE: 907-278-1023  
FAX: 907-277-5718  
EMAIL: DNYMAN@RESTORSCI.COM  
URL: WWW.RESTORSCI.COM

RE: Supplemental Information  
Wetland Verification of AFM Storage Yard Wetland

Dear Mr. McCoy:

On behalf of the Ted Stevens Anchorage International Airport (TSAIA) and the Alaska Department of Transportation and Public Facilities (ADOT&PF), Restoration Science & Engineering, LLC (RSE) conducted a wetland verification at the Air Field Maintenance (AFM) Storage Yard Expansion Site on the south side of Lake Hood Drive and west side of Helio Place located in Anchorage, Alaska. The Study Area consists of approximately 16.5 acres of land located south of Lake Hood Drive and east of Helio Place, on the northwest side of Lake Hood. RSE performed a field verification on July 8 and 15, 2016 to verify the wetland delineated boundaries that was completed in 2012 and delineate/document any changes to the wetland within the proposed project area. Maps depicting the results of the field verification are Provided in Attachment 1.

### **Background Information**

The proposed project area (subject site) is bounded on all sides by development; most significantly, the southeastern boundary abuts the existing AFM Storage Yard. A portion of the subject site is classified by the National Wetlands Inventory (NWI) as Palustrine Forested Needle-Leaved Evergreen/Scrub-Shrub Broad-leaved Deciduous, Seasonally Saturated (PFO4/SS1B) and Palustrine Scrub-Shrub Broad-Leaved Deciduous/Emergent Persistent, Seasonally Saturated (PSS1/EM1B) using the USFWS-Cowardin Classification. The majority of the Study Area (13.19 acres) has been mapped by the NRCS as an Icknuun Peat, which is a very poorly drained with a depth to high water table of 0 inches and frequent flooding. A representative profile for the soil unit is 0-10 inches in depth of mucky peat, 10-14 inches in depth of silt loam, 14-60 inches in depth of mucky peat. Approximately 1.71 acres in the northeast corner of the Study Area has been mapped as a Doroshin Peat, which is also a very poorly drained soil with a depth to high water table of 0 inches and frequent flooding. A representative profile for this soil unit is 0-43 inches in depth of mucky peat, 43-60 inches in depth of gravelly loamy sand. The remaining peripheral portions of the Study Area are mapped as Cryothents and Urban Land. The cryothents soils are somewhat excessively drained with a depth to high water table of more than 72 inches in depth and no flooding. A representative profile for this soil unit is 0-60 inches in depth of very gravelly sandy loam. Urban land refers to developed properties.

RSE performed a wetland delineation in June of 2012. Potential jurisdictional wetlands and waters were found within the property as determined by a detailed evaluation of vegetation, soils, and hydrology at established determination points and supported with observations throughout the area. One wetland polygon containing four wetland classes was identified and mapped on the subject property. Additionally, three surface water features on the property consisting of one manmade pond and two drainage ditches were

identified. The wetland delineation was not submitted to the U.S. Army Corps of Engineers (USACE) for a Jurisdictional Determination (JD) at the time of completion because the site did not have a complete plan of development and TSAIA and ADOT&PF chose to wait and submit the report with a complete Section 404 permit application.

### **Wetland Delineation Field Verification**

Wetland verification at the subject site was conducted on July 8 and 15, 2016 by Colette Brandt of RSE. Verification of wetlands, and the boundaries of wetlands with non-wetlands were made in the field according to the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0) dated September 2007 and the 1987 Corps of Engineers Wetland Delineation Manual.

Dominant plant species were characterized in a 20-foot diameter circle centered at the soil pit. Within this area, the absolute cover of each plant species was estimated to obtain representative data of the vegetation components. The vegetation cover of each species and associated wetland indicator status were used to calculate indices of hydrophytic vegetation. Plant species were identified using regional plant guides, including Collet (2002), Dickenson (1999), Hulten (1968), Pojar and Mackinnon (1994), Tande and Lipkin (2003), and Viereck and Little (1972). Plant species names used on data forms followed the nomenclature of Lichvar (2014), which also provides the recently-updated wetland indicator status of the plants.

The primary tasks for the work included: 1) a review of existing maps and ecological data, 2) collection of field data at observation points to determine the presence or absence of wetlands, and 3) field check the 2012 delineated boundaries, and document any boundary adjustments accordingly.

Existing data reviewed as part of this work included:

- USGS Topographic Series Maps
- NWI and Municipality of Anchorage (MOA) Wetland Maps
- USDA Natural Resources Conservation Service Soil Survey for the Anchorage Area, Alaska
- 2012 Wetland Delineation Report completed by Restoration Science & Engineering, LLC

Wetland Determination Points (DPs), boundary points, and other features were recorded with a GPS unit. Maps were produced with ESRI ARCMAP™ software using location coordinates imported from the GPS unit and combined with aerial imagery, topographic map, NWI and MOA wetlands, and NRCS Soils.

Inspection of the property occurred during the normal growing season in western Alaska on July 8 and 15, 2016. The local precipitation patterns were consulted to determine if hydrologic indicators observed at the site were representative of normal conditions. In this case, the climate records for the Anchorage Area (National Weather Service at Anchorage) indicate below average precipitation has occurred in the region so far this year (3.89 inches (30 year average) vs 4.21 inches of precipitation for January 1 – July 1, 2016).

The climate data are used to estimate general weather patterns that may exist at the investigation site, though it is important to note that precipitation patterns within the Anchorage area may vary somewhat depending upon altitude and geography. Although the field inspections in July, described during the normal dry season in Cook Inlet by the Alaska Regional Manual (Corps, 2007), the climate-based observed conditions at the time

of inspection are believed to dryer conditions than a normal climatic year based on the 30 year average, and the lack of saturation or high water tables could be due to low precipitation prior to the inspection.

The wetland hydrology indicators were evaluated carefully to consider the potential for false negative results, which could influence the accurate determination of wetland hydrology and wetlands. In particular, the lack of saturation in areas of hydric soils and hydrophytic vegetation occurring at a particular location would be considered to be a wetland, and recommend a re-visit if necessary during the normal wet season to check for the presence or absence of wetland hydrology indicators.

## Findings

The results of the field verification are consistent with the 2012 Wetland Delineation, except for a portion along the west delineated boundary. The wetland boundary was updated to include the additional area identified in this field verification, as well as mapped the disturbed site conditions from clearing activities located on the southwest portion of the site.

The boundary along the west side was re-delineated and adjusted based on the additional information to include an approximate 0.29 acre area that was not included in the wetland boundary in 2012. The area is consistent with the surrounding wetlands. The area is dominated by a mixture of needle-leaved and broad-leaved trees and shrubs such as paper black spruce (*Picea mariana*), alders (*Alnus rubra*), and birch shrubs (*Betula papyrifera*). The area is also dominated graminoid species such as bluejoint reed grass (*Calamagrostis Canadensis*) and sedges (*Carex* spp.) Saturated organic soils were encountered through all depths of the soil profile with gley and redox features. The wetland determination points (DPs) indicated saturation in the upper 12 inches of the soil. The hydrology and soil observations are consistent with the NRCS classification of the area. See Map 3 with the updated wetland boundary.

The identified upland community in the 2012 delineation report located on the southwest side of the subject site was observed to have been recently cleared. The cleared area included approximately 3,568 square feet (0.08 acres) of the southern portion of the field mapped wetland area (See Map 4).

If you have any questions regarding this submittal, please feel free to contact me at 278-1023 ext. 104, or cbrandt@restorsci.com. Thank you for your time.

Sincerely,  
RESTORATION SCIENCE & ENGINEERING, LLC



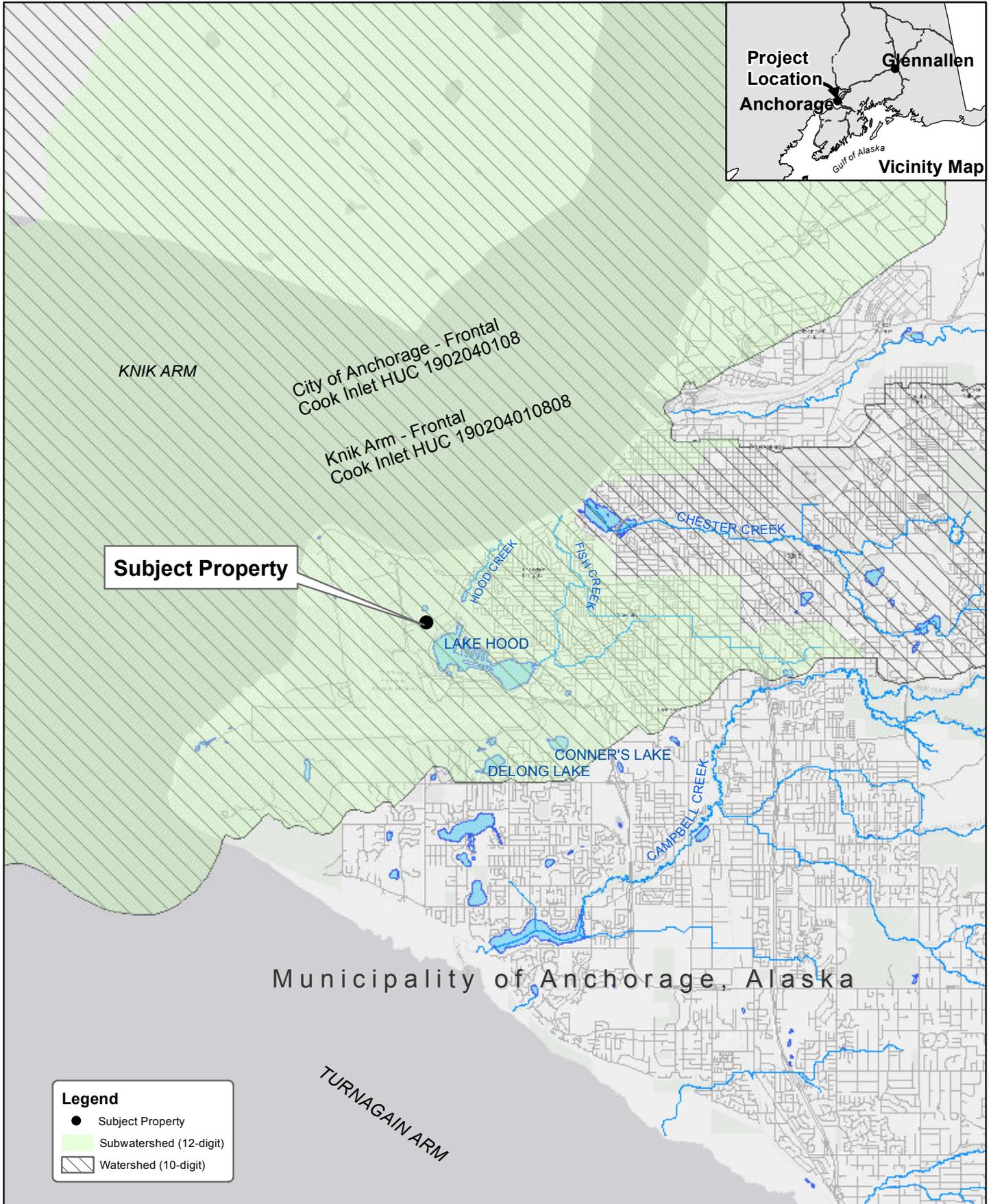
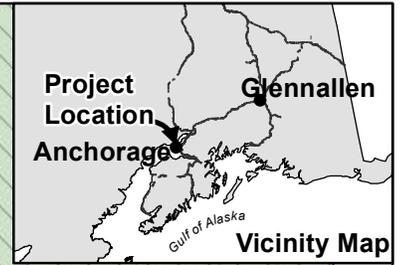
Colette Brandt  
Environmental Scientist

### Attachments:

1. Maps
2. Data Forms
3. Photos
4. Preliminary Jurisdictional Determination, TSAIA AFM Storage Yard Expansion Site, July 2012, prepared by Restoration Science & Engineering, LLC.

# **ATTACHMENT A**

## **Maps**



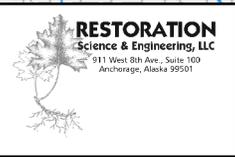
**Legend**

- Subject Property
- Subwatershed (12-digit)
- Watershed (10-digit)

N 0 0.5 1 Miles

Coordinate System:  
NAD 83 State Plane Zone 4  
July 2016, RSE CB

**Map 1**  
Location of Wetland Delineation Field Verification  
Ted Stevens Anchorage International Airport  
SW 1/4, SEC 27, T13N, R4W, SM; South of Lake Hood Drive





**Map 2**  
**NWI and MOA**  
**Wetlands and Waters**  
 AFM Storage Yard Expansion  
 Wetland Field Verification  
 Ted Steven Anchorage Intl' Airport  
 Section 27, T 13N, R 04 W, SM;  
 South of Lake Hood Drive

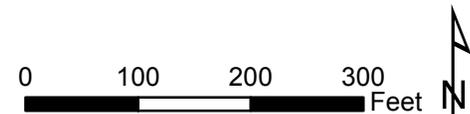
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Map Prepared by:  
 Restoration Science & Engineering, LLC  
 July 28, 2016                      RSE No. 16-1539

**Legend**

- Subject Property Boundary
- MOA Classified Wetlands**
- A - High Valuation
- B - Moderate Valuation
- C - Low Valuation
- USFWS NWI Classified Wetlands**
- PFO4/SS1B
- PSS1/EM1B

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community





**Map 3**  
**2012 RSE Mapped**  
**Wetlands and Waters**  
 AFM Storage Yard Expansion  
 Wetland Field Verification  
 Ted Steven Anchorage Intl' Airport  
 Section 27, T 13N, R 04 W, SM;  
 South of Lake Hood Drive

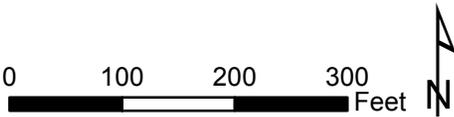
Map Prepared by:  
 Restoration Science & Engineering, LLC  
 July 28, 2016 RSE No. 16-1539

**Legend**

- 2016 Field Verification Determination Points (DPs)
- - - Subject Property Boundary
- ▨ 2012 RSE Field Mapped Wetlands
- - - NRCS Soil Classifications

Symbol	Soil Unit Name
406	Cryorthents & Urban Land, 0 to 5 Percent Slopes
417	Doroshin Peat, 0 to 7 percent slopes (listed hydric soil)
424	Icknuun Peat, 0 to 3 percent slopes (listed hydric soil)

*\*From Soil Survey of Anchorage Area, Alaska 2001 by NRCS*



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

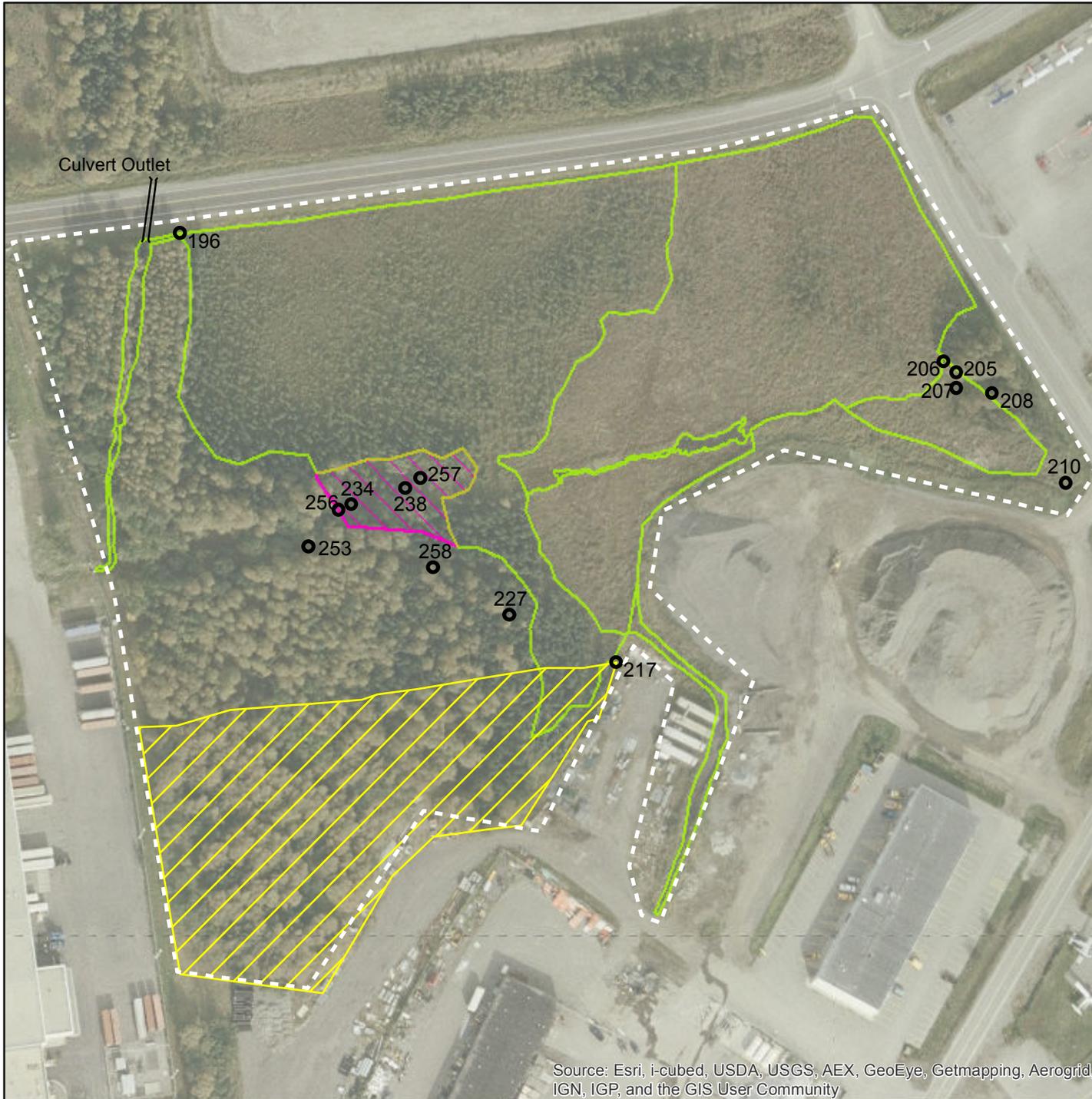
# Map 4 Wetland Verification & Boundary Updates

AFM Storage Yard Expansion  
Wetland Field Verification  
Ted Steven Anchorage Intl' Airport  
Section 27, T 13N, R 04 W, SM;  
South of Lake Hood Drive

Map Prepared by:  
Restoration Science & Engineering, LLC  
July 28, 2016 RSE No. 16-1539

## Legend

- 2016 Field Verification Determination Points (DPs)
- - - Subject Property Boundary
- 2012 RSE Field Mapped Wetlands
- 2016 RSE Field Mapped Wetland Boundary Update/Inclusion
- RSE Mapped Cleared Area



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

0 100 200 300 Feet



# **ATTACHMENT B**

**Data Forms**

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/8/2016  
 Applicant/Owner: ISAIA/DOT&PF Sampling Point: WP 205  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): none Slope (%): 0-2%  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.183' Long: W 149° 58.751 Datum: WGS 84  
 Soil Map Unit Name: 424 Icknuun Peat NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>Below average snowfall and rainfall</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Picea mariana</u>	<u>50</u>	<u>X</u>	<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>85%</u> (A/B)
2. <u>B. papyrifera</u>	<u>25</u>	<u>X</u>	<u>FAC</u>	
3. _____				
4. _____				
Total Cover: <u>75</u>				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>185</u> x 3 = <u>555</u> FACU species <u>30</u> x 4 = <u>120</u> UPL species _____ x 5 = _____ Column Totals: <u>265</u> (A) <u>775</u> (B) Prevalence Index = B/A = <u>2.9</u>
50% of total cover: <u>37.5</u> 20% of total cover: <u>15</u>				
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rosa acicularis</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	
2. <u>B. papyrifera</u>	<u>5</u>	<u>X</u>	<u>FAC</u>	
3. <u>Salix spp.</u>	<u>5</u>	<u>X</u>	<u>FAC</u>	
4. _____				
5. _____				
6. _____				
Total Cover: _____				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Equisetum arvense</u>	<u>75</u>	<u>X</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
2. <u>Calamagrostis canadensis</u>	<u>75</u>	<u>X</u>	<u>FAC</u>	
3. <u>Chamaenerion angustifolium</u>	<u>25</u>		<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>175</u>				
50% of total cover: <u>87.5</u> 20% of total cover: <u>35</u>				
Plot size (radius, or length x width) <u>10' radius</u>	% Bare Ground <u>0</u>			
% Cover of Wetland Bryophytes _____	Total Cover of Bryophytes _____			
(Where applicable)				
Remarks:				

**SOIL**

Sampling Point: WP205

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1	100						silty peat w/ organics, dry
5-18	10YR 2/1	50						silty peat w/ organics, dry
	MH 4N	50						drk gray silt/clay dry

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators:</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue		
<input type="checkbox"/> Thick Dark Surface (A12)			
<input checked="" type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Redox (A14)	<sup>4</sup> Give details of color change in Remarks.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			

**Restrictive Layer (if present):**  
 Type: none  
 Depth (inches): ---

**Hydric Soil Present?** Yes  No

Remarks:  
 Potential dry soils due to below average rainfall & dry season, evidence from the 2012 delineation DP 02 - most likely be considered a transition zone

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (any one indicator is sufficient)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>			
Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	
Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____			
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 Potential dry season & below average rainfall → would consider transition area based on 2012 delineation



Wetland Boundary Verification – WP205 Soils (07-08-2016)



Wetland Boundary Verification – WP205 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: TSAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/8/2016

Applicant/Owner: TSAIA / ADOT & PF Sampling Point: WP 206

Investigator(s): CBRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_

Local relief (concave, convex, none): none Slope (%): 0-2

Subregion: Cook Inlet lowlands Lat: N 61° 11.185' Long: W 149° 58.756' Datum: WGS 84

Soil Map Unit Name: 424 Unknown Peat NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Below average snowfall &amp; rainfall</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>B. papyrifera</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>Picea mariana</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
3. _____				
4. _____				
Total Cover: <u>75</u>				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>210</u> x 3 = <u>630</u> FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>260</u> (A) <u>730</u> (B)  Prevalence Index = B/A = <u>2.8</u>
50% of total cover: <u>37.5</u> 20% of total cover: <u>15</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>B. papyrifera</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Salix spp.</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
Total Cover: <u>10</u>				
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
2. <u>Calamagrostis canadensis</u>	<u>100</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>175</u>				
50% of total cover: <u>87.5</u> 20% of total cover: <u>35</u>				
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)				
Remarks: _____				

**SOIL**

Sampling Point: WP 206

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<u>+1-0</u>								<u>Vegetative root mat</u>
<u>0-20</u>	<u>10 YR 3/1</u>	<u>100</u>						<u>silty mucky peat w/ organics saturated</u>

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

<input checked="" type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)	<sup>4</sup> Give details of color change in Remarks.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		

**Restrictive Layer (if present):**

Type: water table

Depth (inches): ~18-20" bgs

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (any one indicator is sufficient)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): 18-20"

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0-20"

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Wetland Boundary Verification – WP206 Soils (07-08-2016)



Wetland Boundary Verification – WP206 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: TSAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/8/2016  
 Applicant/Owner: TSAIA / ADOT & PF Sampling Point: WP 207  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): none Slope (%): 0-2  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.180' Long: W 149° 58.751 Datum: WGS 84  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Below average snowfall &amp; rain fall.</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Picea mariana</u>	10	<input checked="" type="checkbox"/>	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>6</u> (A)
2. <u>B. papyrifera</u>	10	<input checked="" type="checkbox"/>	FAC	Total Number of Dominant Species Across All Strata:	<u>6</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b>	
Total Cover: <u>20</u>				Total % Cover of: _____ Multiply by: _____	
50% of total cover: <u>10</u> 20% of total cover: <u>4</u>				OBL species _____ x 1 = _____	
<b>Sapling/Shrub Stratum</b>				FACW species <u>10</u> x 2 = <u>20</u>	
1. <u>B. papyrifera</u>	5	<input checked="" type="checkbox"/>	FAC	FAC species <u>195</u> x 3 = <u>585</u>	
2. <u>Salix spp.</u>	5	<input checked="" type="checkbox"/>	FAC	FACU species _____ x 4 = _____	
3. _____				UPL species _____ x 5 = _____	
4. _____				Column Totals: <u>205</u> (A) <u>605</u> (B)	
5. _____				Prevalence Index = B/A = <u>2.95</u>	
6. _____				<b>Hydrophytic Vegetation Indicators:</b>	
Total Cover: <u>10</u>				<input checked="" type="checkbox"/> Dominance Test is >50%	
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				<input checked="" type="checkbox"/> Prevalence Index is ≤3.0	
<b>Herb Stratum</b>				____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
1. <u>Calamagrostis canadensis</u>	100	<input checked="" type="checkbox"/>	FAC	____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
2. <u>Equisetum arvense</u>	75	<input checked="" type="checkbox"/>	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
Total Cover: <u>175</u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.	
50% of total cover: <u>87.5</u> 20% of total cover: <u>35</u>					
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>0</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
% Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)					

Remarks: \_\_\_\_\_

**SOIL**

Sampling Point: WP 207

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<u>+1-0</u>							<u>Veg. root mat</u>	
<u>0-20</u>	<u>5N</u>	<u>75</u>	<u>5YR 5/6</u>	<u>25</u>	<u>RM</u>		<u>Silty mucky gray w/ Roots</u>	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	
<input type="checkbox"/> Thick Dark Surface (A12)		
<input checked="" type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)	<sup>4</sup> Give details of color change in Remarks.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		

<b>Restrictive Layer (if present):</b> Type: <u>high water table</u> Depth (inches): <u>~15"</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
<b>Primary Indicators (any one indicator is sufficient)</b> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Water-stained Leaves (B9) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Salt Deposits (C5) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>~15"</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0-20</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
dry season water table



Wetland Boundary Verification – WP207 Soils (07-08-2016)



Wetland Boundary Verification – WP207 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/8/2016  
 Applicant/Owner: ISAIA/ADOT & PF Sampling Point: WP 208  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 0-5%  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.179' Long: W 149° 58.737' Datum: WGS 84  
 Soil Map Unit Name: 424 Icknuun Peat NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Below average snowfall &amp; rainfall</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>B. papyrifera</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
4. _____				
Total Cover: <u>75</u>				
50% of total cover: <u>37.5</u> 20% of total cover: <u>15</u>				
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Rosa acicularis</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species <u>175</u> x 3 = <u>525</u>
5. _____				FACU species <u>20</u> x 4 = <u>80</u>
6. _____				UPL species _____ x 5 = _____
Total Cover: <u>10</u>				Column Totals: <u>195</u> (A) <u>605</u> (B)
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				Prevalence Index = B/A = <u>3.1</u>
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Equisetum arvense</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<input type="checkbox"/> Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>10</u>		<u>FACU</u>	<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>110</u>				
50% of total cover: <u>55</u> 20% of total cover: <u>22</u>				
Plot size (radius, or length x width) <u>10' radius</u>		% Bare Ground <u>0</u>		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
% Cover of Wetland Bryophytes _____		Total Cover of Bryophytes _____		
Remarks:				

**SOIL**

Sampling Point: WP208

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
+1-0								veg. root mat
0-8	4/2 10YR	100						silty sand w/ roots, clay
8-22	4/3 7.5YR	100						POW silty sand, clay

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)	<sup>4</sup> Give details of color change in Remarks.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (any one indicator is sufficient)</u>		<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Wetland Boundary Verification – WP208 Soils (07-08-2016)



Wetland Boundary Verification – WP208 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/8/2010  
 Applicant/Owner: ISAIA / ADOT & DF Sampling Point: WP 210  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): Concave Slope (%): \_\_\_\_\_  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.162' Long: W 149° 58.708' Datum: WGS84  
 Soil Map Unit Name: 424 Icknump peat NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Below average snowfall and rainfall</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>135</u> x 3 = <u>405</u> FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>135</u> (A) <u>405</u> (B)  Prevalence Index = B/A = <u>3.0</u>
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix spp.</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: <u>10</u>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Callimachos canadensis</u>	<u>100</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>125</u>				
50% of total cover: <u>62.5</u> 20% of total cover: <u>25</u>				
Plot size (radius, or length x width) <u>10' radius</u>	% Bare Ground <u>0</u>			
% Cover of Wetland Bryophytes _____	Total Cover of Bryophytes _____			
(Where applicable)				

Remarks:  
Area w/ drainage w/ culvert across access road/drive

**SOIL**

Sampling Point: WP 210

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<u>+2-0</u>								<u>Veg root mat</u>
<u>0-5</u>	<u>3/3 10YR</u>	<u>100</u>						<u>BEN peat w/ organics</u>
<u>5-18</u>	<u>5/2 10YR</u>	<u>100</u>						<u>silty sand (fine to coarse sand)</u> <u>w/ organics w/ some</u> <u>small cobbles.</u>

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators:</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue		
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)		<sup>4</sup> Give details of color change in Remarks.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)			

**Restrictive Layer (if present):**  
 Type: none  
 Depth (inches): \_\_\_\_\_  
 Hydric Soil Present? Yes \_\_\_ No X

Remarks:  
Debris/garbage uncovered in test pit - potentially f/w when access drive & adjacent pad were constructed based on depth of debris w/in the sand (fill type) material.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (any one indicator is sufficient)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Salt Deposits (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Algal Mat or Crust (B4)			
<input type="checkbox"/> Iron Deposits (B5)			
<input type="checkbox"/> Surface Soil Cracks (B6)			

**Field Observations:**  
 Surface Water Present? Yes \_\_\_ No \_\_\_ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_ No \_\_\_ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes \_\_\_ No \_\_\_ Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)  
 Wetland Hydrology Present? Yes \_\_\_ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Below average rainfall & dry season. 2012 delineation is also consistent. Although culvert & drainage - soils appear to be well drained.



Wetland Boundary Verification – WP210 Soils (07-08-2016)



Wetland Boundary Verification – WP210 Soil Test Pit – debris barried, dry (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM Storage Yard Borough/City: MOA Sampling Date: 7/8/2016  
 Applicant/Owner: ISAIA / ADOT & PF Sampling Point: WP227  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): none Slope (%): 0  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.137' Long: W 149° 58.927' Datum: WGS 84  
 Soil Map Unit Name: 424 Unknown Peat NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Below average snowfall for '15/'16 and rainfall.</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Picea mariana</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (AB)
4. _____				<b>Prevalence Index worksheet:</b>
Total Cover: <u>50</u>				
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>				OBL species _____ x 1 = _____
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Multiply by:
1. <u>P. mariana</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	OBL species _____ x 1 = _____
2. _____				FACW species <u>60</u> x 2 = <u>120</u>
3. _____				FAC species <u>15</u> x 3 = <u>45</u>
4. _____				FACU species <u>25</u> x 4 = <u>100</u>
5. _____				UPL species _____ x 5 = _____
6. _____				Column Totals: <u>100</u> (A) <u>265</u> (B)
Total Cover: <u>10</u>				Prevalence Index = B/A = <u>2.65</u>
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				<b>Hydrophytic Vegetation Indicators:</b>
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Cornus canadensis</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0
2. <u>Vaccinium uliginosum</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3. <u>Rhododendron groenlandicum</u>	<u>5</u>		<u>FAC</u>	____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>Equisetum arvense</u>	<u>5</u>		<u>FAC</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>40</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
50% of total cover: <u>20</u> 20% of total cover: <u>8</u>				
Plot size (radius, or length x width) <u>10' radius</u>	% Bare Ground <u>0</u>			
% Cover of Wetland Bryophytes <u>0</u>	Total Cover of Bryophytes <u>75</u>			
Remarks: <u>feather MOSS ~ 75% cover</u>				

**SOIL**

Sampling Point: WP 227

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	4/4 5/4R	75					Reddish Brn silty peat w/ organics	
	3/1 10YR	25					DK Gray/Blk " (loam) "	
4-20	4/3 10YR	75					Silty sand loam	
	3/1 10YR	25					Silty loam intermixed	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

Histosol or Histel (A1)       Alaska Color Change (TA4)<sup>4</sup>       Alaska Gleyed Without Hue 5Y or Redder Underlying Layer

Histic Epipedon (A2)       Alaska Alpine Swales (TA5)

Hydrogen Sulfide (A4)       Alaska Redox With 2.5Y Hue       Other (Explain in Remarks)

Thick Dark Surface (A12)

Alaska Gleyed (A13)      <sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

Alaska Redox (A14)      <sup>4</sup>Give details of color change in Remarks.

Alaska Gleyed Pores (A15)

**Restrictive Layer (if present):**

Type: None

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Algal Mat or Crust (B4)	
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_

(includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

below average snowfall & rainfall

Remarks:



Wetland Boundary Verification – WP227 Soils (07-08-2016)



Wetland Boundary Verification – WP227 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: TSAIA AFM STORAGE YARD Borough/City: MVA Sampling Date: 7/8/16  
 Applicant/Owner: TSAIA / ADOT & PF Sampling Point: WP 234  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): partly concave Slope (%): 0-2  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.158' Long: W 149° 58.989' Datum: WGS 84  
 Soil Map Unit Name: 424 Icknuun peat NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>below average rainfall &amp; snowfall</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Picea mariana</u>	<u>5</u>		<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. <u>B. papyrifera</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>		
3. <u>Alnus rubra</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>		
4. _____					
Total Cover: <u>40</u>				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>100</u> x 3 = <u>480</u> FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>1165</u> (A) <u>490</u> (B) Prevalence Index = B/A = <u>2.97</u>	
50% of total cover: <u>20</u> 20% of total cover: <u>8</u>					
Sapling/Shrub Stratum					
1. _____					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
Total Cover: <u>125</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
50% of total cover: <u>62.5</u> 20% of total cover: <u>25</u>					
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)					
Remarks:					

**SOIL**

Sampling Point: WP 234

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	3/3 10YR	100					mucky peat/root mat	
4-24	5N	50	5/6 5YR	25	RM		Gley w/ Redox	
	3/3 10YR	25					silty loam intermixed	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)		
<input checked="" type="checkbox"/> Alaska Redox (A14)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (any one indicator is sufficient)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): 0-24

(includes capillary fringe)

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Wetland Boundary Verification – WP234 Soils (07-08-2016)



Wetland Boundary Verification – WP234 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/8/16  
 Applicant/Owner: ISAIA/ADOT&PF Sampling Point: WP 238  
 Investigator(s): CBRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): - Slope (%): 0.2  
 Subregion: Coastal lowlands Lat: N 61° 11.161' Long: W 149° 58.968' Datum: WGS 84  
 Soil Map Unit Name: 424 Icknauun Peat NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Picea mariana</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
2. <u>B. papyrifera</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. <u>Alnus rubra</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
4. _____				
Total Cover: <u>45</u>				
50% of total cover: <u>22.5</u> 20% of total cover: <u>9</u>				
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Alnus rubra</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
Total Cover: <u>5</u>				
50% of total cover: <u>2.5</u> 20% of total cover: <u>1</u>				
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Calamagrostis canadensis</u>	<u>100</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Sagittaria arifolia</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>175</u>				
50% of total cover: <u>87.5</u> 20% of total cover: <u>35</u>				
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)				

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____ x 1 = _____	
FACW species <u>10</u> x 2 = <u>20</u>	
FAC species <u>215</u> x 3 = <u>645</u>	
FACU species _____ x 4 = _____	
UPL species _____ x 5 = _____	
Column Totals: <u>225</u> (A) <u>665</u> (B)	
Prevalence Index = B/A = <u>2.95</u>	

**Hydrophytic Vegetation Indicators:**

Dominance Test is >50%

Prevalence Index is ≤3.0

\_\_\_ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks:

**SOIL**

Sampling Point: WP 238

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-24	4/3 10YR	80						silty sandy loam/muck part
8-13	10N	10						w/ organics, saturated
	4/3 5YR	10						reddish <sup>bln</sup> roots & peat

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

<input checked="" type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)	<sup>4</sup> Give details of color change in Remarks.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (any one indicator is sufficient)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0-24

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: during a normal season w/ average rain - most likely would see a water table



Wetland Boundary Verification – WP238 Soils (07-08-2016)



Wetland Boundary Verification – WP238 Vegetation (07-08-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/15/2016  
 Applicant/Owner: ISAIA/ADOT & PF Sampling Point: WP 253  
 Investigator(s): CBRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.50' Long: W 149° 59.006' Datum: WGS 84  
 Soil Map Unit Name: 424 Icknuun Peat NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Below average snowfall &amp; rainfall</u>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>B. papyrifera</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83%</u> (A/B)
2. <u>Alnus nuba</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____				
4. _____				
Total Cover: <u>35</u>				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>140</u> x 3 = <u>420</u> FACU species <u>55</u> x 4 = <u>220</u> UPL species _____ x 5 = _____ Column Totals: <u>200</u> (A) <u>650</u> (B)  Prevalence Index = B/A = <u>3.25</u>
50% of total cover: <u>17.5</u> 20% of total cover: <u>7</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>Picea mariana</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% _____ Prevalence Index is ≤3.0 _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. <u>B. papyrifera</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
Total Cover: <u>10</u>				
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>5</u>		<u>FACU</u>	
3. <u>Cornus canadensis</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
4. <u>Carex spp.</u>	<u>55</u>		<u>FAC</u>	
5. <u>Calamagrostis canadensis</u>	<u>25</u>		<u>FAC</u>	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>155</u>				
50% of total cover: <u>77.5</u> 20% of total cover: <u>31</u>				
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>25%</u> % Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____				
Remarks:				

**SOIL**

Sampling Point: WP 253

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-9	4/2 10YR	100					BRN SILTY PEAT w/ organics	
9-24	5/4 10YR	100					light brn silty sand w/ organics	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.    <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)	<sup>4</sup> Give details of color change in Remarks.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<u>Primary Indicators (any one indicator is sufficient)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes _____ No _____	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No _____	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No _____	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



Wetland Boundary Verification – WP253 Soils (07-15-2016)



Wetland Boundary Verification – WP253 Vegetation (07-15-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: TSAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/15/2014  
 Applicant/Owner: TSAIA/ADOT & PF Sampling Point: WP256  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion: Cook Inlet lowlands Lat: N161° 11.57' Long: W149° 58.994 Datum: WGS 84  
 Soil Map Unit Name: 424 Unknown Peat NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p align="center"><u>Below average snowfall &amp; rainfall - consider it a transition location</u></p>	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Alnus rubra</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>130</u> x 3 = <u>390</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species _____ x 5 = _____ Column Totals: <u>140</u> (A) <u>430</u> (B) Prevalence Index = B/A = <u>3.1</u>
Total Cover: <u>25</u>				
50% of total cover: <u>12.5</u> 20% of total cover: <u>5</u>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% _____ Prevalence Index is ≤3.0 _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
<b>Sapling/Shrub Stratum</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ Total Cover: _____ 50% of total cover: _____ 20% of total cover: _____				
<b>Herb Stratum</b> 1. <u>Calamagrostis canadensis</u> <u>50</u> <input checked="" type="checkbox"/> <u>FAC</u> 2. <u>Equisetum arvense</u> <u>50</u> <input checked="" type="checkbox"/> <u>FAC</u> 3. <u>Cornus canadensis</u> <u>10</u> <u>FACU</u> 4. <u>Galium triflorum</u> <u>5</u> <u>FAC</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>115</u> 50% of total cover: <u>57.5</u> 20% of total cover: <u>23</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>10</u> % Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)				
Remarks:				

**SOIL**

Sampling Point: WP256

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-18	4/2/10YR	100					silt loam w/organics, clay	
18-24	3/1 10YR	100					silt loam, saturated	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

Histosol or Histel (A1)

Histic Epipedon (A2)

Hydrogen Sulfide (A4)

Thick Dark Surface (A12)

Alaska Gleyed (A13)

Alaska Redox (A14)

Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

Alaska Color Change (TA4)<sup>4</sup>

Alaska Alpine Swales (TA5)

Alaska Redox With 2.5Y Hue

Alaska Gleyed Without Hue 5Y or Redder Underlying Layer

Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

Surface Water (A1)

High Water Table (A2)

Saturation (A3)

Water Marks (B1)

Sediment Deposits (B2)

Drift Deposits (B3)

Algal Mat or Crust (B4)

Iron Deposits (B5)

Surface Soil Cracks (B6)

Inundation Visible on Aerial Imagery (B7)

Sparsely Vegetated Concave Surface (B8)

Marl Deposits (B15)

Hydrogen Sulfide Odor (C1)

Dry-Season Water Table (C2)

Other (Explain in Remarks)

Secondary Indicators (2 or more required)

Water-stained Leaves (B9)

Drainage Patterns (B10)

Oxidized Rhizospheres along Living Roots (C3)

Presence of Reduced Iron (C4)

Salt Deposits (C5)

Stunted or Stressed Plants (D1)

Geomorphic Position (D2)

Shallow Aquitard (D3)

Microtopographic Relief (D4)

FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_

Saturation Present? Yes X No \_\_\_\_\_ Depth (inches): 18-24

Wetland Hydrology Present? Yes \_\_\_\_\_ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Below average rainfall - could/most likely transition zone based on the location/edge of diff veg zones.



Wetland Boundary Verification – WP256 Soils (07-15-2016)



Wetland Boundary Verification – WP256 Vegetation (07-15-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/15/2016  
 Applicant/Owner: ISAIA/ADDT & PF Sampling Point: WP 257  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion: Cook Inlet lowlands Lat: N 61° 11.1163' Long: W 149° 58.962' Datum: WGS84  
 Soil Map Unit Name: 424 Ickmuan Peat NWI classification: PF04/SS1B  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b>	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		

Remarks: Below average rainfall

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
1. <u>Alnus rubra</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Picea mariana</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b>
Total Cover: <u>15</u>				Total % Cover of: _____ Multiply by: _____
50% of total cover: <u>7.5</u> 20% of total cover: <u>3</u>				OBL species _____ x 1 = _____
<b>Sapling/Shrub Stratum</b>				FACW species <u>10</u> x 2 = <u>20</u>
1. <u>Alnus rubra</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	FAC species <u>95</u> x 3 = <u>285</u>
2. _____				FACW species _____ x 4 = _____
3. _____				FACU species _____ x 5 = _____
4. _____				UPL species _____ x 5 = _____
5. _____				Column Totals: <u>105</u> (A) <u>305</u> (B)
6. _____				Prevalence Index = B/A = <u>2.9</u>
Total Cover: <u>5</u>				<b>Hydrophytic Vegetation Indicators:</b>
50% of total cover: <u>2.5</u> 20% of total cover: <u>1</u>				<input checked="" type="checkbox"/> Dominance Test is >50%
<b>Herb Stratum</b>				<input checked="" type="checkbox"/> Prevalence Index is ≤3.0
1. <u>Calamagrostis canadensis</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
2. <u>Sg. arvense</u>	<u>10</u>		<u>FAC</u>	____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>85</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
50% of total cover: <u>42.5</u> 20% of total cover: <u>17</u>				
Plot size (radius, or length x width) <u>10' radius</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____				
Remarks:				

**SOIL**

Sampling Point: WP 257

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-9	3/1 10YR	100						Veg. rootmat & organics
9-26	2/2 10YR	100						silty mucky part w/ organics

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

Histosol or Histel (A1)       Alaska Color Change (TA4)<sup>4</sup>       Alaska Gleyed Without Hue 5Y or Redder Underlying Layer

Histic Epipedon (A2)       Alaska Alpine Swales (TA5)

Hydrogen Sulfide (A4)       Alaska Redox With 2.5Y Hue       Other (Explain in Remarks)

Thick Dark Surface (A12)

Alaska Gleyed (A13)      <sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

Alaska Redox (A14)      <sup>4</sup>Give details of color change in Remarks.

Alaska Gleyed Pores (A15)

**Restrictive Layer (if present):**

Type: water table

Depth (inches): ~26" w/ 1/3"

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

Surface Water (A1)       Inundation Visible on Aerial Imagery (B7)

High Water Table (A2)       Sparsely Vegetated Concave Surface (B8)

Saturation (A3)       Marl Deposits (B15)

Water Marks (B1)       Hydrogen Sulfide Odor (C1)

Sediment Deposits (B2)       Dry-Season Water Table (C2)

Drift Deposits (B3)       Other (Explain in Remarks)

Algal Mat or Crust (B4)

Iron Deposits (B5)

Surface Soil Cracks (B6)

Secondary Indicators (2 or more required)

Water-stained Leaves (B9)

Drainage Patterns (B10)

Oxidized Rhizospheres along Living Roots (C3)

Presence of Reduced Iron (C4)

Salt Deposits (C5)

Stunted or Stressed Plants (D1)

Geomorphic Position (D2)

Shallow Aquitard (D3)

Microtopographic Relief (D4)

FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): 0-26

(includes capillary fringe)

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

most likely have a high water table if normal/average rainfall.



Wetland Boundary Verification – WP257 Soils (07-15-2016)



Wetland Boundary Verification – WP257 Vegetation (07-15-2016)

**WETLAND DETERMINATION DATA FORM – Alaska Region**

Project/Site: ISAIA AFM STORAGE YARD Borough/City: MOA Sampling Date: 7/15/10  
 Applicant/Owner: ISAIA/ADOT PF Sampling Point: WP258  
 Investigator(s): C BRANDT Landform (hillside, terrace, hummocks, etc.): \_\_\_\_\_  
 Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion: \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/>
Remarks:	

**VEGETATION – Use scientific names of plants. List all species in the plot.**

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Picea mariana</u>	<u>25</u>	<u>X</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2.5</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>7</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71%</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b>
Total Cover: <u>25</u>				
50% of total cover: <u>12.5</u> 20% of total cover: <u>5</u>				OBL species _____ x 1 = _____
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	OBL species _____ x 1 = _____
1. <u>Ainus rubra</u>	<u>5</u>	<u>X</u>	<u>FAC</u>	FACW species <u>30</u> x 2 = <u>60</u>
2. <u>P. mariana</u>	<u>5</u>	<u>X</u>	<u>FACW</u>	FAC species <u>55</u> x 3 = <u>165</u>
3. <u>Oplopanax horridus</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	FACU species <u>60</u> x 4 = <u>240</u>
4. <u>Rhododendron groenlandicum</u>	<u>10</u>	<u>X</u>	<u>FAC</u>	UPL species _____ x 5 = _____
5. _____				Column Totals: <u>145</u> (A) <u>4105</u> (B)
6. _____				Prevalence Index = B/A = <u>3.2</u>
Total Cover: <u>25</u>				<b>Hydrophytic Vegetation Indicators:</b>
50% of total cover: <u>12.5</u> 20% of total cover: <u>5</u>				
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	___ Prevalence Index is ≤3.0
1. <u>Calluna vulgaris canadensis</u>	<u>10</u>		<u>FAC</u>	___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
2. <u>Ag. arvense</u>	<u>25</u>	<u>X</u>	<u>FAC</u>	___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
3. <u>Cornus canadensis</u>	<u>50</u>	<u>X</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
4. <u>Chamaenerion angustifolium</u>	<u>5</u>		<u>FACU</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>5</u>		<u>FAC</u>	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>95</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
50% of total cover: <u>47.5</u> 20% of total cover: <u>19</u>				
Plot size (radius, or length x width) _____ % Bare Ground _____				
% Cover of Wetland Bryophytes _____ Total Cover of Bryophytes _____ (Where applicable)				
Remarks:				

**SOIL**

Sampling Point: WP 258

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<u>12-0</u>								<u>veg. rootmat</u>
<u>0-14</u>	<u>3/2 7.5 YR</u>	<u>100</u>						<u>drk BEN silty sand moist</u>
<u>14-16</u>	<u>4/2 5 YR</u>	<u>100</u>						<u>lighter reddish brn silty sand</u>
<u>16-22</u>	<u>4/2 7.5 YR</u>	<u>100</u>						<u>BEN silty sand.</u>

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Alaska Gleyed (A13)	
<input type="checkbox"/> Alaska Redox (A14)	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	

Alaska Gleyed Without Hue 5Y or Redder Underlying Layer  
Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.  
<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
<b>Primary Indicators (any one indicator is sufficient)</b>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present? Yes _____ No _____ Depth (inches): _____	
Water Table Present? Yes _____ No _____ Depth (inches): _____	
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Wetland Boundary Verification – WP258 Soils (07-15-2016)



Wetland Boundary Verification – WP258 Vegetation (07-15-2016)

# **ATTACHMENT C**

**SELECT SITE PHOTOGRPHS**



Project Area – View northeast (07-08-2016)



Project Area – View northwest (07-08-2016)



Project boundary along Lake Hood Drive – View west (07-08-2016)



Project boundary along Helio Place – View southeast (07-08-2016)



Project Area – View north, northwest (07-08-2016)



Southeast end of the project area, dry season conditions, water stained (07-08-2016)



Project Area – View west (07-08-2016)



Cleared area located on the southwest corner of the project area – view west (07-08-2016)



Cleared area located on the southwest corner of the project area – view east (07-08-2016)



Cleared area located on the southwest corner of the project area – view northwest (07-08-2016)



Drainage on the west side of the project area – view north (07-08-2016)

## **ATTACHMENT D**

**Preliminary Jurisdictional Determination, TSAIA AFM Storage Yard  
Expansion Site, July 2012, prepared by Restoration Science &  
Engineering, LLC.**